DRAFT

ENVIRONMENTAL RESOURCES MANAGEMENT

Surrey Corporation and Surrey Company

FEASIBILITY STUDY REPORT

Alsy Manufacturing Site
Hicksville, NY
NYSDEC Site No.:130027

December 2003

Environmental Resources Management
475 Park Avenue South, 29th Floor
New York, NY 10016

ERM

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TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF APPENDICES

1.0 INTRODUCTION

The former Alsy Manufacturing site (hereinafter referred to as the "Site") is located at 270 and 280 Duffy Avenue in the Town of Hicksville, Nassau County, New York. The Site location is shown in Figure 1-1 and the Site plan is presented as Figure 1-2. The Site is currently owned by Long Island Industrial Management LCC and is in active commercial use.

The Site is listed on the New York State Registry of Inactive Hazardous Waste Disposal Sites as a Class 2 site for which performance of a Remedial Investigation (RI) and Feasibility Study (FS) is required. On 28 March 1995, Surrey Company and the Surrey Corporation ("Surrey") entered into an Administrative Order on Consent (AOC) with the New York State Department of Environmental Conservation (NYSDEC) {Index #: WI-0579-92-01} to conduct an RI and FS for the Site.

In December 1997, an RI Report and Supplemental RI (SRI) Report were prepared by Lawler, Matusky & Skelly Engineers, Inc. (LMS) on behalf of Surrey, and submitted to the NYSDEC. These documents contained an assessment of the nature and extent of organic and inorganic constituents in ground water, soil and air, as well as the geological and hydrogeological settings for the Site.

On 25 February 1998, Environmental Resources Management (ERM) was retained to conduct the FS for the Site on behalf of Surrey. An FS Report was submitted to the NYSDEC on behalf of Surrey on 31 August 1998 and approved by NYSDEC on 23 April 1999. Following approval of the FS and transfer of the project to NYSDEC's Albany, NY office, NYSDEC issued a 10 March 2000 letter requesting that additional investigation work be conducted to locate the source of nickel in groundwater at the Site and to further investigate potential off-Site impacts. At the request of the NYSDEC, this document has been prepared to include the results of the RI, SRI, and additional investigative work and to present the revised FS for the Site media.

1.1 PURPOSE AND ORGANIZATION OF REPORT

The purpose of an FS is to evaluate various remedial alternatives with respect to their ability to achieve identified remedial action objectives (RAOs) for a Site. The RAOs for the affected media (or medium) are based upon applicable standards, criteria and/or guidance (SCGs) for the Site. These SCGs can be achieved through a combination of engineering and institutional actions that consider the current and anticipated future use of the Site and are protective of human health and the environment.

This Feasibility Study has been prepared in accordance with:

- the 28 March 1995 AOC between Surrey and the NYSDEC identified as Index #: WI-0579-92-01 (NYSDEC, 1995a);
- the New York State (NYS) Inactive Hazardous Waste Site Remedial Program (6 NYCRR Part 375) (NYSDEC, 1992);
- NYSDEC TAGM HWR-90-4030, "Selection of Remedial Actions at Inactive Hazardous Waste Sites", (NYSDEC, 1990);
- *Draft* DER-10 "Technical Guidance for Site Investigation and Remediation" (NYSDEC, 2002); and
- Commonly accepted and reliable engineering practices.

The FS establishes RAOs for impacted environmental media at the Site. The general response actions (GRAs), which are capable of achieving these RAOs, lead to the identification of potential remedial action (RA) technologies. Remedial technologies that are found to be applicable to Site conditions are then used to develop comprehensive RA alternatives. The RA alternatives are then evaluated in accordance with NYSDEC guidelines to identify a preferred RA alternative for the Site.

This FS is divided into six sections. The present section (Section 1.0) is an introduction and contains a summary of the Site history, physical characteristics, previous investigations, and additional investigation conducted to supplement development of the FS. The RAOs are developed in the Section 2.0 of the report, based on: (1) an evaluation of the LMS RI and SRI data and additional (i.e., post SRI) data collected by ERM and (2) NYSDEC SCGs or chemical specific remediation goals designed to protect human health and the environment taking into account the Site's current and anticipated future use and measures to remove contamination and prevent exposure to contaminants. This section also identifies GRAs that may achieve the RAOs for the affected Site media

Section 3.0 of the report describes various RA technologies that might be used to accomplish the identified GRAs. This section also includes a screening of technologies to determine those that are appropriate for the conditions present at the Site. A number of technologies are eliminated from further consideration in the FS as a result of this screening. Potential technologies are screened based on their ability to meet the RAOs, short-term and long-term effectiveness and implementability.

Section 4.0 of the report assembles the RA technologies into comprehensive RA alternatives. These RA alternatives are evaluated using the criteria established in TAGM HWR-90-4030 and *Draft* DER-10. Section 5.0 of the report compares the RA alternatives, previously presented in Section 4.0, and identifies a preferred remedial alternative for implementation at the Site. References used throughout the FS document are provided in Section 6.0.

1.2 SITE BACKGROUND

This section presents a general Site description, Site history, a summary of the physical characteristics of the Site and a summary of previous investigative activities conducted at the Site.

1.2.1 Site Description

The Site is located at 270 and 280 Duffy Avenue in Hicksville, Nassau County, New York. It is situated on approximately 4 acres of land, bounded: on the north by the Long Island Railroad and a construction and demolition (C&D) debris reclaimer; on the south by Duffy Avenue; and on the east and west by active and vacant industrial or commercial operations. The Site, currently owned by Long Island Industrial Management LCC, is in active commercial use housing a number of tenants.

The Site contains two (2), one-story buildings (270 and 280 Duffy Avenue) with adjacent paved parking areas. The 270 Duffy Avenue building is currently occupied by several active commercial operations, including a corporate office and a distribution center, Sam Ash; the 280 Duffy Avenue building is currently occupied by a wholesale office furniture store. The Site also contains limited non-paved areas:

- a berm located along the northern Site border adjacent to the Long Island Railroad tracks;
- a berm located along the eastern property line;
- a narrow landscaped strip of land located behind (north of) the 270 Duffy Avenue building;
- a landscaped strip of land located in front of the buildings at 270 and 280 Duffy Avenue; and
- a narrow strip of grass and mature trees immediately north of Duffy Avenue.

According to the Town of Oyster Bay Planning Department, the Site is zoned as H-Light Industry. The Oyster Bay Code (see Appendix A), indicates that permitted uses for this zoning are:

- baking plants;
- veterinary hospitals;

- freight terminals;
- lumber yards;
- stone cutting;
- monument works;
- warehouses; or
- manufacturing or industrial operations of any kind provided that no industrial process shall be included which emits dust, odor, gas, fumes, noise and vibration comparable in character or in aggregate amounts to that of any use listed as a special permit use or as a prohibited use.

Other uses, which are identified as special exemptions, may also be permitted pending acceptance following a public hearing. These special exemptions are provided in Section 246-272 and prohibited uses are listed in Section 246-273 of the Oyster Bay Code. Zoning to the north, east and west of the Site is H-Light Industry. The land to the south is zoned as E-Residential.

An active water supply well field is located in the Hicksville Water District, approximately 5,435 feet south of the Site, and another water supply well field is located in the Bowling Green Estates Water District, approximately 6,450 feet southwest of the Site. These water supply well fields are the only active water supply well fields within 6,500 feet of the Site. Applicable law prohibits installation of private wells, and a well search did not identify any private wells in the area.

1.2.2 *Site History*

From 1975 through 31 March 1991, Alsy Manufacturing, Inc. (Alsy) operated the Site. During this time, Alsy manufactured and sold electric lamps and lamp shades (NYSDEC, 1995a). The manufacturing processes used on Site at that time included antiquing and brass plating (NYSDEC, 1995a). Prior to 1975, the Site was occupied by Metalab, a laboratory furniture manufacturer (EAST, 1987) (LMS, 1997a).

Until 1985, the Site was owned by Balatem Corporation. In 1985, Surrey Corporation purchased the Site and assumed Balatem Corporation's lease with Alsy, the sole tenant. In 1991, Alsy ceased operations at the Site. The Surrey Company subsequently assumed Site ownership from Surrey Corporation. In January 1997, First Industrial, L.P. took title to the property. Long Island Industrial Management LLC purchased the property in December 2000 and is the current property owner. The Site is currently leased to several active commercial operations, which utilize the space for sales as well as shipments and deliveries.

Wastes generated and managed on Site during Alsy's operations included: waste water treatment sludge which contained cyanide, copper and zinc; paint strippers and thinners generated during the cleaning of painting equipment; and 1,1,1-trichloroethane from vapor degreasers (EAST, 1987) (LMS, 1997a). Records indicate that these wastes were removed by a licensed industrial waste company for off-site disposal (Hart, 1990) (LMS, 1997a).

In 1977, NYSDEC issued Alsy a State Pollutant Discharge Elimination System (SPDES) permit for two on-Site discharge points. This permit authorized the discharge of sanitary wastes from one discharge point and the discharge of industrial wastewaters containing copper, nickel, zinc, total nitrogen, cyanide and chlorine, within specified concentrations, from the other discharge point (Hart, 1990) (LMS, 1997a).

Between 1977 and 1983, the Nassau County Department of Health (NCDOH) and the NYSDEC conducted investigations at the Site in response to alleged SPDES permit violations (Hart, 1990) (LMS, 1997a). During the investigation NCDOH collected samples from a discharge trough, collection trench, effluent pipe, and various settling tanks within the building adjacent to the plating area (Hart, 1990) (LMS, 1997a). The sampling identified inorganic constituents detected at these sampling points. Chlorinated solvents (i.e., methylene chloride, chloroform, trichloroethane, trichloroethene) and aromatics (i.e., toluene and xylene) were also detected (Hart, 1990) (LMS, 1997a). In addition, the results of self-monitoring at the permitted discharge point, which was conducted by Alsy in 1977-78 and 1980-81 showed concentrations of copper, cyanide, nickel, total nitrogen and zinc in excess of the SPDES permit limits (Hart, 1990) (LMS, 1997a).

In February 1984, during a joint inspection by NCDOH and NYSDEC, four apparently non-permitted industrial waste water discharge points, as well as three industrial leach pools and two trenches located behind the Site buildings, were identified (see Figure 1-3 for locations) (Hart, 1990) (LMS, 1997a). Following the February 1984 inspection, soil and groundwater samples were collected by NYSDEC, NCDOH, the United States Environmental Protection Agency (USEPA), and consultants employed by either Balatem Corporation or Alsy, including Soil Mechanics Drilling Corporation, H2M Corporation, and Roux Associates, Inc. The investigations conducted by Soil Mechanics Drilling Corporation and H2M Corporation between August 1984 and April 1988 confirmed the presence of five additional leach pools and three dry wells as well as the presence of inorganic constituents and volatile organic compounds (VOCs) in soil and ground water (Hart, 1990) (LMS, 1997a).

In 1986, Alsy entered into an AOC with NYSDEC in settlement of alleged SPDES permit violations. In 1987, NYSDEC commissioned EA Science and Technology to conduct a Phase I Site Assessment, and in June 1987, a Phase I Report was issued (LMS, 1997a). Based on the Phase I Report, NYSDEC classified the Site as a Class 2a Site and placed the Site on the

NYS Registry of Inactive Hazardous Waste Disposal Sites. This intermediate classification signifies that further investigation is required.

In 1989, Surrey Corporation entered into an AOC with NYSDEC to conduct a Phase II investigation of the Site. Surrey Corporation retained Fred C. Hart Associates, Inc. (Hart) to conduct the Phase II investigation, and in 1990, Hart prepared a work plan for the investigation, which was submitted to the NYSDEC for approval (LMS, 1997a). However, before the Phase II investigation was implemented, NYSDEC re-evaluated the Site data and reclassified the Site as a Class 2 site. This classification signifies that an RI/FS would be conducted in place of a Phase II investigation.

On 28 March 1995, Surrey entered into an AOC with NYSDEC to conduct an RI/FS. Pursuant to the AOC, an RI/FS Workplan was prepared by LMS and submitted to NYSDEC in March 1996. Following NYSDEC approval of the workplan, the RI was conducted. The results of this investigation were then documented in the RI Report prepared by LMS and submitted to NYSDEC in December 1997. In addition, LMS also prepared and submitted an SRI Report in December 1997. This document contained additional investigative information.

ERM conducted additional investigation activities in 1998 to support preparation of the August 1998 draft FS Report. The 1998 FS was approved by the NSYDEC on 23 April 1999 (see Appendix N). Subsequent to receipt of this approval and transfer of the project from the NYSDEC Region I office to the Albany, NY office, the NYSDEC requested that the source of nickel in ground water at the Site be further investigated. Based on the results of the additional investigation, which identified an abandoned dry well as the source of nickel at the Site, NYSDEC requested in a 31 December 2002 letter that active groundwater remediation be evaluated as an alternative in the FS (NYSDEC, 2002). Rather than prepare an Addendum to the 1998 FS Report, NYSDEC requested that a new, stand-alone FS Report be prepared.

1.2.3 *Summary of Physical Characteristics*

This section presents a description of the Site geology, hydrogeology, topography and storm water drainage systems.

1.2.3.1 *Geology*

Long Island is composed of thick deposits of unconsolidated sediments of Pleistocene and Cretaceous ages overlying crystalline bedrock of the Precambrian Age. The Cretaceous deposits are composed of continentally derived sediments, which represent recurring intervals of deposition and erosion. The basal unit is the Raritan Formation. Above the Raritan is the

Magothy Formation, a thick deposit of interbedded lenses of clay, silt and sand. Overlying the Cretaceous deposits are the Upper Pleistocene glacial deposits, which form the Upper Glacial Aquifer.

The Pleistocene deposits in the Upper Glacial Aquifer are composed primarily of outwash sand and gravels. The outwash deposits are composed of fine to very coarse quartzose sand and pebble- to boulder-sized gravel which are associated with periods of glacial stagnation when meltwater streams carried and deposited these materials in front of the glacier. These outwash deposits form a broad outwash plain along the south shore of Long Island and are present in the immediate vicinity of the Site.

The deeper Magothy Formation underlies the Upper Glacial Aquifer. The Magothy Formation is approximately 525 ft. in thickness in the vicinity of the Site and is composed of gray to white interbedded fine sands and sandy clays; layers of silt, lignite and pyrite are common. Typically within the Magothy Formation, an approximately 100-200 ft. thick basal zone of coarse sand and gravel is present. Research indicates that the upper surface of the Magothy was heavily scoured and eroded by glacial ice and meltwater streams prior to the deposition of the Pleistocene deposits.

The Raritan Formation beneath the Magothy Formation is composed of an unnamed Clay Member (Raritan confining unit) and the Lloyd Sand Member, both Cretaceous in age. The Clay Member of the Raritan Formation is approximately 175 ft. in thickness and is composed of sand, silty sand and sandy clay with lenses of fine sand and gravel which commonly contain lignite and pyrite. The Lloyd Sand Member of the Raritan Formation comprises the Lloyd Aquifer; it is approximately 300 ft. thick and gradually thickens southeastward. It is composed of discontinuous layers of sand, gravel, sandy clay, silt and clay.

Bedrock is composed of relatively impermeable crystalline bedrock of Precambrian age and reportedly lies approximately 1,100 ft. below the surface in the vicinity of the Site. The bedrock surface slopes southward and is considered to be the bottom hydrologic boundary of the Long Island Aquifer System (USGS, 1988)

1.2.3.2 *Hydrogeology*

Three major aquifers underlie the Site and constitute the principal water resources on Long Island: the Upper Glacial Aquifer, the Magothy Aquifer and the Lloyd Aquifer. The Site is directly underlain by the Upper Glacial Aquifer, which is approximately 100 ft. in thickness in the Site vicinity. The outwash deposits of the Upper Glacial Aquifer are moderately to highly permeable. The Upper Glacial Aquifer exhibits high horizontal hydraulic conductivity of up to 270 ft/day, with well yields as much as 1,500 gal/min. (USGS, 1988). All on-Site and off-Site soil probes and borings were advanced into the Upper Glacial Aquifer.

The deeper Magothy Aquifer is Cretaceous in age and underlies the Upper Glacial Aquifer. It is widely used for water supply purposes. Locally, it is approximately 525 ft. in thickness with a maximum thickness of 650 ft. a few miles south of the Site. It consists of fine- to medium-grained, gray to white, sand and clayey sand, although multicolored deposits are common. Numerous discontinuous silt and clay lenses of variable thickness are common locally and cause a high degree of anisotropy (ratio of horizontal to vertical hydraulic conductivity) in the aquifer. The average hydraulic conductivity of the Magothy Aquifer is 50 ft/day and the ratio of horizontal to vertical hydraulic conductivity is approximately 100:1 (USGS, 1988). The Clay Member of the Raritan Formation, which lies below the Magothy Aquifer, averages 175 ft. thick and has a low vertical hydraulic conductivity of 3-10 ft/day. This Clay Member serves as the confining unit for the Lloyd Aquifer due to the lateral continuity of the clay within this unit, which severely retards vertical groundwater movement. The Lloyd Aquifer, which is approximately 300 ft. thick locally, lies unconformably on top of the bedrock surface and has an overall moderate horizontal hydraulic conductivity of approximately 40 ft/day (USGS, 1988).

Bedrock forms the lowermost boundary of the unconsolidated aquifer system at a depth of approximately 1,100 ft. The confining layers present between the Upper Glacial Aquifer and the Magothy Aquifer near the south shore of Long Island are absent or discontinuous in the Site area, leaving both aquifers in direct hydraulic contact. However, both formations are highly stratified and horizontal movement of groundwater within each aquifer is much greater than vertical movement between the two.

Published data (Busciolano, 1997) indicates that the direction of ground water in the Upper Glacial Aquifer in the vicinity of the Site is slightly east of due south. This flow direction was confirmed by data collected on the Magnusonic Devices, Inc. site, which is immediately adjacent and west of the Site boundary(Roux Associates, 1996) and post-SRI investigation. Previous work performed at the Site (LMS, 1997a - Figure 2-3: Water Table Contour Map) indicated a shallow ground water flow direction toward the southwest. However, the regional ground water flow direction (south, or slightly east of due south) is consistent with the ground water flow direction at the adjacent Magnusonic Devices, Inc. site (south). Since the LMS southwest flow direction was inconsistent with the other data available for this general area, additional work was performed to better define ground water flow direction at the former Alsy Site. As part of this work, Site features and wells were re-surveyed. Post-SRI work also confirmed that ground water flow in the area of the Site is slightly east of south (see Table 1-1 for water table elevations and Figures 1-4 through 1-6). Additional discussion regarding ground water flow is presented in Section 1.2.4.4 and 2.2.1.2.

1.2.3.3 *Topography*

The Site is relatively level, with an overall gentle downward slope toward the west and southwest (Figure 1-7). The topography is the result of grading and paving. The Site is graded such that surface drainage is directed toward catch basins located throughout the property. On-Site depressions are typically found around catch basins where the fill material has settled. Several loading docks and one large loading area are present and in active use at the Site. The elevation change from Site grade to the bottom of these loading docks typically ranges from 3 feet to 4 feet. (LMS, 1997a)

The ground elevation across the Site ranges from approximately 127 to 135 feet above Mean Sea Level (MSL). Soil berms are located along the northern and western borders of the Site. A relatively level residential area is located across the public street to the south of the Site. Most of the areas surrounding the Site are relatively flat and have been graded and paved, except for a large gravel pit and storage area west of the Site and a construction and demolition debris reclaimer to the north. (LMS, 1997a)

1.2.3.4 *Storm Water Drainage Systems*

On-Site stormwater drainage control is provided by a system of catch basins and dry wells throughout the Site. LMS personnel were present on-Site during heavy rain events and noted that the area is well drained, with the majority of precipitation draining to the catch basins. According to LMS, there was no ponding of water, other than where catch basins had reached their maximum holding capacity and these areas soon drained (LMS, 1997a). However, during subsequent Site inspections, ERM field personnel noted that standing water exists in dry wells in the rear parking lot area. The locations of the catch basins are presented in Figure 1-7.

1.2.4 ***Summary of LMS RI and SRI Activities***

This section provides the results of the RI and SRI conducted by LMS at the Site from 1996 through 1997. Field investigation activities conducted during the RI and SRI consisted of:

- Ground-Penetrating Radar (GPR) survey to identify sampling locations;
- soil, soil gas, and groundwater probe sampling;
- groundwater monitoring well installation and sampling;
- berm soil sampling; and

- indoor air quality monitoring in the suspected location of the former vapor degreasers.

A more detailed discussion of these activities is presented below.

1.2.4.1 *Ground-Penetrating Radar (GPR) Survey*

A GPR survey was conducted at the Site on 25 May 1996. The objective of the survey was to identify any subsurface leaching or discharge points, shallow confining layers or buried monitoring wells and thus locate potential investigative areas. The GPR survey was performed in the rear parking lots and loading dock areas of the 270 and 280 Duffy Avenue properties, where historical information had indicated that surface discharge had occurred (LMS, 1997a).

During the GPR survey, a number of anomalies were found. In two areas, the anomalies corresponded with asphalt patches showing recent excavation and asphalt repair activities. The GPR survey yielded a distinct contrast between two horizons of subsurface materials at approximately 5 feet below grade. This contrast may have been attributed to disturbed and reworked material overlying natural material. Other anomalies corresponded with leaching areas associated with dry wells or catch basins and the recently installed sewer system. The results of the GPR survey were then used by LMS to determine probe point locations.

1.2.4.2 *Probe Sampling Locations*

To evaluate soil gas, soil and groundwater quality, LMS installed a total of 45 probes throughout the Site. They included ten (10) perimeter probes, five (5) angled probes and twenty seven (27) shallow and three (3) deep soil and groundwater probes. The location of these probes is presented in Figure 1-2.

Five (5) angled probes were installed to collect soil gas samples from beneath structures, which were suspected to be potential source areas. These structures included: former vapor degreasers; plating tanks; solvent storage areas; and paint shops. Ten (10) perimeter probes were installed along the upgradient, downgradient, and sidegradient property boundaries to characterize the groundwater quality entering and leaving the Site. Thirty (30) soil and groundwater probes were installed in and around subsurface discharge structures and at various locations around the Site identified by the GPR survey or where historical information indicated a chemical discharge. Of these 30 probes, 27 were shallow and 3 were deep. These included probe locations inside and outside the catch basins and dry wells.

Probe sampling commenced on 30 May 1996 and was completed on 24 July 1996. Soil gas, soil, and groundwater samples were collected from each probe point.

1.2.4.3 *Soil Quality*

A variety of samples were collected by LMS during the RI and SRI to characterize the soil quality at the Site. They included:

- soil gas samples from perimeter probes and angled probes to identify soil sampling locations;
- soil samples from shallow probes and deep probes;
- soil samples from berm areas; and
- soil samples from within the dry wells DW-1 and DW-2 (formerly CB-1 and CB-2).

Soil Gas

Perimeter soil gas samples, identified as "PSG-", and angled probe samples, identified as "AGP-", were collected from two discrete intervals above the water table and analyzed for VOCs by EPA SW-846 Methods 8010/8020. The location of these probes is presented in Figure 1-2. The analytical results for the soil gas samples are presented in Appendix B, Tables 3-1 and 3-4 . As discussed above, these results were used by LMS to identify soil sampling locations.

Soil Samples

During the LMS investigation, soil samples were collected from the thirty probe locations throughout the Site and from the five berm locations. Probe locations and berm sample locations are presented in Figure 1-2. Probes were located: inside two (2) dry wells, DW-1 and DW-2 (formerly CB-1 and CB-2) and five (5) catch basins DW-3 (formerly CB-3), and CB-4 through CB-7; immediately outside and downgradient of the dry well (OCB-1) and catch basins (OCB-3 through OCB-7); at fourteen (14) ground probe locations (GP-1 through GP-14); and at three (3) deep ground probe locations (DGP-1 through DGP-3). At the OCB and GP locations, soil samples were collected from five to six discrete depth intervals from the ground surface (0 to 4 feet) to just above the water table (44 to 46 feet) and analyzed for Target Compound List (TCL) VOCs, Target Analyte List (TAL) inorganic constituents and Toxicity Characteristic Leaching Procedure (TCLP) inorganic constituents. At the DGP locations, soil samples were collected from four discrete depth intervals at two of the three deep probe locations, DGP-1 and DGP-3. Soil samples were not collected at DGP-2 because this probe point was advanced in the same location as GP-8.

Based on the information that material removed during filling and grading activities was reportedly used to create the berm that separates the property from the Long Island Railroad on the north of the Site, LMS also collected soil samples from this berm area. In total, five (5) berm samples, identified as "B-", were collected and analyzed for VOCs, TCL VOCs, TAL inorganic constituents, and two samples were submitted for extraction using TCLP and the extracts analyzed for Resource Conservation and Recovery Act (RCRA) inorganic constituents.

In addition to probe samples, soil samples were also collected from the top four feet of the two (2) dry wells and the five (5) catch basins during the RI and analyzed for VOCs and inorganic constituents. In September 1997 during the SRI, LMS conducted additional sampling and analyses of soil beneath the two dry wells DW-1 and DW-2 at ten foot intervals extending from 20 feet to 62 feet below grade (LMS, 1997b). The water table depth was encountered at 61 feet beneath DW-1 and at 60.7 feet beneath DW-2. The purpose of this effort was to further characterize soil quality beneath the dry wells in an effort to determine the source of nickel in the groundwater.

VOCs

A total of 115 shallow soil probe samples, six (6) deep probe soil samples and five (5) berm soil samples was collected and analyzed for VOCs. Sample results are presented in Appendix B, Tables 3-5, 3-10 and 3-16. Tetrachloroethene was detected in the soil sample collected from GP-7 (0-4 feet) at an estimated concentration of 0.01 mg/kg. No other VOCs were detected in the Site soil.

Inorganic Constituents

A total of 114 shallow probe samples, six (6) deep probe samples and five (5) berm samples was collected and analyzed for inorganic constituents. Analytical results are presented in Appendix B, Tables 3-6, 3-11 and 3-17. Varying concentrations of inorganic constituents were detected throughout the Site. Concentrations were fairly consistent.

The ten (10) soil samples collected during the SRI beneath dry wells DW-1 and DW-2 were analyzed for total nickel. Soil samples collected from dry wells DW-1 and DW-2 exhibited nickel concentrations ranging from 8.5 to 258 mg/kg (See Appendix B, Table 1-1).

TCLP

A total of 21 shallow probe samples were analyzed for TCLP RCRA parameters. These results are presented in Appendix B, Table 3-7. All results are below the TCLP regulatory limits. In addition the ten (10) soil samples, collected from beneath dry wells DW-1 and DW-2 (formerly CB-1 and CB-2) during the SRI, were analyzed for TCLP nickel. Results of this analysis are presented in Appendix B, Table 1-2.

1.2.4.4 *Groundwater Quality*

During the RI, LMS installed five (5) new on-Site ground water monitoring wells identified as "LMS-". These monitoring wells supplemented the existing three (3) on-Site wells. All new wells were installed to a depth of 75 feet below grade.

During the RI, ground water samples were collected from the ten (10) perimeter probe locations, eight (8) monitoring wells and 22 of the soil and groundwater probe locations. These soil and groundwater probe locations included: six (6) probes located immediately outside and downgradient of the dry well (OCB-1) and the catch basins (OCB-3 through OCB-7); thirteen (13) shallow groundwater probes (GP-1 through GP-13); and three (3) deep ground probes (DGP-1 through DGP-3).

Groundwater samples were collected at each of the perimeter probe locations, identified as "PGW-", at three to four discrete depth intervals from the water table surface to about 50 feet below the water table. Shallow groundwater samples were collected at each of the shallow probe locations, identified as GP- or OCB-, at a depth of 66 to 70 feet. At each of the deep probe locations, identified as "DGP-", groundwater samples were collected from three discrete depth intervals; 66-70 feet; 86 to 90 feet; and 96 to 100 feet. All the groundwater samples were analyzed for TCL VOCs, filtered and unfiltered TAL inorganic constituents and cyanide.

During the SRI, LMS conducted additional sampling and analyses of groundwater located beneath the dry wells, DW-1 and DW-2 (formerly CB-1 and CB-2), and from two (2) downgradient monitoring wells, AMS-2 and LMS-4 (LMS, 1997b). These analyses were conducted to determine whether the soil within the dry wells was a potential source of nickel in groundwater.

VOCs

Thirty-seven (37) perimeter probe, twenty (20) shallow probe, nine (9) deep probe and nine (9) monitoring well groundwater samples were collected and analyzed for VOCs. Analytical results are presented in Appendix C, Tables 3-2, 3-8, 3-12, and 3-14, respectively. As discussed in Section 2.2.1.1.3, the concentration of VOCs in Site ground water samples were extremely low and exceeded their respective NYSDEC Technical and Operational Guidance Series (TOGS) 1.1.1 Class GA ground water standard in less than 3% of the on-Site ground water samples collected during the RI and the SRI.

Inorganic Constituents

Sixty (60) perimeter probe, 37 shallow probe, 18 deep probe, and 18 monitoring well groundwater samples, were collected for inorganic constituent analysis. Approximately half of the samples from each location were filtered. All of the probe samples were analyzed for: arsenic, cadmium, chromium, copper, lead, nickel and zinc. In addition, some of the probe location samples and all the monitoring well samples were analyzed for the full TAL parameters. Results are presented in Appendix C, Tables 3-3, 3-9, 3-13, and 3-15, respectively. As discussed in Section 2.2.1.1.3, the only inorganic constituent of concern in Site ground water is nickel.

During the SRI, groundwater samples were collected using a probe from beneath dry wells DW-1 and DW-2. The highest concentration of nickel was detected in ground water beneath dry well DW-1 (i.e., at 4,660 micrograms per liter, or ug(l)). The monitoring wells located downgradient of these dry wells, monitoring wells AMS-2 and LMS-4, contained the highest total dissolved nickel concentrations at the Site (See Appendix C, Table 1-3). The concentration of nickel in the SRI ground water sample collected from monitoring well AMS-2 was 3,050 ug/l and in LMS-4 was 5,290 ug/l.

1.2.4.5 *Indoor Air Monitoring*

On 22 July 1996, a one-time air monitoring event was performed by LMS inside the building and adjacent to the area reported to have housed the vapor degreasers. The air monitoring was required by NYSDEC as part of the closure of the vapor degreaser area. Old floor plans, in addition to a patch in the concrete floor of one of the storage rooms in the building, aided in the determination of the suspected vapor degreaser location. Compound-specific colorimetric detector tubes for 1,1,1 trichloroethane and trichloroethene were selected as the best method to perform the air monitoring task. Several locations in the building were sampled, including background locations and in the vicinity of the vapor degreaser location. The detector tubs were inserted into the air sampler and an air sample was drawn through the detector tube. If the detector tube-specific compounds were present, the tube would have changed color. No detectable concentrations of either compound were found in the air space within the building. Based on these results, there is no evidence of ongoing indoor air emissions.

1.3 *ADDITIONAL INVESTIGATIVE ACTIVITIES*

Following completion of the LMS RI and SRI, additional investigative activities were conducted in 1998 and subsequently in 2001 through 2003 to identify the source of nickel in ground water and to determine off-Site concentrations of nickel in ground water. The 1998 investigation involved sampling sediment in active dry wells, installing temporary off-Site wells and sampling both on-Site and off-Site wells. The 2001 through 2003 investigation involved identifying on-Site subsurface structures, soil samples in areas of anomalies, off-Site ground water profiling, on-Site and off-Site ground water sampling, and ground water modeling.

All 1998 work was conducted in accordance with the work scope agreed to by the NYSDEC at a meeting on 5 March 1998. All 2001 to 2003 work was conducted in accordance with ERM's 16 April 2001 work plan as amended by NYSDEC's 4 June 2001 conditional approval letter (NYSDEC, 2001).

Additionally, ERM discovered that prior to Long Island Industrial acquiring the property, sanitary leach pool LP-4 was closed in late December 2000 / early January 2001 in the rear of the property. ERM obtained analytical data associated with this closure from the former Site owner's contractor. This is discussed in Section 1.3.1.3.

1.3.1 *Additional Soil Investigation*

In 1998, based on elevated concentrations of nickel in ground water in the vicinity of dry well DW-2 and elevated SRI TCLP nickel levels, soil samples were collected from DW-2 to determine the potential for nickel in soil within and below this structure to migrate to ground water. This was accomplished using the Synthetic Precipitation Leaching Procedure (SPLP) Test. The SPLP test was designed by the USEPA to measure the maximum potential for chemicals in soil to migrate to ground water under natural conditions. In addition, the SPLP test reflects the relatively aggressive leaching that could occur in areas affected by acid rain.

In contrast, the TCLP test, which was used during the SRI for analysis of dry well samples (LMS, 1997b), was designed by the USEPA to reproduce the aggressive leaching conditions found in municipal waste landfills. The USEPA rule that established the TCLP test states that the results of TCLP tests are to be used solely to determine whether a solid waste should be disposed of as a hazardous or a non-hazardous waste. Therefore, it is not appropriate to use TCLP results to evaluate the potential for chemicals in soil to migrate to ground water under natural conditions. The SPLP results obtained by ERM during post-SRI activities will therefore be used in Section 2.0 of this document rather than the LMS SRI TCLP testing to consider the potential for nickel in Site soil to migrate to ground water.

As discussed in Section 1.3.1.3, low levels of total nickel were observed in DW-2 while SPLP nickel results were below the detection limit of 50 µg/L. At the request of NYSDEC, additional source delineation was conducted in 2001. A geophysical survey was conducted to identify potential subsurface structures in the rear courtyard and soil samples were collected. All soil samples were analyzed for total nickel and SPLP nickel, and one soil sample from abandoned dry well DW-4 was also analyzed for VOCs, SVOCs and RCRA metals at the request of NYSDEC (NYSDEC, 2001).

1.3.1.1 *Geophysical Survey*

The geophysical survey was conducted on 8 August 2001 by Northeast Geophysical Services (NGS) of Bangor, Maine under the direction of ERM field personnel. The purpose of the survey was to identify underground structures (i.e., leaching pools, dry wells and associated piping and detectable subsurface utilities) in the rear courtyard area and to determine the interconnections between the drainage structures. The grid and results of this survey are presented on Figure 1-8, and the NGS report is included in Appendix H. The survey was performed over an estimated area measuring 125 by 175 feet by setting up a grid at 10 foot intervals. An electromagnetic (EM) detector was first used to locate anomalous responses to subsurface metallic objects. A GPR system was then used to investigate these anomalous areas further and attempt to image the sources.

As shown in Figure 1-8, two GPR anomalies and five EM anomalies were identified. As discussed in Section 1.3.1.2, the locations of underground anomalies were investigated through soil borings. A summary of the anomalies and corresponding sample locations is provided in Table 1-2 and a plan view of the GPR and EM results and their boring locations is shown in Figure 1-9.

1.3.1.2 *Soil Sample Procedure*

On 5 March 1998, ERM collected a total of four (4) soil samples from the following depths within dry well DW-2: 20 feet below ground surface (bgs) (i.e., at the top of the sediment layer at the bottom of this drainage structure); 25 feet bgs; 30 feet bgs; and 35 feet bgs. The samples were analyzed for nickel using the SPLP test. In addition, a composite of these samples was analyzed for TCLP RCRA metals to determine the disposal requirements should removal of this soil be required.

In August 2001, soil borings were advanced using a hollow stem auger drill rig (see Figure 1-9). The sample description and rationale for analyses are provided in Table 1-3.

EB-1 was installed through existing dry well DW-5. One sample was collected at the base of this dry well, and subsequent samples were collected at 10-foot depth intervals to the water table (located approximately 60 feet below land surface). EB-2 was drilled to investigate shallow soil in the area of GPR anomaly 1. Two samples were collected from this boring at 3.5 to 4 feet below grade and at 10.5 to 11 feet below grade. EB-3 was drilled to investigate the area outside of sanitary leach pool, LP-4, for the potential for impacts from the leach pool at depths adjacent to this structure. Soil samples were collected from this boring at 11 to 11.5 feet below grade and 19 to 20 feet below grade.

In addition, a former sanitary leach pool was investigated at this time. Soil samples were collected from beneath the former sanitary leach pool, LP-4, at 10-foot depth intervals to the water and analyzed in the laboratory for total nickel. Borings EB-6A and EB-6B were drilled to investigate shallow soil in the area of EM anomaly 1. Soil samples were collected at 4.5 to 5, 10 to 10.5, and 16 to 16.5 feet below grade. At each boring, following laboratory analysis for nickel, the soil sample exhibiting the highest total nickel concentration was also analyzed for leachable nickel using SPLP. Finally, boring ERM-3 was drilled through abandoned dry well DW-4. Soil samples were collected from within and beneath the abandoned dry well at 10-foot depth intervals to the water table and analyzed in the laboratory for total nickel. All the soil samples from the abandoned dry well were analyzed for leachable nickel using the SPLP analysis.

1.3.1.3 *Soil Sampling Results*

<u>1998 SPLP Soil Sampling</u>

The 1998 SPLP results for dry well DW-2 are presented on Table 1-4. As shown in this table, none of the four soil samples collected from dry well DW-2 exhibited nickel SPLP leachate at concentrations above the detection limit of 50 µg/l.

Table 1-4 also compares the SPLP results to the TCLP results for the DW-2 soil samples collected during the SRI. The higher nickel concentrations in the TCLP test results are not indicative of the potential leaching of constituents exposed to typical environmental influences (e.g. precipitation). Instead, the SPLP test is a more representative of the potential for soils to leach nickel upon exposure to infiltration under natural conditions.

Table 1-5 provides the TCLP results for the composite sample collected from DW-2. This data indicates that soil in DW-2 is not a RCRA characteristic hazardous waste.

2001 Soil Sampling

Following the 1998 soil sampling, NYSDEC requested additional investigative work to locate the source of nickel at the Site. The subsequent additional soil investigation work was conducted from 28 August 2001 through 5 September 2001. NYSDEC was present during the soil sampling activities and collected composite samples of soil from borings ERM-3 and EB-2. Soil boring logs and well construction summaries are provided in Appendix I.

As part of the 2001 work, ERM obtained the soil sample results for the former sanitary leach pool closure. Following pump out of the leach pool LP-4, a solids sample was collected on 28 November 2000. Based on concentrations of chemicals in excess of the NYSDEC Technical and Administrative Guidance Memorandum (TAGM) #4046 Recommended Soil Cleanup Objective (RSCO) guidelines, First Industrial was required to remove sediment from this structure. A post-excavation sample was collected on 18 January 2001. The results for both samples are included in Appendix L. The total nickel results from the November 2000 sludge sample was 28 mg/kg and the total nickel following removal was 6.4 mg/kg. One soil boring was installed through LP-4 (EB-4) and one just outside this structure, EB-3. A further downgradient soil boring, ERM-1, to the southwest was converted into a monitoring well. The well was subsequently surveyed and sampled for dissolved nickel. Additional discussion regarding well installation and development, ground water sampling techniques, and ground water sample results is provided in Section 1.3.2 and Appendix O. DW-4 was a dry well that was formerly abandoned and paved over. No closure information is available for DW-4. DW-5 currently functions as a dry well for storm water drainage at the Site.

The total nickel and SPLP nickel results for the 2001 soil samples are presented in Table 1-6. The total nickel results were screened against the NYSDEC RSCO guideline of 13 mg/kg and the SPLP nickel results were screened against the Class GA ground water standard for nickel of 100 µg/L.

As shown in these tables, the highest nickel concentrations were observed in sample ERM-2 collected from the former abandoned dry well location, DW-4. The soil sample collected from the 12.5 to 13 feet below grade was bright green and the sample collected from the 15.5 to 16.5 below grade interval had green and white striations. The nickel concentrations in these soil intervals were 106,000 and 24,700 mg/kg, respectively. It appears that the visually impacted interval spans between 9 and 22 feet below grade within the abandoned dry well. Photographs of 11 to 13 and 17 to 19 foot below grade intervals are provided as Appendix J. The NYSDEC project manager collected one composite sample from the 11 to 13 foot and 15 to 17 foot below grade intervals at this location. The results of the NYSDEC sample are presented in Appendix K with a comparison to the NYSDEC RSCO guidelines.

Total nickel concentrations in the underlying DW-4 soil intervals (i.e., 30 to 50.5 feet below grade) ranged from 62.5 to 412 mg/kg, with the highest concentration observed at the 50 to 50.5 foot interval. The water table is present at approximately 61 feet below grade at this location. The SPLP nickel results ranged from 13.5 to 6,220 µg/l. The highest SPLP result was observed in the uppermost soil sample collected from the green, 12.5 to 13 foot below grade interval. The highest total nickel concentrations are confined to the 9 to 23 foot below grade soil interval, however SPLP results above 100 µg/L are present in the deepest sample collected from the 50 to 50.5 foot below grade interval, with an SPLP result of 3,520 µg/L.

Since the abandoned dry well DW-4 was filled in and paved over and no records are available related to its closure, it cannot be determined whether storm water continues to discharge to this structure. Based on the soil observations made during the investigation, the soil below DW-4 was more moist than other locations at the Site. This suggests continued moisture discharge to the dry well.

Four other additional soil sample locations contained total nickel and/or SPLP nickel above their screening levels of 13 mg/kg and 100 µg/L, respectively. Total nickel in EB-1 was detected at 136 mg/kg at 17.5 to 18.5 ft bgs, which was the surface of sediment at the base of DW-5. EB-2 soil exhibited nickel concentrations of 20.9 and 14.5 mg/kg at 3.5 to 4 ft bgs and 10.5 to 11 ft bgs, respectively. The SPLP nickel concentration for the former sample was 117 µg/L. EB-3 soil exhibited nickel concentrations of 70.9 and 7.9 mg/kg at 11 to 11.5 ft bgs and 19 to 20 ft bgs, respectively. The corresponding SPLP concentrations for these samples were 958 and 248 µg/L, respectively. Finally, concentrations of nickel in the EB-6 area were above the NYSDEC RSCO guideline (used for screening purposes) at 4.5

to 5 ft bgs and 10 to 10.5 ft bgs at 19.0 and 74.2 mg/kg, respectively. The former sample exhibited an SPLP concentration of 596 µg/L. EB-4 soil samples did not exhibit total nickel nor SPLP nickel concentrations above detection limits and the screening level, respectively. EB-5 uncovered a former monitoring well, and thus soil samples were not collected from that boring.

In addition to the analysis for nickel, the NYSDEC required that the ERM-2 soil sample collected from the bottom of abandoned dry well DW-4 also be analyzed for VOCs, SVOCs and RCRA metals. A comparison of these analytical results to the NYSDEC RSCO guidelines is presented in Tables 1-7 through 1-9. As shown in these tables, this sampling interval (15.5 to 16 feet below ground surface), which is within the green layer, exceeds the NYSDEC RSCO guidelines for a number of SVOCs and inorganic constituents.

The soil sampling in the rear courtyard indicates that the soil in the abandoned dry well is the source of the nickel in ground water at the Site.

1.3.2 *Additional Ground Water Sampling*

Post-SRI ground water sampling was conducted in June 1998, March 2002 and January 2003. The purpose of the 1998 ground water sampling was to determine the off-Site concentration of nickel and zinc in ground water and to determine the concentration of nickel and zinc in the on-Site monitoring wells AMS-2 and LMS-4.

The 1998 sampling event focused on on-Site monitoring wells AMS-2 and LMS-4, which are located downgradient of dry wells DW-1 and DW-2 and two off-Site locations on Combes Ave and Border Street. These wells were sampled in June 1998 for nickel, zinc, and at the request of NYSDEC, VOCs. As discussed below, nickel was not identified in off-Site ground water during the first sampling event and zinc was present at concentrations below the Class GA guidance value of 2,000 µg/L. The locations of the temporary off-Site ground water monitoring wells, identified as the Combes Avenue well (VP-N) and Border Street well (VP-S), are presented on Figure 1-5. These locations were selected based on accessibility and the southerly ground water flow direction, as discussed in Section 1.2.3.2. On-site nickel concentrations in LMS-4 and AMS-2 were 4,620 and 2,310 µg/L, respectively, during this sampling round.

The 2002 sampling event included three temporary off-Site wells (VP-E, VP-W, and VP-NC). Based on the results of the 2002 sampling, location VP-NC was chosen as the location for the permanent off-Site well. The 2003 sampling event focused the newly-installed on-Site monitoring wells (ERM-1 and ERM-2), select existing on-Site monitoring wells (MW-3, LMS-4, AMS-

2, and AMS-1), and newly-installed off-Site monitoring well ERM-3. This sampling was delayed because of difficulty in obtaining a local permit to install ERM-3.

1.3.2.1 *Procedures*

During the 1998, 2002 and 2003 sampling rounds, ground water samples were collected from the off-Site temporary and on-Site permanent ground water monitoring wells. Each of the temporary wells was constructed using two-inch diameter steel casing fitted with a five (5) foot stainless steel screen and drive point at the bottom. Soil boring logs and well construction summaries are provided in Appendix I.

Temporary Monitoring Wells

To refine the horizontal and vertical distribution of nickel and address vertical ground water movement in the aquifer with increasing distance from the Site, vertical profiling was conducted at various depths. Ground water samples were taken during the 1998 sampling event from temporary off-Site wells VP-N and VP-S at the following three depths: 60 feet below ground surface (bgs) at the ground water table; 95 feet bgs; and 120 feet bgs. These depths were selected to investigate the shallow Upper Glacial Aquifer in this area. During 2002, samples were collected from two depths, 75 feet and 95 feet below grade, at VP-E, VP-NC, and VP-W. Well boreholes were constructed using hollow stem augers; and, to mitigate difficulties with "running sands", potable water was added as necessary to maintain a positive hydrostatic head during well installation. Additional details regarding the installation and sampling of these wells is provided in Appendix O. As discussed in that appendix, an equivalent volume of water was pumped from these locations prior to collecting a ground water sample.

Monitoring Well Construction

Additionally, two new permanent on-Site ground water monitoring wells were installed, ERM-1 and ERM-2, and one permanent off-Site well was installed, ERM-3. ERM-1 was installed downgradient and to the west of former sanitary leach pool LP-4. ERM-2 was installed through the former dry well, DW-4, which had been identified as the nickel source. ERM-3 was installed at the same location as VP-NC, since ground water from this off-Site vertical profile location contained the highest off-Site nickel concentration.

Once the borehole was drilled, monitoring wells were constructed of 4-inch inner diameter (ID) Schedule 40, 0.010-inch slot (10-slot) PVC well screen and threaded, flush joint PVC casing. Ten-foot lengths of well screen were used for all monitoring wells. Number 1 Morie sand was tremied into the annular space to a height of two feet above the screen to form a sand pack. Following placement of the sand pack, a foot of Morie #00 sand was tremied into the annular space two feet above the screen and a foot of bentonite pellets were installed and allowed to expand to form a seal. Augers were slowly removed from the borehole during sand pack emplacement. All well screens were 10 feet in length. The screened sections for wells were set in order to intercept the water table under varying water elevations. The screened depth for the off-Site well, ERM-3, was determined based on results of the profiling task discussed above and was determined to be 62 to 72 feet bgs.

Cuttings and purge water generated from the construction of the on-Site wells were contained on-Site in NYSDOT-approved, 55-gallon, ring-top steel drums and were labeled according to the borehole/monitoring well number. These were disposed of off-Site (see Section 1.3.4). Off-Site cuttings were transferred and placed on open soil areas at the rear of the Site, as approved by NYSDEC.

Temporary and Permanent Monitoring Well Sampling

During 1998 sampling, purging and sampling of the temporary off-Site wells, as well as on-Site wells, was conducted at low-flow rates to reduce turbidity without filtration. This method was used with NYSDEC approval rather than filtration, since filtration removes mobile colloids from the collected sample and, as a result, sometimes biases sample results low, especially for inorganic constituents. A bailer was initially utilized to remove a small amount of water and gross turbidity from the well. Additional sampling details are provided in Appendix O.

All samples from the 1998 sampling were sent to a NYSDOH-approved laboratory and analyzed for nickel and zinc using EPA Method 6010A. Samples were preserved by chilling to 4°C and held at this temperature until analyzed by the laboratory. VOCs were analyzed using EPA Method 8260. The laboratory report included all supporting documentation required by the NYSDEC Analytical Services Protocol (ASP) Superfund guidelines.

All samples from the subsequent additional sampling were sent to a NYSDOH-approved laboratory and analyzed for nickel using EPA Method 6010A. Additionally, samples from ERM-1 and ERM-3 were sampled for VOCs by EPA Method 8260 at the request of NYSDEC. ERM-2 ground water was also sampled for SVOCs and metals arsenic, chromium, lead, and selenium by EPA Method 8270 and 6010A, respectively, since the concentrations of constituents in DW-4 soil were above their NYSDEC RSCO guidelines at this location.

Well Development

Permanent monitoring wells ERM-1 through ERM-3 were developed at the completion of construction after allowing the grout material to set. Wells were developed using a submersible pump at a rate of 1 gpm until the turbidity of the ground water achieved a reading of 65 NTUs (Nephelometric turbidity units) or less. Well development water was collected and stored on-site in 55-gallon, DOT-approved, steel drums and transferred off-site for disposal (see Section 1.3.4 for waste disposal information).

Survey

All new monitoring well locations were surveyed by a licensed surveyor to establish vertical and horizontal control. This was completed to ensure an accurate representation of ground water flow at the Site.

1.3.2.2 *Ground Water Sampling Results*

Ground Water Flow Direction

The additional investigation of ground water flow direction was done in conjunction with the off-Site ground water quality study described in Section 1.3.1. As part of the post-SRI work, water table elevations were measured on June 25, 1998 in on-Site ground water monitoring wells and at the two temporary, off-Site ground water monitoring locations on Combes Avenue and Border Street. Subsequently an off-site ground water monitoring well was installed and water table elevations were measured on 30 December 2002 and 6 January 2003 and all the Site and off-Site monitoring wells were re-surveyed by a licensed land surveyor. The ground water elevations measured at those times are provided in Table 1-1 and on Figures 1-4 through 1-6. The regional ground water flow direction was determined by the U. S. Geological Survey (USGS) to be slightly east of south (Busciolano, 1997). This was confirmed by the 30 December 2002 and 6 January 2003 measurements (Figures 1-5 and 1-6, respectively).

Analytical Results

The water chemistry parameters monitored in the field during June 1998 for LMS-4, AMS-2, and off-site locations Combes Ave. (VP-N) and Border Street (VP-S) are summarized in Table 1-10. These data indicate stable water chemistry thus indicating that the ground water samples reflected ambient aquifer conditions. In addition, the turbidity of the collected samples was in the range of 1 to 42 NTUs, which is below the NYSDEC 50 NTU criteria. The ground water sampling records from the second sampling effort are attached in Appendix M. Stabilized readings were obtained for sample locations ERM-1, ERM-3, AMS-1, AMS-2, MW-3, VP-NC at 75 ft and 95 ft, VP-E at 75 ft and 95 ft, and VP-W at 75 ft and 95 ft. Stabilized readings were not obtained for ERM-2 and LMS-4 because ground water was freezing in the tubing prior to reaching the ground surface. These locations were sampled with a bailer in lieu of low-flow samples and filtered and unfiltered samples were collected for nickel analysis, as approved by NYSDEC.

The ground water analyses were validated by a qualified chemist according to the protocols and QC requirements of the specific analytical methods used, the NYSDEC Analytical Services Protocol (ASP), the USEPA National Functional Guidelines for Organic and Inorganic Data Review, and the reviewer's professional judgment. The results were found to be valid for site characterization and remedial planning purposes. The data usability summary report (DUSR) for the second sampling effort is attached as Appendix G.

A comparison of the laboratory analytical results for the 1998, 2002 and 2003 ground water sampling results to the Class GA ground water standards is presented in Tables 1-11 through 1-15.

In summary:

- VOCs and SVOCs were not detected in excess of NYS Class GA ground water standards at any of the on-Site or off-Site well locations;

- the concentration of zinc in ground water at all locations was within the NYS Class GA ground water guidance value of 2,000 μg/l;

- dissolved nickel was not detected in ground water from AMS-1, MW-3, or ERM-1 above the Contract Required Detection Limit (CRDL) detection limit of 40 μg/L - these wells therefore define the western, eastern, and northern limits of nickel in ground water;

- dissolved nickel was not detected in ground water above the ground water standard of 100 μg/L in temporary wells VP-N, VP-S, VP-W, and VP-E - these wells further define the boundaries of nickel in ground water;

- the concentration of dissolved nickel in on-Site ground water during the 1998 and 2003 sampling events, respectively were 2,310 and 2,850 μg/L in monitoring well AMS-2, and 4,620 and 887 μg/L in monitoring well LMS-4. The concentration of dissolved nickel in ground water at ERM-2 in 2003 was 885 μg/L. These exceeded the

NYS Class GA in on-Site ground water standard of 100 µg/l for nickel; and

- dissolved nickel was detected in ground water at a concentration of 3,150 µg/L at 75 feet below grade and 228 µg/L at 95 feet below grade in VP-NC. As a result, permanent well ERM-3 was installed at this off-Site location to a depth of 72 feet below grade. Dissolved nickel was detected in ERM-3 at 3,580 µg/L in 2003.

These results indicate that dissolved nickel in excess of the Class GA standard occupies a narrow zone of ground water in the Upper Glacial Aquifer that flows southerly as defined by the ERM-2, LMS-4, AMS-1, and ERM-3 locations and bounded to the east and west by VP-N, VP-E, AMS-1, and MW-3.

1.3.3 *Well Search*

A well search was conducted to identify all public and industrial water supply wells and any potential private wells within a one-mile radius of the Site. ERM submitted freedom of information law (FOIL) requests to Nassau County Department of Health (NCDOH), Nassau County Department of Public Works (DPW), Hicksville Water District, and NYSDEC for to request well records. The results of the well search were plotted on a USGS map to show the locations of identified wells (Figure 1-10). As noted on this figure, eleven wells were identified just outside or nearly on the border of the 1-mile radius and have been included here due to their proximity to the Site. In total, twenty-five wells were identified through the well search in four main categories: 1) out-of-service public supply well, 2) active public supply well, 3) Nassau County DPW monitoring wells, and 4) out-of-service private well. The out-of-service public supply wells are no longer used due to VOC contamination, nitrates, or other reasons unrelated to the Site. Operators of the identified public water supply well fields and the Nassau County DPW were contacted to obtain chemical data for nickel concentrations for the ground water extracted from these well fields. All of the available nickel data is summarized in Table 1-16. These data show that nickel was not detected in any of the monitoring or public wells identified in the well search with the exception of one detection in public supply well N09212, for which nickel was detected at a concentration of 20 µg/L in June 1985. However, the original analytical report was not available for this data and without further information, it is not known whether this result is reliable. Further, nickel has not been detected during subsequent sampling of this well.

The well search revealed one potential private well. In response to the FOIL request, NCDOH contacted ERM in a letter dated 17 March 2003. Their files listed a private well on Levittown Parkway that had last been inspected in 1967. A review of Hicksville Water District (HWD) records and a windshield survey confirmed that there are no residences on Levittown Parkway.

These results of the well search (i.e., no private wells were identified) are consistent with the areal development, which has been for private residences to connect to public water. In addition, it is illegal to install private drinking water wells in Hicksville. Therefore, the main wells of interest identified in the well search are the public supply wells located south of the Site: N7561, N8526, and N9212. Additionally, out-of-service public supply wells N3552, N3553 and N5336 were identified through the well search, but these wells have been closed due to VOCs and nitrates (N3553) and some other unknown reason (N3552 and N5336). All of these public water supply wells are screened in the deeper Magothy Aquifer, and as noted in Table 1-16, the total depth of these wells are 550, 642, and 604 feet, respectively. This is within the basal Magothy formation. The available well construction logs for these public supply wells are included in Appendix P.

1.3.4 *Waste Disposal*

Soil cuttings generated during installation and advancement of on-Site borings and monitoring wells were drummed and stored on-Site pending receipt of the soil sampling results. Additionally, all purged ground water was containerized and composite-sampled for off-Site disposal. Following waste characterization, the drill cuttings from ERM-2 (abandoned dry well) were disposed of off-site under manifest. All other soil cuttings and ground water were disposed off-Site as non-hazardous waste. The analytical results and waste manifest for this material are presented in Appendix Q. Off-Site cuttings were transferred and placed on to open soil areas at the rear of the Site, as approved by NYSDEC.

1.4 *SITE CONCEPTUAL MODEL*

Based on the data collected for this Site during the RI, SRI and post-SRI activities, a conceptual site model was developed to evaluate the Site. This summarizes the physical/chemical characteristics and the fate and transport mechanisms at the Site. Additionally, based on discussions with NYSDEC, a conservative two-dimensional ground water model was conducted to simulate the flow and transport of nickel in ground water from the Site.

1.4.1 *Physical/Chemical Characteristics*

The Site is located in an area zoned as H-light industry in Nassau County, New York. The majority of the Site is either covered with buildings or paved; there are some limited unpaved areas within the Site. The regional ground water flow direction in the vicinity of the Site is slightly east of south. There are no on-Site water supply wells. Public water supply wells, which are currently in-service, are located approximately 5,435 feet and 6,450 feet downgradient of the Site. Both of these water supply wells pump from the deeper Magothy Aquifer.

Elevated concentrations of nickel in ground water in the Upper Glacial Aquifer have been observed at the Site and in ERM-3. As shown in Figure 1-11, the highest concentration of nickel in ground water has been detected immediately downgradient of the abandoned dry well DW-4 at monitoring well LMS-4. Soil sampling of dry well DW-4 was therefore conducted during additional investigation to; identify whether this dry well was the source of nickel in ground water. These results were presented previously in Table 1-6. As shown in this table, the total and SPLP concentration of nickel in the soil within and beneath dry well DW-4 (ERM-2 samples) is higher than previously detected at the Site. Based on this information, the source of the elevated nickel concentrations in ground water has been identified as dry well DW-4.

Low levels of inorganic constituents and organic compounds were detected in Site soil outside of the source area. The following sections show that these constituents do not pose any unacceptable potential for exposure to human health or the environment given the current and anticipated future use of the Site as H-Light Industry.

1.4.2 *Fate and Transport*

The evaluation provided in the Section 2.0 will address the potential for exposure pathways for nickel in on-Site and off-Site ground water and the potential for future releases from DW-4 soil to ground water. As previously discussed, ground water containing nickel in excess of the Class GA nickel standard is confined to a narrow, southerly flow path in the Upper Glacial Aquifer that is defined by well locations ERM-2, LMS-4, AMS-1, and ERM-3 and bounded to the east and west by VP-N and VP-E. DW-4 soil sediment exhibited nickel concentrations and has been determined to be the source of nickel in ground water. Figure 1-12 shows total nickel and SPLP nickel concentrations in soil in the rear courtyard. This figure shows that the source of the nickel is located within and beneath DW-4.

1.4.3 *Two-Dimensional Ground Water Model*

Pursuant to discussions with NYSDEC, modeling was conducted to assess potential downgradient migration of dissolved nickel in ground water. The model focused on the area south of the Site including potential receptor wells identified in the well search described above. Nickel concentrations observed in the on-Site and off-Site monitoring wells were used to calibrate the modeling. In addition, the on-Site nickel source in soil was taken into account in the model.

Two components in the modeling were utilized: 1) a simulation of ground water flow conditions; and 2) a simulation of solute transport (dissolved nickel migration) within the simulated flow field. The two-dimensional model represents an extremely conservative projection of the ground water flow regime containing dissolved nickel. The conservative aspects stem primarily from the limits of the two-dimensional model, which do not account for the vertical dispersion and dilution of nickel mass in ground water.

The model output conservatively estimates the dissolved nickel concentrations in the Upper Glacial Aquifer at the location beyond the Site. Though these concentration estimates were limited to the Upper Glacial Aquifer, the conservative predictions were evaluated from the standpoint of potential impact to the nearest downgradient public supply well in the deeper Magothy Aquifer located in the vicinity of Hempstead Avenue. Specifically, a worst-case assumption was made that all of the nickel mass in the Upper Glacial Aquifer would be captured by one of the public supply wells, even though it is screened at hundreds of feet below the Upper Glacial Aquifer.

Based on the conservative prediction that all of the dissolved nickel plume in the Upper Glacial Aquifer would be captured by one of the deeper downgradient public supply wells, it was determined that the ground water quality at these wells would never exceed the CRDL for nickel, a level significantly below the NYS Class GA ground water standard for this constituent. This analysis is substantiated by the available empirical monitoring data taken from these public supply wells, which show no nickel impacts above the CRDL.

In summary, the use of a conservative prediction in modeling (worst case assumptions), and actual data developed during routine monitoring of the public supply wells demonstrates that the projected concentration of nickel in ground water is and will remain below the NYS Class GA ground water standards at the nearest downgradient water supply well. Moreover, the model also shows that if the source of nickel at DW-4 is removed, then ground water nickel concentrations downgradient of the Site in the Upper Glacial Aquifer will improve.

2.0 REMEDIAL ACTION OBJECTIVES

This section presents the remedial goals and RAOs established for the Site medial of interest (i.e., soil and ground water). The remedial goals are common to all inactive hazardous waste sites on the registry and are derived from the statute (i.e., 6 NYCRR Part 375), the Administrative Order on Consent Index No. WI-0579-92-01 between Surrey and NYSDEC (hereafter referred to as the "Order") and NYSDEC guidance. The remedial goals establish the framework around which remedial actions are judged. Examples of relevant remedial goals are set for the in the draft document prepared by the Division of Environmental Remediation (DER) entitled *DER-10, Draft Technical Guidance for Site Investigation and Remediation,* December, 2002 (NYSDEC, 2002).

The remedial goals for the Site are:

- Restore Site to its original state prior to the release, if such condition can be practicably ascertained, or alternatively to a reasonably environmentally sound condition, to the extent feasible and authorized by law; and,

- Eliminate or mitigate all significant threats to the public health and the environment caused by Site-related operations through the proper application of scientific and engineering principles.

The National Contingency Plan (NCP) requires that RAOs be established for Site media. In addition, 6 NYCRR Part 375 1.10(c) requires that activities conducted as part of the NYSDEC Inactive Hazardous Waste Disposal Site (IHWDS) program not be inconsistent with the NCP Guidance on developing RAOs is provided in NYSDEC Technical and Administrative Guidance Memorandum (TAGM) No. 4030 entitled *Selection of Remedial Actions at Inactive Hazardous Waste Sites* (NYSDEC, 1990) to determine the extent of remediation, if any, which may be necessary at a site. Examples of RAOs are set forth in *Draft DER-10.*

RAOs consist of medium-specific or operable-unit specific goals to protect human health and the environment. As such according to NYSDEC Feasibility Study guidance, the RAOs are based upon the nature and extent of contamination, and on applicable or relevant and appropriate New York State Standards, Criteria and Guidance (SCGs).

In the case of the protection of human health, RAOs usually reflect the concentration of a chemical of potential concern (COPC) and the potential exposure route. Protection may be achieved by reducing potential exposure (e.g., use restrictions, limiting access) as well as by reducing concentrations. RAOs, which are established for protection of environmental receptors, are usually intended to preserve or restore a resource. As such, environmental RAOs are set for a media of interest and a target concentration level.

A RAO may be defined as a chemical-specific SCG. Standards and criteria (SC) refer to promulgated standards. Guidance values are applied to media based on practicability and engineering judgement. Additional SCGs may be based on the site location or pertain to a technology considered for remediation. These latter SCGs are referred to as location specific and action specific, respectively. The purpose of SCGs is to protect human health and the environment and comply with related federal and state laws, regulations and guidelines. SCGs are provided in *Draft DER-10.*

Following development of the RAOs, the NYSDEC TAGM FS guidance referenced above recommends that General Response Actions (GRAs) be developed. GRAs describe those actions that: (1) satisfy the RAOs; and (2) comprise technologies that can be considered in the development of remedial action alternatives. GRAs are descriptive engineering terms, which are intended to satisfy the RAOs and potential SCGs. Typically, GRAs are medium-specific and may include containment, excavation, treatment, disposal, institutional actions, or a combination of these general remedial approaches, to achieve the RAOs.

FS guidance also requires that volumes of media to which GRAs might be applied be identified. These volumes should take into account requirements for the protection of human health and the environment as identified in the RAOs and the chemical and geological characterization of the site.

Section 2.1 describes the various types of SCGs, and presents an inventory of the SCGs that pertain to the Site media of interest. Sections 2.2 presents the media of interest and remedial requirements pertaining to soil and ground water and the respective RAOs, and finally, the extent of the impacted media based upon the identified remedial requirements and RAOs.

2.1 *IDENTIFICATION OF SCGS*

Table 2-1 presents potential SCGs, which may govern remediation at the Site. This table lists the regulatory citation; a description of the SCG; whether the SCG is chemical, action or location specific; and the reason the SCG may be applicable or relevant, and appropriate. These SCGs were obtained from the NYSDEC issued list of SCGs presented in *Draft DER-10*. The relevance of a regulation to the Site and to remedial actions included in the development of alternatives is discussed with the evaluation of each alternative in Section 4.0 (i.e., in the evaluation of the alternatives' ability to comply with the SCGs).

The National Contingency Plan (NCP) establishes applicable or relevant and appropriate requirements (ARARs) which are the federal equivalent of standards and criteria. The NCP also contemplates "To Be Considered" (TBC) information defined as other advisories, criteria or guidance, as well as proposed standards issued by federal or state agencies, that while not meeting the definition of an ARAR, should also be considered in remedial decisions (NCP at 40 CFR 300.400(g)(3)). The preamble to the NCP states that TBCs are to be used on an "as appropriate" basis. Because TBCs are not promulgated or enforceable, they do not have the same weight as ARARs (or SC in the case of New York State), and thus, there is more flexibility when contemplating the application of guidance. In accordance with Part 375, engineering judgment is used in applying guidance to remedial decisions.

This report uses the TBC approach established in the NCP in order to address NYSDEC and USEPA guidance that have not been identified as Standards or Criteria by the NYSDEC, but which may be relevant and appropriate to remedial actions that are to be evaluated for the Site. That is, USEPA and additional NYSDEC guidelines are listed in Table 2-1 as To Be Considered Information and are used in Section 4.0 in the evaluation of remedial actions at the Site.

2.2 *DEVELOPMENT OF REMEDIAL ACTION OBJECTIVES*

As discussed above, the NYSDEC FS guidance (NYSDEC, 1990) requires that the RAOs for the media of interest be based upon the protection of human health and the environment and applicable or relevant and appropriate New York State SCGs. As such, both of these requirements were evaluated to determine the RAOs for Site media of interest.

This evaluation, which is provided below in the following subsections, entails:

- selection of the media of interest;
- identifying the chemicals of potential concern (COPCs) for the media of interest;
- identifying the exposure pathways and receptors for the media of interest;
- selecting appropriate cleanup levels for the complete exposure pathways (so that different engineering approaches can be developed to address exposures and hence, meet the cleanup level);
- determining the extent of the affected media of interest; and
- determining the remedial action objectives and GRAs for media of interest.

2.2.1 *Media of Interest*

During the RI, SRI, and post-SRI, the quality of indoor air, on-Site and off-Site ground water, and on-Site soil were evaluated. These media were therefore reviewed as potential media of interest. They were tested for a range of constituents. The data were evaluated to ascertain the constituents and media that were adversely affected by the Site. A summary of this evaluation is provided below. It establishes the basis for the FS focus on nickel as the primary COPC (i.e. its level and distribution encompasses other Site-related COPCs) in soil (including a nickel source area) and ground water.

Indoor Air

As discussed in Section 1.2.4.5, indoor air sampling for 1,1,1-trichloroethane and trichloroethene was conducted in the area of the former degreasers during the RI. Neither chemical was detected. Consequently, indoor air will not be retained as a medium of interest for the Site.

Soil

Site soil evaluated in this FS as a medium of interest includes: unsaturated soil and soil (i.e., sediment) that has accumulated in the bottom of dry wells. The unsaturated soil extends to depths ranging from 55 to 67 feet below grade. The majority of the Site soil is overlain with buildings and pavement. A limited portion of the Site is vegetated.

As documented in Section 1.2.4.3, inorganic constituents were detected in Site soil at fairly consistent concentrations, with the exception of the dry well designated DW-4. At this former dry well, high concentrations of inorganic constituents were detected. Accordingly, soil will be retained as a potential medium of interest for the Site.

Ground Water

Ground water is defined as the portion of water beneath the land surface that is within the zone of saturation (below the seasonal high ground water table) where all the pore spaces of the geologic formation are filled with water. As discussed in Section 1.2.3.2, ground water occurs under unconfined conditions in the shallow Upper Glacial Aquifer and under semi-confined conditions in the underlying deeper Magothy Aquifer. Based on monitoring well information, depth to ground water at the Site in the unconfined Upper Glacial Aquifer ranged from approximately 55 to 67 feet below grade (see Table 1-1). Ground water elevation data at the Site indicates that the hydraulic gradient in the vicinity of the Site is relatively flat. Regional hydrogeologic flow patterns indicate that the ground flow direction in the vicinity of the Site is slightly east of south.

There are no on-Site water supply wells, and the nearest off-Site downgradient public water supply wells are located approximately 5,435 feet downgradient of the Site. These wells are developed at 463 - 642 feet and draw water from the deeper Magothy Aquifer.

As discussed in Sections 1.2.4.4 and 1.3.2 and shown in Appendix C (see Tables 3-14 and 1-3 in Appendix C), inorganic constituents have been detected in ground water but nickel was determined to be the only inorganic constituent of concern. Trace and low-level concentrations of chlorinated VOCs have been detected in both on-Site and off-Site wells. However, the VOC concentrations were extremely low, detected above their respective Class GA ground water standard in less than 3% of the on-Site samples. Moreover, the detected levels of VOCs in ground water were no different than regional background concentrations of these constituents. Based on the detections of inorganic constituents in ground water and the presence of downgradient public water supply wells, ground water will be retained as a potential medium of interest.

2.2.1.1 *Soil*

2.2.1.1.1 *Chemicals of Potential Concern*

As discussed above, soil sampling was conducted during the RI and the SRI by LMS. The soil sampling results for the RI and SRI are provided in Appendix B as shown on the following page.

Soil Sample Locations	Sampling Event	Analysis	App. B Table No.
Shallow Probes (GP-, CB-, OCB-)	RI	Volatiles	3-5
		Metals	3-6
		TCLP Metals	3-7
Deep Probes (DGP-)	RI	Volatiles	3-10
		Metals	3-11
Berm Samples (B-)	RI	Volatiles	3-16
		Metals	3-17
		TCLP Metals	3-18
Supplemental Samples (CB-1 & CB-2)	SRI	Metals (Nickel)	1-1
		TCLP Metals (Nickel)	1-2

In addition, post-SRI investigative activities were conducted by ERM. During the RI, SRI and post-SRI, soil samples were collected from shallow probes, deep probes, berms, the former leach pool LP-4, and nearby dry-wells given the potential for these to have been involved in past operations. Probe and berm samples were analyzed for VOCs, SVOCs, total metals and TCLP metals.

In addition, post-SRI investigations were conducted by ERM. Post -SRI dry well samples were analyzed for total metals and TCLP and SPLP nickel. Sampling results for the post-SRI soil sampling were provided in Tables 1-4 and 1-5. The remaining results are provided in Appendix B as noted below.

To identify chemicals of potential concern (COPCs) in Site soil, the concentrations of inorganic constituents in soil were compared to the NYSDEC RSCO guidelines. The NYSDEC RSCO guidelines for inorganic constituents are guidance values that are reportedly based on background soil concentrations. This evaluation for RI and SRI data is included along with the Appendix B soil data tables noted above. The post-SRI soil data NYSDEC RSCO guidance comparison was presented in Tables 1-6 through 1-9.

Outside the source area dry well designated DW-4, there was only one organic constituent detected in Site soil (i.e., tetrachloroethene was detected in soil sample GP-7 at 0.01 mg/kg). This chemical was present at a low estimated concentration and was well below the NYSDEC RSCO guideline of 1.4 ppm. Within the source dry well, DW-4, there were a number of VOCs and SVOCs detected, but only SVOCs were detected above NYSDEC RSCO guidelines. The seven SVOCs are therefore retained as COPCs for Site soil. These seven SVOCs were identified within one sample collected within the most visually contaminated portion of DW-4. Since these SVOC results are coincident with elevated nickel concentration, nickel is an appropriate surrogate as the COPC for Site soil.

Comparison of the inorganic constituent concentrations in Site soil to the NYSDEC RSCO guidelines indicates that nine (9) inorganic constituents were detected in Site soil at concentrations greater than the guidance concentrations. They are:

arsenic
beryllium
chromium
copper
lead
mercury
nickel
selenium
zinc

These nine (9) inorganic constituents will therefore be retained as COPCs. As is set forth below, direct contact with these COPCs can be controlled and only one of them, nickel, presents a leaching to ground water risk in source area DW-4.

2.2.1.1.2 *Potential Exposure Pathways and Receptors*

Based upon the above evaluation, the potential exposure pathways associated with Site soil would be limited to nine inorganic constituents and limited SVOCs in the source dry well only. The two potential exposure pathways for these chemicals in Site soil are leaching to ground water and direct contact. Current and future uses of the Site are limited to commercial/industrial use. Because the vast majority of the property is paved, and remaining areas are not utilized or readily accessible, direct contact to site soil by commercial/industrial users is not expected and could be controlled. Construction workers could come into contact with covered soil in the future, although such contact also could be controlled.

With the exception of nickel, none of the other eight inorganic constituents detected in soil above their NYSDEC RSCO guidelines were consistently detected (i.e., detected in over 5% of the samples analyzed) in dissolved form in Site ground water at concentrations in excess of their Class GA ground water standard. This demonstrates that these eight inorganic constituents (i.e., arsenic, beryllium, chromium, copper, lead, mercury, selenium and zinc) do not present a leaching potential from soil to ground water in concentrations that would pose an unacceptable risk to human health or the environment. Therefore, leaching of chemicals from soil to ground water is the only a potentially complete exposure pathway for nickel in Site soil.

Nickel is present in shallow ground water at concentrations that exceed the Class GA ground water standard in wells ERM-2, LMS-4, AMS-2 and

ERM-3. These four monitoring wells are located immediately downgradient of the dry well DW-4. As discussed in Section 1.4 and below, the analytical data collected during the SRI and post-SRI indicate that dry well DW-4 is the source of the elevated nickel concentrations in these monitoring wells. Nickel was not present in concentrations that exceeded the Class GA ground water standard in ground water samples collected from the remaining on-Site monitoring wells, which are located downgradient of other soil areas at the Site where nickel is present above NYSDEC RSCO guidelines. For example, nickel was not detected in monitoring well ERM-1, which is located downgradient of soil borings EB-1 (a boring advanced through DW-5), EB-3, and EB-4 (a boring advanced through LP-4). Soil samples collected from each of these borings contained nickel in soil above the NYSDEC RSCOs guidelines. This demonstrates that the nickel in soil outside the area of dry well DW-4 is not leaching to ground water at concentrations that exceed the Class GA ground water standard.

To summarize, nickel is the only chemical of concern in Site soil that poses an unacceptable leaching risk to ground water and the only on-Site location that is contributing unacceptable levels of nickel to the ground water is the vicinity of dry well DW-4.

Based on these Site conditions, the potential exposure pathways for Site soil are:

- commercial/industrial worker that may come into direct contact with impacted soil (absent appropriate controls); and
- leaching of nickel from soil to ground water in the area of dry well DW-4 only.

2.2.1.1.3 *Identification of Cleanup Levels and Evaluation of Complete Exposure Pathways*

This section identifies cleanup levels and evaluates complete exposure pathways for: (1) commercial and industrial worker exposures to all of the 9 inorganic constituents for Site soil (see "Commercial/Industrial Exposure"); and (2) the potential for leaching of nickel from the soil in and beneath dry well DW-4 (see "Leaching from Soil to Ground Water").

Commercial/Industrial Exposure

Table 2-3 presents a comparison of the maximum detected concentrations of inorganic COPCs in Site soil to NYSDEC RSCO guidelines and reported Eastern USA inorganics concentrations in soils and surficial materials (Shacklette & Boerngen, 1984). Table 2-3 shows that of the nine inorganic constituents that exceed the NYSDEC RSCO guidelines in Site soil (i.e., arsenic, beryllium, chromium, copper, lead, mercury, nickel, selenium and zinc), four (i.e., beryllium, chromium, mercury and zinc) are present at concentrations within the reported range of Eastern US background ranges (Shacklette & Boerngen, 1984).

The Eastern USA background ranges reported by Shacklette & Boerngen, 1984, are alternative background guidelines that can be considered in applying engineering judgment when responding to the concentrations of inorganic constituents in soil. Since the concentrations of beryllium, chromium, mercury and zinc are within the range of reported Eastern Regional background (Shacklette & Boerngen, 1984), these constituents can be judged not to present a threat to the public health and the environment.

Only three samples of 125 exhibited inorganics concentrations of one or more constituents above these alternate background levels. These excursions, which are outside the source area, are remote (i.e. < 3% of samples) and, coupled with the institutional and engineering controls provided by the existing surface covers (i.e., pavement, concrete, buildings) and zoning , are adequate to address direct contact and/or threats to human health or the environment.

As discussed above, the ground water data provided in Section 2.2.1.2 indicates that with the exception of nickel, the inorganic constituents in Site soil are not impacting ground water.

Leaching from Soil to Ground Water

Nickel is the only COPC in Site soil that poses a potential to leach to ground water from the source area soil/sediment located within and beneath dry well DW-4.

Two tasks were conducted to identify locations where the residual concentration of nickel in soil pose an unacceptable leaching to ground water risks. They included: conducting SPLP testing on soil samples collected from dry wells DW-2, DW-4, and DW-5, as well as soil from borings in the rear courtyard area; and installation and sampling monitoring wells downgradient of areas of these nickel impacted areas. The SPLP test was designed by the USEPA to measure the maximum potential for chemicals in soil to leach and potentially impact ground water under natural conditions. The SPLP test mimics the leaching that could occur in areas affected by acid rain. The procedures used in this sampling event and the analytical results were presented in Section 1.3.1.

As discussed in Section 1.3.1, soil samples were collected for SPLP nickel analysis and these results were compared to the nickel Class GA ground water standard of 100 µg/L as a screening value. SPLP nickel results soil was detected above 100 µg/L were identified in ERM-2, located in DW-4, at depths of 13, 16, 21, 40, and 50 feet below grade. SPLP results for EB-2, EB-3 and EB-6, located in other areas exhibiting nickel in soil, albeit at lower concentrations than observed in DW-4, also showed some potential for leaching; however, these areas are not exposed and do not receive continued recharge. Moreover, ground water samples collected downgradient of the locations of EB-2, EB-3 and EB-6 did not exhibit nickel concentrations in excess of 100 µg/L. Ground water concentrations of nickel in the monitoring well installed at DW-4 (ERM-2) and in wells downgradient of this structure, LMS-4 and AMS-2, are in excess of 100 µg/L. Additionally, during the investigation, the material in DW-4 was observed visually to be moist, indicating that the area of this structure may still receive storm water infiltration. Based on this analysis, soil/sediment located in DW-4 will therefore be retained for remedial evaluation.

2.2.1.1.4 *Extent of Affected Soil*

With regard to compliance with the New York State SCGs, the only chemical-specific guidance for Site soil is TAGM #4046. This TAGM contains the NYSDEC RSCO guidance values for organic compounds and inorganic constituents in soil. The NYSDEC RSCO guidance can be used as a preliminary screen of concentrations of organic compounds and inorganic constituents in soil at the Site. As previously stated, organic compounds are not present above these NYSDEC RSCO guidelines outside of DW-4. In the case of inorganic constituents, there are nine present in soil at concentrations above the NYSDEC RSCO guidelines provided in TAGM 4046.

Figures 2-1 through 2-3 present the inorganic constituents detected in Site soil at concentrations above the NYSDEC RSCO guidance. As shown in these figures and the table below, the depth of soil containing the inorganic constituents that exceed the NYSDEC RSCO guidance ranges from 7 to 56 feet below grade. Using the horizontal and vertical distribution of inorganic constituents, the Site was divided into seven (7) soil areas. The locations of these soil areas are provided in Appendix E, Figure E-1. As shown in the table on the subsequent page, the total volume of soil containing these constituents at levels that exceed the NYSDEC RSCO guidance is approximately 83,207 cubic yards.

Soil Area	Area (ft²)	Total Quantity of Soil Exceeding RSCO Guidance	
		Depth (ft bag)	Volume (cy)
Area I	3,080	17	1,939
Area II*	20,070	56	41,627
Area III	6,045	29	6,493
Area IV	18,845	18	12,563
Area V	24,710	17	15,558
Area VI	5,765	10	2,135
Area VII	11,155	7	2,892
Total	89,670 ft²	--	83,207 cy

* DW-4 is within Area II and the impacted soil exceeding NYSDEC RSCO guidance extends to 51 feet below grade.

As discussed in Section 2.2.1.1.2, nickel is the only COPC in Site soil that presents a threat to ground water, and whose effect cannot therefore be limited by maintaining existing Site covers. Of the volume of impacted soil shown in Figure 1-12 the mass of nickel is 2,621 kg. As shown in the below table 2,606 kg, or approximately 99.4% of the total nickel mass is found within a 12-foot diameter area centered on DW-4 in 211 cy of soil.

Depth Interval (feet below ground surface)	Estimated Nickel Mass (kg)	Percentage of the Total Nickel Mass
0-13	0	--
13-16	1,812	69.5%
16-21*	703	27.0%
21-30	9	0.3%
30-40	6	0.2%
40-50	11	0.4%
50-60	65	2.5%
Total:	**2,606**	**100%**

* The bottom of the former dry well is located approximately 21 feet below ground surface.

The most significant amount of nickel in Site soil is located from 13 to 21 feet below grade within the former abandoned dry well, DW-4. This interval represents approximately 96% of the nickel mass in the area of DW-4 and includes the visually impacted material present in the 11 to 21 foot interval.

Waste characterization results for Site soil are provided in Appendix B, Tables 3-7 and 3-18. These results demonstrate that Site soil is not a RCRA characteristic hazardous waste.

2.2.1.1.5 *Remedial Action Objectives for Soil*

As discussed above, the potential exposure pathways for Site soil are, without appropriate controls, exposure to commercial and industrial workers through direct contact with Site soil and leaching to ground water (i.e., nickel from dry well DW-4). The evaluation provided in the previous sections demonstrates that chemicals in Site soil exist in covered and limited uncovered areas (i.e., the berm along the northern boundary of the Site) at concentrations above NYSDEC RSCO guidance. Furthermore, nickel concentrations in Site soil located within dry well DW-4, the source of nickel in ground water, may pose an unacceptable leaching to ground water risk. DW-2 does not appear to pose a continuing leaching source to ground water; however, abandonment of this dry well would be a prudent risk management approach to reduce infiltration in the area of DW-4. Minimizing future infiltration in the vicinity of former DW-4 would eliminate the potential for water to come into contact with soils remaining below 25 feet below grade and contain residual nickel concentrations.

Based on the Site data and draft NYSDEC guidance regarding development of RAOs (NYSDEC, 2002) the following RAOs have been established for the Site soil/sediment:

- Prevent ingestion, direct contact, and/or inhalation of/with contaminated soil/sediment; and

- prevent the potential for future leaching of nickel in soil to ground water from dry well DW-4.

GRAs for Site soil include institutional controls, removal and treatment. These GRAs will be used to evaluate technologies (Section 3.0) and to develop remedial action alternatives (Section 4.0).

2.2.1.2 *Ground Water*

2.2.1.2.1 *Chemicals of Potential Concern*

As discussed above, on-Site ground water sampling was conducted during the RI and SRI . The ground water sampling results for the RI and SRI are provided in Appendix C as shown on the following page.

Ground Water Sample Locations	Sampling Event	Analysis	App. C Table No.
Probe Locations			
Perimeter Probes (PGW-)	RI	Volatiles	3-2
		Metals	3-3
Shallow Probes (GP- GW, OCB- GW)	RI	Volatiles	3-8
		Metals	3-9
Deep Probes (DGP- GW)	RI	Volatiles	3-12
		Metals	3-13
Supplemental Samples (CB-1GW & CB-2GW)	SRI	Metals (Total & Dissolved Nickel)	1-3
Monitoring Wells			
Monitoring Wells (AMS-, MW-, LMS-)	RI	Volatiles	3-14
		Metals	3-15
Supplemental Samples (AMS-2, LMS-4)	SRI	Metals (Total & Dissolved Nickel)	1-3

Additional on-Site and off-Site ground water sampling was conducted during the post-SRI by ERM. The sampling results for the additional ground water sampling is provided in Tables 1-11 through 1-15.

To identify the potential COPCs in Site ground water, the concentrations of chemicals in ground water monitoring wells were first screened against upgradient Site ground water concentrations and then were later compared to the Class GA ground water standards. Ground water monitoring wells LMS-1, LMS-2 and LMS-5 and ground water perimeter probes PGW-1, PGW-2, PGW-3, PGW-4 and PGW-5 which are located on the upgradient side of Site operations, were considered to represent ground water concentrations entering the Site (i.e., background concentrations). This comparison indicated that concentrations of the following twenty (20) inorganic constituents and four (4) organic constituents in Site ground water were present at concentrations greater than observed at these background locations (i.e., upgradient Site ground water concentrations in the wells and perimeter probes defined above). These inorganic constituents and organic compounds are summarized below.

Inorganic Constituents

Aluminum
Antimony
Arsenic
Barium
Beryllium
Chromium
Cobalt
Copper
Iron
Lead
Magnesium
Mercury
Nickel
Potassium
Selenium
Silver
Sodium
Thallium
Vanadium
Zinc

Organic Constituents

Tetrachloroethene
1,2-Dichloroethene (total)
1,2-Dichloroethane (total)
Xylenes (total)

The ground water data were further evaluated to ascertain which, if any, Site-related constituents were responsible for any adverse impacts. The process of evaluating organic compounds and inorganic constituents in ground water lead to the identification of COPCs in ground water for the FS.

The process of evaluating organic compounds in ground water first entailed a determination of whether the levels were above Class GA ground water standards. Organic compounds with levels below the standard were eliminated from further consideration. Organic compounds present in ground water above the Class GA ground water standard were then evaluated to determine the frequency at which concentrations exceeded the Class GA ground water standard. Those organic compounds that were found in fewer than 5% of the samples were eliminated from further consideration.

Similarly, the identified inorganic constituents that were not present at total concentrations above their respective Class GA ground water standards were eliminated from further consideration. Since much of the inorganic constituent data were obtained from geoprobes during the RI, dissolved levels of these constituents were also evaluated. (Ground water samples from geoprobes regularly yield samples containing large amounts of suspended particulates. This complicates any evaluation of dissolved constituents in ground water). Hence, dissolved levels, which were based on filtered samples collected during the RI, were also considered in the evaluation of inorganic constituents in ground water. Dissolved levels of inorganic constituents that did not exceed Class GA ground water standards, or were essential nutrients were eliminated from further consideration. The remaining inorganic constituent data in ground water was evaluated for frequency of occurrence above Class GA ground water standards. Those constituents that were not identified above the Class GA ground water standard in at least 5% of the samples were eliminated.

As explained below, organic compounds detected in the Upper Glacial Aquifer are either below or marginally above Class GA ground water standards. With respect to on-Site ground water, less than 5% of the samples collected during the RI, SRI and post-SRI exceeded the Class GA ground water standard. The relatively low concentrations of organic compounds in the Upper Glacial Aquifer identified during the various investigations and the limited number of on-site ground water tests that exceeded Class GA ground water standards eliminates organic compounds as COPCs for ground water. In the case of inorganic constituents in ground water, the process established that the primary dissolved Site-related species that has impacted ground water and is a COPC in ground water is nickel.

2.2.1.2.2 *Potential Exposure Pathways and Receptors*

The only potential exposure pathway for chemicals of concern in ground water is off-Site ground water ingestion. Two public water supply well fields are located approximately one mile downgradient of the Site. They are the Hicksville Water District and the Bowling Green Estates Water District located approximately 5,435 feet and 6,450 feet downgradient of the Site, respectively. Both well fields are used as a source of drinking water and pump water from the deeper Magothy formation, which is the aquifer from which public water supplies are drawn.

On-Site ground water ingestion is not a potential exposure pathway because there are no on-Site wells. Furthermore, future installation of on-Site or off-Site private water supply wells is prohibited by Part 5 of the New York State Department of Health State Sanitary Code due to the presence of nearby public supply lines.

There are no additional potential exposures to ground water within one mile of the Site.

2.2.1.2.3 *Identification of Cleanup Levels and Evaluation of Complete Exposure Pathways*

Organics

Concentrations of the four organic compounds that were initially identified to be present at levels greater than background were compared to the Class GA ground water standards. This comparison, which is presented in Table 2-2 indicates that only three of the organic compounds (tetrachloroethene, 1,2-dichloroethene and 1,2-dichloroethane) were present above the Class GA ground water standard. The analytical results of these three organic compounds in ground water were extremely low (see Table 2-2).

Moreover, a total of 76 ground water samples were collected on-Site during the RI, SRI and post-SRI and analyzed for VOCs. These three organic compounds were present in ground water above their respective Class GA ground water standard in less than 5% of the samples collected during these investigations.

In addition, ground water samples were collected from two (2) off-Site temporary ground water monitoring wells during the post-SRI sampling event in June 1998 and analyzed for VOCs, as well as from ERM-3 during the post-SRI sampling event in January 2003. These off-Site wells are identified as the Combes Avenue well (VP-N), the Border Street well (VP-S), and ERM-3. As shown in Table 2-2, the organic compounds were not detected in any of these off-Site locations. As a result, the organic compounds in ground water are not considered as COPCs for the Site.

Inorganic Constituents

The total results of inorganic constituents that were detected in ground water at concentrations greater than observed at background locations ((i.e., upgradient Site ground water concentrations) were initially compared to Class GA ground water standards. Based on this comparison, only 11 of the 20 total inorganic constituent concentrations (i.e., antimony, arsenic, barium, beryllium, chromium, iron, lead, nickel, selenium, sodium, and thallium) exceeded the Class GA ground water standards. When the dissolved levels (i.e., filtered results) of these samples, which were collected during the RI were considered, only four (4) of the 20 inorganic constituent results (i.e., iron, lead, nickel and sodium) exceeded the Class GA ground water standards. Iron and sodium are earth metals and essential human nutrients. Hence, they are present throughout the environment and there is no specific correlation to the Site. The dissolved concentration of lead in ground water exceeded its Class GA ground water standard in less than 3% of the samples (i.e., two in 67 samples).

Based on the above evaluation, eighteen of the nineteen inorganic chemicals of concern are eliminated from further consideration as potential COPCs in ground water. The sole remaining inorganic COPC in ground water is nickel. A discussion of the distribution of this COPC is provided below to evaluate the potential ground water pathway for this chemical, i.e., the potential for nickel in Site ground water to migrate to the downgradient well field.

The concentration of nickel in the ground water in both on-Site and off-Site wells is presented in Figure 1-11 and Table 2-2. As shown on Figure 1-11, concentrations of nickel in ground water in excess of the Class GA ground water standard are limited to the monitoring wells located immediately within and downgradient of dry well DW-4 (i.e., monitoring wells ERM-2, AMS-2, LMS-4 and ERM-3). During the most recent sampling event conducted in January 2003, the dissolved concentrations of nickel in these monitoring wells were: 855 μg/L in ERM-2, 887 μg/L in LMS-4, 2,840 μg/L in AMS-2, and 3,580 μg/L in ERM-3. Nickel was not detected above the Class GA ground water standard of 100 μg/L in any other on-Site monitoring well during the 2003 sampling or in any previously collected ground water samples from the following monitoring wells: AMS-1, ERM-1, MW-3, LMS-1, LMS-2, LMS-3, and LMS-5. All on-Site wells are screened in the upper portion of the Upper Glacial Aquifer.

As shown by the data presented in Figure 1-11, the majority of the nickel in ground water in the vicinity of the Site in excess of the Class GA ground water standard is present in the upper 40 feet of the Upper Glacial Aquifer, which is approximately 100-feet thick in the area of the Site. Off-Site ground water sampling, conducted after the SRI in June 1998 and again in March 2002 and January 2003, showed that ground water concentrations of nickel downgradient are confined to a narrow plume that follows the ground water flow direction from the location of DW-4. The extent of nickel in the ground water is bounded to the west by AMS-1 and the Combes Avenue monitoring well (VP-N) and to the east by MW-3 and VP-E, all of which contained nickel well below the Class GA ground water standard of 100 μg/L. Ground water samples were collected from off-Site locations initially at three intervals (i.e., at 60 feet, 95 feet and 120 feet below ground surface) during June 1998 and at two intervals during the March 2002 vertical profiling (i.e., 75 feet and 95 feet below ground surface). This profiling was conducted to provide a vertical characterization of nickel in ground water. The maximum concentration of nickel in ground water at these intervals was:

- 32.5 μg/L at 60 feet below ground (Combes Ave, i.e., VP-N, well);
- 3,150 μg/L at 75 feet below ground (VPNC-75);
- 228 μg/L at 95 feet below ground (VPNC-95); and
- 6.3 μg/L at 120 feet below ground (Border Street well).

It should be noted that, with the exception of VPNC, all off-Site ground water data for nickel is qualified with a "B" indicating that the results are less than the Method Detection Limit, but greater than the Instrument Detection Limit. Consequently, the actual concentrations of nickel in ground water for the off-Site samples may be less than those reported.

Based on the presence of nickel in ground water, there is the potential for migration of nickel toward the downgradient public supply wells. However, these supply wells are screened in the underlying Magothy Aquifer at depths greater than 400 feet below grade while the observed nickel concentrations in ground water are present in the upper portion of the Upper Glacial Aquifer. Furthermore, as discussed in Section 1.4.3, the ground water modeling conducted for the Site demonstrates that even if conservative assumptions are made that the highest concentrations of nickel in shallow ground water are captured by the supply wells, which are screened at much deeper zones in a lower aquifer, the resulting impact, if any, would be less than the CRDL for nickel, a level well below the Class GA ground water standard. Furthermore, as discussed in Section 1.3.3, nickel has not been identified above the CRDL in any of these public supply wells.

2.2.1.2.4 *Remedial Action Objectives for Ground Water*

As previously discussed, the NYSDEC FS TAGM (NYSDEC, 1990) requires that RAOs be developed to address potentially unacceptable risks to human health and the environment and to comply with the New York State SCGs.

The only potential exposure pathway for nickel in Site ground water is the migration of nickel to the nearest public water supply well (i.e., the Hicksville Water District), which is located over 1 mile downgradient of the Site. There are no water supply wells located on-site or in the area between the Site and the Hicksville Water District well field. These areas are served by a public water supply system. Part 5 of the New York State Department of Health State Sanitary Code prohibits the installation of new private domestic water supply wells in areas that are served by a public water supply system. As a result, the Hicksville Water District well field located approximately 1 mile downgradient of the site is the only potential human health or environmental receptor to nickel in Site ground water.

Nickel is the only COPC in Site ground water in excess of Class GA ground water standards. The ground water model demonstrates that nickel would not impact the public supply wells at a concentration in excess of contract required detection limits and would not pose an unacceptable potential for exposure to human health or the environment. As a result, Site ground water does not pose an unacceptable risk to human health or the environment. In addition, with removal of the source area, nickel in ground water is not expected to pose an unacceptable potential for exposure to human health or the environment in the future.

Based on this assessment of ground water quality, the RAOs for Site ground water are as follows:

- continue to prevent ingestion of on-Site ground water;
- prevent continued leaching to ground water to the extent practicable;
- prevent unacceptable ground water concentrations of nickel at water supply wells;
- if practicable (i.e. technically and economically feasible) and if needed to protect human health and the environment, restore the impacted area within the ground water aquifer to pre-release conditions.

GRAs for Site ground water include: institutional controls, monitoring, active ground water removal and treatment.

These GRAs will be used to evaluate technologies (Section 3.0) and to develop remedial action alternatives (Section 4.0)

3.0 *IDENTIFICATION AND SCREENING OF REMEDIAL ACTION TECHNOLOGIES*

This section identifies potentially applicable remedial technologies and associated options, which can be employed to achieve RAOs for the media of interest at the Site (i.e., soil and ground water) described in Section 2.2.1. These media-specific RAOs should be attainable and be consistent with the overall objectives for the Site. The remedial technologies discussed in this section correspond to the previously identified GRAs for affected media.

The remedial technologies in this section were identified through a review of USEPA guidelines, the scientific literature, and experience in developing RA plans for similar types of environmental conditions. The screening exercise described in this section is intended to identify those remedial technologies that are technically feasible for implementation at the Site. These technologies are then combined into remedial alternatives, which undergo more detailed evaluation in Section 4.0. The screening procedures used in this section are based on limitations imposed by Site conditions and the nature of the chemicals in the affected media. For example, the presence of inorganic constituents in the affected soil at the Site limits the available soil treatment technologies, as only a small number of treatment processes are suitable for the treatment of inorganics.

Remedial technologies undergo further evaluation weighing their ability to meet the RAOs, exhibit fewer short-term effects while being effective over the long-term, and be implementable. Remedial technologies must have the ability to achieve one or more of the RAOs, which are descriptive statements of the overall goal of the remedial action (RA).

In considering the effectiveness (short and long-term) criteria, the focus is on whether the technology can handle the volume of the affected media. Additional consideration is given to the potential short-term effects to human health and the environment, which could result from the technology and whether the its components have proven reliable over the long-term for the media and constituents requiring remediation.

The criterion for implementability focuses on institutional aspects associated with use of the technology. Institutional aspects involve potential permitting requirements or access approvals for off-Site work as well as off-Site treatment, storage and disposal services.

The following section describes eight RA technologies for the affected media at the Site. The RA technology descriptions that follow include an evaluation of the components of the RA technology as it applies to conditions at the Site. A summary of the RA technologies, which are subsequently combined into remedial alternatives, follows these descriptions.

3.1 REMEDIAL ACTION TECHNOLOGIES

The eight RA technologies identified as potentially applicable for the Site are:

1. Deed (Use) Restrictions
2. Storm Water Reconfiguration
3. Source Control via In-Situ Chemical Fixation\Stabilization
4. Excavation and Off-Site Disposal
5. Ground Water Monitoring
6. Ground Water Extraction
7. Ground Water Treatment (Physical/Chemical)
8. Ground Water Recharge

Sections 3.1.1 through 3.1.8 present descriptions of each RA technology. Each remedial technology is evaluated based on its ability to meet the RA objectives, its short- and long-term effectiveness and implementability.

As discussed in Sections 2.2.1.1.5 and 2.3.1.2.4, the RAOs for the Site media of interest are:

Soil

- Prevent ingestion, direct contact, and/or inhalation of/with contaminated soil/sediment; and;

- prevent the potential for future leaching of nickel in soil to ground water from dry well DW-4.

Ground Water

- continue to prevent ingestion of on-Site ground water;

- prevent continued leaching to ground water to the extent practicable; and

- prevent unacceptable ground water concentrations of nickel at water supply wells;

- if practicable (i.e., technically and economically feasible) and if needed to protect human health and the environment, restore the impacted area within the ground water aquifer to pre-release conditions.

3.1.1 *Deed Restrictions*

This administrative control will entail continuing the existing commercial and industrial use of the Site pursuant to the existing light industrial zoning restrictions and, with the consent of the Site owner, filing a deed restriction for the Site. The limitations on Site uses are:

- Part 5 of the New York State Department of Health State Sanitary Code which prevents installation of a private potable water supply well in areas which are served by a public water supply system; and
- existing light industrial zoning restrictions for the Site by the Town of Oyster Bay.
- The deed restriction will acknowledge and identify residual constituents in soil in excess of the NYSDEC RSCO guidelines, and will define permitted as well as prohibited Site uses. Additionally, the deed restriction would specify the requirement to maintain Site covers and obtain NYSDEC approval for any future intrusive work.

3.1.1.1 *Ability to Meet Medium-Specific Remedial Action Objectives*

Existing zoning restrictions would continue to prevent ingestion of on-Site ground water and restrict Site use to light industry. The deed restriction will administratively ensure that only permitted Site uses occur, effectively prevent potentially unacceptable exposure to Site soils, and provide interested parties with references to information regarding Site conditions. This technology could be used in conjunction with one or more of the other RA technologies to address the remaining RAOs.

3.1.1.2 *Short-Term and Long-Term Effectiveness*

This administrative control has been proven to be effective at numerous Sites and is effective in preventing unauthorized Site use.

3.1.1.3 *Implementability*

The Town of Oyster Bay enforces and is expected to continue to enforce its existing zoning regulations, which restrict the use of the Site to activities defined as light industrial.

3.1.1.4 *Evaluation Summary*

A deed restriction is effective and readily implementable and it would meet the RAOs for the Site. This technology is therefore carried forward to the development of alternatives section.

3.1.2 *Stormwater Reconfiguration*

This technology would entail abandonment of dry wells DW-1 and DW-2 and re-routing storm water for DW-1 and DW-2 to a third existing dry well, DW-3. In accordance with discussions held with NYSDEC regarding this Site, dry wells DW-1 and DW-2 would be abandoned as follows:

- free liquids within the dry wells would be removed, containerized and disposed of;
- pipes entering the dry wells would be evaluated for re-routing of storm water from DW-1 and DW-2 to DW-3, and plugged if not usable, retained if in good condition, or replaced if necessary;
- four feet of sediment from the bottom of DW-1, DW-2, and DW-3 would be removed and disposed off-Site;
- dry wells DW-1 and DW-2 would then be backfilled and replaced with catch basins.

Thus, storm water would be collected at the DW-1 and DW-2 locations, but routed to DW-3 for infiltration. The remaining DW-3 and DW-5 structures in the rear courtyard area are expected to have sufficient capacity to receive stormwater infiltration for this area.

3.1.2.1 *Ability to Meet Medium-Specific Remedial Action Objectives*

Abandonment and relocating dry wells DW-1 and DW-2 would eliminate infiltration from the area around DW-4. This would serve to eliminate any potential future leaching of nickel from soil in the area of DW-4. By eliminating infiltration, there would not be any driving mechanism to create the condition for potential leaching to ground water. By preventing leaching of residual nickel in soil, the likelihood of any future impact at the downgradient public supply wells would be eliminated, irrespective of how remote it is for any impact to these wells under the current condition. This technology would be used in conjunction with one or more of the other RA technologies to address the remaining RAOs.

3.1.2.2 *Short-Term and Long-Term Effectiveness*

Although soil within dry wells DW-1 and DW-2 does not present an unacceptable risk of leaching to ground water risk, these dry wells would be abandoned to eliminate infiltration, which is the driving mechanism for the potential leaching of nickel from soil to ground water from the area of DW-4. Abandoning the dry wells (i.e., filling the structure and replacing with storm boxes) would reduce the amount of rainwater infiltration in this area.

This technology would be effective in reducing the potential for future leaching to ground water, and in combination with source removal (Section 3.1.4, Excavation and Off-Site Disposal), would address this RAO for the Site. This technology could be used in conjunction with one or more of the other RA technologies to address the remaining RAOs.

3.1.2.3 *Implementability*

Dry well abandonment and storm water reconfiguration are readily implementable technologies.

3.1.2.4 *Evaluation Summary*

Dry well abandonment and storm water reconfiguration is effective and readily implementable and, in conjunction with other technologies, would meet the RAOs for the Site. This technology is therefore carried forward to the development of alternatives section.

3.1.3 *Source Control via In-Situ Chemical Fixation/Stabilization*

In-situ chemical fixation/stabilization technology entails mixing material in place with a binder material to ameliorate the physical properties of the waste and immobilize the COPC(s). More specifically, "chemical fixation" describes the chemical technology used to detoxify a matrix and immobilize a chemical. It often denotes a chemical reaction between one or more waste components and a solid matrix - one either introduced deliberately, or already existing in the waste residue. A variety of chemical fixation techniques exist that could be used to prepare waste residues for stabilization.

Stabilization can occur independently of a chemical fixation process. Many wastes do not require chemical fixation, but may be solidified to transform them into a physical form that is more suitable for storage, transportation, landfill or reuse. Stabilization without chemical fixation does not, by itself, affect the hazardous potential of the waste. Stabilization may, however, reduce a potential hazard by establishing a barrier between waste particles and the environment, limiting leaching from the waste by contact with water, or reducing the effective surface area of the waste that is available for diffusion of chemicals that are bound in the stabilized material.

Some common stabilization agents include Portland cement, pozzolan cement, lime, ash, cement and cement kiln dust. A number of proprietary stabilization agents are also available. Generally, mixing of waste and stabilization agents results in a high pH (9-11) so that the metals precipitate as relatively insoluble hydroxides, carbonates and silicates. Silicates are sometimes added as an amendment to increase the chemical fixation of heavy metals.

In-situ chemical fixation/stabilization of soils is accomplished by injecting stabilization agent into the affected soil matrix and mixing the soil with the stabilization agent. Agents can be injected into soil and mixed with augers or injected and simultaneously mixed via high pressure jets. The application method chosen for a Site is generally based on the location of the soils to be remediated. A distinct advantage of in-situ chemical stabilization/fixation is that remote, subsurface soil can be treated without excavation of non-impacted surface soil.

A USEPA fact sheet, "Immobilization As Treatment" (OSWER Publication 9380.3-07FS), presents USEPA policy on evaluating stabilization technologies. The policy requires for certain waste complexes that stabilized waste are tested using the Total Waste Analysis (TWA) procedure to demonstrate that a significant reduction (i.e., a 90 to 99 percent reduction in the concentration of chemicals) has been achieved. There are also additional tests, which can be done to verify the integrity of the stabilized mass. They include: (1) toxicity characteristic leaching procedure (TCLP) for treated waste that is placed in a secure landfill; (2) the multiple extraction procedure methodology described in the US Federal Register, Vol. 47, No. 225, Nov. 22, 1982; and (3) the Unconfined Compressive Strength (UCS) test described in a research paper, "An Assessment of Material that Interfere with Stabilization/Solidification Process," by M. John Cullinane et al., US Army Engineer Waterways Experiment Station, Vicksburg, MS, 1987. When the treated waste remains in the environment, SPLP testing could be an appropriate substitute for the TCLP in gauging effectiveness.

3.1.3.1 *Ability to Meet Medium-Specific Remedial Action Objectives*

In-situ chemical stabilization/fixation has been proven at other sites to be an effective treatment technology for immobilization of inorganics in soil. However, the concentrations of nickel in source soil at the Site may reduce the effectiveness of this technology. It is, therefore, uncertain whether this technology would fulfill the RAO to prevent the potential for future leaching of nickel in soil to ground water.

In-situ chemical stabilization/fixation would not eliminate any potential direct contact risks that may be associated with Site soil concentrations above the NYSDEC RSCO guidance values. As a result, chemical/fixation stabilization of the source material would not fulfill the RAOs.

3.1.3.2 *Short-Term and Long-Term Effectiveness*

For low to moderate concentrations of inorganics in soil, in-situ chemical fixation/stabilization is an effective remedial technology to prevent unacceptable leaching to ground water. Preventing leaching to ground water was identified as an RAO. The effectiveness of stabilization for the source soil located in DW-4 is highly questionable given the nickel concentrations observed in the soil at this location, as well as the presence of other metals at elevated concentrations. The other metals in soil may compete for binding with the stabilization agent, and thus reduce its effectiveness in treating nickel. Over the long-term, this technology would not change the nickel concentration in source material. Hence, any potential direct contact risks that may be associated with Site soil concentrations above the NYSDEC RSCO guidance values in this area would not be eliminated with this technology.

3.1.3.3 *Implementability*

The Site is accessible to the type of heavy equipment needed for application of the stabilization agents. Mobile treatment units for stabilization are available but mobilization costs can be high. Installation of an in-situ stabilization auger within DW-4 would be difficult to implement due to the proximity of the dry well to the existing Site building and on-going Site operations. Although the dry well could be accessed to facilitate in-situ treatment of soil within and beneath this structure, other methods are available that would reduce the potential for leaching of nickel in soil to ground water (i.e., removal of source material and storm water reconfiguration). Due to the high mobilization costs, in-situ stabilization would not be cost effective for the other remaining nickel areas. Other problems associated with stabilization are a potential volume increase resulting from the addition of some stabilization agents and dust generation.

3.1.3.4 *Evaluation Summary*

The reliability of this technology to be effective in stabilizing soil in the source area is uncertain. This uncertainty, coupled with the elevated nickel concentrations in the stabilized source area that would remain would continue to present a potential for future leaching to ground water from soil in the source area. Additionally, this technology has implementability concerns, particularly in ensuring the delivery of stabilization agent to the entire source area. Furthermore, storm water reconfiguration of the upgradient dry wells DW-1 and DW-2 in conjunction with source removal and cover maintenance would be a more cost effective solution to eliminate the potential for future leaching to ground water from the source area as well as residual soil beneath DW-4. In conclusion, this technology is not carried forward to the development of alternatives section.

3.1.4 *Excavation and Off-Site Disposal*

This technology would entail excavation and off-Site disposal of material from the source area. This technology could also apply to a large scale excavation of soils to 15 feet below grade that exceed NYSDEC RSCO guidelines. Excavation of sourceDW-4 source material would be accomplished through the use of heavy equipment utilizing a clam shell bucket.

Excavation of the source material at DW-4 to a depth of 25 feet below grade would require the installation of sheet piling to stabilize the excavation area as well as shoring to maintain the integrity of the existing on-Site building due to the proximity of the building to the excavation area.

Large-scale excavation of soils to a depth of 15 feet below grade would require more extensive shoring, and possibly building demolition since these areas abut the on-Site building at 270 Duffy Avenue. In addition, depending on the extent of excavation, removal and replacement of existing dry wells could be required.

To address the pre-disposal goal, soil would be excavated to a depth of 15 feet below grade and disposed at an off-Site disposal facility. As discussed in Section 2.2.1.1.5, Site soil is not a RCRA characteristic hazardous waste. For the purpose of the FS, it is assumed that DW-4 soil would be transported and disposed off-Site at a RCRA-permitted facility as a hazardous waste though its final disposition will be subject to waste characterization and disposal classification. Site soil outside of the source area at DW-4 would be disposed at a non-hazardous waste landfill.

3.1.4.1 *Ability to Meet Medium-Specific Remedial Action Objectives*

Excavation and off-site disposal would be effective in reducing the concentrations of COPCs in Site soil below the NYSDEC RSCO guidelines. Excavation and off-Site disposal of soil located within dry well DW-4 in conjunction with a Site cover would also eliminate the potential for nickel in this soil to leach to ground water in the future. This technology would be used in conjunction with one or more of the other RA technologies to address the RAOs.

3.1.4.2 *Short-Term and Long-Term Effectiveness*

Excavation and off-Site disposal of soil is a common practice in site remediation and has been proven to be effective at numerous sites. Excavation and off-site disposal provide long term effectiveness by reducing the concentrations of COPCs in Site soil to below the NYSDEC RSCO guidelines. Excavation of source material from dry well DW-4 and a Site cover would eliminate the potential for nickel in remaining soil to leach to ground water in the future.

3.1.4.3 *Implementability*

Excavation of source material at DW-4 to 25 feet below grade is technically feasible and would remove the source area and majority of nickel mass from the Site.

As shown in Figure E-1 (see Appendix E), soil concentrations exceed the NYSDEC RSCO guidelines at depths greater than 46 feet in some areas that are located immediately adjacent to buildings. Given the spatial limitation between Site buildings and property limits, excavation to those depths would require building demolition. Excavation to a maximum of 15 feet would eliminate the majority of any nickel mass and partially restore the Site to a reasonably environmentally sound condition that existed prior to the release. However, this engineering feat would require extreme sheeting and shoring of Site buildings and may require building demolition. Removal and replacement of subsurface drainage structures would also be required.

The Site buildings are currently in active commercial use and vehicle parking currently occupies most of the soil areas presented in Figure E-1 that contain COPCs at concentrations that exceed the NYSDEC RSCO guidelines. Due to the current active commercial use of the Site buildings and the adjacent parking areas, soil excavation would likely require building shut-down during excavation. Furthermore, due to spatial limitation, on-Site storage and stockpiling space for excavated soil is limited. These limitations would apply to both source removal and full-scale excavation. However, focused source removal in DW-4 could be accomplished without significant disruption of commercial activity, whereas broader soil removal would raise significant implementability issues.

3.1.4.4 *Evaluation Summary*

Source removal would restore the Site to a reasonably environmentally sound condition. Full-scale excavation of soils to a depth of 15 feet below grade would remove additional impacted soils. This technology will therefore be retained and be developed into an alternative.

3.1.5 ***Ground Water Monitoring***

This technology would entail annual collection and analysis of ground water samples from three to six ground water monitoring wells located on and off-Site to confirm decreasing concentrations of nickel in the ground water (see below for off-Site ground water monitoring well siting). Ground water monitoring would be conducted for a period of five (5) years.

Ground water samples from ERM-2, AMS-2, LMS-4, and ERM-3 have contained nickel concentrations in excess of the 100 µg/l New York State Class GA ground water standard. Ground water samples from all other on-Site and off-Site sampling locations have not contained nickel at concentrations above this standard.

Future sampling would be limited to select existing and new well(s) within and downgradient of the source area that have contained nickel concentrations above the Class GA ground water standard. The ground water samples would be collected using low-flow sampling methods and analyzed for nickel, as nickel is the principal ground water COPC (see Section 2.2.1.2.1). The results of the annual monitoring rounds, which would be used to document on-Site and off-Site ground water concentrations of nickel, would be reported to NYSDEC. At the conclusion of five (5) years of ground water monitoring, a review of the data would be conducted to confirm that ground water monitoring may cease. This time frame would be consistent with the EPA five-year review process in the Superfund program (EPA, 2003).

Off-Site Ground Water Monitoring Well Siting

One or two off-Site ground water monitoring wells would be installed further downgradient of the Site. This well (or wells) would be placed at a location between the Site and the downgradient public supply wells. The monitoring well location(s) would be determined through the installation and sampling of temporary wells that would be sampled at varying depths for nickel.

3.1.5.1 *Ability to Meet Medium-Specific Remedial Action Objectives*

As shown in Figure 1-11, concentrations of nickel in ground water samples from on-Site monitoring well LMS-4, located downgradient of dry well DW-4 have decreased over the past few years. Nickel concentrations have decreased in monitoring well LMS-4 from 8,770 µg/l during the 1996 RI sampling to 887 µg/l during the 2003 post-SRI sampling. However, AMS-2 has shown a less consistent decreasing trend, declining from 3,280 µg/l during the 1996 RI sampling to 2,310 µg/l during the 1998 post-SRI sampling, followed by a subsequent increase to 2,840 µg/l during the 2003 post-SRI sampling.

While ground water samples collected from off-Site temporary monitoring wells (see Figure 1-11) during the June 1998 post-SRI sampling contained nickel concentrations significantly less than the 100 µg/l New York State Class GA ground water standard, nickel was later detected at elevated concentrations during the March 2002 vertical profiling and subsequent January 2003 sampling of ERM-3. However, sampling results establish that the ground water containing nickel in excess of the Class GA nickel standard follows a narrow, southerly flow path within the shallow aquifer that is defined by the ERM-2, LMS-4, AMS-1, and ERM-3 locations and bounded to the east and west by VP-N and VP-E.

Annual ground water monitoring would be conducted to confirm decreasing nickel concentrations in on-Site or off-Site ground water following source removal. Also, the monitoring will confirm the model prediction that nickel concentrations decrease as the distance from the Site increases and do not threaten downgradient public supply wells. This technology would be used in conjunction with one or more of the other RA technologies to address the RAOs.

3.1.5.2 *Short-Term and Long-Term Effectiveness*

Ground water monitoring is routinely conducted at sites and is effective in determining concentrations of chemicals in ground water.

3.1.5.3 *Implementability*

There are existing ground water monitoring wells located at the Site downgradient of dry well DW-4. Ground water monitoring well installation is readily implementable at the Site. However, permitting to install off-Site wells may be difficult to accomplish with the Town of Oyster Bay. Additionally, the availability of right-of-ways and public land for siting well locations is extremely limited in the area of the Site and could restrict the available choices for well siting. However, these obstacles could likely be managed. Therefore, this technology is considered implementable.

3.1.5.4 *Evaluation Summary*

Ground water monitoring is both effective and implementable. This technology is therefore carried forward to the development of alternatives section.

3.1.6 ***Ground Water Extraction***

Groundwater extraction involves pumping of groundwater to withdraw water and its dissolved and entrained constituents from the aquifer. This pumping can be used to contain, reduce, remove, divert, or prevent development of chemical plumes. The use of extraction wells is most effective when the targeted chemicals of concern are miscible and move readily with the groundwater and the hydraulic conductivity is high.

Groundwater extraction must be used in conjunction with other technologies (i.e., treatment and/or disposal methods) in order to manage the extracted groundwater. As presented in Appendix D, groundwater flow modeling was performed to evaluate various extraction well scenarios. The modeling indicates that the most effective scenario consists of two groundwater extraction wells, with each pumping at 60 gallons per minute (gpm) placed between the Site and the downgradient supply wells.

3.1.6.1 *Ability to Meet Medium-Specific Remedial Action Objectives*

The ground water modeling demonstrates that the wells would capture the nickel plume in the Upper Glacial Aquifer. This action would address the portion of the aquifer that contains nickel in excess of Class GA standards. In capturing the dissolved nickel in the Upper Glacial Aquifer, the technology would eliminate any potential for the dissolved nickel plume to reach the downgradient water supply wells, though modeling and empirical data confirm that this has not occurred and will not occur. Therefore, the ground water extraction technology would provide a basis to evaluate whether ground water can be restored to pre-release conditions in a manner needed to protect human health and the environment and satisfy the ground water RAO.

3.1.6.2 *Short-Term and Long-Term Effectiveness*

The long-term effectiveness of an extraction well is dependent upon proper location, well installation and development procedures, and the hydraulic properties of the aquifer. The groundwater flow model in Appendix D indicated that the groundwater nickel plume could be most effectively captured by two groundwater extraction wells operating at 60 gpm. Although actual well placement would be based on pre-design information, based on the conservative prediction of the model, one well would be located in the vicinity of Blueberry Lane and the other well would be located in the vicinity of Hempstead Avenue.

During the installation of the extraction wells, drilling equipment would be situated on the public access ways. Also, during installation of the wells, workers could be exposed to nickel-impacted soil and groundwater. This potential for exposure would be addressed by following appropriate health and safety precautions, and wearing the correct personal protective equipment as identified in a project Health and Safety Plan. Therefore, short-term impacts from this technology are expected to be minor.

3.1.6.3 *Implementability*

The equipment and materials for extraction wells are readily available. The administrative implementability of this technology is dependent upon obtaining approval from public and, if no public site use is authorized, from private entities affected by the final well placement. The administrative implementability of this option is dependent on the such approvals, and cannot be quantified at this time.

3.1.6.4 *Evaluation Summary*

The groundwater model in Appendix D demonstrates that two extraction wells can be used to capture the groundwater nickel plume and prevent unacceptable groundwater concentrations at the downgradient water supply well. Short-term effects would be limited. This technology is technically feasible, but its administrative implementability is uncertain.

This technology is carried forward to Section 3.2, Evaluation and Selection of Applicable Remedial Action Technologies.

3.1.7 *Groundwater Treatment (Physical/Chemical)*

To address treatment of groundwater containing nickel, two options are available: 1) precipitation and filtration and 2) ion exchange. Either option would need to be bench-scale tested to confirm its viability for use based upon Site-specific parameters. A generalized process flow diagram of each of these options is presented in Figures 3-1and 3-2, respectively.

As part of this technology, piping is needed to convey recovered groundwater to a treatment location. Also, a treatment building would be necessary.

Precipitation and Filtration

Heavy metals, such as nickel, can be removed from water via chemical precipitation as hydroxides, followed by clarification and/or filtration. Clarification uses gravity to settle the precipitated metals to the bottom of a tank. Filtration is a solid-liquid separation process where the liquid is passed through a porous medium (such as sand) to remove the precipitated metals.

Typically, heavy metals are most soluble under acidic conditions, and are less soluble, and hence more likely to precipitate under alkaline conditions. The optimum pH for nickel precipitation is in the range of 10 to 11standard units. Since groundwater pH is typically in the range of 6 to 8 standard units, pH adjustment is necessary to promote nickel precipitation. The pH is commonly increased by the addition of basic chemicals, such as sodium hydroxide, lime, and magnesium hydroxide.

Following chemical precipitation, additional chemical coagulants may need to be added to ensure the resulting floc particles are large and heavy enough to be removed by clarification and/or filtration. Because nickel would likely require removal to 100 μg/L (i.e., the New York State Class GA ground water standard), clarification followed by filtration as a polishing step is the recommended treatment process.

Given Site conditions, where the nickel concentrations are relatively low, the addition of chemical coagulants becomes increasingly important in order to create a settleable floc. The additional coagulant will create an increased amount of sludge that would require off-Site disposal.

Ion Exchange

Ion exchange is a reversible chemical reaction in which an ion from solution is exchanged for a similarly charged ion attached to an immobile solid particle. In wastewater treatment, ion exchange has been used to recover concentrated metal solutions by exchanging one ion, electrostatically attached to a solid resin material, for a metal ion dissolved in the wastewater. Typically, the ion exchange media is a synthetic organic resin. To remove nickel, a cationic resin would be required. The resin is placed in a bed or packed column, and the wastewater is passed through it. Once the resin is spent, it may be regenerated by backwashing with a strong acid such as hydrochloric acid.

3.1.7.1 *Ability to Meet Medium-Specific Remedial Action Objectives*

This remedy used in conjunction with groundwater extraction would be capable of meeting the RAO of preventing unacceptable groundwater concentrations at the supply well. Additionally, the nickel concentration would be reduced to a concentration less than the Class GA standard of 100 μg/L.

3.1.7.2 *Short-Term and Long-Term Effectiveness*

Precipitation and Filtration

Precipitation and Filtration has been an effective technology for removal of nickel from various wastewater streams at other sites. The theoretical solubility of nickel hydroxide at a pH of 10 is 3.25 μg/L. Therefore, this process is expected to be able to reduce nickel to concentrations below the Class GA ground water standard.

The treatment effectiveness depends on several factors including pH, presence of chelating agents, use of treatment chemicals such as coagulants and polymers, and the filtration equipment used. Prior to the implementation of a full-scale system, bench-scale testing would be needed to optimize the full-scale design, determine what treatment chemicals are needed, determine the amount of treatment chemicals needed, determine the most appropriate filtration equipment, and estimate the amount of sludge production.

Ion Exchange

Ion exchange is a proven technology for the removal of nickel. Cationic resins are available which have a high affinity for heavy metals such as nickel, iron, and copper, but have a low affinity for earth metals such as magnesium, calcium, sodium, and potassium. Ion exchange is capable of reducing nickel concentrations below the Class GA groundwater standard of 100 μg/L.

3.1.7.3 *Implementability*

Piping for the conveyance of recovered groundwater to a treatment system would need to be located on or beneath various off-site properties. The administrative implementability of this technology is dependent upon obtaining approval from the Town of Oyster Bay and other private entities affected by the location of the recovery wells. The time necessary to procure these approvals could be lengthy, including the approvals required to conduct work on the Town of Oyster Bay right-of-way.

There is limited off-site space to locate the above-ground treatment plant for recovered ground water. Hence, the recovered ground water would have to be conveyed back to the Site. The treatment facility would need to be housed on a large section of the existing parking area. This would adversely affect operating businesses on the Alsy premises that have no connection with the historic environmental condition that is the subject of this FS. Therefore, the administrative implementability of this option is dependent on numerous public and private party approvals which are currently unknown.

The implementability of the two options is presented in the following sections.

Precipitation and Filtration

Metals removal systems, which employ precipitation followed by filtration, have been used extensively in groundwater treatment. The equipment is readily available. However, in order to increase the pH to the level where nickel precipitates (pH 10 to 11), significant amounts of sodium hydroxide must be added. In addition, similar amounts of acid would be added to neutralize the groundwater prior to discharge. Depending on the chosen method for discharge of the treated groundwater, it is possible that the elevated levels of sodium in the groundwater would need to be addressed, potentially requiring NYSDEC approval for discharge of sodium above the Class GA ground water standard of 20 mg/L

. It is possible to use other chemicals, such as lime, to raise the pH. However, these chemicals would likely be needed in greater quantities than sodium hydroxide.

Ion Exchange

Packaged ion exchange systems are available for the removal of nickel, iron, and other heavy metals at the design flow rate of 120 gpm. These systems contain multiple resin vessels piped in series. With the packaged systems, the regeneration is fully automatic, and the vessels are operated in a lead/lag fashion, such that the most recently regenerated vessel is last in the series. The use of multiple beds allows for continuous operation, even during regeneration.

The presence of iron, organic compounds, and particulates can all reduce the performance of an ion exchange resin. Iron will be present in the extracted groundwater. However, concentrations are low enough to allow for treatment with the ion exchange resin. To protect the resin from fouling by particulates, a bag or cartridge filter would be necessary upstream of the ion exchange system. Downstream of the filter, an activated carbon filter would be needed to remove any potential volatile organic compounds (VOCs) present in the groundwater. This is included because the area of Hicksville is known to have areally impacted VOC problems and is necessary to protect the ion exchange resin. After passing through the carbon, the extracted groundwater would be treated with the ion exchange resin. Once the resin is spent, it would be regenerated with an acid wash, which removes the nickel and iron. This waste solution would contain very high levels of nickel and iron and would require off-site disposal.

3.1.7.4 *Evaluation Summary*

There are significant administrative implementability concerns over the ability to obtain approval to locate groundwater conveyance piping along town roads and other properties. Additional discussion for the two options is provided in the following sections.

Precipitation and Filtration

Precipitation and filtration has been used extensively for the removal of heavy metals from groundwater. Accordingly, the equipment for this option is readily available. The option is also technically implementable. However, significant amounts of treatment chemicals would be needed.

Ion Exchange

Ion exchange is a viable technology for removal of nickel from groundwater, and is well-suited for this application for the following reasons: 1) ion exchange resins, which are selective to heavy metals such as nickel are commercially available in packaged units with the necessary capacity, 2) it is capable of meeting the Class GA groundwater standards for nickel, iron, and manganese, and 3) used in conjunction with groundwater extraction, it will help meet the RAO of preventing unacceptable groundwater concentrations at the supply well. Iron and manganese are a concern for fouling of equipment.

Although this technology has considerable implementability concerns, largely administrative rather than technical, groundwater treatment (physical/chemical) will be carried forward to Section 3.2, Evaluation and Selection of Applicable Remedial Action Technologies. It will be included as part of the alternative conceived to restore ground water to pre-release conditions, if needed to protect human health and the environment, to the extent feasible and authorized by law. The ground water treatment options of precipitation and filtration, and ion exchange will both be considered in the final evaluation.

3.1.8 *Groundwater Discharge*

To address the discharge of treated groundwater, three options are available: 1) reinjection well, 2) discharge to POTW, and 3) discharge to recharge basin.

Reinjection Well

A reinjection well can be used to accept the treated groundwater for reinjection. Water is injected below the water table and the drop pipe inside the reinjection well is sized to maintain full pipe flow to prevent the entrainment of air into the reinjected water. Entrained air will contribute to the rapid clogging of the soil formation around the well. Typically, piezometer wells are provided near the reinjection well to check for water level differences between the well and the piezometer, which may indicate clogging of the reinjection well or soil formation.

Treated groundwater would need to be returned to the aquifer at an upgradient location. Groundwater flows across the site to the south, and the plume of elevated nickel concentrations extends southward from the approximate vicinity of well ERM-02. Therefore, the reinjection well would need to be located at the far northern boundary of the property.

Discharge to POTW

This technology entails discharging the treated groundwater to the sanitary sewer for conveyance to the local publicly-owned treatment works (POTW).

Discharge to Recharge Basin

This technology entails the discharge of treated groundwater to a local recharge basin (i.e., a sump) for subsequent groundwater recharge. Conveyance to the recharge basin may be accomplished via a storm sewer, or a separate pipe may need to be installed from the treatment plant to the recharge basin. Operation of this technology may include periodic clean out of the recharge basin due to the precipitation of metals, such as iron and manganese. The presence of these metals in the treated effluent will depend on the selected groundwater treatment technology.

3.1.8.1 *Ability to Meet Medium-Specific Remedial Action Objectives*

Groundwater discharge alone will not meet any of the remedial action objectives. This technology would be used in conjunction with groundwater extraction and groundwater treatment (physical/chemical) in order to meet the RAO of preventing unacceptable groundwater concentrations at the downgradient water supply well.

3.1.8.2 *Short-Term and Long-Term Effectiveness*

Discharge to a Recharge Basin is routinely conducted on Long Island for stormwater management and has been used for the discharge of treated groundwater from remediation sites. This would be the most practicable option, as discharging to the local POTW would require an evaluation of the ability of the local sanitary sewer piping, and the POTW, to handle the significant increase in flow. Although a reinjection well could be designed to handle the volume of water requiring discharge, there are some concerns regarding potential fouling of the formation around the injection well.

3.1.8.3 *Implementability*

The implementability of groundwater discharge is dependent upon the selected option. All three options are technically implementable. However, there are significant concerns over the administrative implementability of each option.

Discharge to POTW is not likely to be an implementable option. Discussions with the Nassau County Department of Public Works have indicated a reluctance to accept treated remediation wastewater into the sanitary sewer system due to large flow rates, and the subsequent ability to interrupt biological treatment processes of the POTW.

For discharge to a recharge basin, treated groundwater could be discharged to the nearest catch basin located on the north side of Duffy Avenue, and conveyed to the nearest recharge basin, which is located about 2000 feet west of the site at the northwest intersection of Duffy Avenue and Charlotte Avenue. Connection to the catch basin could be performed, if the pipe has sufficient capacity. If not, a new pipe would require installation from the Site to the recharge basin.

These two options are both technically feasible. Approval from the Town of Oyster Bay would be required to allow connection to the catch basin and subsequent discharge to the recharge basin. Also, a road opening permit from the Town of Oyster Bay would be required to allow connection of piping from the groundwater treatment system to the catch basin. A similar permit would be required for the installation of a new pipe along Duffy Avenue to the recharge basin. The time necessary to procure the approval could be lengthy, including approvals to conduct work on the Town of Oyster Bay right-of-way. Therefore, the administrative implementability of this option is dependent on the Town of Oyster Bay's approval, and is therefore uncertain.

3.1.8.4 *Evaluation Summary*

In summary, all three options for groundwater discharge are effective. However, it would not be feasible to obtain approval to discharge to the local POTW. For discharge to a recharge basin, there is some uncertainty associated with the administrative implementability, and the approval process could be lengthy. However, discharge to recharge basin represents the most feasible option for groundwater discharge.

Therefore, discharge to groundwater via a recharge basin is carried forward to Section 3.2, Evaluation and Selection of Applicable Remedial Action Technologies.

3.2 *EVALUATION AND SELECTION OF APPLICABLE REMEDIAL ACTION TECHNOLOGIES*

Based on the identification and screening presented in Section 3.1, seven (7) remedial actions technologies for the Site are retained for further analysis and for use in developing remedial action alternatives. The technologies include: Deed (Use) Restrictions, Storm Water Reconfiguration, Excavation and Off-Site Disposal, Ground Water Monitoring, Ground Water Extraction, Ground Water Treatment, and Ground Water Recharge via Discharge to Recharge Basin.

4.0 *DESCRIPTION AND EVALUATION OF REMEDIAL ACTION ALTERNATIVES*

As discussed in Section 2.2, RAOs were identified for the two media of interest at the Site, Site soil and on-Site and off-Site ground water. The RAOs for these media of interest are:

Soil

- prevent ingestion of, direct contact with, and/or inhalation of contaminated soil/sediment ; and
- prevent the potential for future leaching of nickel from soil/sediment to ground water from dry well DW-4.

Ground Water

- continue to prevent ingestion of on-Site ground water;
- prevent unacceptable ground water concentrations of nickel at water supply wells;
- prevent continued leaching of nickel to ground water to the extent practicable; and
- if practicable (i.e., technically and economically feasible) and if needed to protect human health and the environment, restore the impacted area within ground water aquifer to pre-release conditions.

Section 3.0 evaluated eight RA technologies for soil and ground water. Of these, seven technologies were selected for development into RA alternatives. The seven RA technologies are:

1. Deed Restrictions;
2. Storm Water Reconfiguration;
3. Soil Excavation and Off-Site Disposal;
4. Ground Water Monitoring;
5. Ground Water Extraction;
6. Ground Water Treatment (Physical/Chemical); and
7. Ground Water Recharge via Discharge to Recharge Basin.

Each of these technologies generally satisfies some but not all of the RAOs defined in Section 2.0 for Site soil and on-Site and off-Site ground water. These technologies have been combined in this section to form comprehensive approaches (i.e., RA alternatives) to satisfy the RAOs for these media of interest.

Using these remedial technologies, the RA alternatives developed for the Site are:

Alternative I:	No Action (Section 4.1)
Alternative II:	Continued Commercial Use with Source Removal/Stormwater Control and Ground Water Monitoring (Section 4.2)
Alternative III:	Excavation and Off-Site Disposal of Soil Exceeding the NYSDEC RSCO Guidelines to a Depth of 15 Feet, Source Removal/Stormwater Control and Active Ground Water Remediation (Section 4.3)

RA alternatives are conceptual approaches to site remediation. They demonstrate how the technologies selected for the alternative can be used to achieve the RAOs and provide a basis by which to estimate the potential costs associated with implementation of the alternative.

In accordance with the NYSDEC FS TAGM 4030 (NYSDEC, 1990), Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA (USEPA, 1988), *Draft* DER-10 (NYSDEC, 2002), Technical Guidance for Site Investigation and Remediation, and the National Contingency Plan, each alternative has been evaluated for the following criteria:

- overall protection of human health and the environment;
- compliance with SCGs;
- long-term effectiveness and permanence;
- reduction of toxicity, mobility or volume through treatment;
- short-term effectiveness;
- implementability; and
- cost.

Overall protection of human health and the environment is a threshold criterion. Similarly, compliance with promulgated standards and criteria is a threshold criterion while engineering judgment can be factored into the ability of a remedial alternative to comply with guidance. The remaining five evaluation criteria are referred to as "balancing criteria". They offer a basis to compare the remedial action alternatives as part of the decision-making process that results in a recommended remedial action alternative.

According to 6 NYCRR 375 1.10(c)(5), the criterion, "reduction of toxicity, mobility or volume", relates to a reduction in these factors for site hazardous wastes and/or constituents. NYSDEC guidance (NYSDEC, 2002) also includes a reduction in these factors for all Site contamination. These NYSDEC regulations and guidance are consistent with EPA guidance (EPA, 1988), which indicates that this criterion relates to changes in one or more of the characteristics of the hazardous substances or contaminated media. Under all definitions, preference is given to those alternatives that include treatment to address this criterion. As such, this criterion will review changes in the toxicity, mobility and volume of hazardous waste and the Site COPCs.

An evaluation of each of these criteria for the three above-referenced RA alternatives is provided along with a description of the respective alternative in Sections 4.1 through 4.3. Detailed cost estimates for each alternative are provided in Appendix F. These are conceptual design cost estimates and changes in the quantities of the media of interest requiring remediation (e.g., volume of soil requiring excavation), detailed engineering, as well as other factors not foreseen at the time this report was prepared, could increase costs by as much as 50 percent or decrease costs by as much as 30 percent, as defined in Section 6.2.3.7 of Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA (USEPA, 1988).

The conceptual design costs also include future engineering costs associated with the RA alternatives. Hence, the present worth of these future costs are discounted by five percent. This discount rate, which corresponds to the current interest rate for a 30-year treasury bond, was selected to "produce an amount at which the environmental liability theoretically could be settled in an arm's length transaction with a third party, or if such a rate is not readily determinable, the discount should not exceed the interest rate on "risk-free" monetary assets with maturities comparable to the environmental liability" in accordance with the US Securities and Exchange Commission (SEC) Staff Accounting Bulletin (SAB) No. 92 (SEC, 1993). SAB No. 92 provides generally accepted accounting principles for estimating and reporting environmental liability.

After the RA alternatives have been evaluated in this section, the preferred RA alternative for the Site will be selected in Section 5.0. This selection will be based on a comparison of the evaluation criteria for each of the alternatives. This comparison will be provided in Section 5.2. The results of this comparison and the factors considered in selecting a preferred RA alternative will then be provided in Section 5.3.

The selected RA alternative may be modified during the RA design phase if the modified approach achieves the same level of protection to public health or the environment at a similar or lower cost.

4.1 *ALTERNATIVE I: NO ACTION*

The NYSDEC Inactive Hazardous Waste Disposal regulations at 6 NYCRR Part 375-1.10(c) states that a remedial program for a site listed on the New York State Registry of Inactive Hazardous Waste Disposal Sites must not be inconsistent with the National Contingency Plan (NCP, 1990). Section 300.430(e)(6) of the NCP recommends describing and evaluating a no action alternative as a measure of identifying the potential problems posed by a site if no RAs were to be implemented. In response, Alternative I: No Action, is described and evaluated in this section.

4.1.1 *Description*

Under the No Action alternative, existing use restrictions (i.e., New York State Department of Health (NYSDOH) ground water use restrictions and existing Site zoning as H-Light Industry) would be maintained. However, a deed restriction would not be filed. No other actions would be conducted under this alternative.

4.1.2 *Evaluation*

In accordance with NYSDEC guidance for the selection of RA alternatives at inactive hazardous waste sites (NYSDEC, 1990), USEPA RI/FS guidance (USEPA, 1988) and Section 300.430 of the NCP, this alternative is evaluated for the seven criteria listed in Section 4.0.

4.1.2.1 *Overall Protection of Human Health and The Environment*

The existing zoning regulations restrict land uses at the Site. However, property owners are allowed to petition the Town of Oyster Bay to allow the property to be used for certain non-prohibited purposes. As a result, Alternative I would not prevent the possibility, however remote, that the Site could be used for a purpose that would increase the chance of exposure to COPCs and hence, pose unacceptable risks in the future. Under this alternative, potential direct contact risks for construction workers would not be mitigated. In addition, Alternative I would not address the source material present in the abandoned dry well (DW-4). This material poses potential leaching to ground water risks and direct contact risks for construction workers. Therefore, this alternative would not ensure adequate protection of human health and environment.

Through existing ground water use restrictions, which would continue to be maintained by the NYSDOH (i.e., water supply well prohibition), Alternative I would continue to prevent ingestion of on-Site ground water. Due to the depth of Site ground water (i.e., 58 to 65 feet bgs), direct contact with on-Site impacted ground water during any future construction activities is not anticipated. Because this alternative does not remove the source of nickel contributing to ground water contamination and does not provide measures to ensure that ground water concentrations diminish with time, this alternative would not provide adequate protection of the environment for ground water.

4.1.2.2 *Compliance with SCGs*

Table 4-1 lists the SCGs that may be applicable or relevant and appropriate to the RAs at the Site. Alternative I would not meet the SCGs for Site-soil/source material (i.e., NYSDEC RSCO guidelines) in the abandoned dry well. Alternative I would not reduce the concentration of nickel in on-Site or off-Site ground water to levels that would comply with the Class GA ground water standards in the Upper Glacial Aquifer. Although predictive modeling and current data indicate that Class GA ground water standards are met at downgradient public supply wells, Alternative I would not address removal of the source material and would not include confirmatory ground water monitoring after source removal.

The remaining SCGs and TBCs apply to actions that are not proposed under this alternative.

4.1.2.3 *Long Term Effectiveness and Permanence*

Long-term effectiveness and permanence is measured by the magnitude of the residual risk and the adequacy and reliability of controls.

Under Alternative I, the source material would remain at the Site and no ground water monitoring would be conducted on-Site or off-Site. Because the source material would not be removed, this alternative would not provide any long term effectiveness or permanence.

4.1.2.4 *Reduction of Toxicity, Mobility or Volume*

As discussed in Section 4.0, this criterion evaluates changes in the toxicity, mobility and volume of hazardous waste and COPCs. As discussed in Section 2.2.1.1.4, soil within former dry well is the source of nickel contamination in the groundwater.

Under Alternative I, there would be no reduction in the toxicity, mobility or volume of the source material present in former dry well DW-4. In addition, this alternative would not provide a means to determine whether source removal results in a reduction in the toxicity, mobility or volume of impacted on-Site or off-Site ground water.

This alternative is not a permanent remedy.

4.1.2.5 *Short-Term Effectiveness*

There are no short-term effects associated with the Alternative I since there are no actions included with this alternative.

4.1.2.6 *Implementability*

As there are no actions related to this alternative, it would be readily implementable. However, its approval is unlikely because it fails to adequately meet the threshold criteria..

4.1.2.7 *Cost*

There are no costs associated with the implementation of Alternative I.

4.2 *ALTERNATIVE II: CONTINUED COMMERCIAL USE WITH SOURCE REMOVAL/STORMWATER CONTROL AND GROUND WATER MONITORING*

4.2.1 ***Description***

Alternative II would consist of the following tasks:

- Deed Restrictions (Task No. 1);
- Site Preparation and Mobilization (Task No. 2);
- Source Removal (Task No. 3);
- Ambient Air Monitoring for Particulates (Task No. 4);
- Dry Well Abandonment and Storm Water Reconfiguration (Task No. 5);
- Well Siting and Installation of Off-Site Monitoring Well (Task No. 6); and
- Ground Water Monitoring (Task No. 7).

The construction portion of this alternative could be completed within one year of NYSDEC approval of a Remedial Design (RD). The duration of the O&M and monitoring tasks is discussed below.

This RA alternative would address the principal threat waste by removing source material in DW-4. In addition, it would re-configure stormwater flow to control infiltration, install off-Site monitoring well(s) to monitor the reduction in groundwater impacts resulting from source removal; and institutional controls to limit exposure to Site soils (i.e. Deed restriction). A separate document describing the proposed content and form of the deed restriction would be submitted to the NYSDEC.

4.2.1.1 *Task No. 1: Deed Restrictions*

This task would restrict future uses of the Site to activities consistent with the current zoning. In addition, the Deed restriction would specify the requirement to maintain Site covers and obtain NYSDEC approval for any future intrusive work.

The existing limitations for Site use are:

- Part 5 of the New York State Department of Health State Sanitary Code which prohibits installation of a private potable water supply well in areas which are served by a public water supply system; and
- continued applicability of the existing light industrial zoning designation for the Site by the Town of Oyster Bay.

There is no action that would need to be taken to enforce these existing restrictions.

4.2.1.2 *Task No. 2: Site Preparation and Mobilization*

The task would include: mobilization of equipment to the Site; establishment of the decontamination area; provision of temporary facilities and utilities, as needed; relocation of the employee entrance and delivery/loading area for the current Site operations in the rear courtyard; and establishment of the exclusion zone for the DW-4 area. This task would take approximately 1 week to complete.

4.2.1.3 *Task No. 3: Source Removal*

Under this alternative, the visually impacted soil/sediment located in the abandoned dry well DW-4 would be excavated and removed from the Site. Visually impacted soil/sediment in this structure extends from 11 to 21 feet below grade. As discussed in Section 2.2.2.1.5, the bulk of the nickel mass at the Site resides in this area and is the source of nickel in ground water. Consequently, this source area would be addressed.

Because dry wells are designed to promote infiltration of water into the subsurface, additional impacted soil may be present immediately adjacent to the presumed 8-foot diameter dry well. Pre-design soil sampling would be conducted around DW-4 to confirm the lateral extent of nickel-impacted soil. Using a Geoprobe, soil probes would be advanced at locations east, west, and north of DW-4. Soil samples would be collected and analyzed for total nickel.

A 45-ton crane with clamshell bucket would be mobilized to the Site to remove impacted DW-4 soil/sediment. Sheet piles would be installed around the perimeter of the excavation. Shoring would be installed to maintain building stability by driving vertical I-beams and connecting them with steel plates. For cost estimation purposes, it has been assumed that the extent of impacted soil would be 12-feet centered upon DW-4. Based on an excavation diameter of 12-feet and total depth of 25 feet, approximately 105 cy of soil would be removed for off-Site disposal. Supplementary perimeter sheet piles would be installed in a box surrounding the excavation approximately 12 feet by 12 feet by 25 feet deep. Shoring would be installed along 30 feet of the adjacent building.

Excavated materials would be stockpiled and tested for off-Site disposal. Debris located above the visually impacted soil/sediment would be stockpiled separately from the visually impacted soil/sediment. Excavated areas would be backfilled with approved clean fill and restored following excavation.

This task would take approximately one and a half months to complete.

4.2.1.4 *Task No. 4: Ambient Monitoring for Particulates*

The excavation component of this Alternative can be managed to prevent releases during implementation. To assure this, an ambient air monitoring program would be implemented to measure the concentration of particulates in ambient air in the work zone and at the perimeter of the Site excavation and soil handling activities. A Perimeter Air Monitoring Plan (PAMP) that specifies the components of this program would be developed in accordance with the NYSDOH Community Air Monitoring Plan for Intrusive Activities (NYSDOH, 2000). Dust control measures such as water or foam sprays, or limiting areas of soil to be disturbed at any one time would be used at the Site during these activities. The degree to which these measures would be used would depend on particulate levels in ambient air at the perimeter of the Site as determined through the PAMP. This task would be conducted during the approximately one and a half months of excavation and soil handling activities.

4.2.1.5 *Task No. 5: Dry Well Abandonment and Storm Water Reconfiguration*

To reduce infiltration in the area of DW-4, dry wells DW-1 and DW-2 would be abandoned and replaced with storm water catch basins that would convey storm water to DW-3. In accordance with previous discussions with the NYSDEC, dry wells DW-1 and DW-2 would be abandoned in the following manner:

- free liquids within these dry wells would be removed, containerized and disposed of off-Site;
- an appropriate volume of sediment from the bottom of the dry wells would be remove (estimated at four feet of sediment for the FS) from the bottom of these dry wells and disposed of off-Site;
- the dry wells would then be backfilled and replaced with a new storm water reconfiguration ;
- if usable, inlet pipes that formerly connected to DW-1 and DW-2 would be connected to the new catch basins, or plugged and replaced, if not usable; and
- new outlet pipes would be installed connecting these new catch basins to DW-3.

Soil/sediment would also be removed from DW-3 to optimize drainage from this structure.

This task would take approximately one (1) month to complete.

4.2.1.6 *Task No. 6: Well Siting and Installation of Off-Site Monitoring Well*

Under this alternative, one or possibly two off-Site monitoring well(s) would be installed to monitor the reduction of ground water impacts. The well(s) would be installed to measure the decline in nickel concentrations in ground water over time following nickel source removal, to document that downgradient ground water concentration of nickel will not have an adverse impact on downgradient receptors. Installation of off-site monitoring well(s) will be finalized during final remedial design. The monitoring well(s) would be located approximately half way between the Site and the downgradient public supply well field.

The final placement and depth of the off-site monitoring well(s) would be determined during remedial design/remedial action (RD/RA) phase. For cost estimation purposes, it was assumed that the well siting exercise would involve four temporary well locations that would be installed to a total depth of 300 feet below grade. Ground water samples would be collected at these locations at 25-foot intervals and analyzed for nickel. The purpose of this sampling would be to identify the strata within the aquifer where nickel-impacted ground water is evident so that permanent well screen locations could be identified. These temporary wells would be placed in an east-west line perpendicular to the ground water flow direction.

The permanent monitoring well(s) would then be installed in the strata exhibiting the highest nickel concentration. In the event that nickel is not detected in ground water at these downgradient temporary well locations, the off-Site well(s) would be screened at an interval anticipated to be in the flow path of the nickel plume from the Site. Figure 4-1 shows the approximate areal placement of the well(s). For the purpose of this FS, the areal placement is based on the conservative prediction of the ground water model. However, actual placement will be based on the findings of the well(s) siting exercise.

Prior to conducting the above work, permits would be obtained to install the temporary well(s) and to install the permanent well(s).

This task would take one (1) month to complete. This time estimate does not include the time to obtain necessary permits.

4.2.1.7 *Task No. 7: Ground Water Monitoring*

As discussed in Section 2.2.1.2.3, nickel is present in on-Site and off-Site ground water at concentrations that exceed the 100 µg/L Class GA standard in the Upper Glacial Aquifer. Ground water modeling, which assumes source removal would be conducted, has demonstrated that ground water does not pose an unacceptable risk at the downgradient well fields in the deep aquifer. In addition to source removal, storm water reconfiguration would further reduce the potential for future leaching to ground water. As an additional protection, annual ground water monitoring would be conducted under this alternative for a period of five (5) years to confirm that nickel concentrations in on-Site and off-Site ground water are diminishing and do not pose an unacceptable risk to downgradient receptors.

The highest on-Site and off-Site ground water concentrations of nickel were observed in the wells located immediately downgradient of DW-4, the source of nickel in ground water. Ground water samples would be collected from on-Site and off-Site wells using low-flow sampling methods. See Section 4.2.1.6 for off-Site monitoring well siting and Figure 4-1 for approximate location of the new off-Site well(s). Ground water samples would be analyzed for nickel, the only COPC identified in Section

2.2.1.2.3 for Site ground water. The results of the ground water monitoring would be reported to NYSDEC annually.

This task would take five (5) years to complete following installation of the off-Site monitoring well(s).

4.2.2 *Evaluation*

4.2.2.1 *Overall Protection of Human Health and The Environment*

This alternative would protect human health and the environment. Alternative II would include the removal of 25 feet of impacted soil/sediment source material from former dry well DW-4 and reconfiguration of the stormwater recharge system immediately upgradient of DW-4. As noted in Section 2.2.1.1.5, the majority of the nickel mass in Site soil is located within the upper 25 feet of DW-4. Removal of the source material and storm water reconfiguration would reduce leaching of nickel from soil to ground water. These removal and control activities along with ground water monitoring and the existing NYSDOH potable well installation restrictions would ensure that the on-Site and off-Site ground water does not pose an unacceptable risk to human health and the environment.

As discussed in Section 2.2.1.1.5, Table 2-3 shows that, with the exception of DW-4 soil and two isolated sample locations at depths greater than four feet below grade, on-Site soil concentrations for inorganics are within Eastern USA background concentrations. As discussed above, soil in DW-4 would be removed under this alternative. Potential future work that may disturb the remaining subsurface at the Site (for example, a sewer installation) would require NYSDEC approval as referenced in the Deed restriction. On-going direct contact with soils would be managed through maintenance of the existing surface covers. The deed restriction would ensure that the property is used for authorized site uses under current zoning restrictions. In combination, the components of this alternative would protect human health and environment for Site soil.

4.2.2.2 *Compliance with SCGs*

A summary of the applicable SCGs that apply to this alternative is presented in Table 4-1. As shown in this table, Alternative II would effectively comply with all of the SCGs listed in the table.

<u>*Soil*</u>

Through source removal, Alternative II: would address the 6 NYCRR Part 375 goal to eliminate or mitigate all significant threats to public health and the environment; would comply with the 6 NYCRR Part 375 requirement to remove consequential amounts of hazardous substances present in source material which exhibits the potential for leaching to ground water; and, would comply with alternate Eastern USA background concentrations.

Ground Water

Through source removal and the storm water reconfiguration undertaken in Alternative II, nickel levels exceeding Class GA ground water standards in the Upper Glacial Aquifer are expected to decrease and Class GA groundwater standards at the water supply wells would continue to be met. The Site would continue to comply with 6 NYCRR Parts 700 through 705: NYSDEC Water Quality Regulations for Ground Water, and with Class GA ground water standards at the downgradient drinking water supply wells.

Through source removal and stormwater reconfiguration, Alternative II would reduce the concentration of nickel in on-Site ground water in the shallow Upper Glacial Aquifer. Hence in the short to medium term, Alternative II would not comply with the NYSDEC Water Quality Regulations for Ground Water (6 NYCRR Parts 700 through 705) or with the NYSDEC Ambient Water Quality Standards and Guidance Values (TOGS 1.1.1), which are NYSDEC SCGs, as listed on Table 2-1 for the shallow Upper Glacial Aquifer. However, as discussed in Section 1.4, nickel concentrations in off-Site ground water supply wells developed in the deeper Magothy Aquifer comply with the 100 μg/l Class GA ground water standard for nickel and are not expected to be detected above the CRDL, which is less than one half of this standard. Based on the conservative ground water model (Appendix D), the supply wells will continue to meet the Class GA ground water standard.

4.2.2.3 *Long-Term Effectiveness and Permanence*

Long-term effectiveness and permanence is measured by the magnitude of the residual risk and the adequacy and reliability of controls. Alternative II would be effective and reliable in the long term. As discussed above, remedial components were developed to ensure continued protection of human health and the environment through source removal, reconfiguration of stormwater flow to control infiltration, ground water monitoring to confirm a reduction in groundwater impacts, and institutional controls to limit exposure to Site soils.

The Hicksville Water District well field, located approximately 1 mile downgradient of the Site, is the nearest receptor. In addition, Part 5 of the State Sanitary Code prohibits installation of new private wells in the vicinity of the Site, including the areas between the Site and the nearest receptor. Accordingly, ingestion of on-Site and off-Site groundwater from the Upper Glacial Aquifer is not expected to occur now or in the future.

Alternative II would also include the collection and analysis of ground water samples from the existing on-Site monitoring wells and off-Site monitoring well(s) to be installed, located downgradient of dry well DW-4. The ground water monitoring component of this alternative is intended to confirm that on-Site and off-Site nickel concentrations decrease following source removal. These data are expected to confirm over time that ground water nickel concentrations are declining.

The land use component of this alternative (i.e., the existing zoning and the implementation of a deed restriction) would ensure that the existing commercial and industrial use of the Site continues in the future, that Site covers would be maintained, and would eliminate potential for unacceptable exposure to Site soil.

Finally, Alternative II would permanently remove source material from dry well DW-4. This action, coupled with storm water reconfiguration, would reduce the potential for future leaching to ground water. Since source material would be removed, this RA alternative is a permanent remedy.

4.2.2.4 *Reduction of Toxicity, Mobility or Volume*

As discussed in Section 4.0, this criterion evaluates changes in the toxicity, mobility and volume of hazardous substances and COPCs. As discussed in Section 2.2.1.1.4, soil within former dry well DW-4 constitutes the source of nickel contamination in the groundwater.

Alternative II would significantly reduce toxicity, mobility and volume by removing 105 cy of source material from DW-4. Storm water reconfiguration would result in a further reduction in the mobility of chemicals in soil remaining beneath this dry well. The on-Site and off-Site concentrations of nickel in ground water are expected to decrease over time following source removal. In addition, the source material would no longer present an on-Site threat as it would be relocated to a secure land disposal facility.

4.2.2.5 *Short-Term Effectiveness*

As discussed in Section 4.2.1, this alternative, including ground water monitoring, can be completed within five years from installation of the permanent off-Site monitoring well(s). Activities potentially posing short-term effects under Alternative II would be related to source removal, storm water reconfiguration, and off-Site monitoring well siting and installation. These activities would take approximately two and a half months to complete. The possible short-term exposures that could result from implementation of this remedy can be managed through appropriate engineering controls.

4.2.2.6 *Implementability*

The main components of Alternative II are a deed restriction, storm water reconfiguration, source removal, off-Site monitoring well siting and installation, and ground water monitoring. All these engineering elements are technically feasible and are not subject to significant implementability issues. The Site Owner would be required to consent to a deed restriction. Some planning and coordination may be necessary for off-Site monitoring well siting and installation, including obtaining permits from the Town of Oyster Bay.

Similarly, under this alternative, some advance planning and coordination would be required in connection with intrusive work that would be conducted in the on-Site area in the vicinity of DW-4. This would require close coordination with the ongoing commercial operations conducted at the Site to minimize disruptions. The active delivery/loading area immediately adjacent to DW-4 would need to be temporarily relocated during this work. The installation of shoring for the building may necessitate restricting access to a portion of the building during construction, but any such restrictions would be of short duration.

4.2.2.7 *Cost*

The total present worth cost of Alternative II is approximately $483,995. The total capital cost for this alternative is approximately $391,051. The total present worth of the O&M costs for this alternative, which includes five (5) years of ground water monitoring, thirty years of cover maintenance, and a 10% estimated project management, is approximately $92,944.

A detailed description of the Alternative II cost estimates is provided in Appendix F.

4.3 *ALTERNATIVE III: EXCAVATION AND OFF-SITE DISPOSAL OF SOIL EXCEEDING THE NYSDEC RSCO GUIDELINES TO A DEPTH OF 15 FEET, SOURCE REMOVAL/STORMWATER CONTROL AND ACTIVE GROUND WATER REMEDIATION*

A goal of the IHWS program as identified in 6NYCRR Part 375 is to restore a Site to its original state prior to the release if such condition can be practicably ascertained or alternatively to a reasonably environmentally sound condition, to the extent feasible and authorized by law. Alternative III has been developed to evaluate this goal for the Site soil and ground water. In addition to the Alternative II components, Alternative III would include excavation of Site soil containing COPCs at concentrations above the NYSDEC RSCO guidelines to a depth of 15 feet below grade, installation and operation of an active ground water pump, and treat system for nickel.

This alternative would consist of the following tasks for soil excavation and ground water remediation:

Removal of Site Soil to 15 Feet to Meet NYSDEC RSCO Guidelines

- Site Preparation and Mobilization (Task No. 1);
- Excavation of Soil Above NYSDEC RSCO Guidelines to 15 Feet (Task No. 2);
- Source Removal (Task No. 3);
- Ambient Air Monitoring for Particulates (Task No. 4);
- Off-Site Disposal of Excavated Soil and Overlying Asphalt (Task No. 5);
- Storm Water Reconfiguration (Task No. 6);
- Backfill and Replacement of Excavated Soil (Task No. 7);
- Site Restoration (Task No. 8).

Ground Water Remediation System

- Extraction Well Siting and Installation (Task No. 9);
- Off-Site Ground Water Extraction (Task No. 10);
- Ground Water Treatment (Task No. 11);
- Ground Water Discharge (Task No. 12;
- Ground Water Monitoring(Task No. 13);
- Performance Monitoring and Operations and Maintenance (Task No. 14);

This alternative could require twenty (20) years to complete after NYSDEC approval of the RD for this Site, and, as is discussed below, would have significant adverse impacts on the ongoing businesses at the Site.

4.3.1 *Description of Site Soil Removal to 15 Feet to Meet NYSDEC RSCO Guidelines*

As discussed in Section 2.2.1.1.5, the total surface area of soil exceeding the NYSDEC RSCO guidelines is over 89,000 sf and ranges from 7 to 56 feet below grade in depth. Alternative III, like Alternative II, would include excavation of the soil/sediment in DW-4 to 25 feet below grade. The majority of the nickel mass at the Site is located within the upper 25 feet of DW-4 and removal of soil from depths greater than 25 feet in this dry well would be technically impracticable.

Excavation to depths greater than 15 feet at locations immediately adjacent to Site buildings would be technically impracticable because it would most likely require extensive shoring that could endanger the structural integrity of the buildings and/or building demolition. Moreover, future intrusive activities can be managed as part of the deed restriction. Hence, future exposures to construction workers to depths of 15 feet are unlikely and/or manageable.

4.3.1.1 *Task No. 1: Site Preparation and Mobilization*

The first component of Alternative III would be mobilization and Site preparation. This would include: mobilization of equipment to the Site; establishment of the decontamination area; provision of temporary facilities and utilities, as needed; establishment of the Soil Areas to be excavated; and removal of the fence in Soil Area V. This task would take approximately 1 week to complete.

4.3.1.2 *Task No. 2: Excavation of Site Soil to 15 Feet to Meet NYSDEC RSCO Guidelines*

Under this alternative, soil containing COPCs in concentrations that exceed the NYSDEC RSCO guidelines to a maximum depth of 15 feet would be excavated and disposed of at an appropriately permitted off-Site disposal facility. The locations of areas that would be excavated under Alternative III are presented in Figure E-1.

A summary of the areal extent, depth and volume of soil to be excavated under Alternative III is provided below.

SITE	*SURFACE*	*QUANTITY OF SOIL EXCEEDING NYSDEC RSCO GUIDELINES TO A DEPTH OF 15 FEET BELOW GRADE*	
SOIL AREA	*AREA (ft^2)*	*DEPTH (ft bg)*	*VOLUME (cy)*
Area I	3,080	15	1,711
Area II(1)	20,070	15(1)	10,289
Area III	6,045	15	3,358
Area IV	18,845	15	10,469
Area V	24,710	15	13,728
Area VI	5,765	10	2,135
Area VII	11,155	7	2,892
Subtotal =	89,670 ft^2	--	44,582 cy
Contingency (2) =			3,740 cy
		TOTAL =	*48,322 cubic yards*

TERMS: ft^2 =square feet; ft bg = feet below ground; cy = cubic yards

NOTES: 1.Total soil volume for Area II also includes excavation of DW-4 centered on a 12-foot radius from 15 to 25 feet bgs.

2. Soil volume contingency factor calculated as 20% of Areas IV and VII and 50% of Area VI.

Five of the seven areas would be excavated to a depth of 15 feet (Area II would extend to 25 feet bgs at DW-4 for 113 sf of area, i.e., a 12-foot diameter), one area would be excavated to a depth of 10 feet (Area VI) and the remaining areas would be excavated to a depth of seven feet (Area VII). A total volume of 48, 322 cy is estimated for these seven Soil Areas, including the 25 foot excavation at DW-4. A contingency factor was applied to the soil volumes to address the possibility that the volume of soil in certain areas could increase if the horizontal extent, based on post-excavation sampling, were greater than the areas initially calculated for this analysis (i.e., the baseline volume of approximately 44,582 cubic yards; see table above).

Soil would be excavated with standard construction equipment and the source dry well would be excavated with a clamshell bucket mounted on a crane. Because the majority of the soil areas requiring excavation are paved with asphalt, during soil excavation, 2000 tons of asphalt cover would have to be removed along with the soil. Disposal of the asphalt and restoration of these areas to pre-remedial conditions would be required.

Prior to soil excavation, over 26,000 square feet of sheeting would have to be installed along building walls to secure the excavation and adequately protect the existing buildings. Calculation of the estimated quantity of sheeting is provided in Appendix E, Table E-1. The actual sheeting requirements would be determined during the remedial design. Since the ground water table elevation (i.e., 55 to 67 feet below grade) is well below the vertical limit of excavation (i.e., 15 feet below grade), dewatering would not be required to excavate Site soil.

After the sheeting has been installed, soil would be excavated and placed into dump trailers for transportation to an off-Site disposal facility. Due to space constraints at the Site, soil stockpiling would not be feasible. The rate of excavation would therefore be limited by the ability to stage dump trailers at the Site. Even if forty (40) dump trailers could be mobilized to the Site each day of excavation, it would take approximately 62 days to load for transport the baseline soil volume of approximately 44,582 cubic yards, without any contingency considerations. Disposal of excavated soil is discussed in Section 4.4.1.4 below.

Post-excavation samples would be collected at a frequency of one (1) sample per 100 linear feet from the excavation sidewalls coincident with the Soil Area limits of excavation presented in Appendix E, Figure E-1. Soil samples would not be collected from the excavation floor; instead the existing soil data for the soil below 15 feet would be used to characterize these areas. All samples will be analyzed for TAL metals.

Any on-Site ground water monitoring wells that would remain as part of the permanent monitoring program and underground drainage or other structures disturbed during the excavation process would have to be reinstated. The excavation task would take at least four (4) to six (6) months to complete.

4.3.1.3 *Task No. 3: Source Removal*

Alternative III would include the same source removal measures as Alternative II. See Section 4.2.1.3.

4.3.1.4 *Task No.4: Ambient Air Monitoring for Particulates*

Given the large areal extent of excavation to be performed, an ambient air monitoring program that would be required to measure the concentration of particulates in ambient air in the work zone and at the perimeter of the Site would be implemented during excavation and soil handling activities. A PAMP that specifies the components of this program would have to be developed in accordance with the NYSDOH Community Air Monitoring Plan for Intrusive Activities (NYSDOH, 2000). Dust control measures such as water or foam sprays, or limiting areas of soil to be disturbed at any one time would be used at the Site during these activities. The degree to which these measures would be used would depend on particulate levels in ambient air at the perimeter of the Site as determined through the particulate air monitoring program.

This task would have to be conducted throughout excavation and soil handling activities over a period of at least (4) to (6) months.

4.3.1.5 *Task No. 5: Off-Site Disposal of Soil and Removed Asphalt*

Various waste streams would be generated under this alternative. Source material and ancillary soil exceeding NYSDEC RSCO guidelines would need to be characterized for authorized disposal. All efforts would be made to segregate these streams during excavation.

Non-hazardous soil would be transported to and disposed of at an off-Site Subtitle D, non-hazardous waste landfill under this alternative. Source material would be evaluated and disposed of at an appropriate disposal facility. Costs for disposal are determined on a weight basis (i.e., per ton). To calculate the soil disposal cost, the estimated volume of this material was converted to a weight basis (i.e., from cubic yards to tons) using a typical soil density for this area of 1.4 tons per cubic yard. The excavation of the baseline volume of soil to be removed (i.e., 44,582 cubic yards) was calculated to be approximately 62,415 tons (i.e., 44,582 cubic yards x 1.4 tons/cubic yard). The total volume of soil to be removed, including the contingency factors described in Section 4.3.1.2, was computed to be approximately 67,651 tons (i.e., 48,322 cubic yards x 1.4 tons/cubic yard).

The excavation of the baseline volume of soil of 44,582 cubic yards would require that approximately 2,000 tons of asphalt would have to be removed prior to excavation. Excavation of the contingency volume would require that approximately 2,220 tons of asphalt be removed prior to excavation.

For cost estimation purposes, it was assumed that one (1) sample would be collected every 1,000 cubic yards of excavated soil and analyzed for disposal characteristics.

This task would be conducted during the soil excavation period, which is expected to take at least four (4) to six (6) months.

4.3.1.6 *Task No. 6: Storm Water Reconfiguration*

Alternative III would include the same storm water reconfiguration measures as Alternative II. See Section 4.2.1.5.

4.3.1.7 *Task No. 7: Backfill and Replacement of Excavated Soil*

Soil that is excavated for off-site disposal would be replaced by approved clean fill from either a virgin or NYSDEC-approved off-Site source. Approximately 44,582 cubic yards of uncontaminated soil from an off-Site source would be needed to replace the baseline volume of soil to removed or 48,322 cubic yards of uncontaminated soil from an off-Site source would be needed to replace the total plus contingency volume. Refer to Section 4.3.1.2 for a description of the baseline and total plus contingency volume of soil to be removed.

This task would be conducted concurrently with excavation.

4.3.1.8 *Task No. 8: Site Restoration*

After the Site has been excavated and backfilled and any subsurface drainage or other structures disturbed during the excavation are replaced, , the Site would have to be restored. This would include:

- reinstallation of the fencing in Soil Area V that would be removed prior to excavation of soil in this area;
- regrading of all seven soil areas after excavation and backfill operations have been completed;
- restoration of the pavement in all seven soil areas; and
- re-seeding in Soil Area V.

The approximate quantities of fencing, regrading, seeding and repaving required under this alternative are provided in Appendix E, Table E-1. Costs for paving, regrading and well replacement are reflected in the cost estimate provided in Section 4.4.2.7. The cost estimate assumes that the fencing removed to facilitate excavation can be reinstalled after excavation has been completed and that the costs for re-seeding are minimal and are included in the excavation costs.

This task would be conducted after soil excavation and backfill has been completed and any structures removed during excavation are reinstalled. This task is expected to take one month to complete.

4.3.2 *Description of Ground Water Remediation System*

4.3.2.1 *Task No. 9: Extraction Well Siting and Installation*

The groundwater flow modeling conducted in Appendix D indicates that the nickel plume in the Upper Glacial Aquifer could be captured via installation of two groundwater extraction wells. The location of these extraction wells would intersect the nickel plume downgradient of the Site. Although the FS anticipates the location of the offsite extraction wells based on the conservative prediction of the model, their actual location would be based on well siting using temporary wells.

To facilitate access during installation and sampling, the temporary wells would be located in public rights-of-way that run east-west, intersecting the plume perpendicular to ground water flow direction. It is anticipated that one set of temporary wells would be located in the vicinities of Blueberry Lane and Hempstead Avenue. These locations are approximately 2,300 and 4,800 feet respectively, from the Site. For cost estimation purposes, it is assumed that a total of eight temporary wells would be installed.

The temporary wells would be sampled at 25-foot intervals to 300 feet below grade, and the collected ground water samples would be analyzed for nickel. The extraction well would then be screened at the location that would optimize collection of the highest nickel concentration in the aquifer. . For the purpose of the FS, these locations were derived from the 2-D model used to conservatively predict the dissolved nickel concentrations in ground water. Hence, these locations would ensure collection of the estimated plume in the Upper Glacial Aquifer.

4.3.2.2 *Task No. 10: Off-Site Ground Water Extraction*

The ground water flow modeling, presented in Appendix D, indicates that the nickel plume removal could most effectively be addressed by installation of two ground water extraction wells, each operating at 60 gpm. Each extraction well would be six inches in diameter and approximately 100 feet in total depth. As discussed above in Section 4.3.2.1 and based upon available information, the extraction well screen would be placed at the depth of the highest nickel concentration, within the Upper Glacial Aquifer. Based on the hydraulic properties of the Upper Glacial aquifer, two wells located within the footprint of the conservatively estimated nickel plume in the Upper Glacial aquifer that pump at 60 gpm will exert a sufficient influence to capture the plume. A pump capable of transporting water from the well to the treatment system would be installed within each well. This would require well and pump facilities to be constructed at each extraction well site with their own power source.

4.3.2.3 *Task No. 11: Ground Water Treatment*

It is estimated that a 40-foot by 60-foot building that would be constructed on-Site would be required to house treatment system for recovered groundwater. This would require installation of approximately 7,000 feet of four-inch high density polyethylene (HDPE) underground piping to connect the extraction wells to the Site. Hence, an extensive network of underground piping would be required to run through residential areas, and, possibly through school properties.

This task considers two process options to treat the ground water: 1) precipitation and filtration, and 2) ion exchange. The final option would be selected following bench-scale testing conducted during the RD. Bench-scale testing is needed to determine the following design parameters: most effective treatment chemistry, volume of sludge or regenerate created, and frequency of ion exchange regeneration. Because the selection criteria differ slightly for these two options, they are discussed separately in the following sections.

Precipitation and Filtration

Figure 4-3 presents a detailed flow diagram of the precipitation and filtration option. Ground water would be pumped to a pH adjustment tank. At this tank, alum (i.e., aluminum sulfate) and sodium hydroxide would be added until the pH is in the range of 10 to 11. This would cause the nickel and other metals, such as iron and manganese, to precipitate and begin to coagulate. The ground water would flow by gravity to a slant-plate clarifier with mixing tanks. Polymer will be added to further enhance the precipitation of metals. The accumulated sludge would be routinely pumped to a 5,000-gallon sludge thickener tank at an estimated rate of 187 gallons per day. The thickened sludge (estimated 6% solids) would be generated at an estimated rate of 62 gallons per day. Thickened sludge would be stored in a 5,000-gallon tank, and would be disposed at an off-site location approximately every 81 days. Supernatant fluid from the thickener tank would be pumped back to the pH adjust tank.

The ground water would then be pumped through a multi-media filtration system as a polishing step to further remove solids. The ground water would continue to a neutralization tank where sulfuric acid would be added to reduce the pH to within the range of 6 to 8. Ground water would be pumped from this tank through two sets of two carbon vessels (each holding 1,100 pounds of activated carbon) connected in parallel for removal of VOCs and on to an effluent holding tank. Ground water would then be pumped to the discharge point (see Section 4.3.2.4 below). The filters would be periodically backwashed using water from the effluent holding tank.

Ion Exchange

Pumped ground water would pass through two cartridge filters to remove particulates that could foul the downstream treatment processes. The first filter cartridge would be a "roughing" filter, and would have a large micron size to remove larger particulate matter. The second cartridge would have a much smaller micron size to remove smaller particulate. After filtration, the ground water would pass through two sets of two 1,100-pound activated carbon vessels connected in parallel (see Figure 4-4 for the arrangement). The activated carbon would remove low levels of VOCs present in the ground water. Then, the groundwater would continue to the ion exchange system.

Initially, the effluent from each vessel would be periodically monitored to establish a regeneration frequency. The automatic regeneration cycle would then be activated on a regular basis. During regeneration, one resin vessel would be taken offline to allow treatment to continue. Upon completion of the cycle, the vessel most recently regenerated would be used as the final polishing step. This ensures adequate treatment is continuously achieved. The regeneration cycle consists of an acid regeneration step, which extracts nickel and other heavy metals from the resin, followed by a rinse step. The heavy-metal bearing regenerate and rinse water would be held in a 5,000-gallon waste holding tank, and disposed of off-Site. It is estimated that approximately 3,800 gallons of regenerate/rinse water would be generated every two months. The final regeneration frequency and volume could vary based on the results of bench-scale testing during the RD phase.

Following the ion exchange system, the ground water may be at a reduced pH. Therefore, sodium hydroxide would be pumped, as necessary, into the ground water stream through an injection point in a static mixer. This would raise the pH to the necessary level. Finally, the extracted ground water would empty into an effluent holding tank. Ground water would then be pumped to the discharge point (see Section 4.3.2.4 below). The treated ground water held in the effluent holding tank would provide a source of water for the rinsing of the ion exchange system.

4.3.2.4 *Task No. 12: Ground Water Discharge*

The treated ground water would be discharged to a nearby stormwater catch basin on the north side of Duffy Avenue that feeds a local recharge basin (i.e., a sump) for subsequent ground water recharge. The recharge basin is located approximately 2,000 feet west of the Site at the northwest intersection of Charlotte Avenue and Duffy Avenue. Thus, an additional 2,000 feet of pipeline would be required to reach the recharge basin. As part of the RD, the hydraulic capacity of the recharge basin to accept the treated groundwater would be confirmed, and appropriate permitting would be sought and obtained.

4.3.2.5 *Task No. 13: Ground Water Monitoring*

As discussed in Section 2.2.1.2.3, nickel is present in on-Site and off-Site ground water at concentrations that exceed the 100 µg/L Class GA standard in the Upper Glacial aquifer. This alternative would include ground water extraction and treatment (see Task No. 10 and 11), source removal (see Task No. 3) and storm water reconfiguration (Task No. 6). Annual ground water monitoring would also be conducted at the Site for a period of five (5) years to document stable or decreasing on-Site ground water concentrations of nickel. Additionally, the off-Site extraction wells would be sampled for nickel as part of the influent concentration analysis for the duration of the pump and treat operation. This is discussed further in Section 4.3.2.6.

The results of the annual ground water monitoring would be reported to NYSDEC annually.

The on-Site ground water sampling task would take five (5) years to complete and the off-Site ground water sampling would take an additional 15 years (20 years total) to complete.

4.3.2.6 *Task No. 14: Performance Monitoring and Operations and Maintenance*

It is estimated that the ground water treatment system would require about 142 hours total operating labor per month. This would consist of approximately fifteen site visits per month, along with administrative support. To monitor the performance of the treatment system, one set of monthly influent and effluent samples would be collected and analyzed for VOCs and selected metals (nickel, iron, manganese, sodium, and magnesium). Four additional process samples would be collected every month to further evaluate the performance of individual treatment units.

Engineering support would be required at about 54 hours per month. This would include sampling coordination, reporting, performance tracking, troubleshooting, waste disposal support, project management, and administrative support.

For cost estimation purposes, it has been assumed that the ground water pump and treat could be completed within 10 years but may extend to a maximum of 20 years.

4.3.3 *Evaluation*

4.3.3.1 *Overall Protection of Human Health and The Environment*

This alternative would protect human health and the environment by: 1) controlling the off-Site nickel plume and preventing unacceptable ground water concentrations at the public supply wells, 2) discharging treated ground water back to the aquifer at concentrations that meet the Class GA ground water standards, or the Ground Water Effluent Limitations for

Discharge to Class GA ground water, 3) removing soils above NYSDEC RSCO guidelines, 4) removing source material, 5) reducing the potential for nickel in soil to leach to ground water through storm water reconfiguration.

Alternative III includes treatment of ground water to meet the Class GA groundwater standards. This Alternative would also include removal of all Site soil to a depth of 15 feet that contains COPCs in concentrations that exceed the NYSDEC RSCO guideline levels. The soil removed under this alternative would then be replaced with uncontaminated soil from an off-Site source. These actions would eliminate the source of any potential direct contact exposures to COPCs in Site soil. As discussed in Section 2.2.1.1.3, however, the NYSDEC RSCO guidelines for the inorganic chemicals of concern found in Site soil are not risk-based concentrations. A comparison of Site soil concentrations with Shacklette & Boerngen Eastern USA background concentrations of inorganics in soil (insert reference) shows that, with the exception of the source and two isolated sample locations at depths greater than four feet below grade, Site soils are within reported background inorganics concentrations.

Removal of Site soil to 15 feet that contains COPCs in concentrations that exceed the NYSDEC RSCO guideline concentrations would eliminate most potential or future exposures. Removal of DW-4 and storm water reconfiguration would reduce the potential for nickel in soil beneath DW-4 to leach to ground water. The ground water treatment system would aid in reducing the off-Site Upper Glacial Aquifer nickel concentrations. However, the success of pump and treat systems in reducing residual concentrations of constituents in ground water has been shown to be technologically limited. Though the ground water treatment system is designed to treat nickel concentrations to below the ground water treatment standard, it is generally accepted that pump and treat systems may reach an asymptotic level at a concentration above the Class GA ground water standards. Further operation of pump and treat systems generally exhibit narrow fluctuation around this asymptotic point. Although, hydraulic control (i.e., capture) would continue, it is common for pump and treat systems to become unable to completely restore ground water to Class GA ground water standards.

4.3.3.2 *Compliance with SCGs*

A summary of the SCGs that apply to this alternative is presented in Table 4-1. As shown in this table, Alternative III would comply with all of the SCGs listed in the table.

Soil

- Alternative III would address the 6 NYCRR Part 375 goal to eliminate or mitigate all significant threats to public health and the environment;
- Alternative III would comply with the 6 NYCRR Part 375 requirement to remove consequential amounts of hazardous waste to the extent source material, which contains hazardous substances, may be characterized as hazardous waste;
- would comply with the NYSDEC RSCO guidelines provided in TAGM 4046 for inorganics for soils to 15 feet below grade, for the additional 4 feet of soil/sediment from the base of dry wells DW-1, DW-2, and DW-3, and for an additional 10 feet of soil beneath dry well DW-4; and
- would comply with the NYSDEC RSCO guidance provided in TAGM 4046 for inorganics based on alternate Eastern USA background for nickel, and the leachability of the residual nickel in on-Site soil/sediment (as defined in Section 2) for soils at depths more than 15 feet below grade.

Ground Water

- Alternative III would comply with 6 NYCRR Parts 700 through 705: NYSDEC Water Quality Regulations for Ground Water; and
- would comply with TOGS 1.1.1: New York State Ambient Water Quality Standards and Guidance Values, within the limits of pump and treat technology.

The ground water discharge would be in compliance with the NYSDEC Water Quality Regulations for Ground Water (6 NYCRR Parts 700 through 705). Specifically, the ground water discharge would have to comply with the Ground Water Effluent Limitations For Discharges to Class GA Waters as identified in 6 NYCRR Part 703.6 as well as any more stringent limitations imposed by NYSDEC in accordance with 6 NYCRR Part 702.18. Therefore, the treatment system would be designed to meet the Class GA ground water standards. Both of these standards are presented in the following table for key parameters:

Parameter	*Ground Water Effluent Limitation (ug/L)*	*Class GA Ground Water Standard (ug/L)*
Nickel	200	100
Iron	600	300
Manganese	600	300
Sum of iron and manganese	1000	500
Sodium	Determined on case-by-case basis	20,000

4.3.3.3 *Long-Term Effectiveness and Permanence*

Long-term effectiveness and permanence is measured by the magnitude of the residual risk and the adequacy and reliability of controls. This alternative would be effective in the long term and reliable. As discussed above, remedial components were developed to ensure continued protection of human health or the environment through soil excavation, source removal, ground water pumping and treatment and ground water monitoring.

The water supply well prohibition, contained in Part 5 of the State Sanitary Code, prohibits the installation of new private wells at the Site and in the areas between the Site and the nearest receptor (i.e., the Hicksville Water District well field located approximately 1 mile downgradient of the Site). These regulations (i.e., Part 5 of the State Sanitary Code) prevent ingestion of on-Site ground water. Additionally, no other potable wells were identified within the search area. The private well prohibition regulations (i.e., Part 5 of the State Sanitary Code) would also prevent ingestion of off-site ground water in the area between the Site and the Hicksville Water District well field. Hence, ingestion of groundwater on and off-Site would not occur now or in the future due to the absence of potable wells in the vicinity.

This alternative also seeks to restore ground water to pre-release conditions. However, as previously discussed this goal would not be achieved throughout the Upper Glacial Aquifer, and instead nickel concentrations would likely stabilize at an asymptotic level above the Class GA ground water standard within the aquifer.

This alternative would permanently remove nickel-impacted ground water from the Upper Glacial Aquifer. Prior to ground water recharge, either of the proposed treatment process options would treat to levels that meet Class GA ground water standards, or the Ground Water Effluent Limitations for Discharge to Class GA Ground Water. Ion exchange is a proven technology for the removal of nickel, and is capable of reducing nickel concentrations below the Class GA ground water standard of 100 μg/L. Precipitation and Filtration has been an effective technology for removal of nickel from various wastewater streams. The theoretical solubility of nickel hydroxide at a pH of 10 is 3.25 μg/L. Therefore, this process is expected to be able to reduce nickel to concentrations below 100 μg/L.

Removal of the source area and stormwater reconfiguration would prevent continued leaching of nickel to ground water. Finally, excavation of the upper 15 feet of Site soil containing COPCs in excess of the NYSDEC RSCO guidelines would permit unrestricted use of the Site in the future, limited only by the existing zoning-based land use restrictions.

4.3.3.4 *Reduction of Toxicity, Mobility or Volume*

As discussed in Section 4.0, this criterion evaluates changes in the toxicity, mobility and volume of hazardous waste and COPCs. As discussed in Section 2.2.1.1.4, soil within former dry well DW-4 is the source of nickel contamination in the groundwater. Because this source material would be removed from the Site under Alternative III, this alternative is a permanent remedy.

It is estimated that source removal would eliminate 105 cy of material containing nickel at levels that constitute the source of nickel in ground water. Storm water reconfiguration would result in a reduction in the mobility of residual COPCs that remain in soil beneath this dry well. In addition, toxicity and mobility associated with the removed DW-4 soil/sediment would no longer present an on-Site threat as it would be relocated to a secure land disposal facility.

Soil containing inorganic constituents at concentrations above the NYSDEC RSCO guidelines would be excavated and relocated to an off-Site landfill, thus, reducing their mobility at the Site. However, since the mobility of chemicals in Site soil, outside of the source area (i.e. DW-4) is not of quantifiable concern, there would be little, if any, practical reduction in the overall mobility of chemicals in soil upon removal of the soil outside of DW-4.

Through operation of the ground water recovery and treatment system, the toxicity, mobility and volume of the nickel plume within the Upper Glacial Aquifer would be reduced. Although removed from the ground water, the overall mass of nickel would be maintained. However, by concentrating the nickel mass into sludge (as a waste product of precipitation and filtration) or as waste regenerate (as a waste product from ion exchange), the contaminant mass of nickel would be greatly reduced in the ground water media, and relocated to a secure disposal facility.

4.3.3.5 *Short-Term Effectiveness*

As discussed in Section 4.3.1, this alternative, including ground water monitoring O&M, would require ten to twenty years of operation from the approval by the NYSDEC of the RD/RA. The specific schedule for implementation of this alternative would be defined in the RD.

The large-scale excavation, transportation and off-Site disposal of soil and ground water treatment system installation and operation would have significant short-term impacts on the on-Site businesses, workers, and the community. Potential short-term exposures to the environment would also arise from prolonged transportation efforts associated with the removal contemplated by this RA alternative.

The potential for a short-term increase of risk to the community and workers due to particulate emissions (dust) during soil excavation would require implementation of elaborate dust control measures. The particulate air monitoring program described for Alternative II would be greatly expanded for this RA alternative to adequately measure particulate levels in ambient air at the property boundary during the course of the expansive removal. The scope of this monitoring would undoubtedly result in implementation of dust control measures that will slow the progress of the RA alternative. Workers would need to be protected by the provisions of a Health and Safety Plan. Given the scope of the contemplated soil removal in this RA alternative, significant health and safety measures would need to be implemented for this alternative. Under this alternative, nearly 2500 truckloads of excavated soil would be transported to an off-site landfill disposal facility. This would pose potential short-term risks to the community and to the environment. These potential risks include the risk of motor vehicle-related injuries, as well as the risk of spills along the transportation route. Both would result in exposures to the community and the environment.

The installation of the extraction wells would require the use of drilling equipment situated on Town roads in the vicinity of pubic and private properties creating the potential risk of injuries to workers and the community. In addition, workers could be exposed to nickel-impacted ground water during well installation.

Operation of the groundwater treatment system proposed under this alternative would result in risks to workers during collection of groundwater samples and maintenance of groundwater treatment equipment. Also, depending on the chosen process option for treating ground water, storage of significant volumes of chemicals (i.e., sodium hydroxide, alum, sulfuric acid, acid regenerate) would be required on-Site. Engineering controls, such as secondary containment tanks and piping, would be used to prevent any accidental exposures to these chemicals, and a Health and Safety Plan would be established to govern all such activities.

Adherence to the project Health and Safety Plan, as required by OSHA would be necessary to address all of the above risks. Monitoring, protective clothing, and respirators, when required, would be necessary to protect workers during the ground water treatment system O&M actions.

4.3.3.6 *Implementability*

To complete this alternative, extensive sheeting and shoring would have to be installed and extensive excavation would have to take place at the Site. Such intrusive work could well require that Site structures not be occupied during the four (4) to six (6) month excavation remedial action period. In addition, due to the limited on-Site storage space at the Site, dump trucks would have to be mobilized to the Site to remove the soil as it is excavated. As a result, the rate of excavation would be limited by available space. In addition, construction of a 40 x 60 foot treatment plant on Site could require variances from the Town for the Site and could have a significant adverse effect on the continued use of the Site for commercial purposes that could effectively threaten the Site's commercial viability.

There are also significant limitations on the implementability of this alternative due to the need to obtain approval to place components of this alternative at the Site, and on Town of Oyster Bay and/or third-party properties. There is limited space at the Site for a ground water treatment system and approval would need to be obtained from the current property owner to locate a treatment system at their Site. Third-party approvals would be required to install the two ground water extraction wells and associated piping in the vicinities of the Blueberry Lane and Old Country Road. A Road Opening Permit from the Town of Oyster Bay would be required to allow construction of piping from the extraction wells to the ground water treatment system, and then on to the catch basin. This permit would need to allow piping to cross a heavily traveled roadway - Old Country Road. During installation, lane closures on Old Country Road would be necessary. Additionally, permits would be required to install a well and pump facilities at the point of extraction

Approval from the Town of Oyster Bay would be required to permit connection to the catch basin and subsequent discharge to the recharge basin. The time necessary to procure the Town's approvals could be lengthy, as demonstrated by the one-year duration to obtain approval to install a monitoring well on the Town of Oyster Bay right-of-way.

The resulting traffic and other disruptions caused by this alternative would be significant. To implement ground water treatment using the precipitation and filtration process, it would be necessary to obtain approval from NYSDEC to discharge sodium above the Class GA ground water standard of 20 mg/L. This would be necessary because it is likely that addition of sodium hydroxide to the ground water will result in a sodium concentration greater than 20 mg/L in the treated effluent. It is possible that this ground water could still be discharged under the Ground Water Effluent Limitations in 6 NYCRR Part 703.6. This allows discharge of sodium above the Class GA ground water standard on a case-by-case basis. Other treatment chemicals (such as lime) may be used to raise the pH without exceeding the Class GA ground water standards. However, these chemicals would create a significantly greater amount of sludge that would require off-Site disposal.

The use of ion exchange for ground water may be used in lieu of precipitation and filtration; however, bench scale testing would need to be conducted to confirm that this technology would be feasible in this case.

In conclusion, because of the traffic, commercial, and other significant constraints detailed above, this alternative would pose numerous implementability issues.

4.3.3.7 Cost

The total present worth cost of Alternative III would range from $15.9 to $19.7 million dollars. The range is based on the type of ground water treatment. The Alternative is estimated to occur over for 10 to 20 years of operation. A detailed description of the Alternative III cost estimates is provided in Appendix F. The estimated cost for Alternative III is two orders of magnitude greater than RA Alternative II. Moreover, Alternative III would not provide any further benefit in protecting public health and the environment beyond that achieved in Alternative II.

This cost calculation does not address the possible need to vacate the Site buildings during the four (4) to six (6) month excavation period or any other costs associated with disruptions to the existing businesses that may occur during this period. Nor does it account for any purchase of property for extraction well siting or treatment system siting in the event that necessary third-party consents cannot be obtained.

5.0 *RECOMMENDATION OF A PREFERRED REMEDIAL ACTION ALTERNATIVE*

This section considers the evaluation of RA alternatives presented in Section 4.0, comparing them to one another in order to recommend a preferred remedial action alternative for the Site. The NCP (40 CFR 300.430), NYSDEC TAGM 4030 guidance on the selection of RAs at inactive hazardous waste disposal sites (NYSDEC, 1990) and NYSDEC *Draft* DER-10 (NYSDEC, 2002) require that alternatives protect human health and the environment by eliminating, reducing and controlling potential risks posed through each pathway at a site. As discussed in Section 2.2, two of the three environmental media evaluated at the Site pose the potential for exposure to potential receptors through available pathways. Those two media, identified as media of interest for the Site, are Site soil and ground water. Additional discussion regarding these media of interest and their RAOs are provided in Section 5.1 below.

With respect to developing remedial alternatives, the NCP provides for a review of remedial alternatives that: (1) involve little or no treatment but protect human health and the environment by preventing or controlling potential exposures to hazardous substances through engineering or institutional controls {40 CFR 300.430(e)(3)(ii)}; and (2) reduce the toxicity, mobility or volume of hazardous substances through treatment {40 CFR 300.430(e)(3)(i)}. In addition, the NCP also requires that a no action alternative be developed and evaluated {40 CFR 300.430(e)(6)}.

The No Action approach evaluated in this FS in Alternative I complies with the NCP requirement to evaluate the applicability of not implementing additional remedial actions at the Site. Alternative II (Continued Commercial Use with Source Removal/Stormwater Control and Ground Water Monitoring) and Alternative III (Excavation And Off-Site Disposal of Soil Exceeding NYSDEC RSCO Guidance to a Depth of 15 Feet, Source Removal/Stormwater Control and Active Ground Water Remediation) comply with the NCP requirement to evaluate, where applicable, alternatives which protect human health and the environment through engineering or institutional controls and by reducing the toxicity, mobility or volume of hazardous substances.

Each alternative was evaluated for seven criteria identified in the NCP {40 CFR 300.430(e)(9)}, in the NYSDEC TAGM guidance for the selection of remedial actions (NYSDEC, 1990), and in *Draft* DER-10 (NYSDEC, 2002) as performance criteria to be considered during the preparation of an FS. The NCP, the NYSDEC TAGM 4030 guidance, and *Draft* DER-10 also require that alternatives be evaluated for community acceptance. The evaluation of community acceptance will be completed after the NYSDEC has distributed a proposed remedial action plan (PRAP) and the community has reviewed the PRAP and FS.

In accordance with the NCP (40 CFR 300.430(f)(1)(i)), NYSDEC TAGM 4030 on the selection of RAs (NYSDEC, 1990), and *Draft* DER-10 (NYSDEC, 2002), the first two performance criteria are considered threshold criteria. RA alternatives that do not satisfy both of these criteria cannot be selected for use in remediating a site. That is, alternatives must comply with the following threshold criteria in order to be eligible for selection: (1) protect human health and the environment; and (2) comply with SCGs, unless a waiver is justified. As stated in Section 4.0, engineering judgment can be factored into the ability of a remedial alternative to comply with guidance. The remaining five criteria are considered primary balancing criteria. These balancing criteria address the following issues:

1. How will the RAs perform in the future (long-term effectiveness)?
2. Does the alternative reduce the toxicity, mobility or volume of hazardous substances?
3. Does the implementation of the alternative create adverse impacts (short-term effectiveness)?
4. Can the alternative be implemented?
5. What is the total cost of the alternative?

Addressing these criteria for each alternative provides a comparative analysis so that a preferred RA alternative can be selected. This comparative analysis compares the particular advantages and disadvantages of each alternative within each of the seven specific criteria. See Section 5.2 below.

Section 5.3 below uses the comparisons analyzed in Section 5.2 to evaluate the alternatives and to recommend a preferred remedial action. This evaluation addresses the requirements specified in the NYSDEC FS TAGM 4030 (NYSDEC, 1990) and in *Draft* DER-10 (NYSDEC, 2002). The selected RA alternative must:

- be protective of human health and the environment;
- attain SCGs unless a waiver is granted, using engineering judgment in the application of guidance;
- satisfy the preference for permanent reduction in toxicity, mobility or volume; and
- be cost effective.

5.1 *MEDIA OF INTEREST*

Elevated levels of inorganic constituents were detected in the soil/sediment source area located in DW-4. Former discharges to this dry well and continued leaching from this structure are the source of nickel in on-Site and off-Site ground water. Low levels of inorganic constituents were detected in the remainder of Site soil. Evaluation of the Site soil data in Section 2.2 demonstrates that Site soil, with the exception of DW-4 soil and two isolated soil samples at depths greater than four feet below grade, is within established Shacklette and Boerngen Eastern USA background concentrations for inorganics. Although the Site is currently zoned as H-Light Industry, and its anticipated future use is for commercial purposes, a deed restriction would be required to ensure future use of the Site remains commercial.

Ground water in Nassau County is supplied by a sole source drinking water aquifer. There are two aquifers that have been identified within the study area. The Upper Glacial Aquifer, which is approximately 100 feet in thickness in the Site vicinity, is an unconfined aquifer and is underlain by layered finer grain soil deposits that partially isolate and separate it from the underlying Magothy Aquifer. The deeper Magothy Aquifer is the aquifer in which public water supply wells are screened in the area of the Site.

There are no on-Site water supply wells. The nearest downgradient public water supply well is located approximately 5,435 feet south of the Site. Moreover, the New York State Department of Health State Sanitary Code prohibits installation of new private potable wells in areas supplied by a public water system.

As is shown in Figure 1-11, concentrations of nickel in ground water above the Class GA ground water standard have been detected in three on-Site ground water monitoring wells located within the Upper Glacial Aquifer downgradient (i.e., to the south) of dry well DW-4 (i.e., ERM-2, LMS-4 and AMS-2) and in off-Site ground water monitoring well ERM-3, also completed within the Upper Glacial Aquifer. Previous discharges to dry well DW-4 are the source of these elevated nickel concentrations. Discharges at the facility ceased in 1991. Ground water modeling for the Site (see Appendix D) demonstrates that nickel concentrations in the Upper Glacial Aquifer ground water do not present a threat to downgradient receptors via downgradient supply wells. These wells are routinely tested for nickel and reported concentrations do not exceed the CRDL for this constituent, which is a limit that is well below the Class GA standard for nickel. Moreover, the ground water modeling indicates that the nickel concentrations in the public supply wells will continue to be below the CRDL and the Class GA ground water standard into the future.

To determine the potential impact of nickel in ground water to the downgradient public water supply wells, temporary off-Site ground water monitoring wells were installed downgradient of the Site. As shown in Figure 1-11, the concentration of nickel in the off-Site ground water is bounded to the east and west by VP-N and VP-E, indicating an extremely narrow plume.

As is set forth in Section 2.2, the following RAOs have been developed for the Site:

Soil

- prevent ingestion of, direct contact with, and/or inhalation of contaminated soil/sediment; and
- prevent the potential for future leaching of nickel in soil to ground water from dry well DW-4.

Ground Water

- continue to prevent ingestion of on-Site ground water;
- prevent unacceptable ground water concentrations of nickel at water supply wells;
- prevent continued leaching of nickel to ground water to the extent practicable; and,
- if practicable (i.e., technically and economically feasible) and if needed to protect human health and the environment, restore the impacted area within ground water aquifer to pre-release conditions.

5.2 *COMPARATIVE EVALUATION OF THE REMEDIAL ACTION ALTERNATIVES*

Section 3.0 selected technologies that were compiled into three RA alternatives described in Section 4.0. The RA Alternatives are:

Alternative I:	No Action
Alternative II:	Continued Commercial Use with Source Removal/ Stormwater Control and Ground Water Monitoring
Alternative III:	Excavation and Off-Site Disposal of Soil Exceeding NYSDEC RSCO Guidance to a Depth of 15 Feet, Source

Removal/Stormwater Control and Active Ground Water Remediation

This section presents a comparative evaluation of the two threshold and five balancing criteria presented in Section 4.0 for each of the three RA alternatives.

5.2.1 *Overall Protection of Human Health and the Environment*

Protection of human health and the environment is measured by the ability of an alternative to address the RAOs for the environmental media of interest at a site. The media of interest at the Site are soil and ground water. Alternative I does not meet this threshold criterion. Both Alternatives II and III achieve this threshold criterion through their various institutional controls and engineering elements.

As discussed in Section 2.2, soil and ground water at the Site do not pose any unacceptable risks to human health or the environment under current and future anticipated Site use (i.e., commercial and industrial).

Alternative I (No Action) does not include the removal of source material that is continuing to cause a ground water impact, does not redirect storm water, does not ensure that the Site will continue to be used solely for industrial or commercial purposes and would not provide a mechanism to ensure that the existing Site cover remains intact. Furthermore, Alternative I does not provide for ground water monitoring to ensure that nickel concentrations diminish and continue not to impact ground water extracted by the public supply wells. Consequently, Alternative I (No Action) would not provide adequate protection of human health and the environment and therefore is not recommended as the preferred RA alternative for the Site.

Alternative II (Continued Commercial Use with Source Removal/ Stormwater Control and Ground Water Monitoring) would protect human health and the environment. By removing source material redirecting storm water, and maintaining the Site cover, leaching of nickel to ground water would be eliminated. The imposition of institutional controls with a deed restriction would serve to further ensure protection. Additionally, ground water monitoring would confirm declining nickel concentrations in ground water and the steady reduction in any potential impacts to the public supply wells, even though no such impacts are expected under current conditions.

Alternative III (Excavation and Off-Site Disposal of Soil Exceeding NYSDEC RSCO Guidance to a Depth of 15 Feet, Source Removal/ Stormwater Control and Active Ground Water Remediation) would include the elements of Alternative II while greatly expanding the removal and disposal of significant amounts of Site soil. Additionally, Alternative III contemplates a large scale on-Site and off-Site construction project involving the installation of an active ground water pump and treat system and its associated appurtenances.

Alternatives II and III would ensure that no unacceptable potential for exposure is posed to receptors by Site soil through a combination of removal and deed restriction and institutional controls. Though Alternative III would accomplish this by relying on more soil removal to restore the Site, based on the evaluation in Section 4.0, the additional effort described in Alternative III would not result in a proportional increase in the effectiveness of the remedy. Hence, the additional elements of Alternative III are not necessary to protect human health and the environment.

Alternative II and III ensure that on-Site and off-Site ground water does not pose an unacceptable potential for exposure to potential receptors through:

- removal of source material;
- existing use restrictions for ground water (i.e., the New York State Department of Health State Sanitary Code well installation prohibition);
- the absence of potable wells between the Site and the public supply wells more than one mile from the Site;
- the greater than one mile distance of public supply wells from the Site and their screened depth at more than 450 feet below grade; and
- the demonstration that nickel has not, and is not expected, to reach concentrations above the CRDL in water pumped at the public supply wells.

Alternative III would provide additional treatment of extracted ground water. However, based on the evaluation in Section 4.0, this additional treatment is not necessary to protect human health and the environment. Accordingly, Alternatives II and III both meet the threshold criterion of protecting human health and the environment.

5.2.2 *Compliance with SCGs*

Compliance with SCGs, or a site-specific waiver of the SCG's application, is the second threshold criterion which a remedial alternative must satisfy to be considered for implementation at a site. While standards and criteria refer to promulgated requirements, engineering judgment is factored into the manner by which a remedial alternative complies with guidance.

Table 2-1 contains a list of potential SCGs and TBCs for current Site conditions and for the RAs that were considered in Section 4.0. Compliance with SCGs determines whether an alternative satisfies regulatory and risk management requirements. As discussed in Section 2.2, To Be Considered information, or TBCs, do not have the same weight as SCGs and, thus, RA alternatives do not have to comply with TBCs to be considered for implementation at a site. In accordance with NYSDEC procedures, TBCs have been identified as regulations and guidance documents not identified in the NYSDEC listing of SCGs (NYSDEC, 2002).

Section 2.2 identified SCGs and TBCs related to Site soil and ground water. The chemical and location specific SCGs and TBCs for these media are:

Ground Water

- 6 NYCRR Parts 700 through 705: NYSDEC Water Quality Regulations for Ground Water; and
- TOGS 1.1.1: New York State Ambient Water Quality Standards and Guidance Values.

Soil

- 6 NYCRR Part 364, Waste Transporter Permits;
- 6 NYCRR Part 370 through 373 Hazardous Waste Management Regulations;
- 6 NYCRR Part 376, Land Disposal Restrictions;
- 6 NYCRR Part 375, Inactive Hazardous Waste Disposal Site Remedial Program;
- TAGM #4046, Determination of Soil Cleanup Objectives and Cleanup Levels; and
- NYSDOH Community Air Monitoring Plan for Intrusive Activities.

Alternative II (Continued Commercial Use with Source Removal/ Stormwater Control and Ground Water Monitoring) addresses the source of contamination and complies with NYSDEC RSCO guidelines for soil (with institutional controls and application of alternate Eastern U.S.A. background). Although nickel concentrations in the Upper Glacial Aquifer exceed the Class GA ground water standard, Alternative II would comply with this standard at the downgradient public supply well. Since the public supply well is the receptor, Alternative II complies with SCGs by removing source material and ground water monitoring to gauge the subsequent decline in nickel concentrations.

Alternative III (Excavation And Off-Site Disposal Of Soil Exceeding the NYSDEC RSCO Guidance to a Depth of 15 Feet, Source Removal/ Stormwater Control and Active Ground Water Remediation) seeks to comply with the water quality SCGs listed above for on-Site and off-Site ground water in the Upper Glacial Aquifer. However, though the ground water treatment system is designed to treat nickel concentrations to below the ground water treatment standard, it is generally accepted that pump and treat systems may reach an asymptotic level at a concentration above the Class GA ground water standards. Additionally, Alternative III does not fully remove all soils from the Site that exceed NYSDEC guidelines, and, like Alternative II, would rely on institutional controls to attain NYSDEC RSCO guidelines.

Under Alternative II, inorganic constituents would remain in Site soil at concentrations above the TAGM RSCO guidelines in areas outside of the source dry well. However, with the exception of two soil sample locations at depths greater than 4 feet below grade, these concentrations are within Shacklette and Boerngen Eastern USA background concentrations. Additionally, the potential for any direct contact exposure to Site soil would be addressed through the use of Site covers and institutional controls. As such, Alternative II would comply with NYSDEC RSCO guidelines (through maintenance of the Site covers and the Deed Restrictions). Alternative III removes soil exceeding NYSDEC RSCO guidelines to 15 feet below grade. Consequently, even this alternative would not remove all soil exceeding these guidelines levels more than 15 feet below grade. However, these soils are considered to be inaccessible, and thus would not pose the potential for direct contact. All three alternatives comply with NYSDEC RSCO guidelines for organics.

Alternatives II and III both meet the alternate background Eastern U.S.A. background concentrations for soils, in conjunction with institutional controls are an appropriate substitute for NYSDEC RSCO guidelines. These institutional controls would eliminate potential exposures to Site soil. It is not feasible to remove all Site soil in excess of NYSDEC RSCO guidelines as part of Alternative III.

Alternatives II and III also would comply with SCGs for:

- worker health and safety during implementation of the remedy; and
- ambient (i.e., off-site) air quality during implementation of the remedy.

In both of the above cases, Alternative III would required considerably more effort to ensure compliance with these two SCGs. Finally, Alternatives II and III comply with SCGs for ground water at the downgradient water supply well.

5.2.3 *Long-Term Effectiveness and Permanence*

Long-term effectiveness and permanence is measured by the magnitude of the residual risk and the adequacy and reliability of controls. Alternatives II and III adequately restrict future use of the property and would both protect against exposure to contaminated soils. In addition, Alternatives II and III include ground water monitoring to confirm that off-Site ground water concentrations of nickel decline after source removal and continue to be acceptable at the downgradient water supply well. Although Alternative III would collect and treat on-Site and off-Site ground water, such collection and treatment would be extremely difficult and costly to implement. Furthermore, the technology would unlikely be able to completely restore Upper Glacial Aquifer to Class GA ground water standards and consequently would not provide any practical benefit beyond the source removal and other remedies included in Alternative II.

5.2.4 *Reduction of Toxicity, Mobility or Volume*

This criterion evaluates the ability of each alternative to reduce the toxicity, mobility or volume of hazardous substances in Site soil and ground water.

The NYSDEC guidance on the selection of remedial actions at inactive hazardous waste sites (NYSDEC, 1990) and the NCP, through the 1986 amendments to CERCLA, contain requirements that preference be given to remedies that permanently reduce the toxicity, mobility or volume of hazardous substances, pollutants or contaminants. Alternatives II and III would reduce the mobility of COPCs in the source area (i.e., dry well DW-4) and permanently remove that source material. Alternatives II and III would also result in a reduction in the concentration of nickel in on-Site and off-Site ground water. Alternative III may result in increased concentration of sodium in ground water as discussed in Section 4 in the event that the applicable treatment technology is precipitation and filtration.

Both of these alternatives would reduce the mobility of chemicals at the Site via their removal and placement in an off-site secure landfill. However, the mobility of chemicals in Site soil outside of the source area is not of concern given the residual concentrations and the imposition of institutional controls. Consequently, the only significant reduction in the mobility of chemicals in Site soil would be associated with the source removal.

5.2.5 *Short-Term Effectiveness*

Short-term effectiveness refers to the potential effects and related risks associated with the implementation of a remedy. Potential short-term effects for Alternative II would be limited to the construction period associated with source removal and storm water reconfiguration, Alternative II work could be completed following coordination with ongoing commercial operations at the Site. In contrast, Alternative III would involve at least (4) to six (6) months of significant construction activity throughout the Site. Alternative III would require installation of over 26,000 sf of sheeting. It would result in severe disruption to on-Site businesses and generate significant truck traffic. Even after this construction project is completed, the ground water remedy component would require construction of an on-Site treatment plant that would interfere with on-Site commercial operations, as well as installation of piping under roads and other off-Site properties.

Excavation of soil can generate air emissions if soil particles and other material (i.e., dust) is released into ambient air. Although Alternative II would entail some excavation , Alternative III would include the excavation of at least 44,582 cubic yards of soil and as much as 48,322 cubic yards of soil, all of which would have to be disposed off-Site. Consequently, Alternative III poses the greatest potential for dust and soil to be released into ambient air and the greatest potential for transportation risks such as motor vehicle accidents or spills.

Alternative II poses the least short-term impacts because of the smaller volume of soil to be excavated and transported, the many fewer trucks and trips that would be required, the much more limited scope and period of excavation and sheeting activities that would be required at the Site, and the much smaller impact on ongoing commercial operations. The short-term effects for Alternative II are also more easily controlled than those for Alternative III and can be controlled or mitigated by air monitoring and dust suppression.

5.2.6 *Implementability*

Implementability evaluates the technical and administrative feasibility of RA alternatives. The implementability issues raised by Alternative II can be managed without significant difficulty. Sheeting and shoring, as well as specialized excavation equipment and labor operators, would be required to complete the work proposed under Alternative II. Storm water reconfiguration, excavation, sheeting and shoring, off-site disposal, and monitoring well installation are all proven technologies. A deed restriction would limit future use of the Site and would specify the requirement to maintain Site covers and obtain NYSDEC approval for any future intrusive work.

The scope of the excavation and off-Site disposal under Alternative III poses numerous implementability concerns, including the possible need to vacate Site buildings during construction activities, extensive sheeting and shoring and possible damage to existing buildings and a continuous supply of dump trailers for immediate transportation to an off-site landfill. The siting of the ground water extraction wells and location of the ground water pump and treat system also pose numerous implementability concerns related to permitting, access, and the ability of on-Site tenants to continue their operations.

5.2.7 *Cost*

Detailed cost estimates for Alternatives II and III are presented in Appendix G; there are no costs associated with Alternative I. The total present worth costs for each alternative, as discussed below, are as follows:

Alternative	*Total Present Worth Cost*
Alternative I	$0
Alternative II	$484,000
Alternative III (See Note 1)	$15,900,000 to $19,700,000

NOTES:
1.This cost calculation does not address the possible need and cost to vacate the Site buildings during the four (4) to six (6) month excavation period or any other costs associated with disruptions to the existing businesses that may occur during this period. Nor does it account for any purchase of property for extraction well siting or treatment system siting, should it not be allowed on school property or the Site, respectively. Cost range represents 10 to 20 years of operation and the two potential treatment options.

5.3 *RECOMMENDATION OF A PREFERRED REMEDIAL ACTION ALTERNATIVE*

On the basis of the analysis of the three RAs identified in Section 4 herein, in accordance with the processes set out in Section 2.2 to identify RAOs, Alternative II (Continued Commercial Use with Source Removal/Stormwater Control and Ground Water Monitoring) is recommended in this FS as the preferred RA for the Site based on:

1. Alternative II provides an equivalent degree of protection to human health and the environment as Alternative III. It complies with the risk-based SCGs and TBC information identified in Section 2.2 and Table 2-1, is consistent with Eastern USA background Shacklette & Boerngen for inorganics, and addresses NYSDEC RSCO guidelines via the existing surface cover. Alternative II also complies with the ground water SCGs at the public water supply wells and includes monitoring to document the decline in nickel concentrations in the Upper Glacial Aquifer following source removal. Alternative II, then, satisfies the two threshold criteria (i.e., protection of human health and the environment and compliance with NYSDEC SCGs).

2. Alternative II would remove and eliminate source material in DW-4, re-route stormwater, and decrease on-Site and off-Site concentrations of nickel in ground water. Alternative II is a permanent remedy because it removes source material from the Site.

3. Alternative II poses minimal, if any, short-term effects and these effects are controllable through engineering. By contrast, Alternative III poses significant potential adverse short-term effects from dust and other fugitive emissions during excavation and transportation and would effectively shut down ongoing businesses for at least (4) to (6) months.

4. There are limited technical or regulatory implementability concerns associated with Alternative II. There are numerous implementability concerns associated with Alternative III.

5. Alternative II would provide adequate long term permanence and effectiveness.

6. Alternative II is by far the most cost-effective approach to ensure continued protection of human health and the environment.

A key component of Alternative II is the execution of a deed restriction by the current property owner limiting future use of the Site, and monitoring to assure that ground water concentrations are diminishing and continue to be acceptable at the water supply wells.

Alternative II is recommended in this FS as the preferred remedial action alternative for the following reasons:

- ability to satisfy the two threshold criteria related to safeguarding of human health and the environment, and demonstrated satisfaction of the SCGs;
- demonstrated long-term effectiveness with minor and controllable short-term issues;
- the timeframe required to remediate the Site to the extent practicable;
- the implementability of the RA; and
- the cost-effectiveness of the RA.

In conclusion, Alternative II provides an equal degree of protection to human health and the environment and an equal reduction in the toxicity, mobility and volume of chemicals in Site soil as Alternative III. Alternative III would provide added reduction in the mobility and volume of nickel in ground water; however, for reasons analyzed throughout this FS, ground water treatment is not needed to protect human health and the environment.

Alternative II is a permanent remedy as defined by 6 NYCRR Part 375 and by the NYSDEC FS TAGM and there are no significant short-term effects or implementability concerns associated with the construction and operation of this alternative. Alternative II is also the most cost-effective alternative evaluated in this FS. For these reasons, Alternative II is recommended in this FS as the preferred remedial action alternative for the Site.

6.0 REFERENCES

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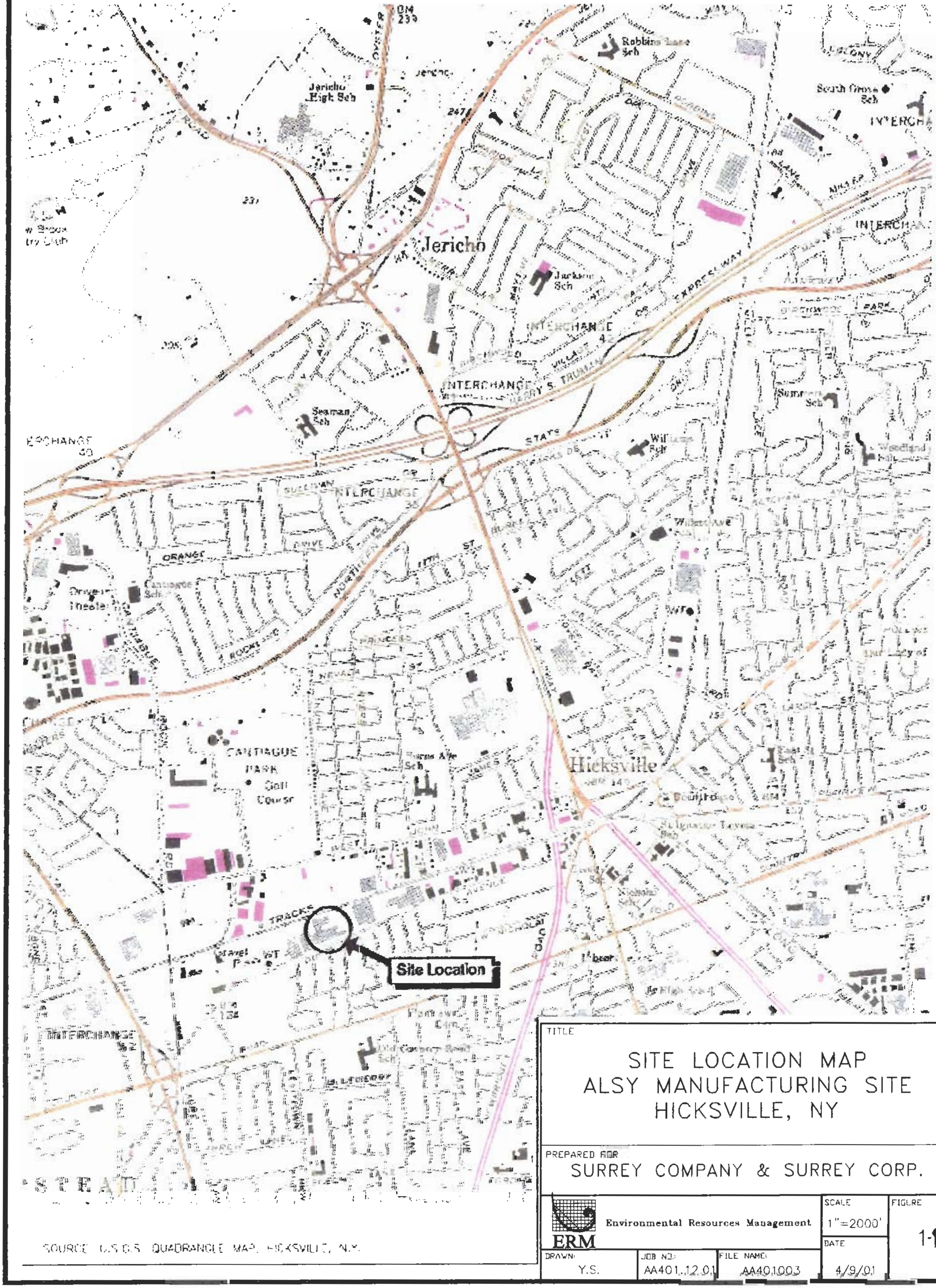


SOURCE: U.S.G.S. QUADRANGLE MAP, HICKSVILLE, N.Y.

TITLE

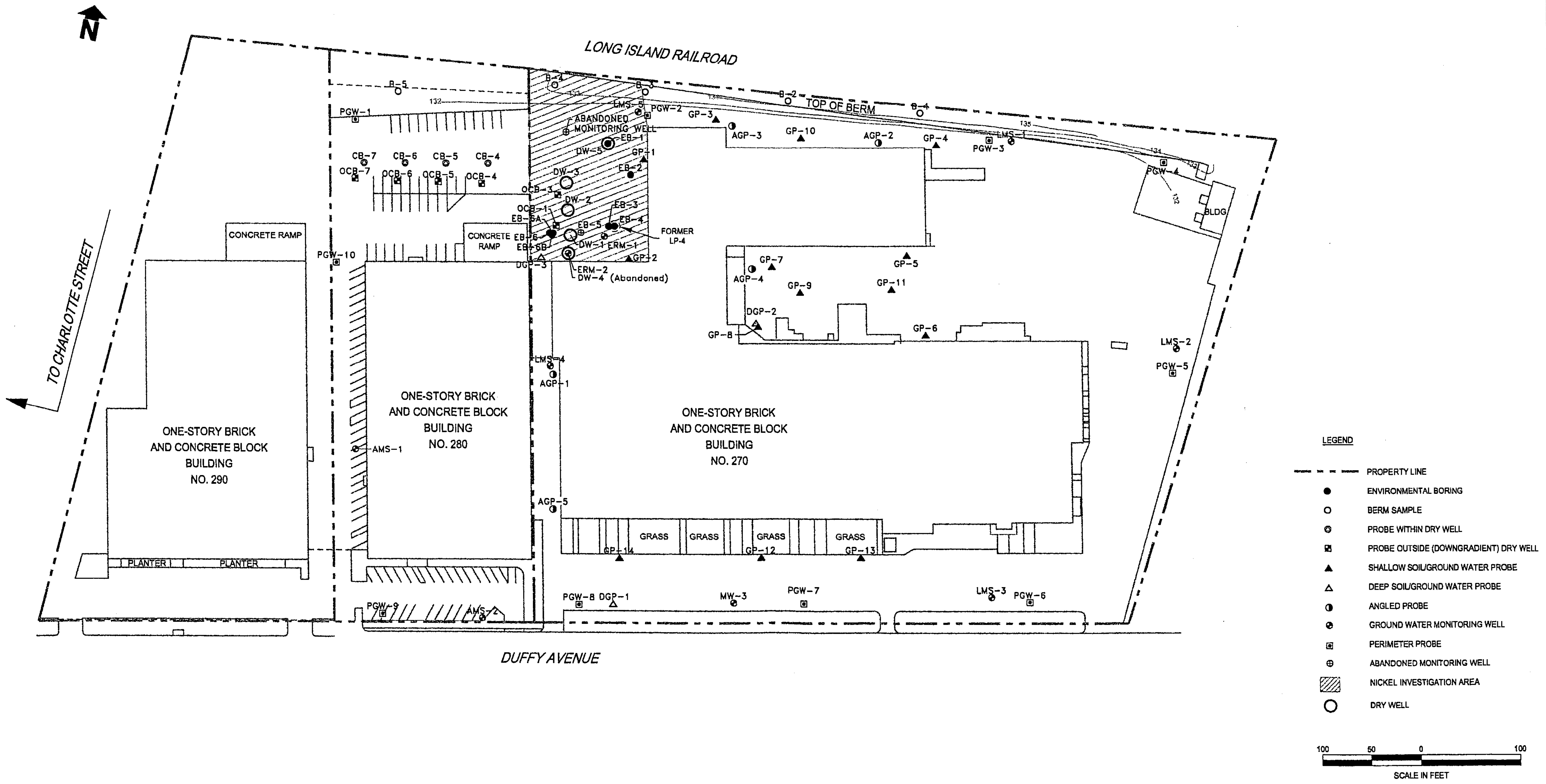
SITE LOCATION MAP
ALSY MANUFACTURING SITE
HICKSVILLE, NY

PREPARED FOR
SURREY COMPANY & SURREY CORP.

ERM
Environmental Resources Management

SCALE 1"=2000'	FIGURE 1-1		
DATE 4/9/01			
DRAWN: Y.S.	JOB NO: AA401.12.01	FILE NAME: AA401003	

FIGURE 1-2
SITE PLAN
FORMER ALSY MANUFACTURING SITE
HICKSVILLE, NEW YORK



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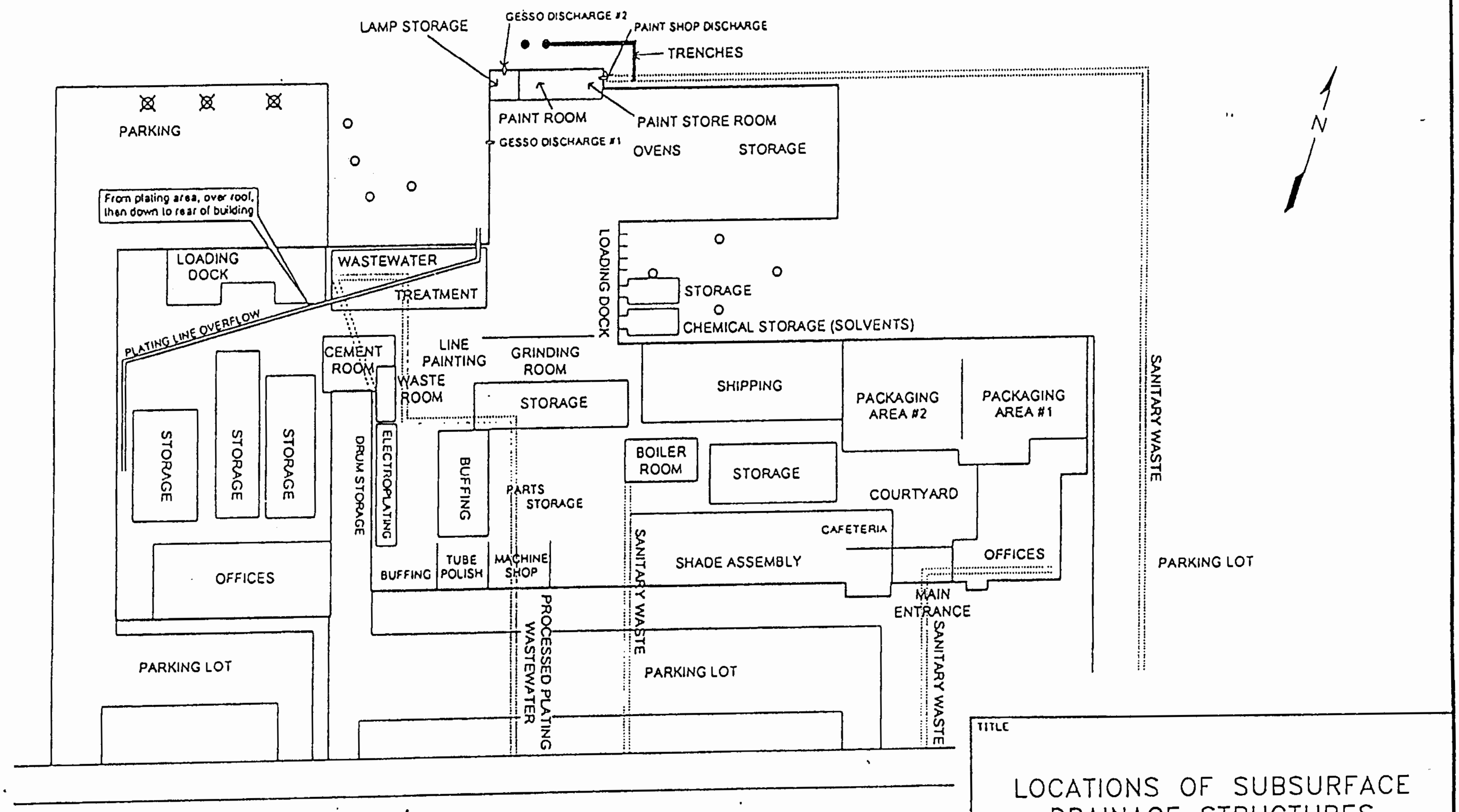


LEGEND

☒ Dry well

○ Leach pool

● Septic pool

NOT TO SCALE

SOURCE: SURREY COMPANY AND SURREY CORPORATION PLANTIFF'S EXHIBIT

TITLE

LOCATIONS OF SUBSURFACE DRAINAGE STRUCTURES

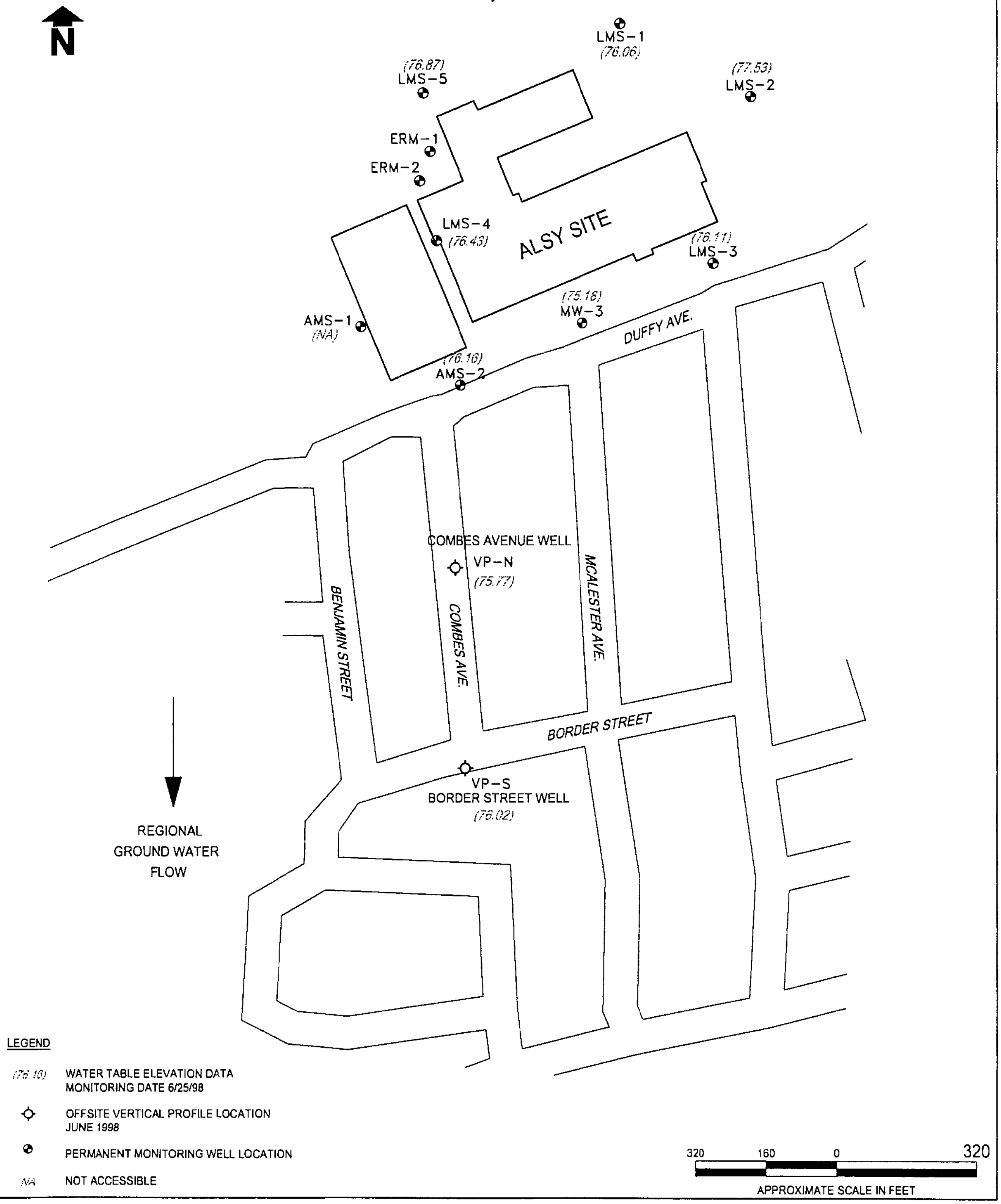
PREPARED FOR
SURREY COMPANY & SURREY CORP.

ERM-Northeast
Environmental Resources Management

SCALE	FIGURE
NONE	1-3

DRAWN	JOB NO.	FILE NAME	DATE
Y.S.	1426.001	1426005M	8/21/98

FIGURE 1-4
WATER TABLE ELEVATIONS
25 JUNE 1998
FORMER ALSY MANUFACTURING SITE
HICKSVILLE, NEW YORK

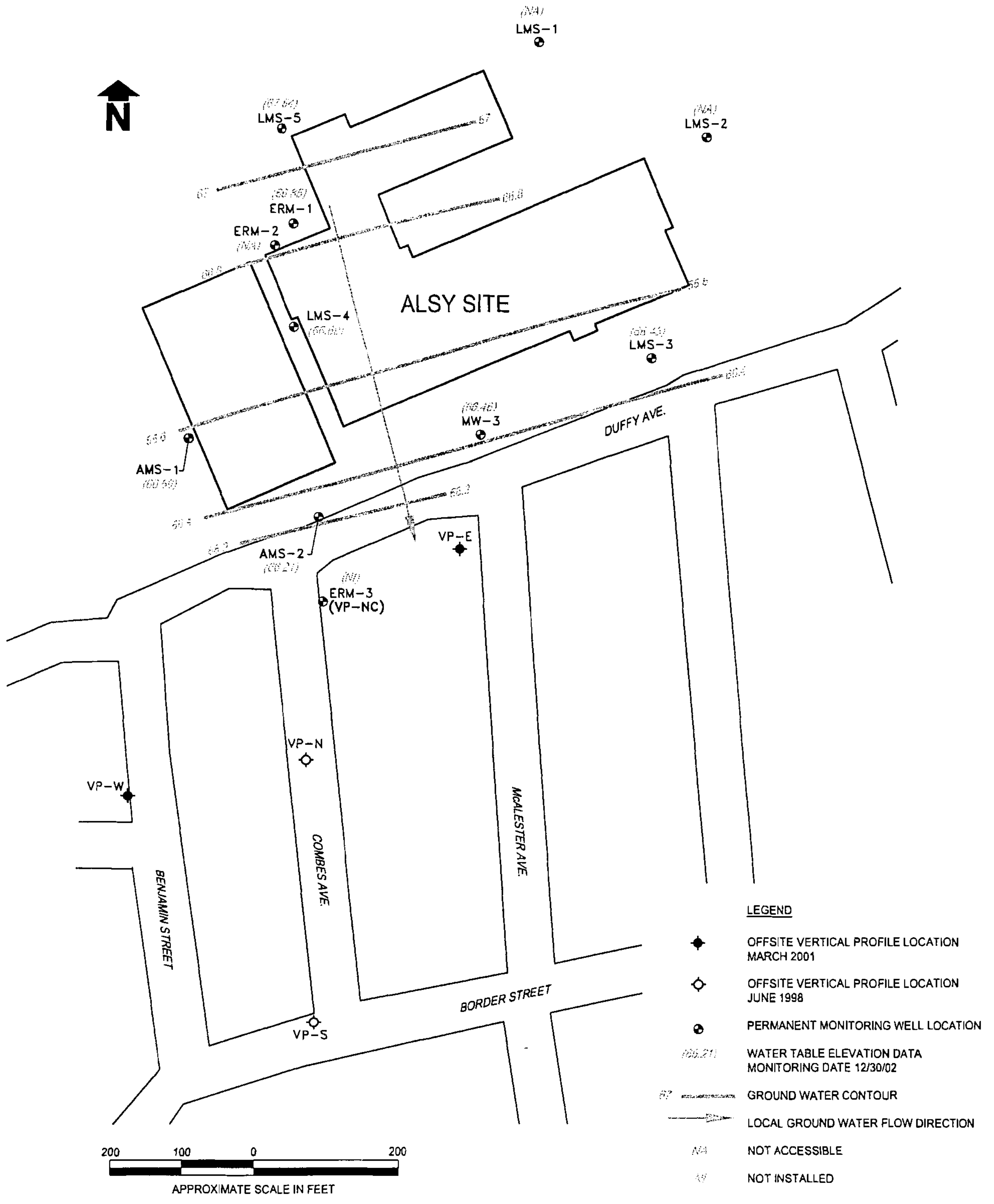


C:\CAD\DRAWINGS\0001328\A104.DWG DATE: 10/30/2003

MLB/10-30-03

ERM, INC.

FIGURE 1-5
GROUND WATER ELEVATIONS AND FLOW MAP
30 DECEMBER 2002
FORMER ALSY MANUFACTURING SITE HICKSVILLE, NEW YORK

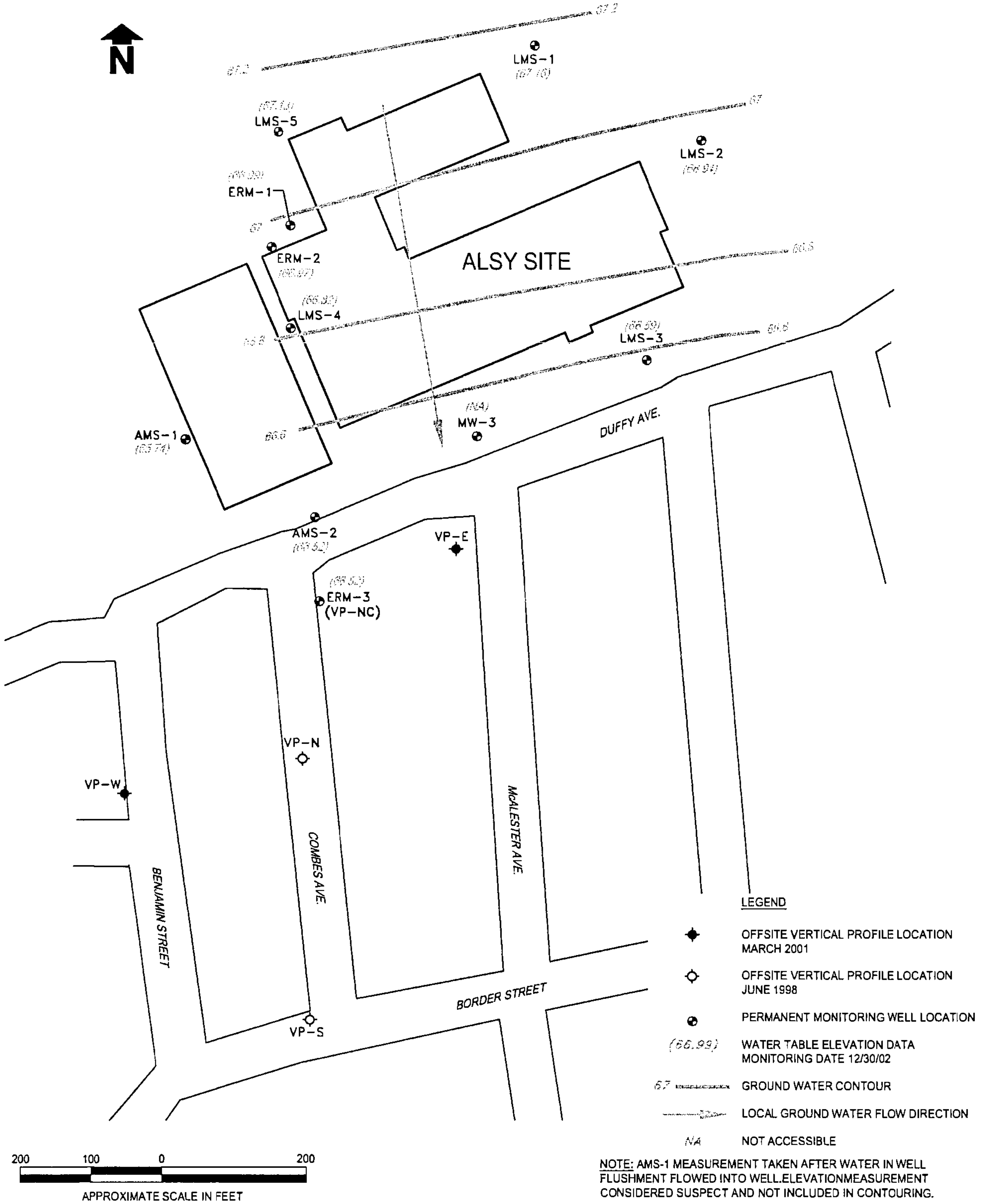


G:\CAD\DRAWINGS\0001328\A102.DWG DATE: 10/30/2003

MLB/10-30-03

ERM, INC.

FIGURE 1-6
GROUND WATER ELEVATIONS AND FLOW MAP
6 JANUARY 2003
FORMER ALSY MANUFACTURING SITE
HICKSVILLE, NEW YORK

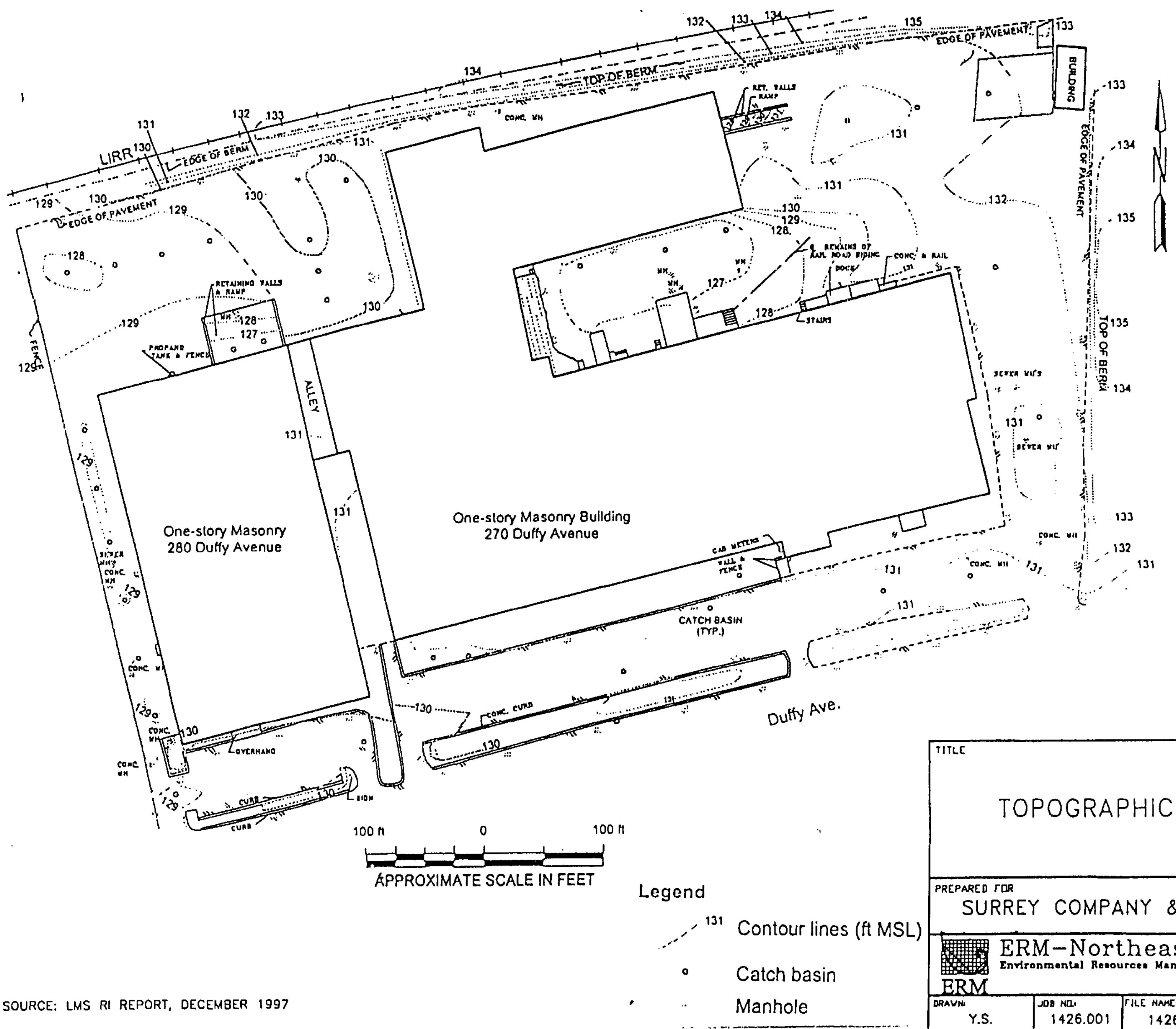


NOTE: AMS-1 MEASUREMENT TAKEN AFTER WATER IN WELL FLUSHMENT FLOWED INTO WELL.ELEVATIONMEASUREMENT CONSIDERED SUSPECT AND NOT INCLUDED IN CONTOURING.

G:\CAD\DRAWINGS\0001328\A103.DWG DATE: 10/30/2003

MLB/10-30-03

ERM, INC.



SOURCE: LMS RI REPORT, DECEMBER 1997

TITLE

TOPOGRAPHIC SITE MAP

PREPARED FOR
SURREY COMPANY & SURREY CORP.

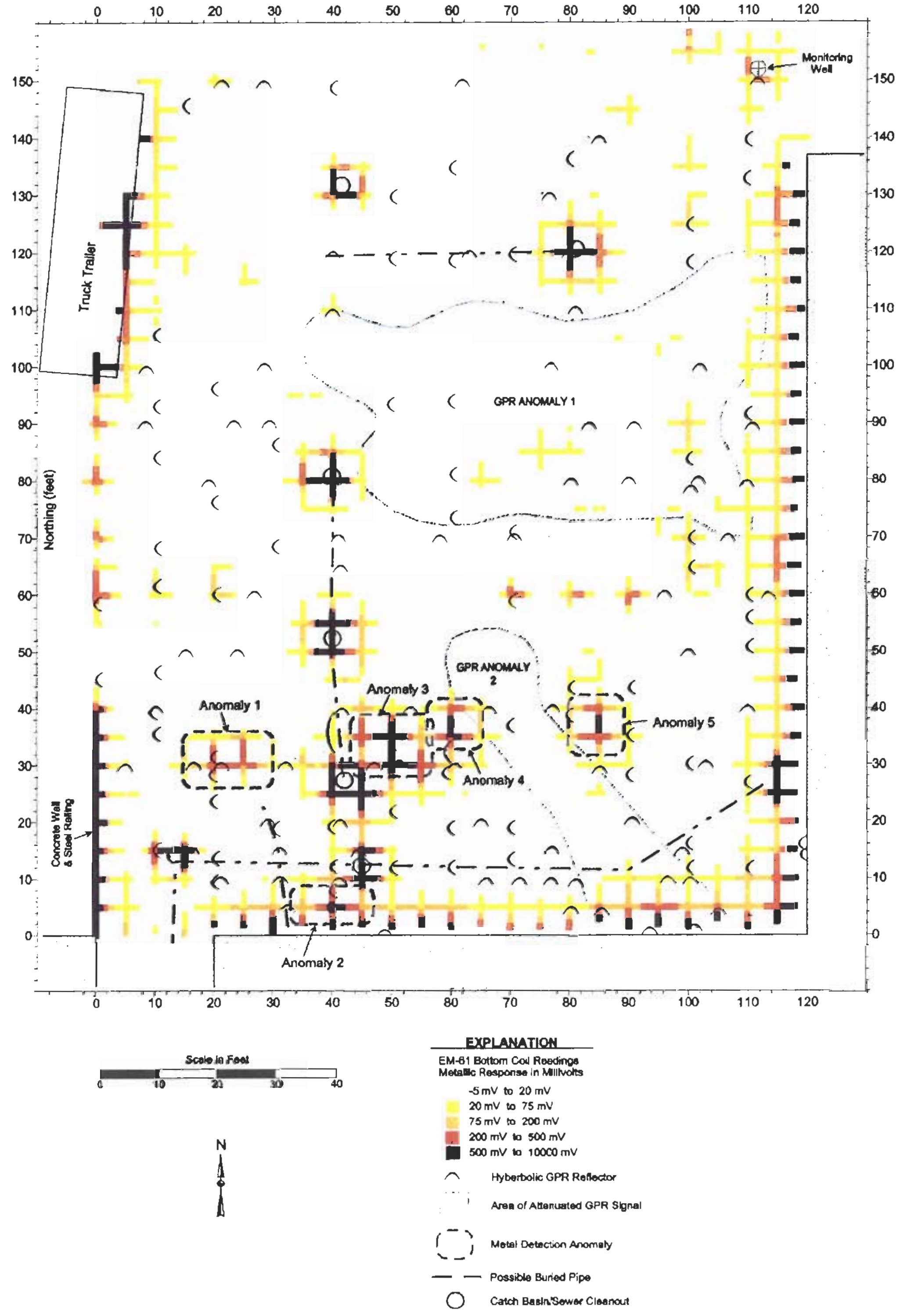
ERM-Northeast
Environmental Resources Management
ERM

DRAWN:	JOB NO.:	FILE NAME:	SCALE	FIGURE
Y.S.	1426.001	1426006M	GRAPHIC	1–7
			DATE 7/21/98	

FIGURE 1-8

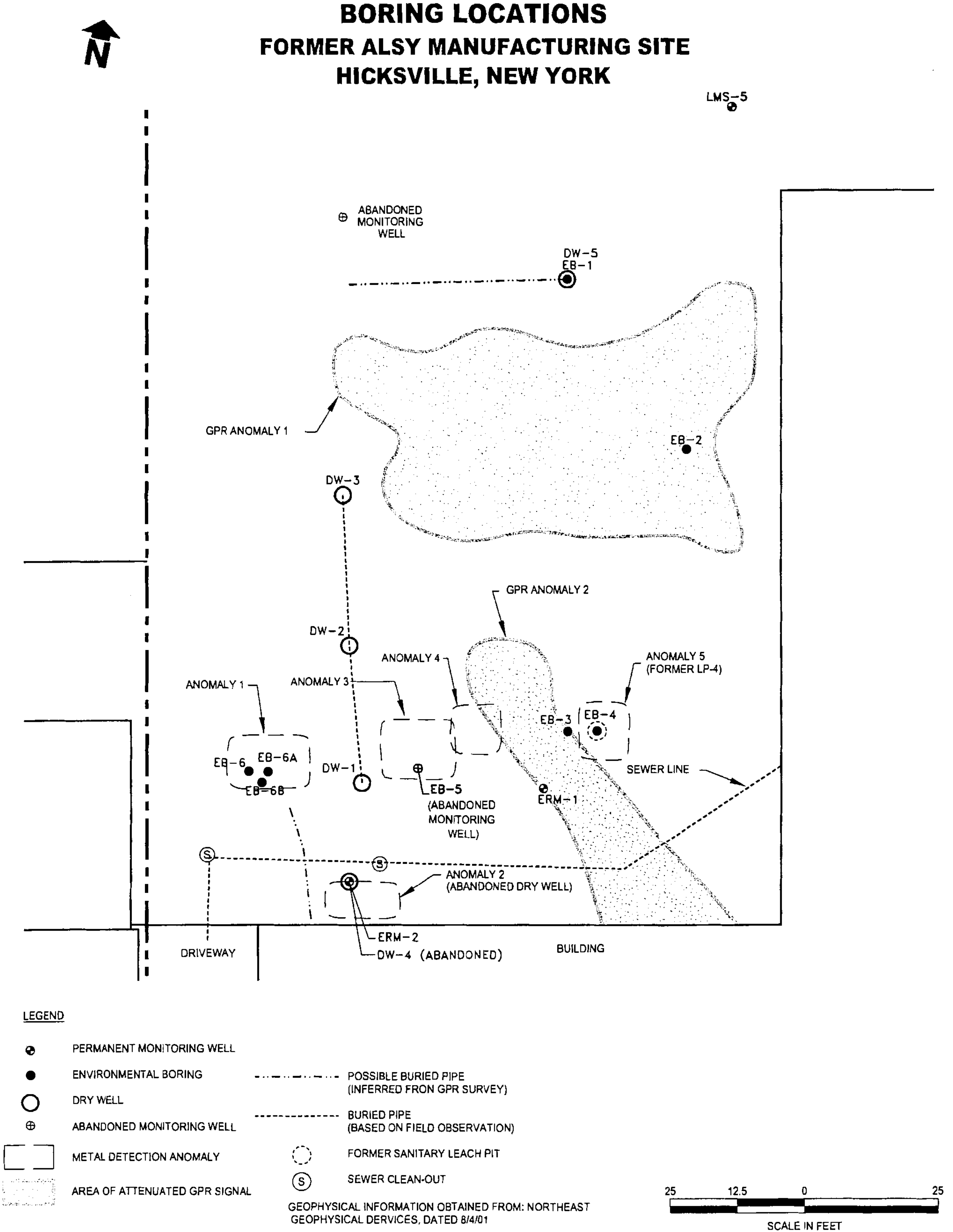
RESULTS OF EM AND GPR SURVEYS

FORMER ALSY MANUFACTURING SITE
HICKSVILLE, NEW YORK



G:\CAD\DRAWINGS\0001328\1102.DWG DATE: 10/31/2003

FIGURE 1-9
PLAN VIEW OF THE GPR RESULTS AND BORING LOCATIONS
FORMER ALSY MANUFACTURING SITE
HICKSVILLE, NEW YORK



GEOPHYSICAL INFORMATION OBTAINED FROM: NORTHEAST GEOPHYSICAL DERVICES, DATED 8/4/01

G:\CAD\DRAWINGS\0001328\1101.DWG DATE: 10/30/2003

MLB/10-30-03

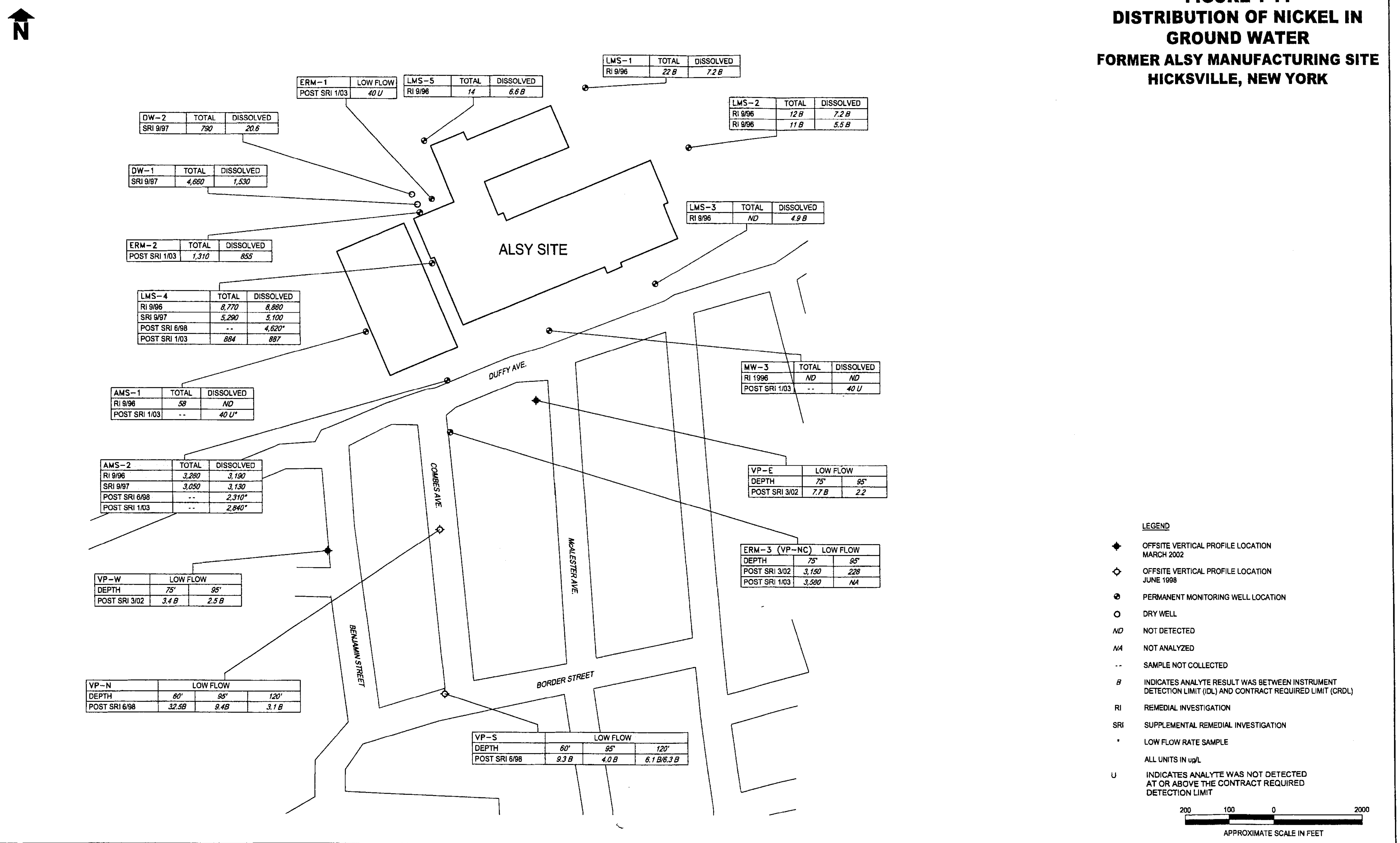
ERM, INC.

Figure 1-10
One-Mile Radius Well Search
Former ALSY Manufacturing Site
Hicksville, New York

Source: USGS Topographic Quadrangles, Hicksville and Freeport, New York-Nassau Co.

F005M.00.01 AP/EK/CW 4-4-03 rev. 10-28-03

FIGURE 1-11
DISTRIBUTION OF NICKEL IN GROUND WATER
FORMER ALSY MANUFACTURING SITE
HICKSVILLE, NEW YORK

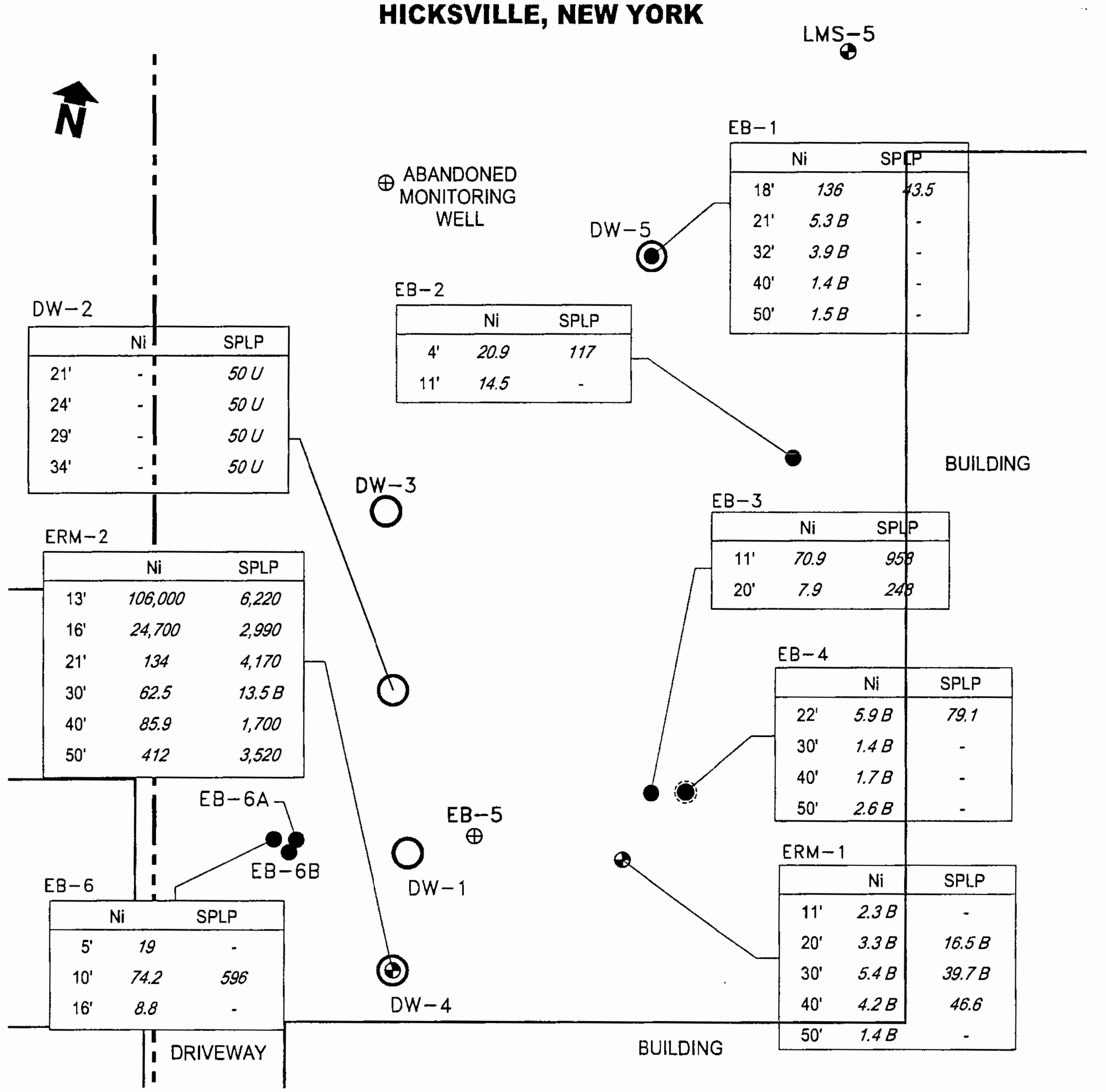


G:\CAD\DRAWINGS\0001328\A201.DWG DATE: 11/03/2003

MLB/11-03-03

ERM, INC.

FIGURE 1-12
REAR COURTYARD NICKEL AND SPLP NICKEL SOIL CONCENTRATIONS
FORMER ALSY MANUFACTURING SITE
HICKSVILLE, NEW YORK



EB-1

	Ni	SPLP
18'	*136*	*43.5*
21'	*5.3 B*	-
32'	*3.9 B*	-
40'	*1.4 B*	-
50'	*1.5 B*	-

EB-2

	Ni	SPLP
4'	*20.9*	*117*
11'	*14.5*	-

DW-2

	Ni	SPLP
21'	-	*50 U*
24'	-	*50 U*
29'	-	*50 U*
34'	-	*50 U*

ERM-2

	Ni	SPLP
13'	*106,000*	*6,220*
16'	*24,700*	*2,990*
21'	*134*	*4,170*
30'	*62.5*	*13.5 B*
40'	*85.9*	*1,700*
50'	*412*	*3,520*

EB-3

	Ni	SPLP
11'	*70.9*	*958*
20'	*7.9*	*248*

EB-4

	Ni	SPLP
22'	*5.9 B*	*79.1*
30'	*1.4 B*	-
40'	*1.7 B*	-
50'	*2.6 B*	-

ERM-1

	Ni	SPLP
11'	*2.3 B*	-
20'	*3.3 B*	*16.5 B*
30'	*5.4 B*	*39.7 B*
40'	*4.2 B*	*46.6*
50'	*1.4 B*	-

EB-6

	Ni	SPLP
5'	*19*	-
10'	*74.2*	*596*
16'	*8.8*	-

LEGEND

◒	PERMANENT MONITORING WELL
●	ENVIRONMENTAL BORING
○	DRY WELL
⊕	ABANDONED MONITORING WELL
◌	FORMER SANITARY LEACH PIT
-	NOT ANALYZED
U	INDICATES SPLP NICKEL WAS NOT DETECTED ABOVE THE ANALYTICAL DETECTION LIMIT

SPLP SYNTHETHETIC PRECIPITATION LEACHING PROCEDURE

GEOPHYSICAL INFORMATION OBTAINED FROM:
NORTHEAST GEOPHYSICAL SERVICES, 8/4/01

25 12.5 0 25
SCALE IN FEET

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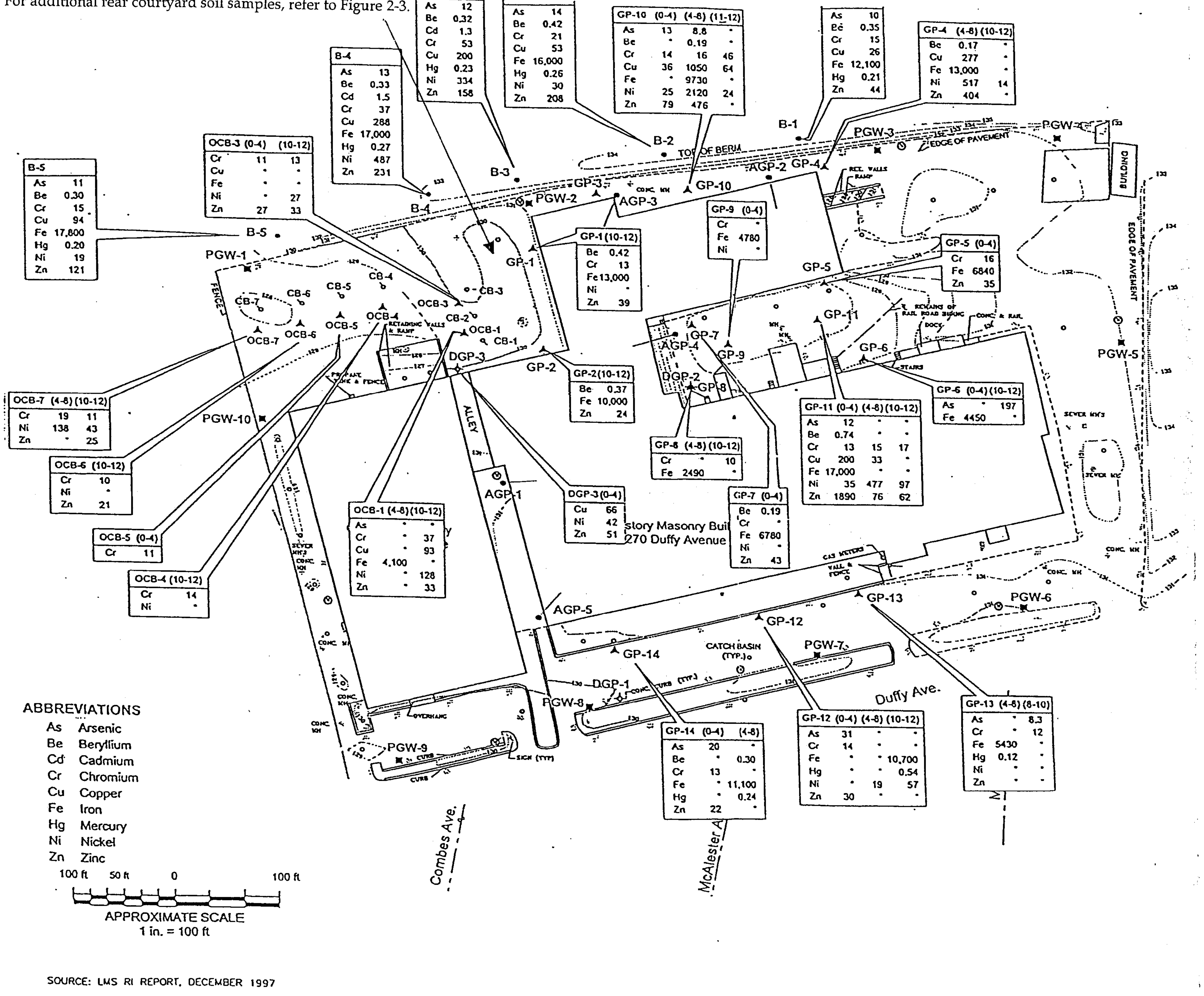
MLB/11-03-03

ERM. INC.

For additional rear courtyard soil samples, refer to Figure 2-3.



LEGEND

B-# ● Berm samples

GP-# ⅄ Shallow soil/groundwater probes

PGW-# ✖ Perimeter probes

DGP-# ✧ Deep probes

AGP-# ● Angled probes

OCB-1 ⅄ Outside (downgradient) catch basin probe

CB-5 Catch basin probe

• Does not exceed NYSDEC Recommended Soil Cleanup Objective (RSCO) Guideline

NYSDEC RSCO
GUIDELINE
As = 7.5
Be = 0.16
Cd = 1.0
Cr = 10.0
Cu = 25.0
Fe = 2000
Hg = 0.1
Ni = 13.0
Zn = 20.0

NOTE: All results in mg/kg
Sample depths in feet below grade

TITLE
SOIL SAMPLES
(0–12 FT. BELOW GRADE)

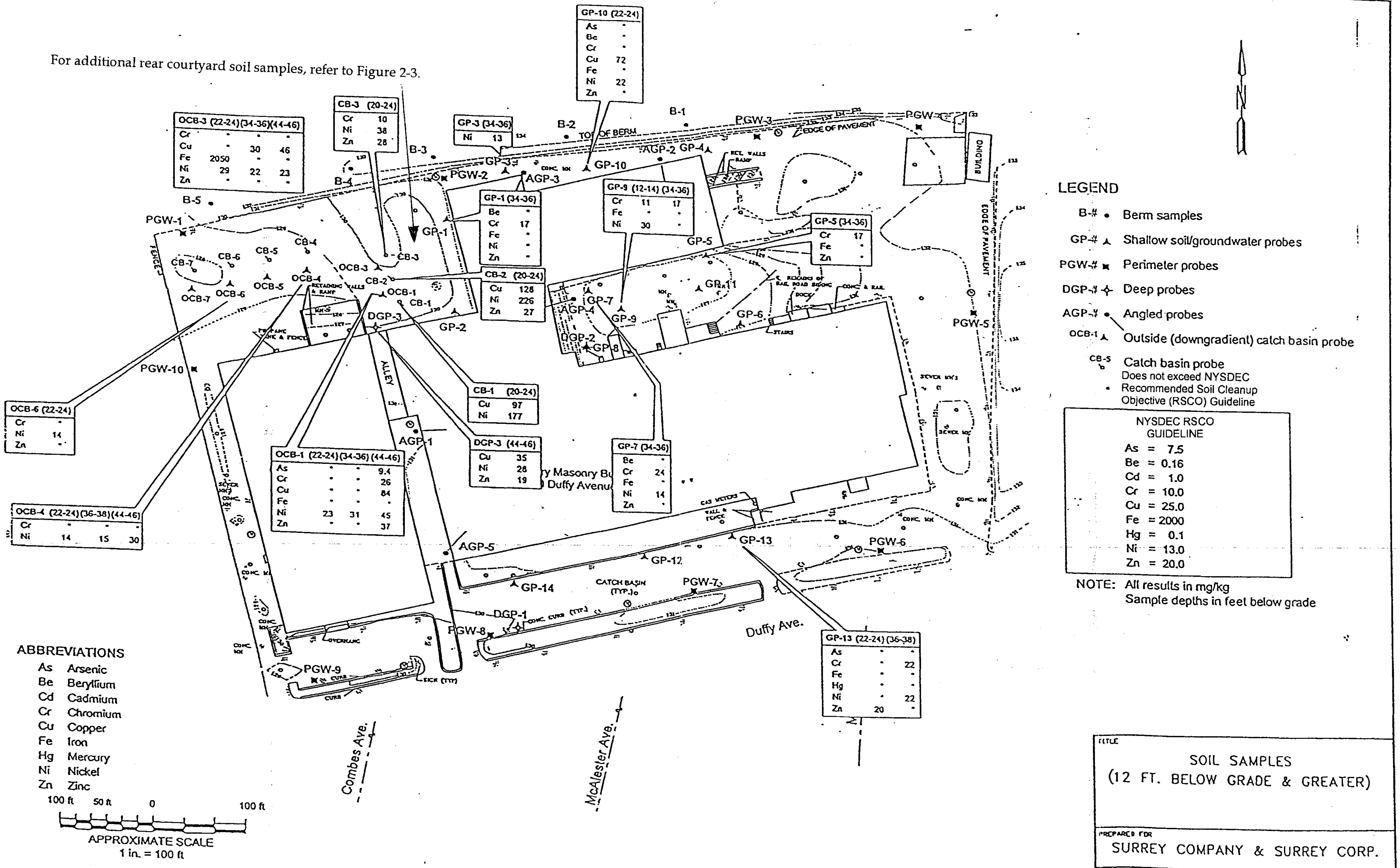
PREPARED FOR
SURREY COMPANY & SURREY CORP.

ERM–Northeast
Environmental Resources Management
ERM

SCALE	FIGURE
GRAPHIC	2-1
DATE 7/21/98	

DRAWN Y.S.
JOB NO. 1426.001
FILE NAME 1426003M

For additional rear courtyard soil samples, refer to Figure 2-3.



SOURCE: LMS RI REPORT, DECEMBER 1997

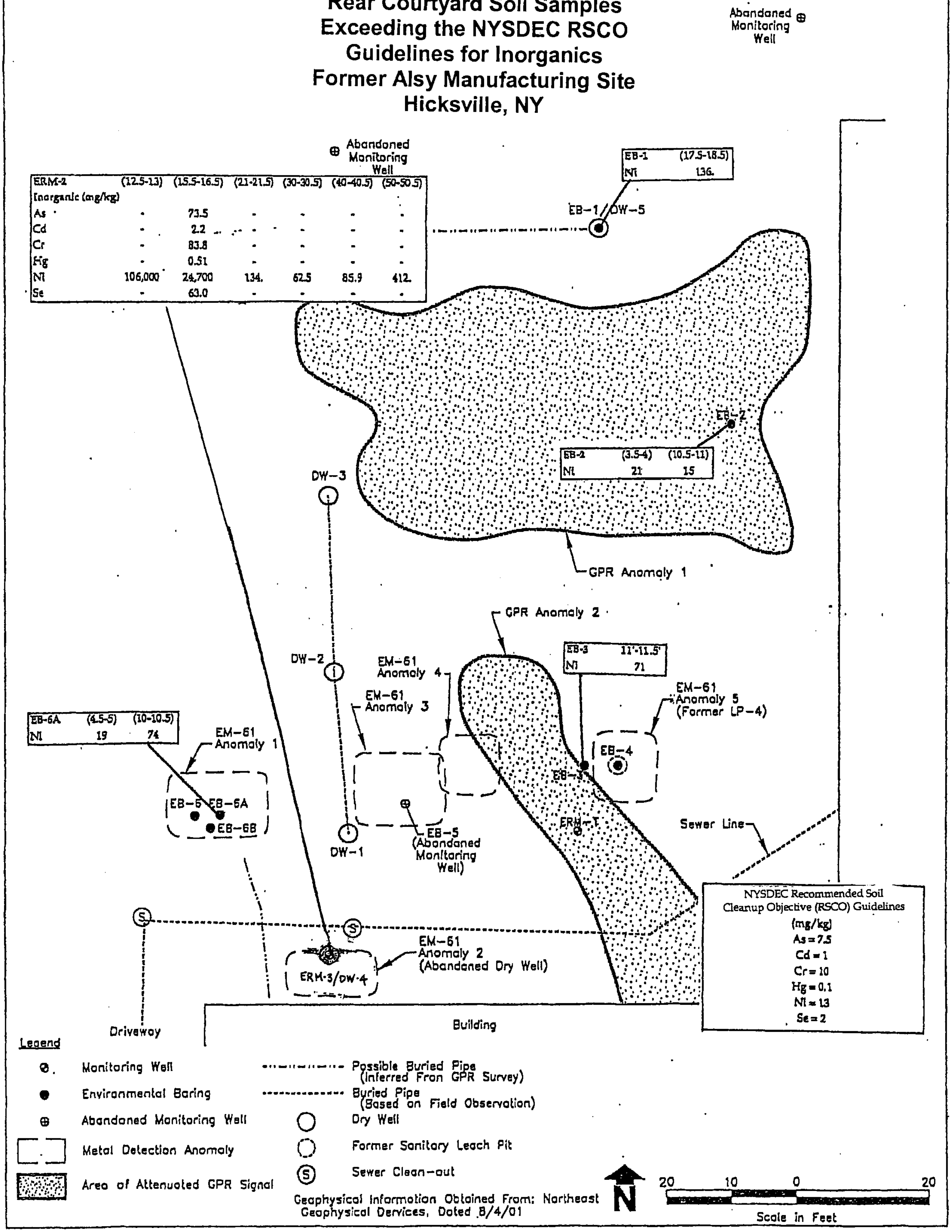
TITLE
SOIL SAMPLES
(12 FT. BELOW GRADE & GREATER)

PREPARED FOR
SURREY COMPANY & SURREY CORP.

ERM–Northeast
Environmental Resources Management
ERM

DRAWN Y.S.	JOB NO. 1426.001	FILE NAME 1426004M	SCALE GRAPHIC DATE 7/21/98	FIGURE 2-2

Figure 2-3
Rear Courtyard Soil Samples Exceeding the NYSDEC RSCO Guidelines for Inorganics
Former Alsy Manufacturing Site
Hicksville, NY



ERM-2	(12.5-13)	(15.5-16.5)	(21-21.5)	(30-30.5)	(40-40.5)	(50-50.5)
Inorganic (mg/kg)						
As	-	73.5	-	-	-	-
Cd	-	2.2	-	-	-	-
Cr	-	83.8	-	-	-	-
Hg	-	0.51	-	-	-	-
Ni	106,000	24,700	134.	62.5	85.9	412.
Se	-	63.0	-	-	-	-

EB-1	(17.5-18.5)
Ni	136.

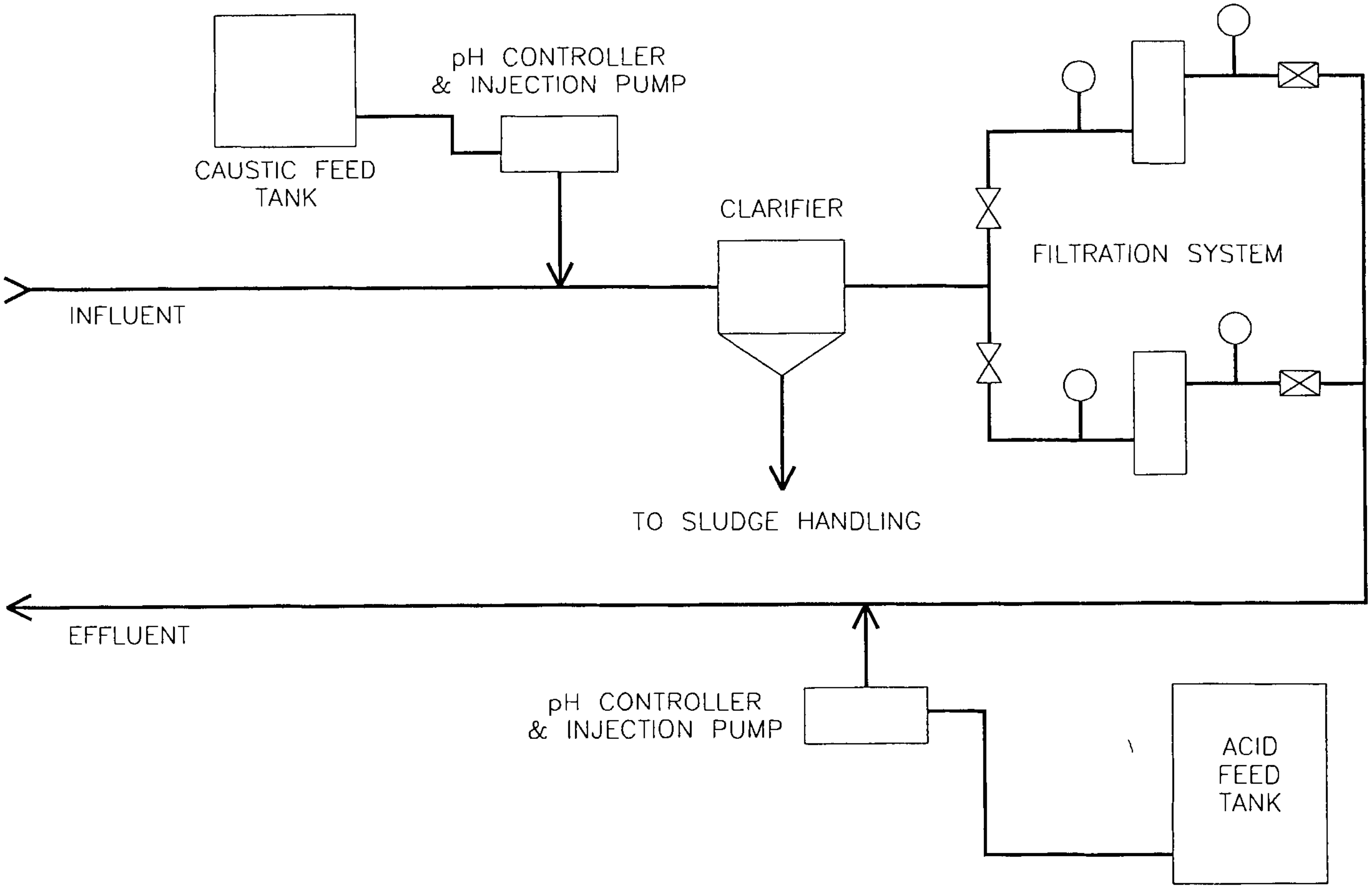
EB-2	(3.5-4)	(10.5-11)
Ni	21	15

EB-3	11'-11.5'
Ni	71

EB-6A	(4.5-5)	(10-10.5)
Ni	19	74

NYSDEC Recommended Soil Cleanup Objective (RSCO) Guidelines
(mg/kg)
As = 7.5
Cd = 1
Cr = 10
Hg = 0.1
Ni = 13
Se = 2

Geophysical Information Obtained From: Northeast Geophysical Dervices, Dated 8/4/01



LEGEND

☒ AUTOMATIC CONTROL VALVES

○ PRESSURE GAUGE

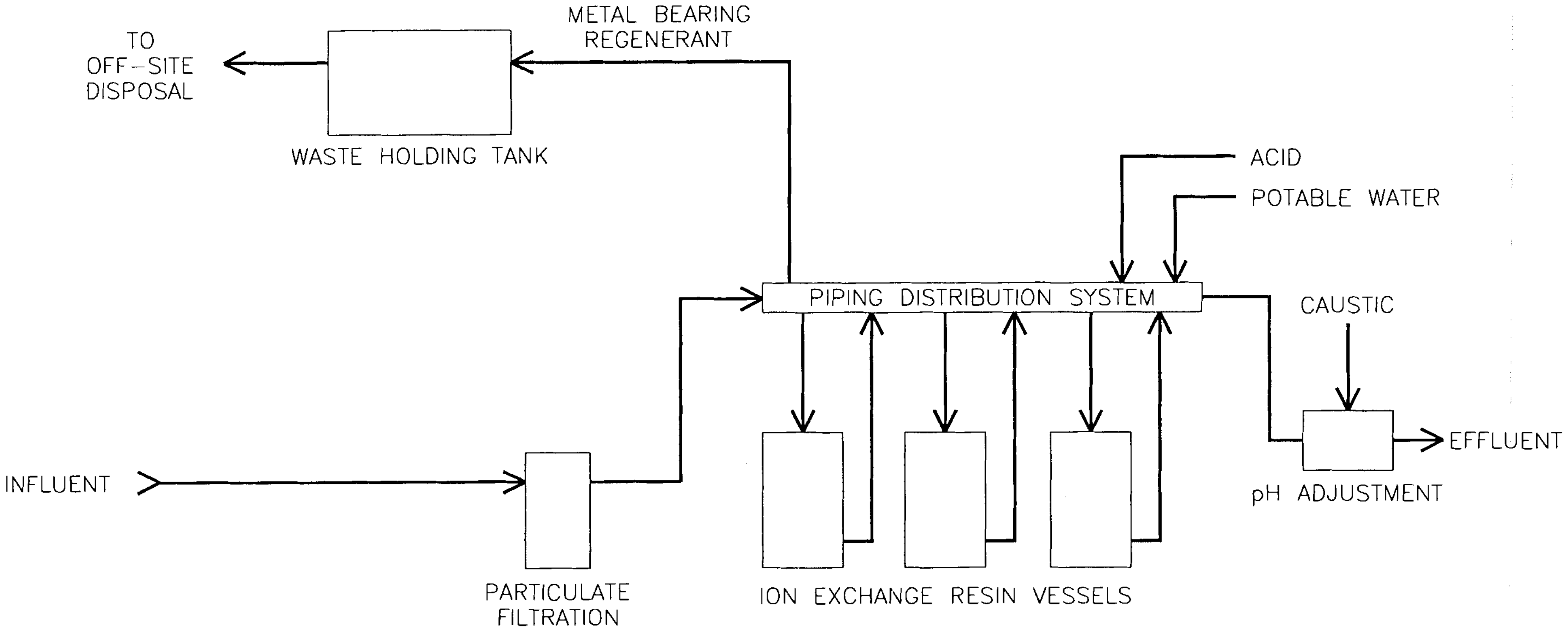
TITLE

PROCESS FLOW DIAGRAM GROUNDWATER METALS REMOVAL VIA PRECIPITATION & FILTRATION

PREPARED FOR

ERM Environmental Resources Management

			SCALE NONE	FIGURE 3-1
DRAWN: JPM	JOB NO.: 0001328	FILE NAME: 0001328001	DATE 10/13/03	



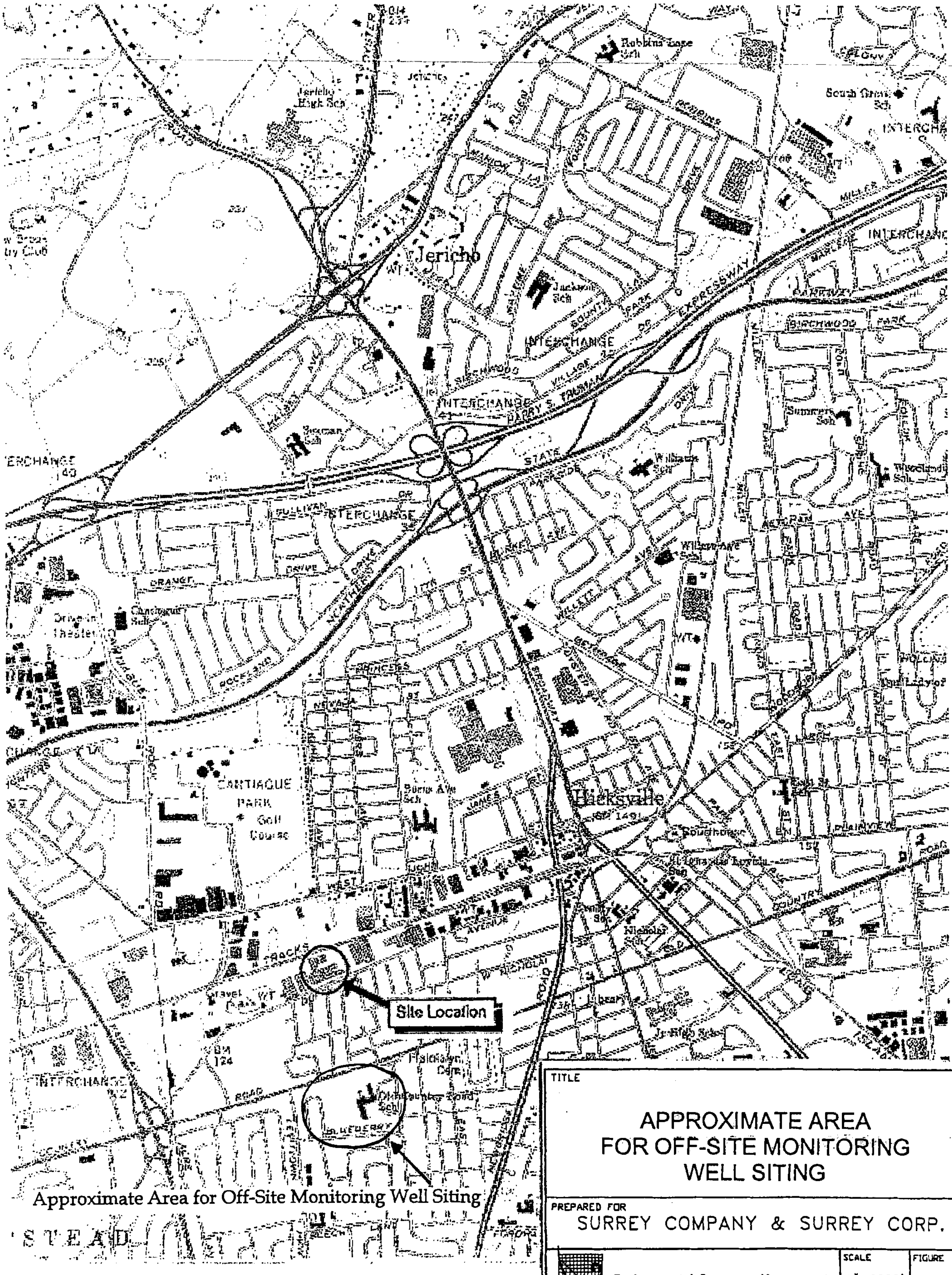
TITLE

PROCESS FLOW DIAGRAM GROUNDWATER METALS REMOVAL VIA ION EXCHANGE

PREPARED FOR

ERM
Environmental Resources Management

SCALE: NONE
FIGURE: 3-2
DATE: 10/13/03
DRAWN: JPM
JOB NO.: 0001328
FILE NAME: 0001328002



SOURCE: U.S.G.S. QUADRANGLE MAP, HICKSVILLE, N.Y.

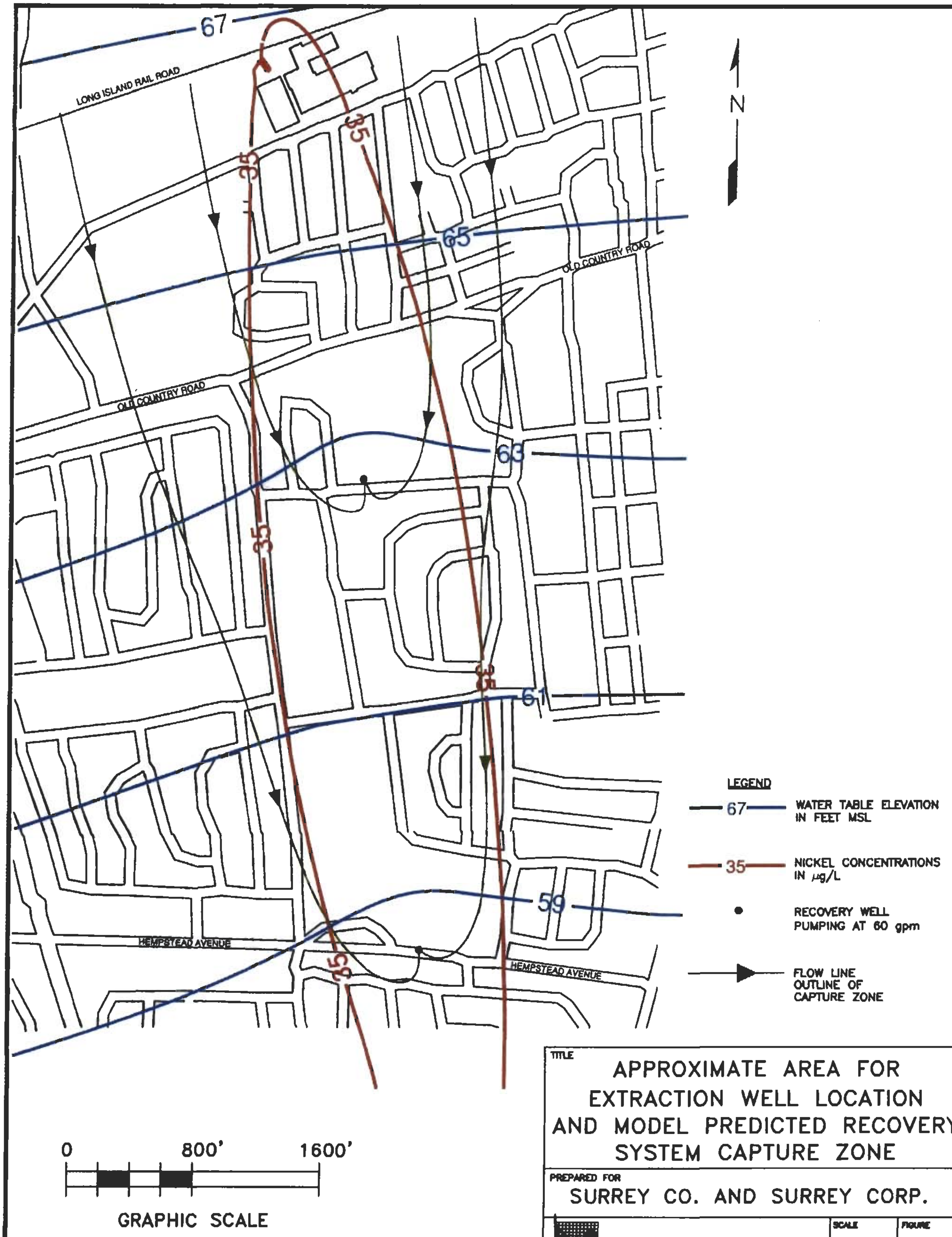
TITLE

APPROXIMATE AREA FOR OFF-SITE MONITORING WELL SITING

PREPARED FOR

SURREY COMPANY & SURREY CORP.

ERM Environmental Resources Management			SCALE 1"=2000'	FIGURE 4-1
			DATE	
DRAWN: Y.S.	JOB NO.: AA401.12.01	FILE NAME: AA401003	4/9/01	



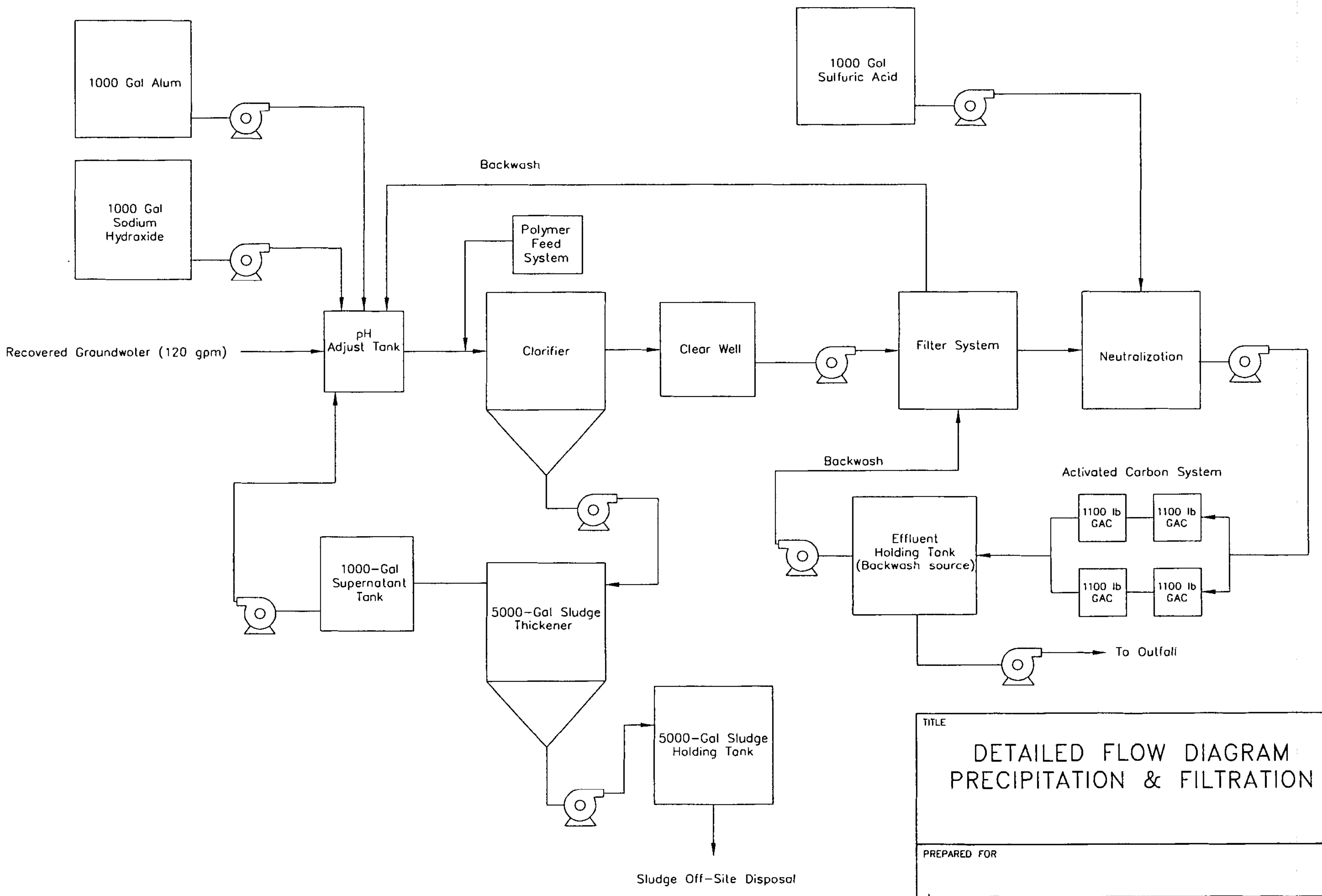
TITLE

APPROXIMATE AREA FOR EXTRACTION WELL LOCATION AND MODEL PREDICTED RECOVERY SYSTEM CAPTURE ZONE

PREPARED FOR
SURREY CO. AND SURREY CORP.

Environmental Resources Management
ERM

DRAWN: Y.S./EMF	JOB NO.: 0001328.02	FILE NAME: 0001328-02-004E	SCALE GRAPHIC DATE 6/8/04	FIGURE 4-2



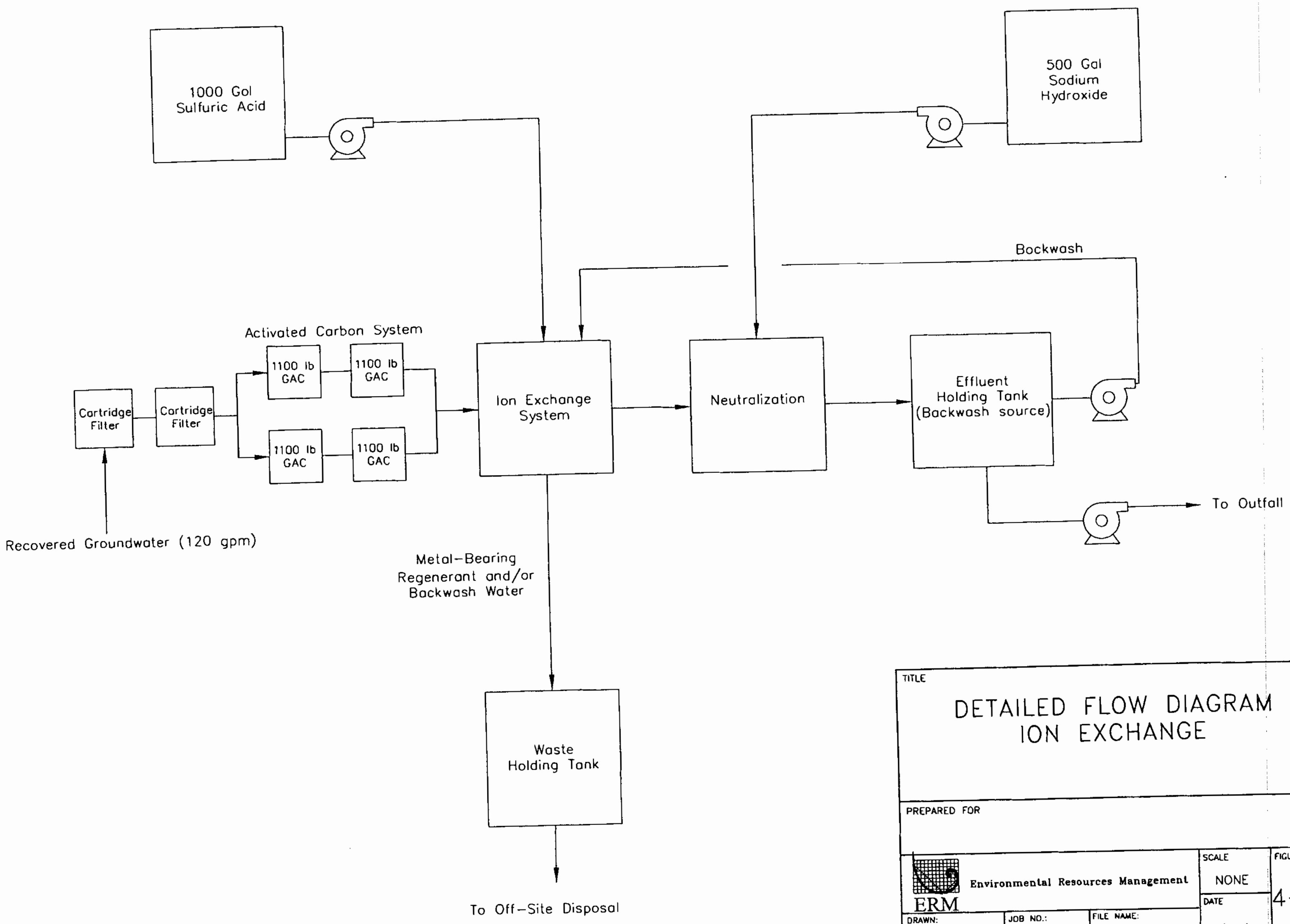
TITLE

DETAILED FLOW DIAGRAM PRECIPITATION & FILTRATION

PREPARED FOR

ERM Environmental Resources Management

DRAWN: JPM	JOB NO.: 0001328	FILE NAME: 0001328003	SCALE NONE DATE 10/20/03	FIGURE 4-3



TITLE

DETAILED FLOW DIAGRAM ION EXCHANGE

PREPARED FOR

ERM Environmental Resources Management

DRAWN: JPM	JOB NO.: 0001328	FILE NAME: 0001328004	SCALE NONE DATE 10/20/03	FIGURE 4-4

TABLES

Table 1-1
Groundwater Elevations
Alsy Manufacturing Site, Hicksville, NY

Well	Measuring Point Elevation	Depth to Water 6/25/98	Water Table Elevation 6/25/98
LMS - 1	134.21	58.15	76.06
LMS - 2	134.8	57.27	77.53
LMS - 3	133.79	57.68	76.11
LMS - 4	134.43	58	76.43
LMS - 5	134.07	57.2	76.87
AMS - 1	132.19	NA	--
AMS - 2	132.65	56.49	76.16
MW -3	132.04	56.86	75.18
Combes Ave. Well	132.08	56.31	75.77
Border St.Well	130.97	54.95	76.02

Well	Measuring Point Elevation	Depth to Water (btoc) 12/30/02	Ground Water Elevation 12/30/02	Depth to Water (btoc) 1/6/03	Water Table Elevation 1/6/03	Depth to Water (btoc) 1/29/03	Water Table Elevation 1/29/03
LMS-1	132.97	--	--	65.81	67.16	65.78	67.19
LMS-2	133.58	--	--	66.64	66.94	66.48	67.1
LMS-3	132.56	66.1	66.46	65.97	66.59	65.52	67.04
LMS-4	133.23	66.54	66.69	66.41	66.82	66.45	66.78
LMS-5	132.84	65.3	67.54	65.71	67.13	65.71	67.13
AMS-1	130.99	64.4	66.59	65.25	65.74	64.4	66.59
AMS-2	131.41	65.2	66.21	64.89	66.52	64.84	66.57
ERM-1	131.77	64.92	66.85	64.78	66.99	64.8	66.97
ERM-2	131.83	--	--	64.86	66.97	64.91	66.92
ERM-3	131.45	NI	NI	NA	66.52	65.01	66.44
MW-3	131.81	65.35	66.46	NA	NA	65.2	66.61

Notes:

NA - Not Accessible

NI= Not Installed

Wells were re-surveyed in January 2003. Elevations reported from 1998 are based upon prior survey information. Modifications were also made to casings and well covers between 1998 and 2003 that preclude extrapolating previous ground water measurements with new survey data.

TABLE 1-2
GEOPHYSICAL SURVEY ANOMALY SUMMARY AND RESULTANT SAMPLE LOCATIONS
FORMER ALSY MANUFACTURING SITE
HICKSVILLE, NY

Geophysical Anomaly	**Action Taken**
EM #1	Drilled soil borings: EB-6, EB-6A, EB-6B and collected soil samples
EM #2	Installed monitoring well ERM-2 and collected soil samples
EM #3 EM #4	Drilled soil boring EB-5
EM #5	Drilled soil boring EB-4 and collected soil sample
GPR #1	Drilled soil boring EB-2 and collected soil samples
GPR #2	Drilled soil boring EB-3; installed monitoring well ERM-1; collected soil sample
Additional Boring Location	
Existing Drywell, DW-5	Drilled soil boring EB-1 and collected soil samples

TABLE 1-3
SOIL SAMPLE RATIONALE AND ANALYSIS PERFORMED
FORMER ALSY MANUFACTURING SITE
HICKSVILLE, NY

LOCATION	REASON FOR SAMPLE	DEPTH, bgs	SAMPLE DESCRIPTION	ANALYSIS	REASON FOR ANALYSIS
1998 Soil Sampling					
DW-2	Existing Dry Well	21-22' (1)	Not Available	SPLP Nickel (2)	SOW
		24-26'		SPLP Nickel (2)	SOW
		29-30'		SPLP Nickel	SOW
		34-36'		SPLP Nickel	SOW
2001 Soil Sampling					
ERM-1	Downgradient of Former Sanitary Leach Pool LP-4	10.5-11' (3)	Tan f-m SAND, trace f-m sub-rounded to sub-angular gravel, trace crushed stone, trace silt, no staining (dry)	Nickel	SOW
		20-21'	Tan f-m SAND, trace f-m sub-rounded to sub-angular gravel, trace crushed stone, trace silt, no odor, no stain (dry)	Nickel, SPLP Nickel	SOW, Duplicate
		30-31'	Tan f-m SAND, trace fine gravel, trace silt, no odor, no staining (moist) Orange-tan colored from 4 to 8-inches	Nickel, SPLP Nickel	SOW, MS/MSD
		41-41.5'	Brown f-m SAND, trace fine sub-rounded gravel, trace silt, no odor (moist) Brownish-gray at 41-41.5'	Nickel	SOW
		51-51.5'	Orangish-brown f-m SAND, trace f-m sub-rounded to sub-angular gravel, no odor, reddish-brown iron staining at 50.5' (moist)	Nickel	SOW
ERM-2	Former Drywell DW-4 (EM Anomaly 2)	12.5-13' (1)	0.7' Bright green SILT (sludge-like) (moist)	Nickel, SPLP Nickel	Green Soil (E)
		15.5-16.5'	1.4' Brown-gray SILT, trace clay, 0.3' Light-brown m-c SAND, trace fine gravel, (moist-wet) Green and white striations at 15-feet	Ni, SPLP Nickel, VOC, SVOC, RCRA Metals	Green Soil (E)
		21-21.5'	0.8' Light-brown coarse SAND, trace f-m gravel, no staining (moist)	Nickel, SPLP Nickel	SOW, high nickel (E)
		30-30.5'	Light-brown m-c SAND, trace gravel, no staining (moist-dry)	Nickel, SPLP Nickel	SOW, high nickel (E)
		40-40.5'	Light-brown m-c SAND, trace fine gravel, no staining (moist-dry)	Nickel, SPLP Nickel	SOW, high nickel (E)
		50-50.5'	Light-brown m-c SAND, trace f-m gravel, no staining (moist-dry)	Nickel, SPLP Nickel	SOW, high nickel (E)
EB-1	Existing Drywell DW-5	17.5-18.5' (1)	0.1' Dark-gray silty f-m SAND, trace fine gravel, 0.3' Brown gravelly f-c SAND, trace silt (moist)	Nickel, SPLP Nickel	(3), highest total nickel at EB-1 (E)
		20.5-21'	Brown m-c SAND, some f-m gravel (moist) some darkened gray coloring at 20.5'	Nickel	(3)
		32-32.5'	0.1' Crushed pinkish-white stone; 0.2' Light-brown m-c SAND, some f-m sub-rounded to rounded gravel, no odor, no staining (dry)	Nickel	(3)
		40.5-41'	Light-brown m-c SAND, trace fine subrounded to sub-angular gravel, no odor, no staining (slightly moist)	Nickel	(3)
		50.5-51'	0.9' Brown m-c SAND, trace fine subrounded gravel; 0.2' Reddish-brown gravelly coarse SAND; 0.4' White-brown gravelly f-c SAND (slightly moist)	Nickel	(3)

TABLE 1-3
SOIL SAMPLE RATIONALE AND ANALYSIS PERFORMED
FORMER ALSY MANUFACTURING SITE
HICKSVILLE, NY

LOCATION	REASON FOR SAMPLE	DEPTH, bgs	SAMPLE DESCRIPTION	ANALYSIS	REASON FOR ANALYSIS
EB-2	Area of attenuated GPR (GPR Anomaly 1)	3.5-4'	1.4' Dark-brown f-m SAND, trace silt: FILL, fibers, organic material ie. Top soil loam 0.3' Tan clayey-SILT, trace fine sand (moist) iron staining, no odor	Nickel, SPLP Nickel	nickel concentration at EB-2 (E)
		10.5-11'	Light-brownish-tan f-m SAND, trace f-c gravel sub-rounded to rounded, trace silt, (dry)	Nickel	SOW
EB-3	Outside of Sanitary Leachpool LP-4 (GPR Anomaly 2)	11-11.5'	Brown m-c SAND, trace fine gravel, trace silt (moist)	Nickel, SPLP Nickel	(3), highest total nickel concentration at EB-3 (E)
		19-20'	Grayish-tan m-c SAND, trace f-m gravel (slightly moist), slight septic odor	Nickel, SPLP Nickel	(1), MS/MSD
EB-4	Through former Sanitary Leach Pool LP-4 (EM Anomaly 5)	21.5-22.5'	Brownish-gray f-m SAND, trace silt (moist); Black petrified rocks 1-inch diameter and 1/2-inch; sewage odor	Nickel, SPLP Nickel	SOW, highest total nickel concentration at EB-4 (E)
		30-30.5'	Light-brown tan m-c SAND, trace to some rounded f-m white quartz gravel, trace fine sand (dry)	Nickel	SOW
		40-40.5'	Tan medium SAND, trace fine and coarse sand, grading to f-m SAND, trace fine gravel, well sorted, some reddish, iron staining (slightly moist)	Nickel	SOW
		50-50.5'	0.2' Grayish-brown f-m SAND, trace silt; 0.9' Yellowish-orange brown f-m SAND, trace silt (slightly moist)	Nickel	SOW
EB-5	Metal Detection Anomaly (EM Anomaly 3 and 4)	none colelcted	Identified a former monitoring well cover	none	none
EB-6A	Metal Detection Anomaly (EM Anomaly 1)	4.5-5'	0.3' Brown silty f-m SAND, trace clay; 0.2' Orangish-brown f-m SAND, trace fine	Nickel	shallow sample
		10-10.5'	0.2' Brown f-c SAND, trace fine gravel, trace silt (moist)	Nickel, SPLP Nickel	SOW, highest total nickel concentration at EB-6A (E)
EB-6B	Metal Detection Anomaly (EM Anomaly 1)	16-16.5'	Brown f-c SAND, trace some f-m white quartz gravel, rounded, brownish-green colored stain at 16.2' bgs	Nickel	(3)

SOW = Scope of Work

SPLP = Synthetic Precipitation Leaching Procedure

VOC = Volatile Organic Compound

SVOC = Semi-Volatile Organic Compound

RCRA = Resource, Conservation, and Recovery Act

MS/MSD = Matrix Spike/Matrix Spike Duplicate

(1) Corresponds to top of the sediment layer at the bottom of a drainage structure.

(2) Compoiste sample analyzed for TCLP RCRA metals.

(3) Soil sample analysis was performed for newly identified structures at depth intervals consistent with the scope of work for the site.

(E) Reason for expanded anlaysis in addition to toal nickel.

Table 1-4
SPLP Results and Comparison to TCLP Results
Alsy Manufacturing Site, Hicksville, NY

ERM SAMPLE NO.(1)	*DEPTH* (2)	*SPLP TEST RESULTS NICKEL CONCENTRATION* (3) *(micrograms/liter)*	*COMPARISON TO SRI TCLP TEST RESULTS*
CB-2A	21′ - 22′	< 50 µg/l	The TCLP leachate from the 20′ - 22′ depth sample collected during the Supplemental Remedial Investigation contained 1,200 µg/l of nickel.
CB-2B	24′ - 26′	< 50 µg/l	No sample was collected during the Supplemental Remedial Investigation at this depth. The TCLP sample above (20′ - 22′) contained 1,200 µg/l of nickel and the TCLP sample below (30′ - 32′) this level contained 750 µg/l of nickel.
CB-2C	29′ - 30′	< 50 µg/l	The TCLP leachate from the 30′ - 32′ depth sample collected during the Supplemental Remedial Investigation contained 750 µg/l of nickel.
CB-2D	34′ - 36′	< 50 µg/l	No sample was collected during the Supplemental Remedial Investigation at this depth. The TCLP sample above (30′ - 32′) this level contained 750 µg/l of nickel. The TCLP sample below this level (i.e., 40′ - 42′) contained 86 µg/l of nickel. The TCLP leachate from the sample collected from 50′ to 52′ below ground surface (i.e., 16′ below ERM sample CB-2D) contained 200 µg/l of nickel.

NOTES:

1. CB-2 was renamed DW-2.
2. This is the depth from grade level. The soil in drainage structure CB-2 starts approximately 20 feet below grade.
3. The New York State Class GA standard for nickel is 100 µg/l.

Table 1-5
Results of RCRA Metals TCLP Test for Disposal Characterization of DW-2 Soil
Alsy Manufacturing Site, Hicksville, NY

INORGANIC CONSTITUENT	*TCLP TEST RESULT (milligrams/liter)*	*RCRA LIMIT (1)*
arsenic	<0.10 mg/l	5.0 mg/l
selenium	<0.20 mg/l	1.0 mg/l
barium	0.57 mg/l	100.0 mg/l
cadmium	<0.010 mg/l	1.0 mg/l
chromium	<0.030 mg/l	5.0 mg/l
lead	<0.10 mg/l	5.0 mg/l
silver	<0.020 mg/l	5.0 mg/l
mercury	<0.00020 mg/l	0.2 mg/l

NOTES:

1. As defined in 40 CFR 261.24, Table 1, "Maximum Concentration of Contaminants for the Toxicity Characteristic".

TABLE 1-6
NICKEL IN SOIL ANALYTICAL RESULTS
FORMER ALSY MANUFACTURING SITE
HICKSVILLE, NY

LOCATION	Recommended Soil Cleanup Objective	Screening Level	ERM-1	ERM-1	ERM-1 DUP	ERM-1	ERM-1
DEPTH			10.5'-11'	20'-21'	20'-21'	30'-31'	41'-41.5'
DATE COLLECTED			9/4/01	9/4/01	9/4/01	9/4/01	9/4/01
Nickel (mg/kg)	13	NA	2.3 B	3.3 B	5.4 B	4.2 B	2.4 B
Leachability							
SPLP Nickel (ug/L)	NA	100	NA	16.5 B	39.7 B	46.6	NA

LOCATION	Recommended Soil Cleanup Objective	Screening Level	ERM-1	ERM-2	ERM-2	ERM-2 DUP	ERM-2
DEPTH			51'-51.5'	12.5'-13'	15.5'-16.5'	15.5'-16.5'	21'-21.5'
DATE COLLECTED			9/4/01	8/28/01	8/28/01	8/28/01	8/28/01
Nickel (mg/kg)	13	NA	1.4 B	**106,000**	**24,700**	**22,900**	**134.**
Leachability							
SPLP Nickel (ug/L)	NA	100	NA	**6220**	**2990**	**4750**	**4170**

LOCATION	Recommended Soil Cleanup Objective	Screening Level	ERM-2	ERM-2	ERM-2	EB-1	EB-1
DEPTH			30'-30.5'	40'-40.5'	50'-50.5'	17.5'-18.5'	20.5'-21'
DATE COLLECTED			8/28/01	8/28/01	8/28/01	8/31/01	8/31/01
Nickel (mg/kg)	13	NA	**62.5**	**85.9**	**412.**	**136.**	5.3 B
Leachability							
SPLP Nickel (ug/L)	NA	100	13.5 B	**1700**	**3520**	43.5	NA

Notes:

U = Indicates analyte was not detected at method reporting limit

B = Indicates analyte result was between instrument detection limit (IDL) and contract required detection limit (CRDL)

Soil Cleanup Objective to Protect Groundwater and Recommended Soil Cleanup Objective obtained from New York State Department of Environmental Conservation (NYSDEC) Technical and Administrative Guidance Memorandum (TAGM) #4046 entitled "Determination of Soil Cleanup Objectives and Cleanup Levels" dated 24 January 1994.

Shaded boxes with bold value indicate concentration exceeds the NYSDEC TAGM value.

Screening level of 100 ug/L for the SPLP nickel result is from the NYSDEC Division of Water TOGS 1.1.1 Ambient Water Quality Standard and Guidance Value Memorandum dated June 1998.

TABLE 1-6
NICKEL IN SOIL ANALYTICAL RESULTS
FORMER ALSY MANUFACTURING SITE
HICKSVILLE, NY

LOCATION	Recommended Soil Cleanup Objective	Screening Level	EB-1	EB-1	EB-1	EB-2	EB-2
DEPTH			32'-32.5'	40.5'-41'	50.5'-51'	3.5'-4'	10.5'-11'
DATE COLLECTED			8/31/01	8/31/01	8/31/01	8/31/01	8/31/01
Nickel (mg/kg)	13	NA	3.9 B	1.4 B	1.5 B	20.9	14.5
Leachability							
SPLP Nickel (ug/L)	NA	100	NA	NA	NA	117	NA

LOCATION	Recommended Soil Cleanup Objective	Screening Level	EB-3	EB-3	EB-4	EB-4	EB-4
DEPTH			11'-11.5'	19'-20'	21.5'-22.5'	30'-30.5'	40'-40.5'
DATE COLLECTED			9/5/01	9/5/01	8/30/01	8/30/01	8/30/01
Nickel (mg/kg)	13	NA	70.9	7.9	5.9 B	1.4 B	1.7 B
Leachability							
SPLP Nickel (ug/L)	NA	100	958	248.	79.1	NA	NA

LOCATION	Recommended Soil Cleanup Objective	Screening Level	EB-4	EB-6A	EB-6A	EB-6B
DEPTH			50'-50.5'	4.5'-5'	10'-10.5'	16'-16.5'
DATE COLLECTED			8/30/01	8/30/01	8/30/01	8/30/01
Nickel (mg/kg)	13	NA	2.6 B	19.0	74.2	8.8
Leachability						
SPLP Nickel (ug/L)	NA	100	NA	NA	596.	NA

TABLE 1-6
NICKEL IN SOIL ANALYTICAL RESULTS
FORMER ALSY MANUFACTURING SITE
HICKSVILLE, NY

FIELD BLANK ANALYTICAL RESULTS

LOCATION	Recommended Soil Cleanup Objective	Screening Level	FB082801	FB083001
DEPTH			--	--
DATE COLLECTED			8/28/01	8/30/01
Nickel (ug/L)	NA	NA	1.4 U	2.5 B
Leachability				
SPLP Nickel (ug/L)	NA	NA	1.4 U	13.5 B

LOCATION	Recommended Soil Cleanup Objective	Screening Level	FB083101	FB090401
DEPTH			--	--
DATE COLLECTED			8/31/01	9/4/01
Nickel (ug/L)	NA	NA	1.7 B	1.9 B
Leachability				
SPLP Nickel (ug/L)	NA	NA	7.9 B	1.6 B

LOCATION	Recommended Soil Cleanup Objective	Screening Level	FB090501
DEPTH			--
DATE COLLECTED			9/5/01
Nickel (ug/L)	NA	NA	1.4 U
Leachability			
SPLP Nickel (ug/L)	NA	NA	1.4 U

TABLE 1-7
SOIL ANALYTICAL RESULTS: VOLATILE ORGANIC COMPOUNDS
FORMER ALSY MANUFACTURING SITE
HICKSVILLE, NY

LOCATION	Recommended Soil Cleanup Objective	ERM-2	ERM-2 RE	ERM-2DUP	FB082801	TB082801
DEPTH		15.5'-16.5'	15.5'-16.5'	15.5'-16.5'	–	–
DATE COLLECTED		8/28/01	8/28/01	8/28/01	8/28/01	8/28/01
VOCs (ug/kg)						
Chloromethane	NS	14 U	14 U	13 U	10 U	10 U
Bromomethane	NS	14 U	14 U	13 U	10 U	10 U
Vinyl Chloride	200	14 U	14 U	13 U	10 U	10 U
Chloroethane	1,900	14 U	14 U	13 U	10 U	10 U
Methylene Chloride	100	**7 B**	**6 J**	**6 B**	**1 J**	**1 J**
Acetone	200	**60 B**	**35 B**	**63 B**	**6 JB**	**8 JB**
Carbon Disulfide	2,700	**2 J**	7 U	**2 J**	5 U	5 U
Vinyl Acetate	NS	14 U	14 U	13 U	10 U	10 U
1,1-Dichloroethene	400	7 U	7 U	6 U	5 U	5 U
1,1-Dichloroethane	200	**4 J**	7 U	**2 J**	5 U	5 U
cis-1,2-Dichloroethene	NS	**8**	7 U	**4 J**	5 U	5 U
trans-1,2-Dichloroethene	300	7 U	7 U	6 U	5 U	5 U
Chloroform	300	7 U	7 U	6 U	5 U	5 U
1,2-Dichloroethane	100	7 U	7 U	6 U	5 U	5 U
2-Butanone	300	**19 B**	14 U	**18 B**	10 U	10 U
1,1,1-Trichloroethane	800	**11**	7 U	**8**	5 U	5 U
Carbon Tetrachloride	600	7 U	7 U	6 U	5 U	5 U
Bromodichloromethane	NS	7 U	7 U	6 U	5 U	5 U
1,2-Dichloropropane	NS	7 U	7 U	6 U	5 U	5 U
cis-1,3-Dichloropropene	NS	7 U	7 U	6 U	5 U	5 U
Trichloroethene	700	**16**	**2 J**	**9**	5 U	5 U
Dibromochloromethane	NS	7 U	7 U	6 U	5 U	5 U
1,1,2-Trichloroethane	NS	7 U	7 U	6 U	5 U	5 U
Benzene	60	7 U	7 U	6 U	5 U	5 U
trans-1,3-Dichloropropene	NS	7 U	7 U	6 U	5 U	5 U
Bromoform	NS	7 U	7 U	6 U	5 U	5 U
4-Methyl-2-Pentanone	1,000	14 U	14 U	13 U	10 U	10 U
2-Hexanone	NS	14 U	14 U	13 U	10 U	10 U
Tetrachloroethene	1,400	**300 E**	**43**	**170**	5 U	5 U
Toluene	1,500	**2 J**	7 U	**2 J**	5 U	5 U
1,1,2,2-Tetrachloroethane	600	7 U	7 U	6 U	5 U	5 U
Chlorobenzene	1,700	7 U	7 U	6 U	5 U	5 U
Ethylbenzene	5,500	**2 J**	7 U	**1 J**	5 U	5 U
Styrene	NS	7 U	7 U	6 U	5 U	5 U
Xylene (total)	1,200	**15**	7 U	**16**	5 U	5 U
Total VOC Concentration		446	86	285	7	9

Notes:

NS = No Standard

B= Analyte found in blank as well as the sample.

U = Indicates that the compound was anlyzed for but not detected.

E = Indicates that it exceeds calibration curve range.

RE = Sample was reanalyzed due to exceeding claibration range

J = Indicates that the compound was detected below the minimum detection limit but greater than zero. The value given is estimated.

Recommended Soil Cleanup Objective obtained from New York State Department of Environmental Conservation (NYSDEC) Technical and Administrative Guidance Memorandum (TAGM) #4046 entitled "Determination of Soil Cleanup Objectives and Cleanup Levels" dated 24 January 19

Bold value indicates a compound was detected at the indicated concentration and the bolded shaded values exceed the recommended soil cleanup objective.

VOC = Volatile Organic Compound

TABLE 1-8
SOIL ANALYTICAL RESULTS: SEMI-VOLATILE ORGANIC COMPOUNDS
FORMER ALSY MANUFACTURING SITE
HICKSVILLE, NY

LOCATION	Recommended Soil Cleanup Objective	ERM-2	ERM-2DUP	FB082801
DEPTH		15.5'-16.5'	15.5'-16.5'	–
DATE COLLECTED		8/28/01	8/28/01	8/28/01
SVOCs (ug/kg)				
Phenol	30 or MDL	**580 J**	**11000**	10 U
bis(2-Chloroethyl)ether	NS	7300 U	4400 U	10 U
2-Chlorophenol	800	7300 U	4400 U	10 U
1,3-Dichlorobenzene	NS	7300 U	4400 U	10 U
1,4-Dichlorobenzene	NS	7300 U	4400 U	10 U
Benzyl alcohol	NS	7300 U	4400 U	10 U
1,2-Dichlorobenzene	NS	7300 U	4400 U	10 U
2-Methylphenol	100 or MDL	7300 U	4400 U	10 U
2,2'-oxybis(1-Chloropropane)	NS	7300 U	4400 U	10 U
4-Methylphenol	900	**240 J**	4400 U	10 U
N-Nitroso-di-n-propylamine	NS	7300 U	4400 U	10 U
Hexachloroethane	NS	7300 U	4400 U	10 U
Nitrobenzene	200 or MDL	7300 U	4400 U	10 U
Isophorone	4,400	7300 U	4400 U	10 U
2-Nitrophenol	330 or MDL	7300 U	4400 U	10 U
2,4-Dimethylphenol	NS	7300 U	4400 U	10 U
Benzoic acid	NS	**380 JB**	22000 U	50 U
bis(2-Chloroethoxy)methane	NS	7300 U	4400 U	10 U
2,4-Dichlorophenol	400	**310 J**	4400 U	10 U
1,2,4-Trichlorobenzene	NS	7300 U	4400 U	10 U
Naphthalene	13,000	**250* J**	**82 J**	10 U
4-Chloroaniline	220 or MDL	7300 U	4400 U	10 U
Hexachlorobutadiene	410	7300 U	4400 U	10 U
4-Chloro-3-methylphenol	NS	7300 U	4400 U	10 U
2-Methylnaphthalene	36,400	**230 J**	4400 U	10 U
Hexachlorocyclopentadiene	NS	7300 U	4400 U	10 U
2,4,6-Trichlorophenol	NS	**600 J**	4400 U	10 U
2,4,5-Trichlorophenol	100	36000 U	22000 U	50 U
2-Chloronaphthalene	NS	7300 U	4400 U	10 U
2-Nitroaniline	430 or MDL	36000 U	22000 U	50 U
Dimethylphthalate	2,000	**210* J**	**130 J**	10 U
Acenaphthylene	50,000	7300 U	4400 U	10 U
2,6-Dinitrotoluene	1,000	7300 U	4400 U	10 U
3-Nitroaniline	500 or MDL	36000 U	22000 U	50 U
Acenaphthene	50,000	**1100 J**	**88 J**	10 U
2,4-Dinitrophenol	200 or MDL	36000 U	22000 U	50 U
4-Nitrophenol	100 or MDL	36000 U	22000 U	50 U
Dibenzofuran	6,200	**520 J**	**80 J**	10 U
2,4-Dinitrotoluene	200 or MDL	7300 U	4400 U	10 U
Diethylphthalate	7,100	7300 U	4400 U	10 U
4-Chlorophenyl-phenylether	NS	7300 U	4400 U	10 U
Fluorene	50,000	**900 J**	**83 J**	10 U
4-Nitroaniline	430	36000 U	22000 U	20 U
4,6-Dinitro-2-methylphenol	NS	36000 U	22000 U	50 U
N-Nitrosodiphenylamine (1)	NS	7300 U	4400 U	10 U
4-Bromophenyl-phenylether	NS	7300 U	4400 U	10 U
Hexachlorobenzene	410	7300 U	4400 U	10 U
Pentachlorophenol	1,000 or MDL	36000 U	22000 U	50 U
Phenanthrene	50,000	**7300**	**790 J**	10 U
Anthracene	50,000	**1700 J**	**140 J**	10 U
Carbazole	NS	**1000 J**	**150 J**	10 U
Di-n-butylphthalate	8,100	**1700 JB**	**340 JB**	**.2 JB**
Fluoranthene	50,000	**5900 J**	**690 J**	10 U
Pyrene	50,000	**7500**	**820 J**	10 U
Butylbenzylphthalate	50,000	**3900 J**	**1100 J**	10 U
3,3'-Dichlorobenzidine	NS	15000 U	8900 U	20 U
Benzo(a)anthracene	224 or MDL	**3100 J**	**250 J**	10 U
Chrysene	400	**4700 J**	**490 J**	10 U
bis(2-Ethylhexyl)phthalate	50,000	**44000 B**	**28000 B**	**.6 JB**
Di-n-octylphthalate	50,000	**1200 J**	**950 J**	10 U
Benzo(b)fluoranthene	1,100	**3200 J**	**300 J**	10 U
Benzo(k)fluoranthene	1,100	**2800 J**	**300 J**	10 U
Benzo(a)pyrene	61 or MDL	**3300 J**	**280 J**	10 U
Indeno(1,2,3-cd)pyrene	3,200	**2100 J**	**190 J**	10 U
Dibenzo(a,h)anthracene	14 or MDL	**890 J**	4400 U	10 U
Benzo(g,h,i)perylene	50,000	**2100 J**	**210 J**	10 U
Total SVOC Concentration		101710	46463	0.8

Notes:

Recommended Soil Cleanup Objective obtained from New York State Department of Environmental Conservation (NYSDEC) Technical and Administrati Guidance Memorandum (TAGM) #4046 entitled "Determination of Soil Cleanup Objectives and Cleanup Levels" dated 24 January 1994.

J = Indicates that the compound was detected at a concentration below the minimum detection limit but greater than zero. The value given is estimated.

B= Analyte found in blank as well as the sample.

U = Indicates that the compound was anlyzed for but not detected.

NS = No standard

SVOC = Semi Volatile Organic Compound

Bold value indicates a compound was detected at the listed concentration and bolded shaded values exceed the recommended soil cleanup objective.

TABLE 1-9
RCRA METALS SOIL ANALYTICAL RESULTS
FORMER ALSY MANUFACTURING SITE
HICKSVILLE, NY

LOCATION	**Recommended Soil Cleanup Objective**	ERM-2	ERM-2DUP	FB082801
DEPTH		15.5'-16.5'	15.5'-16.5'	–
DATE COLLECTED		8/28/01	8/28/01	8/28/01
Metal (mg/kg)				
Arsenic	7.5 or SB	**73.5**	**75.0**	4.4 U
Barium	300 or SB	**48.7 B**	**51.0 B**	**4.7 B**
Cadmium	10 (1)	**2.2**	**1.5 B**	0.80 U
Chromium	50 (1)	**83.8**	**50.0**	**1.6 B**
Lead	200-500 (1)	**1400**	**134.**	2.0 U
Mercury	0.1	**0.51**	**0.16**	0.10 U
Selenium	2 or SB	**63.0**	**5.8**	4.8 U
Silver	SB	**0.52 B**	0.35 U	1.0 U

Notes:

J = Indicates that the compound was detected at a concentration below the minimum detection limit but greater than zero. The value given is estimated.

B= Analyte found in blank as well as the sample.

U = Indicates that the compound was anlyzed for but not detected.

E= Indicates that it exceeds calibration curve range.

Soil Cleanup Objective to Protect Groundwater and Recommended Soil Cleanup Objective (RSCO) obtained from New York State Department of Environmental Conservation (NYSDEC) Technical and Administrative Guidance Memorandum (TAGM) #4046 entitled "Determination of Soil Cleanup Objectives and Cleanup Levels" dated 24 January 1994.

Bold value indicates a compound was detected at the indicated concentration and the bolded and shaded values exceed the recommended soil cleanup objective.

1. Interim RSCOs currnetly being used by the NYSDEC.

Table 1-10
1998 Post-SRI Ground Water Sampling Water Chemistry Parameters
Alsy Manufacturing, Hicksville, NY

Well (depth)	Date	Purge Rate (gpm)	Sample Rate (lpm)	Purge Volume	pH (std units)	Spec. Cond. (umohs/cm)	D.O. (mg/l)	Turbidity (NTUs)
Combes Ave (60 ft)	6/26/98	1.0	1.0	1	7.14	500	1.87	>1000
				2	7.26	350	2.04	>1000
				3	7.24	350	2.10	>1000
				final	NM	NM	NM	15.0
Combes Ave (95 ft)	6/26/98	1.0	1.0	1	7.26	500	1.30	>1000
				2	7.21	500	0.60	408
				3	7.11	500	0.40	203.0
				final	NM	NM	NM	23.0
Combes Ave (120 ft)	6/26/98	1.0	1.0	1	6.85	290	1.00	>1000
				2	6.91	500	0.71	>1000
				3	7.10	500	0.91	615.0
				final	NM	NM	NM	42.0
Border St (60 ft)	6/25/98	1.0	1.0	1	6.70	43	3.64	>1000
				2	6.29	40	3.53	>1000
				3	6.03	40	3.61	>1000
				final	NM	NM	NM	18.0
Border St (95 ft)	6/25/98	1.0	1.0	1	7.15	220	1.25	>1000
				2	7.12	200	1.00	58.0
				3	7.07	220	0.97	21.0
				final	NM	NM	NM	9.0
Border St (120 ft)	6/25/98	1.0	1.0	1	6.86	350	3.00	>1000
				2	7.02	250	2.92	94.0
				3	7.08	240	2.88	100.0
				final	NM	NM	NM	43.0
LMS-4	6/26/98	1.0	1.0	1	7.18	70	3.02	280.0
				2	6.90	70	3.22	234.0
				3	6.69	70	3.32	234.0
				final	NM	NM	NM	30.0
AMS-2	6/25/98	1.0	1.0	1	7.52	290	1.37	2.0
				2	6.70	320	1.70	1.0
				3	6.84	320	1.82	1.0

Note:
NM = Not Measured

Table 1-11
1998 Post-SRI Ground Water Sampling Results
Alsy Manufacturing Site, Hicksville, NY

	On-Site Wells				Off-Site Wells													
SAMPLE NO.:	AMS-2		LMS-4		Combes Avenue Well						Border Street Well							
SAMPLE HORIZON:	-		-		60 feet		95 feet		120 feet		60 feet		95 feet		120 feet		120 feet (D)	
SAMPLE DATE:	6/25/98		6/26/98		6/26/98		6/26/98		6/26/98		6/25/98		6/25/98		6/25/98		6/25/98	
VOCs, ug/l																		
Chloromethane	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
Bromomethane	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
Vinyl Chloride	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
Chloroethane	5.0	U	5.0	UJ	5.0	UJ	5.0	UJ	5.0	UJ	5.0	U	5.0	U	5.0	U	5.0	U
Methylene Chloride	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U
Acetone	5.0	UJ	5.0	UJ	5.0	UJ	5.0	UJ	5.0	UJ	5.0	UJ	5.0	UJ	5.0	UJ	5.0	UJ
Carbon Disulfide	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
1,1-Dichloroethene	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	0.7	J	0.7	J	0.7	J
1,1-Dichloroethane	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
trans-1,2-dichloroethene	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
cis-1,2-dichloroethene	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
Chloroform	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	**1.3**	**J**	5.0	U	5.0	U	5.0	U
1,2-Dichloroethane	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U
2-Butanone	5.0	UR	5.0	UR	5.0	UR	5.0	UR	5.0	UR	5.0	UR	5.0	UR	5.0	UR	5.0	UR
1,1,1-Trichloroethane	5.0	U	**0.6**	**J**	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	**0.9**	**J**	**0.9**	**J**
Carbon Tetrachloride	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U
Bromodichloromethane	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
1,2-Dichloropropane	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
cis-1,3-Dichloropropene	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
Trichloroethene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
Dibromochloromethane	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
1,1,2-trichloroethene	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U
Benzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
trans-1,3-Dichloropropene	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
Bromoform	4.0	U	4.0	U	4.0	U	4.0	U	4.0	U	4.0	U	4.0	U	4.0	U	4.0	U
4-methyl-2-pentanone	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
2-hexanone	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U

Table 1-11
1998 Post-SRI Ground Water Sampling Results
Alsy Manufacturing Site, Hicksville, NY

	On-Site Wells				Off-Site Wells													
SAMPLE NO.:	AMS-2		LMS-4		Combes Avenue Well						Border Street Well							
SAMPLE HORIZON:	-		-		60 feet		95 feet		120 feet		60 feet		95 feet		120 feet		120 feet (D)	
SAMPLE DATE:	6/25/98		6/26/98		6/26/98		6/26/98		6/26/98		6/25/98		6/25/98		6/25/98		6/25/98	
Tetrachloroethene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
1,1,2,2-tetrachloroethane	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
Toluene	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
Chlorobenzene	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
Ethylbenzene	4.0	U	4.0	U	4.0	U	4.0	U	4.0	U	4.0	U	4.0	U	4.0	U	4.0	U
Styrene	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
Total Xylenes	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
Total VOCs	ND		0.6	J	ND		ND		ND		**1.3**	**J**	**0.7**	**J**	**1.6**	**J**	**1.6**	**J**
Total TICs	ND		ND		ND		ND		ND		ND		ND		ND		ND	
Inorganics, ug/l																		
Nickel	**2,310**		**4,620**		**32.5**	**B**	**9.4**	**B**	**3.1**	**B**	**9.3**	**B**	**4.0**	**B**	**6.1**	**B**	**6.3**	**B**
Zinc	7.8	U	**777**		**53.5**		8.7	U	10.2	U	22.9	U	7.7	U	20.8	U	28.1	U

NOTES:

Detections are identified in bold format.
U - Undetected at the indicated detection limit.
J - (Organics) Result less than quantitation limit but greater than zero. Concentration is estimated.
B - (Organics) Compound also detected in blank.
B - (Inorganics) Result less than Method Detection Limit but greater than Instrument Detection Limit
NA - Not Analyzed
D - Duplicate Sample
ND - Not Detected

Table 1-11

1998 Post-SRI Ground Water Sampling Results

Alsy Manufacturing Site, Hicksville, NY

SAMPLE NO.:	Field Blank		Trip Blank		Trip Blank	
SAMPLE HORIZON:	-		-		-	
SAMPLE DATE:	6/25/98		6/25/98		6/26/98	
VOCs, ug/l						
Chloromethane	5.0	U	5.0	U	5.0	U
Bromomethane	5.0	U	5.0	U	5.0	U
Vinyl Chloride	5.0	U	5.0	U	5.0	U
Chloroethane	5.0	U	5.0	U	5.0	U
Methylene Chloride	3.0	U	3.0	U	3.0	U
Acetone	5.0	U	5.0	U	5.0	U
Carbon Disulfide	5.0	U	5.0	U	5.0	U
1,1-Dichloroethene	2.0	U	2.0	U	2.0	U
1,1-Dichloroethane	5.0	U	5.0	U	5.0	U
trans-1,2-dichloroethene	5.0	U	5.0	U	5.0	U
cis-1,2-dichloroethene	5.0	U	5.0	U	5.0	U
Chloroform	5.0	U	5.0	U	5.0	U
1,2-Dichloroethane	2.0	U	2.0	U	2.0	U
2-Butanone	5.0	U	5.0	U	5.0	U
1,1,1-Trichloroethane	5.0	U	5.0	U	5.0	U
Carbon Tetrachloride	2.0	U	2.0	U	2.0	U
Bromodichloromethane	1.0	U	1.0	U	1.0	U
1,2-Dichloropropane	1.0	U	1.0	U	1.0	U
cis-1,3-Dichloropropene	5.0	U	5.0	U	5.0	U
Trichloroethene	1.0	U	1.0	U	1.0	U
Dibromochloromethane	5.0	U	5.0	U	5.0	U
1,1,2-trichloroethene	3.0	U	3.0	U	3.0	U
Benzene	1.0	U	1.0	U	1.0	U
trans-1,3-Dichloropropene	5.0	U	5.0	U	5.0	U
Bromoform	4.0	U	4.0	U	4.0	U
4-methyl-2-pentanone	5.0	U	5.0	U	5.0	U
2-hexanone	5.0	U	5.0	U	5.0	U

Table 1-11
1998 Post-SRI Ground Water Sampling Results
Alsy Manufacturing Site, Hicksville, NY

SAMPLE NO.:	Field Blank		Trip Blank		Trip Blank	
SAMPLE HORIZON:	-		-		-	
SAMPLE DATE:	6/25/98		6/25/98		6/26/98	
Tetrachloroethene	1.0	U	1.0	U	1.0	U
1,1,2,2-tetrachloroethane	1.0	U	1.0	U	1.0	U
Toluene	5.0	U	5.0	U	5.0	U
Chlorobenzene	5.0	U	5.0	U	5.0	U
Ethylbenzene	4.0	U	4.0	U	4.0	U
Styrene	5.0	U	5.0	U	5.0	U
Total Xylenes	5.0	U	5.0	U	5.0	U
Total VOCs	ND		ND		ND	
Total TICs	ND		ND		ND	
Inorganics, ug/l						
Nickel	2	U	NA		NA	
Zinc	7.7	**B**	NA		NA	

TABLE 1-12
GROUNDWATER ANALYTICAL RESULTS: ON-SITE AND OFF-SITE MONITORING WELLS
NICKEL ANALYSIS
FORMER ALSY MANUFACTURING SITE
HICKSVILLE, NY

On-Site Wells

SAMPLE ID	NYS TOGS 1.1.1 Class GA Ground Water Quality Standard	ERM-1	ERM-2	ERM-2	LMS-4	LMS-4	AMS-1
SAMPLE TYPE		Low-Flow	Unfiltered	Filtered	Unfiltered	Filtered	Low-Flow
DATE COLLECTED		1/28/03	1/28/03	1/28/03	1/28/03	1/28/03	1/29/03
Nickel (ug/L)	100	40 U	**1310**	**855**	**884**	**887**	40 U

SAMPLE ID	NYS TOGS 1.1.1 Class GA Ground Water Quality Standard	AMS-2	MW-3	FB012803	FB012903	DUP012803	DUP012803
SAMPLE TYPE		Low-Flow	Low-Flow	NA	NA	Unfiltered	Filtered
DATE COLLECTED		1/29/03	1/29/03	1/28/03	1/29/03	1/28/03	1/28/03
Nickel (ug/L)	100	**2840**	40 U	40 U	40 U	**1220**	**850**

Off-Site Wells

SAMPLE ID	NYS TOGS 1.1.1 Class GA Ground Water Quality Standard	VPE75	VPE95	VPNC75	VPNC95	VPW75	VPW95	ERM-3
LOCATION		McCalester Ave.	McCalester Ave.	Combes Ave.	Combes Ave.	Benjamin Ave.	Benjamin Ave.	Off-Site
DEPTH (feet bgs)		70-75'	90-95'	70-75'	90-95'	70-75'	90-95'	Low-Flow
DATE COLLECTED		3/5/02	3/5/02	3/6/02	3/6/02	3/8/02	3/8/02	1/29/03
Nickel (ug/L)	100	7.7 B	2.2 B	**3150**	**228**	3.4 B	2.5 B	**3580**

SAMPLE ID	NYS TOGS 1.1.1 Class GA Ground Water Quality Standard	FB030502	FB030602	FB030702	DUP030702	FB030802
LOCATION		McCalester Ave.	Combes Ave.	Combes Ave.	VPNC75	Benjamin Ave.
DEPTH (feet bgs)		NA	NA	NA	70-75	NA
DATE COLLECTED		3/5/02	3/6/02	3/7/02	3/7/02	3/8/02
Nickel (ug/L)	100	20 U	20 U	20 U	**3260**	20 U

Notes:
bgs = below ground surface
ug/L = microgram per liter
U = Indicates analyte was not detected at method reporting limit
B = Indicates analyte result was between instrument detection limit (IDL) and
contract required detection limit (CRDL)
NA = Not Applicable
Standard listed is the New York State (NYS) Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1 value for nickel for Class GA water.
Shaded boxes with bold value indicate concentration exceeds the TOGS 1.1.1 Class GA standard.

.ABL . .3

GROUNDWATER ANALYTICAL RESULTS: VOLATILE ORGANIC COMPOUNDS
FORMER ALSY MANUFACTURING SITE
HICKSVILLE, NY

FIELD ID LAB ID DATE COLLECTED	TOGS 1.1.1 Class GA Ambient Water Quality Standar & Guidance Values (ug/L)	ERM-1 N31701-1 1/28/03	ERM-3 N31701-6 1/29/03	DUP012903 N31701-7 1/28/03	FB012803 N31701-5 1/28/03	FB012903 N31701-11 1/29/03	TRIBBLANK N31701-12 1/29/03
Volatile Organic Compounds (ug/L)							
Acetone	50*	10 U	10 U	10 U	10 U	10 U	10 U
Benzene	1	1 U	1 U	1 U	1 U	1 U	1 U
Bromodichloromethane	50*	1 U	1 U	1 U	1 U	1 U	1 U
Bromoform	50*	4 U	4 U	4 U	4 U	4 U	4 U
Bromomethane	5	5 U	5 U	5 U	5 U	5 U	5 U
2-Butanone (MEK)	–	10 U	10 U	10 U	10 U	10 U	10 U
Carbon disulfide	–	5 U	5 U	5 U	5 U	5 U	5 U
Carbon tetrachloride	5	1 U	1 U	1 U	1 U	1 U	1 U
Chlorobenzene	5	2 U	2 U	2 U	2 U	2 U	2 U
Chloroethane	5	5 U	5 U	5 U	5 U	5 U	5 U
Chloroform	7	5 U	5 U	5 U	5 U	5 U	5 U
Chloromethane	5	5 U	5 U	5 U	5 U	5 U	5 U
Dibromochloromethane	50*	5 U	5 U	5 U	5 U	5 U	5 U
1,1-Dichloroethane	5	5 U	5 U	5 U	5 U	5 U	5 U
1,2-Dichloroethane	0.6	2 U	2 U	2 U	2 U	2 U	2 U
1,1-Dichloroethene	5	2 U	2 U	2 U	2 U	2 U	2 U
cis-1,2-Dichloroethene	5	5 U	5 U	5 U	5 U	5 U	5 U
trans-1,2-Dichloroethene	5	5 U	5 U	5 U	5 U	5 U	5 U
1,2-Dichloropropane	1	1 U	1 U	1 U	1 U	1 U	1 U
cis-1,3-Dichloropropene	0.4**	1 U	1 U	1 U	1 U	1 U	1 U
trans-1,3-Dichloropropene	0.4**	1 U	1 U	1 U	1 U	1 U	1 U
Ethylbenzene	5	1 U	1 U	1 U	1 U	1 U	1 U
2-Hexanone	50*	5 U	5 U	5 U	5 U	5 U	5 U
4-Methyl-2-pentanone(MIBK)	–	5 U	5 U	5 U	5 U	5 U	5 U
Methylene chloride	5	2 U	2 U	2 U	2 U	2 U	2 U
Styrene	5	5 U	5 U	5 U	5 U	5 U	5 U
1,1,2,2-Tetrachloroethane	5	2 U	2 U	2 U	2 U	2 U	2 U
Tetrachloroethene	5	1 U	1 U	1 U	1 U	1 U	1 U
Toluene	5	1 U	1 U	1 U	1 U	1 U	1 U
1,1,1-Trichloroethane	5	5 U	5 U	5 U	5 U	5 U	5 U
1,1,2-Trichloroethane	1	3 U	3 U	3 U	3 U	3 U	3 U
Trichloroethene	5	1 U	1 U	1 U	1 U	1 U	1 U
Vinyl chloride	2	1 U	1 U	1 U	1 U	1 U	1 U
Xylene (total)	5	1 U	1 U	1 U	1 U	1 U	1 U

Notes:
ug/L = microgram per liter
U = Indicates analyte was not detected at method reporting limit
J = Indicates that the compound was detected at a concentration below the minimum detection limit but greater than zero. The value given is estimated.
Standard listed is the New York State (NYS) Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1 value for Class GA water.
*: Guidance Value
**: Applies to the sum of cis- and trans-1,3-dichloropropene.
–: No standard available
Shaded boxes with bold value indicate concentration exceeds the TOGS 1.1.1 Class GA standard.

TABLE 1-14
GROUNDWATER ANALYTICAL RESULTS: METALS
FORMER ALSY MANUFACTURING SITE
HICKSVILLE, NY

SAMPLE ID	NYS TOGS 1.1.1 Class GA Ground Water Quality Standard (ug/L)	ERM-2	ERM-2	DUP12803	DUP12803	FB012803
LOCATION		On-Site	On-Site	ERM-2	ERM-2	NA
SAMPLE TYPE		Unfiltered	Filtered	Unfiltered	Filtered	NA
DATE COLLECTED		1/28/03	1/28/03	1/28/03	1/28/03	1/28/03
Arsenic	25	22.9	5.0 U	18.5	5.0 U	5.0 U
Chromium	50	**53.9**	10 U	46.8	10 U	10 U
Lead	25	**34.3**	3.0 U	**28.4**	3.0 U	3.0 U
Nickel	100	**1,310**	**855**	**1,220**	**850**	40 U
Selenium	10	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U

Notes:
ug/L = microgram per liter
U = Indicates analyte was not detected at method reporting limit
NA = Not Applicable
Standard listed is the New York State (NYS) Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1 value for nickel for Cl
Shaded boxes with bold value indicate concentration exceeds the TOGS 1.1.1 Class GA standard.

TABLE 1-15
GROUNDWATER ANALYTICAL RESULTS: SEMI-VOLATILE ORGANIC COMPOUNDS
FORMER ALSY MANUFACTURING SITE
HICKSVILLE, NY

FIELD ID LAB ID DATE COLLECTED	TOGS 1.1.1 Class GA Ambient Water Quality Standards & Guidance Values (ug/L)	ERM-2 N31701-3 1/28/03	DUP012803 N31701-4 1/28/03	FB012803 N31701-5 1/28/03
Semi-volatile Organic Compounds (ug/L)				
2-Chlorophenol	1	6 U	5 U	5.1 U
4-Chloro-3-methyl phenol	--	6 U	5 U	5.1 U
2,4-Dichlorophenol	5	6 U	5 U	5.1 U
2,4-Dimethylphenol	50*	6 U	5 U	5.1 U
2,4-Dinitrophenol	10*	22 U	20 U	20 U
2,4-Dinitro-o-cresol	--	22 U	20 U	20 U
2-Methylphenol	1	6 U	5 U	5.1 U
3&4-Methylphenol	--	6 U	5 U	5.1 U
2-Nitrophenol	--	6 U	5 U	5.1 U
4-Nitrophenol	--	22 U	20 U	20 U
Pentachlorophenol	1	22 U	20 U	20 U
Phenol	1	6 U	5 U	5.1 U
2,4,5-Trichlorophenol	--	6 U	5 U	5.1 U
2,4,6-Trichlorophenol	--	6 U	5 U	5.1 U
Acenaphthene	20*	2 U	2 U	2 U
Acenaphthylene	--	2 U	2 U	2 U
Anthracene	50*	2 U	2 U	2 U
Benzo(a)anthracene	0.002*	2 U	2 U	2 U
Benzo(a)pyrene	ND	2 U	2 U	2 U
Benzo(b)fluoranthene	0.002*	2 U	2 U	2 U
Benzo(g,h,i)perylene	--	2 U	2 U	2 U
Benzo(k)fluoranthene	0.002*	2 U	2 U	2 U
4-Bromophenyl phenyl ether	--	2 U	2 U	2 U
Butyl benzyl phthalate	50*	2 U	2 U	2 U
2-Chloronaphthalene	10*	6 U	5 U	5.1 U
4-Chloroaniline	5	6 U	5 U	5.1 U
Carbazole	--	2.20 U	2.00 U	2.00 U
Chrysene	0.002*	2 U	2 U	2 U
bis(2-Chloroethoxy)methane	5	2 U	2 U	2 U
bis(2-Chloroethyl)ether	1.0	2 U	2 U	2 U
bis(2-Chloroisopropyl)ether	5	2	2	2.00 U
4-Chlrophenyl phenyl ether	--	2 U	2 U	2.00 U
1,2-Dichlorobenzene	3	2.20 U	2.00 U	2.00 U
1,3-Dichlorobenzene	3	2.20 U	2.00 U	2.00 U
1,4-Dichlorobenzene	3	2.20 U	2.00 U	2 U
2,4-Dinitrotoluene	5	2.20 U	2.00 U	2 U
2,6-Dinitrotoluene	5	2 U	2 U	2 U
3,3'-Dichlorobenzidine	5	6 U	5 U	5.1 U
Dibenzo(a,h)anthracene	--	2 U	2 U	2 U
Dibenzofuran	--	6 U	5 U	5.1 U
Di-n-butyl phthalate	50	2 U	2 U	2 U
Di-n-octyl phthalate	50*	2 U	2 U	2 U
Diethyl phthalate	50*	2 U	2 U	2 U
Dimethyl phthalate	50*	2 U	2 U	2 U
bis(2-Ethylhexyl)phthalate	5	3.60	2.3	2 U
Fluoranthene	50*	2 U	2 U	2.00 U
Fluorene	50*	2 U	2 U	2.00 U
Hexachlorobenzene	0.04	2.20 U	2.00 U	2.00 U
Hexachlorobutadiene	0.5	2.20 U	2.00 U	2.00 U
Hexachlorocyclopentadiene	5	22.00 U	20.00 U	20.00 U
Hexachloroethane	5	5.60 U	5.00 U	5.10 U
Indeno(1,2,3-cd)pyrene	0.002*	2.20 U	2.00 U	2.00 U
Isophorone	50*	2.20 U	2.00 U	2.00 U
2-Methylnaphthalene	--	2.20 U	2.00 U	2.00 U
2-Nitroaniline	5	5.60 U	5.00 U	5.10 U
3-Nitroaniline	5	5.60 U	5.00 U	5.10 U
4-Nitroaniline	5	5.60 U	5.00 U	5.10 U
Naphthalene	10*	2.20 U	2.00 U	2.00 U
Nitrobenzene	0.4	2.20 U	2.00 U	2.00 U
N-Nitroso-di-n-propylamine	--	2.20 U	2.00 U	2.00 U
N-Nitrosodiphenylamine	50*	5.60 U	5.00 U	5.10 U
Phenanthrene	50*	2.20 U	2.00 U	2.00 U
Pyrene	50*	2.20 U	2.00 U	2.00 U
1,2,4-Trichlorobenzene	5	2.20 U	2.00 U	2.00 U

Notes:

ug/L = microgram per liter U = Indicates analyte was not detected at method reporting limit

*: Guidance Value --: No standard available

J = Indicates that the compound was detected at a concentration below the minimum detection limit but greater than zero. The value given is estim

Standard listed is the New York State (NYS) Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1 value for Class GA water.

Shaded boxes with bold value indicate concentration exceeds the TOGS 1.1.1 Class GA standard.

Table 1-16
Well Search Available Nickel Data
Downgradient Public Supply Wells and Monitoring Wells
Fomer Alsy Manufacturing Site
Hicksville, NY

Well ID	Total Depth	Screen Depth	DATE	Nickel Concentration (mg/L)
N-03552 was not analyzed for nickel last sampled 1972 taken out of service				
N-03553 available data from periodic sampling events from 1950 to 1978 - nickel analyzed twice nickel analyzed in 1968 and 1976 and was not detected; detection limit not identified last sampled 1978 taken out of service in 1980 due to VOCs and Nitrates				
N-05336 available data from periodic sampling events from 1957 to 1988 - nickel analyzed once nickel analyzed once in 1976 and was not detected; detection limit not identified last sampled in 1988 taken out of service				
N-07561	550	463	7/64 - 11/68	NA
			12/5/68	ND*
			6/26/69	ND*
			7/69-11/76	NA
			12/20/76	ND*
			1/77-11/87	NA
			12/31/87	ND*
			1/88-9/88	NA
			10/28/88	ND*
			11/88-2/94	NA
			3/9/94	<0.04
			6/30/95	<0.04
			9/26/96	<0.04
			12/17/97	<0.04
			3/23/98	<0.04
			12/15/99	<0.04
			6/20/00	<0.04
N-08526	642	NA	6/6/69	ND*
			8/15/69	ND*
			9/69-11/76	NA
			12/20/76	ND*
			1/77-10/89	NA
			11/21/89	ND*
			12/89-6/96	NA
			7/23/96	<0.02
			7/23/96	<0.02
			9/26/96	<0.04
			10/96-5/97	NA
			6/20/97	<0.02
			12/17/97	<0.04
			3/17/98	<0.04
			12/9/99	<0.04
			6/16/00	<0.04
			12/21/00	<0.04

*: detection limit not noted

Table 1-16
Well Search Available Nickel Data
Downgradient Public Supply Wells and Monitoring Wells
Fomer Alsy Manufacturing Site
Hicksville, NY

Well ID	Total Depth	Screen Depth	DATE	Nickel Concentration (mg/L)
N-09212	604	538	4/78-3/5/85	NA
			6/11/85	0.02
			7/85-11/87	NA
			12/31/87	ND*
			1/88-9/88	NA
			10/28/88	ND*
			11/88-8/93	NA
			9/22/93	<0.04
			3/9/94	<0.04
			6/30/95	<0.04
			9/26/96	<0.04
			12/17/97	<0.04
			3/23/98	<0.04
			12/15/99	<0.04
			6/20/00	<0.04
All sample events for N-10313 through N-10317 (a.k.a. WH-1 through WH-6):				NA
Only WH-3 was analyzed for nickel; all other wells were not analyzed for nickel.				
N-10314 (WH-3)	63**	NA	10/2/01	<0.020

NA = Not Analyzed
*: detection limit not noted
** well may be too shallow

Table 2-1
Potential New York State Standards, Criteria and Guidelines
Former Alsy Manufacturing Site, Hicksville, NY

Citation	Description	Type	Reason for Listing
Standards, Criteria Guidelines (SCGs) (1)			
TAGM HWR-90-4030	Selection of Remedial Actions at Inactive Hazardous Waste Sites	Action	May relate to all activities
TAGM HWR-94-4046	Determination of Soil Cleanup Objectives and Cleanup Levels	Chemical	May relate to soil remediation at the Site
NYSDOH Community Air Monitoring Plan for Intrusive Activities	Requirements real-time monitoring VOCs and particulates (i.e., dust)	Action, Chemical	May relate to soil remediation at the Site
6 NYCRR Part 375	Inactive Hazardous Waste Disposal Site Remedial Program	Action	May relate to all remedial activities at the Site
Part 5, NYSDOH State Sanitary Code	Drinking Water Supplies	Location Action	May relate to certain activities at the Site
10 NYCRR Part 5	Drinking Water Supplies	Location Action	May relate to certain activities at the Site
6 NYCRR Parts 700 through 705	NYSDEC Water Quality Regulations for Ground Water	Location Chemical	May relate to ground water quality and remedial activities at the Site
TOGS 1.1.1	Ambient Water Quality Standards and Guidance Values	Location Chemical	May relate to ground water quality and remedial activities at the Site
6 NYCRR Part 364	Waste Transporter Permits	Action	Relates to alternatives that involve waste removal.
6 NYCRR Part 370 through 373	Hazardous Waste Management Regulations	Action, Chemical	This standard would relate to the management of hazardous waste at the Site, including characterization of excavated soil at the Site.
6 NYCRR Part 360	New York State Solid Waste Regulations	Action	May relate to soil remediation at the Site
To Be Considered (TBC) Information (2)			
NYSDEC *Draft* DER-10	Technical Guidance for Site Investigation and Remediation	Action	Relates to all Site remedial action activities.
OSHA; 29 CFR 1926	Safety and Health Regulations for Construction	Action	May relate to certain remedial Site activities
Oyster Bay Code	Zoning for the Town of Oyster Bay	Location Action	May relate to all activities

GLOSSARY OF ACRONYMS:

NYCRR	New York Code of Rules and Regulations	TBC	To Be Considered
CFR	Code of Federal Regulations	SCG	Standards, Criteria and Guidance

NOTES:

(1) Standards and Criteria were obtained from NYSDEC Draft DER-10, Technical Guidance for Site Investigation and Remediation, December 2002.

(2) Guidelines were obtained from NYSDEC Draft DER-10, Technical Guidance for Site Investigation and Remediation, December 2002.

(3) TBCs are defined in this report as regulations and guidance documents that are not identified NYSDEC Draft DER-10, Technical Guidance for Site Investigation and Remediation, December 2002.

able 2-2
omparison of the Concentrations of the Chemicals of Concern in Ground Water to the NYS Class GA Standards
lsy Manufacturing Site, Hicksville, NY

PARAMETER	* PGW-1 (66-70)	PGW-1 (66-70)	* PGW-2 (66-70)	PGW-3 (66-70)	PGW-3 (66-70)	PGW-3 (76-80)	PGW-3 (86-90)	NYSDEC CLASS GA STANDARDS
VOLATILE ORGANICS (µg/l)								
1,1-Dichloroethane	ND	1.4	2.0 j	ND	ND	ND	ND	
1,1,1-Trichloroethane	ND	ND	ND	ND	1.2	ND	ND	
Tetrachloroethylene	ND	ND	ND	1.8	ND	2.0	ND	5.0
Xylenes (total)	ND	ND	ND	ND	ND	ND	1.7	5.0

PARAMETER	PGW-3 (96-100)	* PGW-3 (96-100)	PGW-4 (66-70)	PGW-4 (76-80)	PGW-4 (86-90)	PGW-4 (96-100)	PGW-5 (66-70)	NYSDEC CLASS GA STANDARDS
VOLATILE ORGANICS (µg/l)								
1,1,1-Trichloroethane	ND	ND	ND	ND	ND	ND	7.2	
Trichloroethylene	ND	ND	ND	ND	ND	4.4	ND	
Benzene	ND	1.0 j	ND	ND	ND	ND	ND	
Toluene	ND	3.0 j	ND	ND	ND	ND	ND	
Ethylbenzene	ND	1.0 j	ND	ND	ND	ND	ND	
Xylenes (total)	ND	1.0 j	ND	ND	ND	ND	ND	5.0

- Confirmatory sample.
- Estimated concentration; compound present below quantitation limit.

ND - Not detected at analytical detection limit.

ote: Concentrations of chemicals of concern exceeding both the ackground concentrations and the Class GA standards are circled.

Source: LMS, 1997a

Table 2-2

Comparison of the Concentrations of the Chemicals of Concern in Ground Water to the NYS Class GA Standards

Alsy Manufacturing Site, Hicksville, NY

PARAMETER	PGW-5 (76-80)	PGW-5 (86-90)	PGW-5 (96-100)	PGW-6 (66-70)	PGW-6 (76-80)	PGW-6 (86-90)	PGW-6 (96-100)	PGW-7 (66-70)	NYSDEC CLASS GA STANDARDS
VOLATILE ORGANICS (µg/l)									
1,1-Dichloroethane	1.1	1.9	ND	ND	ND	ND	ND	ND	
1,1,1-Trichloroethane	12	11	2.4	ND	ND	ND	ND	ND	
Tetrachloroethylene	ND	ND	ND	7.2	2.9	8.4	ND	ND	5.0

PARAMETER	PGW-7 (76-80)	PGW-7 (86-90)	• PGW-7 (96-100)	• PGW-8 (66-70)	PGW-8 (76-80)	PGW-8 (86-90)	PGW-8 (96-100)	PGW-9 (66-70)	NYSDEC CLASS GA STANDARDS
VOLATILE ORGANICS (µg/l)									
1,1-Dichloroethane	ND	ND	ND	ND	ND	1.0	1.2	ND	
1,1,1-Trichloroethane	ND	ND	ND	2.0 j	ND	ND	ND	ND	
Trichloroethylene	ND	ND	ND	ND	1.1	ND	ND	ND	

PARAMETER	PGW-9 (76-80)	PGW-9 (86-90)	PGW-9 (96-100)	PGW-10 (66-70)	• PGW-10 (76-80)	PGW-10 (86-90)	PGW-10 (96-100)	NYSDEC CLASS GA STANDARDS
VOLATILE ORGANICS (µg/l)								
Toluene	ND	ND	ND	ND	0.80 j	ND	ND	
Xylenes (total)	ND	ND	ND	ND	0.70 j	ND	ND	5.0

•• - Confirmatory sample.
j - Estimated concentration; compound present below quantitation limit.

Source: LMS, 1997a

ND - Not detected at analytical detection limit.

Note: Concentrations of chemicals of concern exceeding both the background concentrations and the Class GA standards are circled.

Table 2-2
Comparison of the Concentrations of the Chemicals of Concern in Ground Water to the NYS Class GA Standards
Alsy Manufacturing Site, Hicksville, NY

PARAMETER	GP-1GW (66-70)	* GP-2GW (66-70)	* GP-3GW (66-70)	GP-4GW (66-70)	GP-5GW (66-70)	GP-6GW (66-70)	NYSDEC CLASS GA STANDARDS
VOLATILE ORGANICS (µg/l)							
1,1,1,-Trichloroethane	ND	ND	1.4	1.2	ND	ND	
Tetrachloroethene	ND	ND	ND	1.0	2.2	ND	5.0

PARAMETER	GP-7GW (66-70)	* GP-8GW (66-70)	GP-9GW (66-70)	GP-10GW (66-70)	GP-11GW (66-70)	GP-12GW (66-70)	* GP-13GW (66-70)	NYSDEC CLASS GA STANDARDS
VOLATILE ORGANICS (µg/l)								
1,1,1,-Trichloroethane	8.8	6.0 J	1.8	ND	ND	2.9	1.0 J	
1,2-Dichloroethene (total)	5.3	2.0 J	ND	ND	ND	ND	ND	5.0
Trichloroethene	1.8	1.0 J	ND	ND	ND	ND	ND	
Tetrachloroethene	1.9	2.0 J	ND	ND	ND	1.8	2.0 J	5.0
1,1-Dichloroethane	1.4	ND	ND	ND	ND	ND	ND	
Xylenes (total)	ND	ND	2.9	ND	ND	ND	ND	5.0

* - Confirmatory sample.
J - Estimated concentration; compound present below quantitation limit.
ND - Not detected at analytical detection limit.

Note: Concentrations of chemicals of concern exceeding both the background concentrations and the Class GA standards are circled.

Source: LMS, 1997a

Table 2-2
Comparison of the Concentrations of the Chemicals of Concern in Ground Water to the NYS Class GA Standards
Alsy Manufacturing Site, Hicksville, NY

PARAMETER	• DGP-1GW (66-70)	DGP-1GW (86-90)	DGP-1GW (96-100)	• DGP-2GW (68-70)	DGP-2GW (88-90)	DGP-2GW (98-100)	DGP-3GW (66-70)	DGP-3GW (86-90)	DGP-3GW (96-100)	NYSDEC CLASS GA STANDARDS
VOLATILE ORGANICS (μg/l)										
1,2-Dichloroethane (total)	2.0 j	ND	ND	2.0 j	ND	ND	♦	ND	ND	0.6
1,1,1-Trichloroethane	3.0 j	ND	ND	5.0 j	ND	ND	♦	ND	ND	
Trichloroethane	ND	ND	ND	1.0 j	ND	ND	♦	ND	ND	
Tetrachloroethene	ND	ND	ND	2.0 j	ND	ND	♦	ND	ND	5.0

♦ - Not analyzed.
• - Confirmatory sample.
j - Estimated concentration; compound present below quantitation limit.
ND - Not detected at analytical detection limit.

Note: Concentrations of chemicals of concern exceeding both the background concentrations and the Class GA standards are circled.

Source: LMS, 1997a

able 2-2
omparison of the Concentrations of the Chemicals of Concern in Ground Water to the NYS Class GA Standards
lsy Manufacturing Site, Hicksville, NY

PARAMETER	AMS-1	AMS-2	MW-3	LMS-1	LMS-2	LMS-3	LMS-4	LMS-5	LMS-6	FIELD BLANK	TRIP BLANK-1	TRIP BLANK-2	TRIP BLANK-3	NYSDEC CLASS GA STANDARDS
VOLATILE ORGANICS (µg/l)														
1,1,1-Trichloroethane	ND	ND	2.0 j	2.0 j	4.0 j	ND	ND	ND	4.0 j	ND	ND	ND	ND	
Tetrachloroethene	ND	ND	ND	5.0 j	ND	9.0 j	ND	ND	ND	ND	ND	ND	ND	5.0
Benzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Toluene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Ethylbenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Xylenes (total)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5.0

- Estimated concentration; compound present below quantitation limit.
D - Not detected at analytical detection limit.

Note: Concentrations of chemicals of concern exceeding both the background concentrations and the Class GA standards are circled.

ource: LMS, 1997a

Table 2-2
Comparison of the Concentrations of the Chemicals of Concern in Ground Water to the NYS Class GA Standards
Alsy Manufacturing Site, Hicksville, NY

Post SRI Sampling

	On-Site Wells		Combes Avenue Well			Border Street Well				
SAMPLE NO.:	AMS-2	LMS-4	VP-N	VP-N	VP-N	VP-S	VP-S	VP-S	VP-S (D)	NYS
SAMPLE HORIZON:	-	-	60 feet	95 feet	120 feet	60 feet	95 feet	120 feet	120 feet	Class GA
SAMPLE DATE:	6/25/98	6/26/98	6/26/98	6/26/98	6/26/98	6/25/98	6/25/98	6/25/98	6/25/98	Standard
VOCs, ug/l										
trans-1,2-dichloroethene	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0
cis-1,2-dichloroethene	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0
1,2-dichloroethane	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	0.6
tetrachloroethene	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0

Notes:

Detections are identified in bold format.

Concentrations of chemicals of concern exceeding both the background concentrations and the NYS Class GA Standards are circled.

U - Undetected at the indicated detection limit.

Table 2-2
Comparison of the Concentrations of the Chemicals of Concern in Ground Water to the NYS Class GA Standards
Alsy Manufacturing Site, Hicksville, NY

PARAMETER	PGW-1 (66-70)	DISSOLVED PGW-1 (66-70)	PGW-1 (76-80)	DISSOLVED PGW-1 (76-80)	PGW-1 (96-100)	DISSOLVED PGW-1 (96-100)	PGW-2 (66-70)	DISSOLVED PGW-2 (66-70)	PGW-2 (76-80)	NYSDEC CLASS GA STANDARDS
METALS (µg/l)										
Aluminum	1,180	ND	♦	♦	♦	♦	15,600	ND	♦	NS
Antimony	4.0 B	ND	♦	♦	♦	♦	4.0 B	5.1 B	♦	3.0
Arsenic	4.0 B	3.2 B	42	ND	37	ND	19	ND	55	25
Barium	226	217	♦	♦	♦	♦	263	153 B	♦	1,000
Beryllium	0.73 B	ND	♦	♦	♦	♦	0.66 B	ND	♦	3.0
Cadmium	ND	ND	2.1 B	ND	3.1 B	ND	ND	ND	ND	5.0
Calcium	32,300 G	81,100 G	♦	♦	♦	♦	56,600 G	76,400 G	♦	
Chromium	85	ND	189	ND	1,330	1.7 B	67	ND	1,120	
Cobalt	13 B E	13 B E	♦	♦	♦	♦	17 B E	10 B E	♦	NS
Copper	65	6.7 B	323	6.5 B	667	ND	32	ND	525	200
Iron	41,300	39,800	♦	♦	♦	♦	36,500	2,100	♦	300 (m)
Lead	3.5	ND	54	3.3	64	ND	13	ND	143	25
Magnesium	5,430 G	13,900 G	♦	♦	♦	♦	8,020 G	8,950 G	♦	35,000 GV
Manganese	1,090 G	2,470 G	♦	♦	♦	♦	3,390 G	4,030 G	♦	
Mercury	0.36	ND	♦	♦	♦	♦	0.33	ND	♦	0.7
Nickel	28 B	14 B	104	11 B	668	30 B	25 B	9.1 B	202	100
Potassium	4,910 B G	10,900 G	♦	♦	♦	♦	8,170	10,600	♦	NS
Selenium	3.8 B	ND	♦	♦	♦	♦	4.7 B	ND	♦	10
Silver	0.70 B N	ND N	♦	♦	♦	♦	ND N	ND N	♦	50
Sodium	16,300 G	42,100 G	♦	♦	♦	♦	14,400 G	19,600 G	♦	20,000
Thallium	2.4 B	3.8 B	♦	♦	♦	♦	3.4 B	ND	♦	0.5
Vanadium	12 B	ND	♦	♦	♦	♦	37 B	ND	♦	NS
Zinc	12 B	9.0 B	100	16 B	476	15 B	32	12 B	190	2,000 GV
Cyanide	ND N	♦	♦	♦	♦	♦	ND G N	♦	♦	

♦ - Not analyzed.
(m) - Iron and manganese not to exceed 500 µg/l.
B - Value is less than the contract-required detection limit but greater than the instrument detection limit.
E - Value estimated due to interference.

G - Value considered estimated based on data validators report (Appendix G).
N - Spiked sample recovery is not within control limits.
GV - Guidance value.
ND - Not detected at analytical detection limit.

Note: Concentrations of chemicals of concern exceeding both the background concentrations and the Class GA standards are circled.

Source: LMS, 1997a

able 2-2
omparison of the Concentrations of the Chemicals of Concern in Ground Water to the NYS Class GA Standards
lsy Manufacturing Site, Hicksville, NY

PARAMETER	DISSOLVED PGW-2 (76-80)	PGW-2 (96-100)	DISSOLVED PGW-2 (96-100)	PGW-3 (66-70)	DISSOLVED PGW-3 (66-70)	PGW-3 (76-80)	DISSOLVED PGW-3 (76-80)	PGW-3 (96-100)	DISSOLVED PGW-3 (96-100)	NYSDEC CLASS GA STANDARDS
METALS (µg/l)										
Aluminum	♦	♦	♦	♦	♦	♦	♦	2,580	ND	NS
Antimony	♦	♦	♦	♦	♦	♦	♦	ND	7.1 B	3.0
Arsenic	ND	118	ND	34	ND	ND	ND	15	ND	25
Barium	♦	♦	♦	♦	♦	♦	♦	75 B	48 B	1,000
Beryllium	♦	♦	♦	♦	♦	♦	♦	0.94 B	ND	3.0
Cadmium	ND	ND	0.81 B	ND	0.45 B	ND	ND	ND	ND	5.0
Calcium	♦	♦	♦	♦	♦	♦	♦	5,490 G	16,800 G	
Chromium	ND	1,200	ND	421	3.4 B	85	2.4 B	35	ND	
Cobalt	♦	♦	♦	♦	♦	♦	♦	17 B E	15 B E	NS
Copper	5.9 B	409	9.8 B	194	5.1 B	63	3.0 B	27	ND	200
Iron	♦	♦	♦	♦	♦	♦	♦	32,200	6,340	300 (m)
Lead	ND	88	11	33	3.0 B	19	2.3 B	15	ND	25
Magnesium	♦	♦	♦	♦	♦	♦	♦	1,130 B	4,280 B	35,000 GV
Manganese	♦	♦	♦	♦	♦	♦	♦	299 G	665 G	
Mercury	♦	♦	♦	♦	♦	♦	♦	ND	ND	0.7
Nickel	13 B	381	8.7 B	118	30 B	55	18 B	11 B	20 B	100
Potassium	♦	♦	♦	♦	♦	♦	♦	715 B	2,820 B	NS
Selenium	♦	♦	♦	♦	♦	♦	♦	3.5 B	ND	10
Silver	♦	♦	♦	♦	♦	♦	♦	ND N	ND N	50
Sodium	♦	♦	♦	♦	♦	♦	♦	6,470 G	25,500 G	20,000
Thallium	♦	♦	♦	♦	♦	♦	♦	2.8 B	ND	0.5
Vanadium	♦	♦	♦	♦	♦	♦	♦	28 B	ND	NS
Zinc	18 B	284	18 B	1,360	249	16 B	8.2 B	25	4.4 B	2,000 GV
Cyanide	♦	♦	♦	♦	♦	♦	♦	ND G N	♦	

♦ - Not analyzed.
(m) - Iron and manganese not to exceed 500 µg/l.
B - Value is less than the contract-required detection limit but greater than the instrument detection limit.
E - Value estimated due to interference.

G - Value considered estimated based on data validator's report (Appendix G).
N - Spiked sample recovery is not within control limits.
ND - Not detected at analytical detection limit.
GV - Guidance value.

Note: Concentrations of chemicals of concern exceeding both the background concentrations and the Class GA standards are circled.

Source: LMS, 1997a

able 2-2
omparison of the Concentrations of the Chemicals of Concern in Ground Water to the NYS Class GA Standards
lsy Manufacturing Site, Hicksville, NY

PARAMETER	PGW-4 (66-70)	DISSOLVED PGW-4 (66-70)	PGW-4 (86-90)	DISSOLVED PGW-4 (86-90)	PGW-4 (96-100)	DISSOLVED PGW-4 (96-100)	PGW-5 (76-80)	DISSOLVED PGW-5 (76-80)	PGW-5 (86-90)	NYSDEC CLASS GA STANDARDS
METALS (µg/l)										
Aluminum	♦	♦	♦	♦	♦	♦	♦	♦	♦	NS
Antimony	♦	♦	♦	♦	♦	♦	♦	♦	♦	3.0
Arsenic	35	ND	113	ND	11	2.2 B	5.9 B	3.5 B	50	25
Barium	♦	♦	♦	♦	♦	♦	♦	♦	♦	1,000
Beryllium	♦	♦	♦	♦	♦	♦	♦	♦	♦	3.0
Cadmium	ND	ND	17	ND	18	ND	ND	2.6 B	10	5.0
Calcium	♦	♦	♦	♦	♦	♦	♦	♦	♦	
Chromium	413	ND	681	ND	4,430	4.2 B	516	2.2 B	1,110	
Cobalt	♦	♦	♦	♦	♦	♦	♦	♦	♦	NS
Copper	119	ND	552	ND	2,600	ND	189	3.3 B	409	200
Iron	♦	♦	♦	♦	♦	♦	♦	♦	♦	300 (m)
Lead	26	ND	139	ND	75	ND	14	31	71	25
Magnesium	♦	♦	♦	♦	♦	♦	♦	♦	♦	35,000 GV
Manganese	♦	♦	♦	♦	♦	♦	♦	♦	♦	
Mercury	♦	♦	♦	♦	♦	♦	♦	♦	♦	0.7
Nickel	79	36 B	130	ND	1,210	70	86	25 B	177	100
Potassium	♦	♦	♦	♦	♦	♦	♦	♦	♦	NS
Selenium	♦	♦	♦	♦	♦	♦	♦	♦	♦	10
Silver	♦	♦	♦	♦	♦	♦	♦	♦	♦	50
Sodium	♦	♦	♦	♦	♦	♦	♦	♦	♦	20,000
Thallium	♦	♦	♦	♦	♦	♦	♦	♦	♦	0.5
Vanadium	♦	♦	♦	♦	♦	♦	♦	♦	♦	NS
Zinc	82	33	311	23	6,010	22	60	14 B	353	2,000 GV
Cyanide	♦	♦	♦	♦	♦	♦	♦	♦	♦	

- Not analyzed.
m) - Iron and manganese not to exceed 500 µg/l.
- Value is less than the contract-required detection limit but greater than the instrument detection limit.
ND - Not detected at analytical detection limit.
GV - Guidance value.

ote: Concentrations of chemicals of concern exceeding both the ackground concentrations and the Class GA standards are circled.

Source: LMS, 1997a

Table 2-2
Comparison of the Concentrations of the Chemicals of Concern in Ground Water to the NYS Class GA Standards
Alsy Manufacturing Site, Hicksville, NY

PARAMETER	DISSOLVED PGW-5 (86-90)	PGW-5 (96-100)	DISSOLVED PGW-5 (96-100)	PGW-6 (66-70)	DISSOLVED PGW-6 (66-70)	PGW-6 (86-90)	DISSOLVED PGW-6 (86-90)	PGW-6 (96-100)	DISSOLVED PGW-6 (96-100)	NYSDEC CLASS GA STANDARDS
METALS (µg/l)										
Aluminum	♦	♦	♦	♦	♦	♦	♦	♦	♦	NS
Antimony	♦	♦	♦	♦	♦	♦	♦	♦	♦	3.0
Arsenic	ND	72	ND	ND	ND	2.2 B	ND	21	ND	25
Barium	♦	♦	♦	♦	♦	♦	♦	♦	♦	1,000
Beryllium	♦	♦	♦	♦	♦	♦	♦	♦	♦	3.0
Cadmium	ND	23	ND	ND	4.7 B	ND	ND	ND	ND	5.0
Calcium	♦	♦	♦	♦	♦	♦	♦	♦	♦	
Chromium	ND	3,890	ND	167	2.9 B	57	2.1 B	84	2.2 B	
Cobalt	♦	♦	♦	♦	♦	♦	♦	♦	♦	NS
Copper	ND	1,190	ND	69	3.4 B	69	5.6 B	105	4.6 B	200
Iron	♦	♦	♦	♦	♦	♦	♦	♦	♦	300 (m)
Lead	ND	88	ND	13	51	9.1	2.7 B	27	2.0 B	25
Magnesium	♦	♦	♦	♦	♦	♦	♦	♦	♦	35,000 GV
Manganese	♦	♦	♦	♦	♦	♦	♦	♦	♦	
Mercury	♦	♦	♦	♦	♦	♦	♦	♦	♦	0.7
Nickel	26 B	760	ND	34 B	14 B	29 B	13 B	36 B	7.8 B	100
Potassium	♦	♦	♦	♦	♦	♦	♦	♦	♦	NS
Selenium	♦	♦	♦	♦	♦	♦	♦	♦	♦	10
Silver	♦	♦	♦	♦	♦	♦	♦	♦	♦	50
Sodium	♦	♦	♦	♦	♦	♦	♦	♦	♦	20,000
Thallium	♦	♦	♦	♦	♦	♦	♦	♦	♦	0.5
Vanadium	♦	♦	♦	♦	♦	♦	♦	♦	♦	NS
Zinc	30	1,200	21	16 B	29	14 B	12 B	92	15 B	2,000 GV
Cyanide	♦	♦	♦	♦	♦	♦	♦	♦	♦	

♦ - Not analyzed.
(m) - Iron and manganese not to exceed 500 µg/l.
B - Value is less than the contract-required detection limit but greater than the instrument detection limit.
ND - Not detected at analytical detection limit.
GV - Guidance value.

ote: Concentrations of chemicals of concern exceeding both the ackground concentrations and the Class GA standards are circled.

Source: LMS, 1997a

Table 2-2

Comparison of the Concentrations of the Chemicals of Concern in Ground Water to the NYS Class GA Standards

Alsy Manufacturing Site, Hicksville, NY

PARAMETER	PGW-7 (66-70)	DISSOLVED PGW-7 (66-70)	PGW-7 (76-80)	DISSOLVED PGW-7 (76-80)	PGW-7 (96-100)	DISSOLVED PGW-7 (96-100)	PGW-8 (66-70)	DISSOLVED PGW-8 (66-70)	PGW-8 (76-80)	DISSOLVED PGW-8 (76-80)	NYSDEC CLASS GA STANDARDS
METALS (µg/l)											
Aluminum	♦	♦	♦	♦	20,600	68 B	53,500	82 B	♦	♦	NS
Antimony	♦	♦	♦	♦	21 B R	ND R	64 R	ND R	♦	♦	3.0
Arsenic	6.8 B	ND	10 B	ND	108	ND	82	ND	137	ND	25
Barium	♦	♦	♦	♦	168 B	42 B	564	93 B	♦	♦	1,000
Beryllium	♦	♦	♦	♦	3.6 B	ND	3.4 B	ND	♦	♦	3.0
Cadmium	ND	ND	ND	ND	1.2 B	0.64 B	4.1 B	0.89 B	3.7 B	0.65 B	5.0
Calcium	♦	♦	♦	♦	12,700	13,300	28,400	31,400	♦	♦	
Chromium	159	1.2 B	705	1.6 B	118 E	0.65 B E	999 E	1.9 B E	1,220	4.1 B	
Cobalt	♦	♦	♦	♦	14 B	7.2 B	100	44 B	♦	♦	NS
Copper	48	5.0 B	208	18 B	83	ND	285	ND	603	ND	200
Iron	♦	♦	♦	♦	136,000	4,270	219,000	17,500	♦	♦	300 (m)
Lead	9.0	2.2 B	24	ND	30 G	ND	60	ND	125	1.9 B	25
Magnesium	♦	♦	♦	♦	1,830 B	1,800 B	7,100	4,330 B	♦	♦	35,000 GV
Manganese	♦	♦	♦	♦	655	478	6,040	3,750	♦	♦	
Mercury	♦	♦	♦	♦	0.36	ND	0.62 R	ND R	♦	♦	0.7
Nickel	24 B	11 B	95	25 B	25 B	11 B	163	37 B	238	30 B	100
Potassium	♦	♦	♦	♦	3,670 B	3,710 B	5,890 G	5,970	♦	♦	NS
Selenium	♦	♦	♦	♦	7.7	ND	15	ND	♦	♦	10
Silver	♦	♦	♦	♦	ND	ND	ND	ND	♦	♦	50
Sodium	♦	♦	♦	♦	36,300 G	50,000 G	29,500 G	35,100 G	♦	♦	20,000
Thallium	♦	♦	♦	♦	22 G	6.1 B G	33	14	♦	♦	0.5
Vanadium	♦	♦	♦	♦	160	ND	169	ND	♦	♦	NS
Zinc	33	3.7 B	42	16 B	50	ND	229	16 B	617	5.9 B	2,000 GV
Cyanide	♦	♦	♦	♦	ND G	♦	♦	♦	♦	♦	

♦ - Not analyzed.

m) - Iron and manganese not to exceed 500 µg/l.

B - Value is less than the contract-required detection limit but greater than the instrument detection limit.

E - Value estimated due to interference.

G - Value considered estimated based on data validator's report (Appendix G).

R - Duplicate analysis not within control limits.

ND - Not detected at analytical detection limit.

GV - Guidance value.

Note: Concentrations of chemicals of concern exceeding both the background concentrations and the Class GA standards are circled.

Source: LMS, 1997a

Table 2-2

Comparison of the Concentrations of the Chemicals of Concern in Ground Water to the NYS Class GA Standards

Alsy Manufacturing Site, Hicksville, NY

PARAMETER	PGW-8 (96-100)	DISSOLVED PGW-8 (96-100)	PGW-9 (76-80)	DISSOLVED PGW-9 (76-80)	PGW-9 (86-90)	DISSOLVED PGW-9 (86-90)	PGW-9 (96-100)	DISSOLVED PGW-9 (96-100)	PGW-10 (76-80)	NYSDEC CLASS GA STANDARDS
METALS (µg/l)										
Aluminum	♦	♦	♦	♦	♦	♦	♦	♦	134,000	NS
Antimony	♦	♦	♦	♦	♦	♦	♦	♦	13 B	3.0
Arsenic	88	ND	90	ND	85	ND	165	ND	139	25
Barium	♦	♦	♦	♦	♦	♦	♦	♦	524	1,000
Beryllium	♦	♦	♦	♦	♦	♦	♦	♦	5.9	3.0
Cadmium	2.6 B	0.59 B	ND	ND	ND	ND	ND	ND	ND	5.0
Calcium	♦	♦	♦	♦	♦	♦	♦	♦	36,400	
Chromium	427	3.4 B	1,320	4.1 B	1,790	0.67 B	224	3.3 B	576	
Cobalt	♦	♦	♦	♦	♦	♦	♦	♦	82	NS
Copper	243	ND	462	ND	820	ND	440	ND	440	200
Iron	♦	♦	♦	♦	♦	♦	♦	♦	291,000	300 (m)
Lead	150	ND	101	ND	77	ND	96	ND	117	25
Magnesium	♦	♦	♦	♦	♦	♦	♦	♦	5,890	35,000 GV
Manganese	♦	♦	♦	♦	♦	♦	♦	♦	2,650	
Mercury	♦	♦	♦	♦	♦	♦	♦	♦	0.61 N	0.7
Nickel	110	16 B	301	54	465	65	134	27 B	207	100
Potassium	♦	♦	♦	♦	♦	♦	♦	♦	9,290	NS
Selenium	♦	♦	♦	♦	♦	♦	♦	♦	40	10
Silver	♦	♦	♦	♦	♦	♦	♦	♦	2.2 B	50
Sodium	♦	♦	♦	♦	♦	♦	♦	♦	16,900	20,000
Thallium	♦	♦	♦	♦	♦	♦	♦	♦	44 G	0.5
Vanadium	♦	♦	♦	♦	♦	♦	♦	♦	305	NS
Zinc	237	8.6 B	392	16 B	407	101	105	25	364	2,000 GV
Cyanide	♦	♦	♦	♦	♦	♦	♦	♦	ND G N	

♦ - Not analyzed.
(m) - Iron and manganese not to exceed 500 µg/l.
B - Value is less than the contract-required detection limit but greater than the instrument detection limit.

G - Value considered estimated on data validator's report (Appendix G).
N - Spiked sample recovery is not within control limits.
GV - Guidance value.
ND - Not detected at analytical detection limit.

lote: Concentrations of chemicals of concern exceeding both the ackground concentrations and the Class GA standards are circled.

Source: LMS, 1997a

Table 2-2
Comparison of the Concentrations of the Chemicals of Concern in Ground Water to the NYS Class GA Standards
Alsy Manufacturing Site, Hicksville, NY

PARAMETER	DISSOLVED PGW-10 (76-80)	PGW-10 (86-90)	DISSOLVED PGW-10 (86-90)	PGW-10 (96-100)	DISSOLVED PGW-10 (96-100)	NYSDEC CLASS GA STANDARDS
METALS (µg/l)						
Aluminum	ND	♦	♦	♦	♦	NS
Antimony	ND	♦	♦	♦	♦	3.0
Arsenic	ND	18	3.2 B	65	2.6 B	25
Barium	70 B	♦	♦	♦	♦	1,000
Beryllium	ND	♦	♦	♦	♦	3.0
Cadmium	ND	ND	ND	ND	ND	5.0
Calcium	31,800	♦	♦	♦	♦	
Chromium	ND	392	0.68 B	221	6.4 B	
Cobalt	21 B	♦	♦	♦	♦	NS
Copper	2.5 B	533	ND	473	ND	200
Iron	26,100	♦	♦	♦	♦	300 (m)
Lead	2.3 B	40	ND	62	ND	25
Magnesium	4,480 B	♦	♦	♦	♦	35,000 GV
Manganese	2,010	♦	♦	♦	♦	
Mercury	0.28 N	♦	♦	♦	♦	0.7
Nickel	28 B	169	33 B	132	42	100
Potassium	4,900 B	♦	♦	♦	♦	NS
Selenium	ND	♦	♦	♦	♦	10
Silver	ND	♦	♦	♦	♦	50
Sodium	16,300	♦	♦	♦	♦	20,000
Thallium	6.6 B G	♦	♦	♦	♦	0.5
Vanadium	ND	♦	♦	♦	♦	NS
Zinc	32	205	56	129	7.5 B	2,000 GV
Cyanide	♦	♦	♦	♦	♦	

♦ - Not analyzed.
(m) - Iron and manganese not to exceed 500 µg/l.
B - Value is less than the contract-required detection limit but greater than the instrument detection limit.
G - Value considered estimated based on data validator's report (Appendix G).
GV - Guidance value.
ND - Not detected at analytical detection limit.

Note: Concentrations of chemicals of concern exceeding both the background concentrations and the Class GA standards are circled.

Source: LMS, 1997a

Table 2-2

Comparison of the Concentrations of the Chemicals of Concern in Ground Water to the NYS Class GA Standards Alsy Manufacturing Site, Hicksville, NY

PARAMETER	GP-1GW (66-70)	DISSOLVED GP-1GW (66-70)	GP-2GW (66-70)	DISSOLVED GP-2GW (66-70)	GP-3GW (66-70)	DISSOLVED GP-3GW (66-70)	GP-4GW (66-70)	DISSOLVED GP-4GW (66-70)	NYSDEC CLASS GA STANDARDS
METALS (µg/l)									
Aluminum	♦	♦	28,600 G N	ND N R	♦	♦	♦	♦	NS
Antimony	♦	♦	ND	ND	♦	♦	♦	♦	3.0
Arsenic	94	ND	13	ND	81	ND	24	ND	25
Barium	♦	♦	329	138 B	♦	♦	♦	♦	1,000
Beryllium	♦	♦	2.0 B	ND	♦	♦	♦	♦	3.0
Cadmium	ND	ND	ND	ND	ND	ND	ND	ND	5.0
Calcium	♦	♦	40,600 G	39,300	♦	♦	♦	♦	
Chromium	356	9.6 B	217 G	ND	982	36	204	ND	
Cobolt	♦	♦	13 B	3.4 B	♦	♦	♦	♦	NS
Copper	180	7.2 B	41 G	ND	541	9.6 B	100	8.8 B	200
Iron	♦	♦	70,500 G	745 r	♦	♦	♦	♦	300 (m)
Lead	80	ND	17	ND	161	ND	45	3.8 B	25
Magnesium	♦	♦	4,590 B	3,930 B	♦	♦	♦	♦	35,000 GV
Manganese	♦	♦	4,080 G	2,510	♦	♦	♦	♦	
Mercury	♦	♦	0.59 r	0.36 r	♦	♦	♦	♦	0.7
Nickel	123	28 B	96	46	396	48	98	12 B	100
Potassium	♦	♦	7,970	6,690	♦	♦	♦	♦	NS
Selenium	♦	♦	ND	ND	♦	♦	♦	♦	10
Silver	♦	♦	ND	ND	♦	♦	♦	♦	50
Sodium	♦	♦	12,900	13,100	♦	♦	♦	♦	20,000
Thallium	♦	♦	ND	ND	♦	♦	♦	♦	0.5
Vanadium	♦	♦	42 B G	ND	♦	♦	♦	♦	NS
Zinc	173	17 B	44 r	17 B r	605	31	98	24	2,000 GV
Cyanide	♦	♦	ND r	♦	♦	♦	♦	♦	

♦ - Not analyzed.
(m) - Iron and manganes - Iron and manganese not to exceed 500 µg/l.
r - Value rejected by data validator but usable to show magnitude of contaminated level (Appendix G).
B - Value is less than the contract-required detection limit but greater than the instrument detection limit.
G - Value considered estimated based on data validator's report (Appendix G).

N - Spiked sample recovery is not within control limits.
R - Duplicate analysis not within control limits.
GV - Guidance value.
ND - Not detected at analytical detection limit.

Note: Concentrations of chemicals of concern exceeding both the background concentrations and the Class GA standards are circled.

Source: LMS, 1997a

Table 2-2

Comparison of the Concentrations of the Chemicals of Concern in Ground Water to the NYS Class GA Standards
Alsy Manufacturing Site, Hicksville, NY

PARAMETER	GP-5GW (66-70)	DISSOLVED GP-5GW (66-70)	GP-6GW (66-70)	DISSOLVED GP-6GW (66-70)	GP-7GW (66-70)	DISSOLVED GP-7GW (66-70)	GP-8GW (66-70)	DISSOLVED GP-8GW (66-70)	GP-9GW (66-70)	DISSOLVED GP-9GW (66-70)	NYSDEC CLASS GA STANDARDS
METALS (µg/l)											
Aluminum	◆	◆	◆	◆	◆	◆	27,500 G	ND	◆	◆	NS
Antimony	◆	◆	◆	◆	◆	◆	ND G	ND	◆	◆	3.0
Arsenic	26	ND	55	5.9 B	62	ND	19 G	ND	57	ND	25
Barium	◆	◆	◆	◆	◆	◆	399 G	103 B	◆	◆	1,000
Beryllium	◆	◆	◆	◆	◆	◆	1.8 B	ND	◆	◆	3.0
Cadmium	ND	ND	ND	ND	0.83 B	ND	ND	ND	0.93 B	ND	5.0
Calcium	◆	◆	◆	◆	◆	◆	33,700 G	32,200	◆	◆	
Chromium	301	ND	423	11	473	32	184 G	ND	696	ND	
Cobolt	◆	◆	◆	◆	◆	◆	23 B	5.2 B	◆	◆	NS
Copper	104	ND	126	7.4 B	163	17 B	194 r	6.1 B	208	ND	200
Iron	◆	◆	◆	◆	◆	◆	55,300 G	3,250	◆	◆	300 (m)
Lead	31	ND	43	2.5 B	41	ND	27 G	ND	65	ND	25
Magnesium	◆	◆	◆	◆	◆	◆	6,310 r	4,050 B	◆	◆	35,000 GV
Manganese	◆	◆	◆	◆	◆	◆	2,830 G	852	◆	◆	
Mercury	◆	◆	◆	◆	◆	◆	0.28	ND	◆	◆	0.7
Nickel	85	13 B	111	10 B	132	21 B	129 G	33 B	181	12 B	100
Potassium	◆	◆	◆	◆	◆	◆	4,920 B r	3,170 B	◆	◆	NS
Selenium	◆	◆	◆	◆	◆	◆	ND	ND	◆	◆	10
Silver	◆	◆	◆	◆	◆	◆	ND	ND	◆	◆	50
Sodium	◆	◆	◆	◆	◆	◆	31,900 r	32,100 r	◆	◆	20,000
Thallium	◆	◆	◆	◆	◆	◆	ND	ND	◆	◆	0.5
Vanadium	◆	◆	◆	◆	◆	◆	44 B G	ND	◆	◆	NS
Zinc	66	10 B	95	12 B	97	15 B	71 r	24 r	145	13 B	2,000 GV
Cyanide	◆	◆	◆	◆	◆	◆	ND N	◆	◆	◆	

- Not analyzed.

) - Iron and manganese not to exceed 500 µg/l.

- Value rejected by data validator but usable to show magnitude of contaminated level (Appendix G).

- Value is less than the contract-required detection limit but greater than the instrument detection limit.

G - Value considered estimated based on data validator's report (Appendix G).

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Note: Concentrations of chemicals of concern exceeding both the background concentrations and the Class GA standards are circled.

Source: LMS, 1997a

Table 2-2

Comparison of the Concentrations of the Chemicals of Concern in Ground Water to the NYS Class GA Standards Alsy Manufacturing Site, Hicksville, NY

PARAMETER	GP-10GW (66-70)	DISSOLVED GP-10GW (66-70)	GP-11GW (66-70)	DISSOLVED GP-11GW (66-70)	GP-12GW (66-70)	DISSOLVED GP-12GW (66-70)	GP-13GW (66-70)	DISSOLVED GP-13GW (66-70)	OCB-1GW (66-70)	DISSOLVED OCB-1GW (66-70)	NYSDEC CLASS GA STANDARDS
METALS (µg/l)											
Aluminum	♦	♦	♦	♦	♦	♦	149,000 G	187	♦	♦	NS
Antimony	♦	♦	♦	♦	♦	♦	61 G	ND	♦	♦	3.0
Arsenic	40	ND	68	5.5 B	6.8 B	ND	76 G	7.9 B	264	2.2 B	25
Barium	♦	♦	♦	♦	♦	♦	1,480 G	255	♦	♦	1,000
Beryllium	♦	♦	♦	♦	♦	♦	6.0	ND	♦	♦	3.0
Cadmium	1.2 B	ND	1.3 B	ND	0.89 B	ND	3.1 B	ND	ND	ND	5.0
Calcium	♦	♦	♦	♦	♦	♦	32,900 G	31,700	♦	♦	
Chromium	617	26	443	34	227	ND	45 B G	ND	992	8.9 B	
Cobolt	♦	♦	♦	♦	♦	♦	45 B	ND	♦	♦	NS
Copper	270	10 B	284	47	172	8.0 B	151 r	11 B	975	4.7 B	200
Iron	♦	♦	♦	♦	♦	♦	156,000 G	1,260 r	♦	♦	300 (m)
Lead	89	ND	79	ND	76	ND	59 G	2.9 B	286	3.0 B	25
Magnesium	♦	♦	♦	♦	♦	♦	10,700 r	4,280 B	♦	♦	35,000 GV
Manganese	♦	♦	♦	♦	♦	♦	3,540 G	329 G	♦	♦	
Mercury	♦	♦	♦	♦	♦	♦	0.28 N	ND G	♦	♦	0.7
Nickel	209	24 B	156	43	111	20 B	177 G	15 B	964	197	100
Potassium	♦	♦	♦	♦	♦	♦	12,700 r	5,020	♦	♦	NS
Selenium	♦	♦	♦	♦	♦	♦	ND	4.9 B	♦	♦	10
Silver	♦	♦	♦	♦	♦	♦	ND N	ND	♦	♦	50
Sodium	♦	♦	♦	♦	♦	♦	28,700 r	28,900 r	♦	♦	20,000
Thallium	♦	♦	♦	♦	♦	♦	ND	ND	♦	♦	0.5
Vanadium	♦	♦	♦	♦	♦	♦	169 G	ND	♦	♦	NS
Zinc	155	16 B	114	22	105	20 B	183 r	16 B r	266	6.2 B	2,000 GV
Cyanide	♦	♦	♦	♦	♦	♦	ND	♦	♦	♦	

♦ - Not analyzed.
(m) - Iron and manganese not to exceed 500 µg/l.
- Value rejected by data validator but usable to show magnitude of contaminated level (Appendix G).
B - Value is less than the contract-required detection limit but greater than the instrument detection limit.

G - Value considered estimated based on data validator's report (Appendix G).
N - Spiked sample recovery is not within control limits.
GV - Guidance value.
ND - Not detected at analytical detection limit.

Note: Concentrations of chemicals of concern exceeding both the background concentrations and the Class GA standards are circled.

Source: LMS, 1997a

Table 2-2

Comparison of the Concentrations of the Chemicals of Concern in Ground Water to the NYS Class GA Standards
Alsy Manufacturing Site, Hicksville, NY

ARAMETER	OCB-3GW (66-70)	DISSOLVED OCB-3GW (66-70)	OCB-4GW (66-70)	DISSOLVED OCB-4GW (66-70)	OCB-5GW (66-70)	OCB-6GW (66-70)	DISSOLVED OCB-6GW (66-70)	OCB-7GW (66-70)	DISSOLVED OCB-7GW (66-70)	FIELD BLANK 01	DISSOLVED FIELD BLANK 01	NYSDEC CLASS GA STANDARDS
METALS (μg/l)												
Aluminum	♦	♦	♦	♦	♦	♦	♦	62,900 G	ND	138 B	ND	NS
Antimony	♦	♦	♦	♦	♦	♦	♦	ND N	ND	ND N R	ND	3.0
Arsenic	284	ND	71	4.1 B	48	35	5.4 B	41	11	ND R	ND	25
Barium	♦	♦	♦	♦	♦	♦	♦	390	152 B	ND	ND	1,000
Beryllium	♦	♦	♦	♦	♦	♦	♦	5.7	ND	ND	ND	3.0
Cadmium	ND	ND	ND	ND	ND	ND	ND	0.76 B	ND	ND	ND	5.0
Calcium	♦	♦	♦	♦	♦	♦	♦	76,500 G	80,000	1,070 B E	653 B	
Chromium	947	ND	273	ND	219	263	ND	116 G	ND	21 N R	40	
Cobolt	♦	♦	♦	♦	♦	♦	♦	41 B	13 B	ND	ND	NS
Copper	666	17 B	293	ND	224	204	6.1 B	180 r	6.3 B	63 N R	45	200
Iron	♦	♦	♦	♦	♦	♦	♦	166,000 G	58,500	1,440 R	259 R	300 (m)
Lead	200	ND	53	ND	45	46	2.3 B	39 G	ND G	ND R	ND	25
Magnesium	♦	♦	♦	♦	♦	♦	♦	12,300 r	12,600	6,260	4,390 B	35,000 GV
Manganese	♦	♦	♦	♦	♦	♦	♦	5,100 G	4,830	16 E R	8.3 B R	
Mercury	♦	♦	♦	♦	♦	♦	♦	0.39 G	ND G	ND N	ND	0.7
Nickel	695	93	115	15 B	86	76	14 B	43	11 B	22 B R	23 B	100
Potassium	♦	♦	♦	♦	♦	♦	♦	8,010 r	7,440	5,280	4,340 B	NS
Selenium	♦	♦	♦	♦	♦	♦	♦	ND	ND	ND	ND	10
Silver	♦	♦	♦	♦	♦	♦	♦	ND	ND	ND N	ND	50
Sodium	♦	♦	♦	♦	♦	♦	♦	33,700 r	37,200 r	47,700	49,800	20,000
Thallium	♦	♦	♦	♦	♦	♦	♦	ND	ND	ND	9.4 B	0.5
Vanadium	♦	♦	♦	♦	♦	♦	♦	152 G	ND	ND N R	ND	NS
Zinc	321	18 B	58	8.0 B	67	77	19 B	59 r	21 r	58 R	46	2,000 GV
Cyanide	♦	♦	♦	♦	♦	♦	♦	ND r	♦	ND	♦	

- Not analyzed.
- Iron and manganese not to exceed 500 μg/l.
- Value rejected by data validator but usable to show magnitude of contaminated level (Appendix G).
- Value is less than the contract-required detection limit but greater than the instrument detection limit.

Source: LMS, 1997a

G - Value considered estimated based on data validator's report (Appendix G).
N - Spiked sample recovery is not within control limits.
R - Duplicate analysis not within control limits.
GV - Guidance value.
ND - Not detected at analytical detection limit.

Note: Concentrations of chemicals of concern exceeding both the background concentrations and the Class GA standards are circled.

Table 2-2

Comparison of the Concentrations of the Chemicals of Concern in Ground Water to the NYS Class GA Standards
Alsy Manufacturing Site, Hicksville, NY

PARAMETER	DGP-1GW (66-70) 7/19/96	DISSOLVED DGP-1GW (66-70) 7/19/96	DGP-1GW (86-90) 7/19/96	DISSOLVED DGP-1GW (86-90) 7/19/96	DGP-1GW (96-100) 7/19/96	DISSOLVED DGP-1GW (96-100) 7/19/96	DGP-2GW (68-70) 7/23/96	DISSOLVED DGP-2GW (68-70) 7/23/96	DGP-2GW (88-90) 7/23/96	DISSOLVED DGP-2GW (88-90) 7/23/96	NYSDEC CLASS GA STANDARDS
METALS(µg/l)											
Aluminum	14,100 G	ND	♦	♦	♦	♦	6,840 G N	ND N	♦	♦	NS
Antimony	ND	ND	♦	♦	♦	♦	ND	ND	♦	♦	3.0
Arsenic	22	ND	25	ND	101	ND	ND	ND	65	ND	25
Barium	173 B	69 B	♦	♦	♦	♦	184 B	108 B	♦	♦	1,000
Beryllium	0.58 B	ND	♦	♦	♦	♦	0.48 B	ND	♦	♦	3.0
Cadmium	ND	ND	ND	ND	1.9 B	ND	ND	ND	ND	ND	5.0
Calcium	22,800 G	22,100	♦	♦	♦	♦	38,800 G	36,800	♦	♦	
Chromium	359 G	ND	110	ND	245	ND	192 G	ND	122	9.4 B	
Cobalt	15 B	3.1 B	♦	♦	♦	♦	8.0 B	2.8 B	♦	♦	NS
Copper	159 G	10 B	352	9.5 B	141	5.5 B	92 G	9.1 B	152	6.0 B	200
Iron	74,500 G	1,150	♦	♦	♦	♦	53,900 G	1,750 r	♦	♦	300 (m)
Lead	19	ND	83	3.2 B	70	2.7 B	10	ND	63	4.0 B	25
Magnesium	4,300 B	3,300 B	♦	♦	♦	♦	5,080	4,480 B	♦	♦	35,000 GV
Manganese	1,200 G	302	♦	♦	♦	♦	976 G	375	♦	♦	
Mercury	ND G	ND G	♦	♦	♦	♦	0.68 r	0.22 r	♦	♦	0.7
Nickel	150	13 B	49	6.6 B	88	12 B	44	10 B	50	12 B	100
Potassium	ND	3,100 B	♦	♦	♦	♦	5,880	5,150	♦	♦	NS
Selenium	ND	ND	♦	♦	♦	♦	ND	ND	♦	♦	10
Silver	ND	ND	♦	♦	♦	♦	ND	ND	♦	♦	50
Sodium	33,900	31,700	♦	♦	♦	♦	36,900	36,200	♦	♦	20,000
Thallium	ND	ND	♦	♦	♦	♦	ND	ND	♦	♦	0.5
Vanadium	42 B G	ND	♦	♦	♦	♦	12 B G	ND	♦	♦	NS
Zinc	237	45	153	47	77	12 B	283	60 r	243	29	2,000 GV
Cyanide	ND r	♦	♦	♦	♦	♦	ND r	♦	♦	♦	

♦ - Not analyzed.
(m) - Iron and manganese not to exceed 500 µg/l.
r - Value rejected by data validator but usable to show magnitude of contaminated level (Appendix G).
B - Value is less than the contract-required detection limit but greater than the instrument detection limit.

G - Value considered estimated based on data validator's report (Appendix G).
N - Spiked sample recovery is not within control limits.
R - Duplicate analysis not within control limits.
GV - Guidance value.
ND - Not detected at analytical detection limit.

Note: Concentrations of chemicals of concern exceeding both the background concentrations and the Class GA standards are circled.

Source: LMS, 1997a

Table 2-2
Comparison of the Concentrations of the Chemicals of Concern in Ground Water to the NYS Class GA Standards
Alsy Manufacturing Site, Hicksville, NY

PARAMETER	DGP-2GW (98-100) 7/23/96	DISSOLVED DGP-2GW (98-100) 7/23/96	DGP-3GW (66-70) 7/23/96	DISSOLVED DGP-3GW (66-70) 7/23/96	DGP-3GW (86-90) 7/25/96	DISSOLVED DGP-3GW (86-90) 7/25/96	DGP-3GW (96-100) 7/25/96	DISSOLVED DGP-3GW (96-100) 7/25/96	NYSDEC CLASS GA STANDARDS
METALS(µg/l)									
Arsenic	66	ND	81	ND	113	ND	164	ND	25
Cadmium	1.6 B	ND	ND	ND	ND	ND	ND	ND	5.0
Chromium	3,310	ND	982	36	757	8.7 B	238	11	
Copper	1,160	7.6 B	541	9.6 B	469	12 B	284	8.3 B	200
Lead	222	5.9	161	ND	60	ND	68	ND	25
Nickel	770	30 B	396	48	254	35	98	21 B	100
Zinc	1,590	31	605	31	154	13 B	159	13 B	2,000 GV

B - Value is less than the contract-required detection limit but greater than the instrument detection limit.
GV - Guidance value.
ND - Not detected at analytical detection limit.

Note: Concentrations of chemicals of concern exceeding both the background concentrations and the Class GA standards are circled.

Source: LMS, 1997a

Table 2-2
Comparison of the Concentrations of the Chemicals of Concern in Ground Water to the NYS Class GA Standards
Alsy Manufacturing Site, Hicksville, NY

PARAMETER	AMS-1	DISSOLVED AMS-1	AMS-2	DISSOLVED AMS-2	MW-3	DISSOLVED MW-3	LMS-1	DISSOLVED LMS-1	LMS-2	NYSDEC CLASS GA STANDARDS
METALS (µg/l)										
Aluminum	1,340 G	ND G	469 G	ND G	633 G	ND G	16,600 E G N	ND G	7,690 E G N	NS
Antimony	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.0
Arsenic	14	ND	15	ND	ND	ND	40	ND	19	25
Barium	273	127 B	130 B	97 B	99	98 B	372	198 B	280	1,000
Beryllium	ND	ND	ND	ND	ND	ND	1.4 B	ND	0.67 B	3.0
Cadmium	ND	ND	ND	ND	0.53 B	ND	1.3 B	1.1 B	ND	5.0
Calcium	13,700 G R	14,200 R	40,000 G R	37,000 R	5,890 G	6,040	32,900 E G	36,400	39,700 E G	
Chromium	94 R	ND R	ND R	ND R	ND	ND	52	ND	16	
Cobalt	41 B	ND	ND	ND	ND	ND	13 B	ND	8.3 B	NS
Copper	14 B	ND	22	ND	6.1 B	ND	50	ND	22 B	200
Iron	46,100 G N R	55 B G N R	9,230 G N R	225 G N R	668 G	ND G	43,900 G R	ND G	19,400 G R	300 (m)
Lead	12 N R	ND N R	8.4 N R	ND N R	ND	ND	37	ND	9.2	25
Magnesium	1,800 B R	1,890 B R	6,220 R	5,600 R	1,080 B	1,070 B	5,630	4,740 B	4,940 B	35,000 GV
Manganese	4,710	53 G	1,110	1,030 G	33	11 B G	3,260 N	1,560 G	704 N	
Mercury	1.0	ND	ND	ND	ND	ND	0.50	ND	0.38	0.7
Nickel	58	ND	3,280	3,190	ND	ND	22 B	7.2 B	12 B	100
Potassium	3,680 B R	3,640 B R	9,810 R	9,580 R	2,390 B	2,620 B	5,880	4,530	8,760	NS
Selenium	ND R	ND R	7.9 R	6.9 R	ND	ND	ND	ND	ND	10
Silver	ND G	ND G	ND G	ND G	ND G	ND G	ND G N	ND G	ND G N	50
Sodium	9,910 R	10,600 R	25,000 R	24,300 R	9,040	8,810	31,200	33,500	32,700	20,000
Thallium	18	ND	ND	ND	ND	ND	ND	ND	ND	0.5
Vanadium	6.8 B	ND	5.6 B	ND	ND	ND	64	ND	24	NS
Zinc	59 r	110 r	28 r	119 r	73	76	115	23	33	2,000 GV
Cyanide	ND G N	♦	ND G N	♦	ND G N	♦	ND G N	♦	ND G N	

♦ - Not analyzed.
(m) - Iron and manganese not to exceed 500 µg/l.
r - Value rejected by data validator but usable to show magnitude of contaminated level (Appendix G).
B - Value is less than the contract-required detection limit but greater than the instrument detection limit.
E - Value estimated due to interference.
G - Value considered estimated based on data validator's report (Appendix G).

N - Spiked sample recovery is not within control limits.
R - Duplicate analysis not within control limits.
GV - Guidance value.
ND - Not detected at analytical detection limit.
NS - No standard.

Note: Concentrations of chemicals of concern exceeding both the background concentrations and the Class GA standards are circled.

Source: LMS, 1997a

Table 2-2

Comparison of the Concentrations of the Chemicals of Concern in Ground Water to the NYS Class GA Standards
Alsy Manufacturing Site, Hicksville, NY

PARAMETER	DISSOLVED LMS-2	LMS-3	DISSOLVED LMS-3	LMS-4	DISSOLVED LMS-4	LMS-5	DISSOLVED LMS-5	LMS-6	DISSOLVED LMS-6	FIELD BLANK-0	NYSDEC CLASS GA STANDARDS
								[Blind duplicate of LMS-2]	[Blind duplicate of LMS-2]		
METALS (µg/l)											
Aluminum	ND G	726 E G N	250 G	14,200 G	ND G	11,300 G	ND G	7,920 E G N	ND G	ND G	NS
Antimony	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.0
Arsenic	ND	ND	ND	16.7	ND	30	ND	15	ND	ND	25
Barium	178 B	253	234	369	264	470	373	285	136 B	81 B	1,000
Beryllium	ND	ND	ND	0.90 B	ND	1.2 B	ND	0.96 B	ND	ND	3.0
Cadmium	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5.0
Calcium	37,800	189,000 E G	147,000	20,200 G	20,400	87,800 G	91,100	38,800 E G	38,600	894 B G	
Chromium	ND	15	14	37	ND	30	ND	15	ND	ND	
Cobalt	ND	ND	ND	12 B	7.6 B	8.2 B	3.0 B	9.1 B	ND	ND	NS
Copper	ND	8.5 B	ND	105	16 B	46	ND	27	ND	7.6 B	200
Iron	69 B G	289 G R	ND G	28,400 G	ND G	27,500 G	ND G	15,600 G R	ND G	59 B G	300 (m)
Lead	ND	ND	ND	15	ND	24	ND	11	ND	ND	25
Magnesium	4,090 B	1,420 B	ND	2,380 B	1,990 B	7,340	7,590	4,730 B	4,150 B	628 B	35,000 GV
Manganese	190 G	20 N	1.8 B G	518	461 G	7,640	7,060 G	763 N	191 G	ND	
Mercury	ND	ND	ND	ND	ND	0.28	ND	ND	ND	ND	0.7
Nickel	7.2 B	ND	4.9 B	8,770	8,860	14	6.6 B	11 B	5.5 B	17 B	100
Potassium	7,440	31,000	34,400	4,530 B	3,950 B	20,100	21,000	8,240	460	ND	NS
Selenium	ND	ND	ND	7.5	8.0	ND	ND	ND	ND	ND	10
Silver	ND G	ND G N	ND G	ND G	ND G	ND G	ND G	ND G N	ND G	ND G	50
Sodium	32,800	37,400	39,500	34,800	37,700	39,800	44,800	32,200	32,300	3,410 B	20,000
Thallium	ND	ND	ND	ND G	ND	21	20	ND	ND	ND	0.5
Vanadium	ND	3.6 B	ND	37 B	ND	72	ND	20 B	ND	ND	NS
Zinc	15 B	ND	10	1,380	1,250	71	52	35	16 B	15 B	2,000 GV
Cyanide	♦	ND G N	♦	ND G N	♦	ND G N	♦	ND G N	♦	ND G N	

♦ - Not analyzed.
(m) - Iron and manganese not to exceed 500 µg/l.
r - Value rejected by data validator but usable to show magnitude of contaminated level (Appendix G).
B - Value is less than the contract-required detection limit but greater than the instrument detection limit.
E - Value estimated due to interference.
G - Value considered estimated based on data validator's report (Appendix G).

N - Spiked sample recovery is not within control limits.
R - Duplicate analysis not within control limits.
GV - Guidance value.
ND - Not detected at analytical detection limit.
NS - No standard.

Note: Concentrations of chemicals of concern exceeding both the background concentrations and the Class GA standards are circled.

Source: LMS, 1997a

Table 2-2
Comparison of the Concentrations of the Chemicals of Concern in Ground Water to the NYS Class GA Standards
Alsy Manufacturing Site, Hicksville, NY

Supplemental (September 1997)

PARAMETER	AMS-2	LMS-4	CB-1GW	CB-2GW	NYSDEC CLASS GA STANDARDS
METALS (µg/L)					
Nickel, total	3,050	5,290	4,660	790	100
Nickel, dissolved	3,130	5,100	1,530	20.6	100

(a) - USEPA Region III Table of Risk Based Concentrations (USEPA, Region III, 19 April 1996).
NS - No Standard.

Note: Concentrations of chemicals of concern exceeding both the background concentrations and the Class GA standards are circled.

Table 2-2
Comparison of the Concentrations of the Chemicals of Concern in Ground Water to the NYS Class GA Standards
Alsy Manufacturing Site, Hicksville, NY

Post SRI Sampling

	On-Site Wells		Combes Avenue Well			Border Street Well				
SAMPLE NO.:	AMS-2	LMS-4	VP-N	VP-N	VP-N	VP-S	VP-S	VP-S	VP-S (D)	NYS
SAMPLE HORIZON:	-	-	60 feet	95 feet	120 feet	60 feet	95 feet	120 feet	120 feet	Class GA
SAMPLE DATE:	6/25/98	6/26/98	6/26/98	6/26/98	6/26/98	6/25/98	6/25/98	6/25/98	6/25/98	Standard
Inorganics, ug/l										
Nickel (1)	2,310	4,620	32.5 B	9.4 B	3.1 B	9.3 B	4.0 B	6.1 B	6.3 B	100
Zinc (1)	7.8 B	777	53.5	8.7 B	10.2 B	22.9 B	7.7 B	20.8 B	28.1 B	2,000

Notes:

Detections are identified in bold format.

Concentrations of chemicals of concern exceeding both the background concentrations and the NYS Class GA Standards are circled.

B - (Inorganics) Result less than Method Detection Limit but greater than Instrument Detection Limit

(1) Sample collected using low-flow sampling techniques.

SAMPLE ID	NYS TOGS 1.1.1 Class GA Ground Water Quality Standard	ERM-1	ERM-2	ERM-2	LMS-4	LMS-4	MW-3	AMS-1	AMS-2
SAMPLE TYPE		Low-Flow	Unfiltered	Filtered	Unfiltered	Filtered	Low-Flow	Low-Flow	Low-Flow
DATE COLLECTED		1/28/03	1/28/03	1/28/03	1/28/03	1/28/03	1/29/03	1/29/03	1/29/03
Chromium	50	NA	53.9	10.0 U	NA	NA	NA	NA	NA
Lead	25	NA	34.3	3.0 U	NA	NA	NA	NA	NA
Nickel	100	40 U	1310	855	884	887	40 U	40 U	2840

SAMPLE ID	NYS TOGS 1.1.1 Class GA Ground Water Quality Standard	VPE75	VPE95	VPNC75	VPNC95	VPW75	VPW95	ERM-3
LOCATION		McCalester Ave.	McCalester Ave.	Combes Ave.	Combes Ave.	Benjamin Ave.	Benjamin Ave.	Off-Site
DEPTH (feet bgs)		70-75'	90-95'	70-75'	90-95'	70-75'	90-95'	Low-Flow
DATE COLLECTED		3/5/02	3/5/02	3/6/02	3/6/02	3/8/02	3/8/02	1/29/03
Nickel	100	7.7 B	2.2 B	3150	228	3.4 B	2.5 B	3580

Notes:

bgs = below ground surface

U = Indicates analyte was not detected at method reporting limit

All units shown are in micrograms per liter.

NA = Not Applicable/Not Analyzed

Standard listed is the New York State (NYS) Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1 value for nickel for Class GA water.

TABLE 2-3
Comparison of Maximum Detected Inorganic Concentrations in Soil to NYSDEC RSCO Guidelines and Eastern US Background Concentrations
Former Alsy Site, Hicksville, NY

CONSTITUENT (mg/kg)	Recommended Soil Cleanup Objective (2)	Shacklette & Boerngen (3) Eastern USA Range	Maximum Detected Concentration	Location (depth in feet)
Arsenic	7.5 or SB	< 0.1 - 73	**197**	GP-6 (10-12)
Beryllium	0.16 or SB	< 1 - 7	0.74	GP-11 (0-4)
Chromium	50 (1)	1 - 1,000	83.8	ERM-2 (15.5-16.5)
Copper	25 or SB	< 1 - 700	**1050**	GP-10 (4-8)
Lead	200-500 (1)	< 10 - 300	**1400**	ERM-2 (15.5-16.5)
Mercury	0.1	0.01 - 3.4	0.54	GP-12 (10-12)
Nickel	13 or SB	< 5 -700	**106,000**	ERM-2 (15.5-16.5)
Selenium	2 or SB	< 0.1 - 3.9	**63.0**	ERM-2 (15.5-16.5)
Zinc	20 or SB	< 5 - 2,900	1890	GP-11 (0-4)

SB = Site background
Exceeds Soil Background

1. Interim RSCOs currently being used by the NYSDEC.
2. NYSDEC TAGM HWR-94-4046, Appendix A, Table 4
3. "Elemental Concentrations in Soils and Other Surficial Materials of the Conterminous United States", Shacklette, H. and Boerngen, J. USGS, 1984

Table 4-1
Compliance with SCGs
Former Alsy Manufacturing Site
Hicksville, New York

CITATION	DESCRIPTION	TYPE	MANNER OF COMPLIANCE
STANDARDS AND CRITERIA (1)			
6 NYCRR Part 364	Waste Transporter Permits	Action	Alternatives II and III would include removal of Site source soil/sediment from DW-4. The source material would be evaluated and dipsosed of at an appropriate off-Site disposal facility. Under these alternatives, should any hazardous waste be generated, this waste would be transported using permitted hazardous waste transporters. All wastes will be properly contained during transport so as to prevent leaking, blowing or any other type of discharge into the environment. All hazardous waste shipments would be manifested in compliance with all applicable requirements of NYCRR Part 372.
6 NYCRR Part 370 through 373	Hazardous Waste Management Regulations	Action, Chemical	As noted above, source material would be evaluted and disposed of at an appropriate off-Site disposal facility. Should any hazardous waste be removed, this waste would be managed under regulations for generator notification, identification, and manifesting.
6 NYCRR Part 376	Land Disposal Restrictions	Action, Chemical	As noted above, source material within DW-4 would be evaluated. Should hazardous waste be removed under Alternatives II and III, this waste would be treated, if necessary, to meet the applicable universal treatment standards prior to land disposal.
6 NYCRR Part 375	Inactive Hazardous Waste Disposal Site Remedial Program		
	- restore Site to pre-disposal conditions, to the extent feasible and authorized by law (goal)	Action	Alternative III would meet the intent of this goal as defined by the scope of the alternative (i.e., Alternative III removes soil above RSCOs to a depth of 15 feet and source materiall, as well as attempts to restore ground water to pre-release conditions.)
	- eliminate or mitigate all significant threats to the public health and the environment	Action	Alternatives II and III would eliminate or mitigate significant threats to public health and the environment. Additional discussion regarding this matter is contained in the protection of human health and the environment discussion within each of the alternatives.
	- remove consequential amounts of hazardous waste (if present)	Action	Alternatives II and III would remove source material from the Site, for which its designation would be evaluated for disposal at an appropriate off-Site disposal facility.

Table 4-1
Compliance with SCGs
Former Alsy Manufacturing Site
Hicksville, New York

CITATION	DESCRIPTION	TYPE	MANNER OF COMPLIANCE
6 NYCRR Part 700 through 705	NYSDEC Water Quality Standards for Ground Water	Action, Chemical	Through source removal and stormwater reconfiguration, Alternative II would reduce the concentration of nickel in on-Site ground water in the shallow Upper Glacial Aquifer. Hence in the short to medium term, Alternative II would not comply with the NYSDEC Water Quality Regulations for Ground Water (6 NYCRR Parts 700 through 705) or with the NYSDEC Ambient Water Quality Standards and Guidance Values (TOGS 1.1.1), which are NYSDEC SCGs, as listed on Table 2-1 for the shallow upper Glacial Aquifer. However, nickel concentrations in off-Site ground water supply wells developed in the deeper Magothy Aquifer comply with the Class GA ground water standard for nickel and are not expected to be detected above the CRDL, which is less than one half of this standard. Alternative III would comply with 6 NYCRR Part 700 through 705 and TOGS 1.1.1 within the limitations of pump and treat technology. However, as discussed in Section 4.3.1.1, it is generally accepted that pump and treat systems may reach an asymptotic level at a concentration above the Class GA ground water standards and not all ground water in the Upper Glacial Aquifer will be treated to below this standard.
6 NYCRR Part 257	Air Quality Standards	Action	Air monitoring will be conducted, as needed during all intrusive activities, to ensure that these standards are not contravened.
OSHA; 29 CFR 1910	Guidelines/Requirements for Workers at Hazardous Waste Sites (Subpart 120) and Standards for Air Contaminants (Subpart 1)	Action	All alternatives will include preparation and implementation of a HASP that will address the requirement of this regulation.
OSHA; 29 CFR 1926	Safety and Health Regulations for Construction	Action	The HASP prepared for the alternatives will include provisions for construction safety.

Table 4-1
Compliance with SCGs
Former Alsy Manufacturing Site
Hicksville, New York

CITATION	DESCRIPTION	TYPE	MANNER OF COMPLIANCE
Guidelines (1)			
TAGM #4030	Selection of Remedial Actions at Inactive Hazardous Waste Sites	Action	The remedy selection for implementation considered the hierarchy of remedial technologies presented in TAGM 4030. The NYSDEC guidance on the selection of remedial actions at inactive hazardous waste sites (NYSDEC, 1990) and the NCP, through the 1986 amendments to CERCLA, contain requirements that preference be given to remedies that permanently reduce the toxicity, mobility or volume of hazardous waste. As discussed further in Section 4.2.2.4, Alternatives II and III would reduce the mobility of residual chemicals in DW-4 and the concentration of nickel in on-Site and off-Site ground water.
TAGM #4046	Determination of Soil Cleanup Objectives and Cleanup Levels	Chemical	Alternatives II and III will meet NYSDEC recommended soil cleanup criteria (RSCO) guidance based upon alternate Eastern USA background concentrations. Alternative II removes soil from the source area. Alternative III removes accessible soils to 15 feet below grade, as well as soil from the source area. Additional discussion regarding compliance with this SCG is provided in the evaluation of each of the alternatives.
NYSDOH Community Air Monitoring Plan for Intrusive Activities	Requirements real-time monitoring for volatile organic compounds (VOCs) and particulates (i.e., dust)	Action, Chemical	Air monitoring conducted during intrusive activities will address the requirements of this document. Fugitive dust and particulate suppression controls will be employed, if necessary.
NYSDEC TOGS 1.1.1	Ambient Water Quality Standards and Guidance Values	Action, Chemical	See 6 NYCRR Part 700 through 705.
TO BE CONSIDERED (TBCS) (2)			
NYSDEC Draft DER-10	Technical Guidance for Site Investigation and Remediation	Action	Development of remedial goals, objectives and alternatives conducted in accordance with this draft document, remedial design and O&M would address the requirements of this document once finalized.

Notes:

(1) Standards and Criteria were obtained from NYSDEC Draft DER-10, Technical Guidance for Site Investigation and Remediation, December 2002.

(2) Guidance were obtained from NYSDEC Draft DER-10, Technical Guidance for Site Investigation and Remediation, December 2002.

(3) TBCs are defined in this report as regulations and guidance documents that are not identified NYSDEC Draft DER-10, Technical Guidance for Site Investigation and Remediation,

GLOSSARY OF ACRONYMS

CFR	Code of Federal Regulations	NYCRR	New York Code of Rules and Regulations
CRDL	Contract Required Detection Limit	OSHA	Occupational Safety and Health
DER	Division of Environmental Remediation	SCGs	Standards, Criteria and Guidance
HASP	Health and Safety Plan	TBC	To Be Considered Information
NYSDEC	New York State Department of Environmental Conservation	USEPA	U. S. Environmental Protection Agency

APPENDIX A

Town of Oyster Bay Code

ARTICLE XXIII
H Industrial Districts (Light Industry)

§ 246-271. Permitted uses.

In an H Industrial District, no building or premises shall be used, and no building shall be hereafter erected unless otherwise provided in this chapter, except for one (1) or more of the following uses:

A. Baking plant, veterinary hospital, freight terminal, lumber yard, stone cutting, monument works or warehouse.

B. Manufacturing or industrial operation of any kind not heretofore listed and exclusive of special permit uses, listed in § 246-272 and exclusive of prohibited uses listed in § 246-273, provided that no industrial process shall be included which emits dust, odor, gas, fumes, noise and vibration comparable in character or in the aggregate amount to that of any use listed as a special permit use or as a prohibited use.

§ 246-272. Special exception uses.

A. In an H Industrial District, the following uses shall be permitted only as a special exception by the Town Board, after a public hearing:

(1) Bag cleaning or carpet cleaning.

(2) Brewing or distilling of beverages.

(3) Dextrine, glucose or starch manufacture.

(4) Grain drying or poultry feed manufacture from refuse mash or refuse grain, flour or feed mill.

(5) Poultry slaughterhouse.

(6) Any use permitted in a business district. [Amended 6-27-78]

(7) Gas manufacture from coal, coke or petroleum or the storage thereof; carbon or lamp-black manufacture; or petroleum storage in quantities greater than tank car lots.

(8) Power forge, structural iron or pipeworks or railroad roundhouse or shop.

(9) Plating works.

(10) Celluloid manufacture.

(11) Asphalt manufacture or refining, coal distillation or tar distillation.

(12) Pickle, sauerkraut or vinegar manufacture or soap manufacture.

(13) Raw hides or skins, curing or tanning or wool scouring.

(14) Small arms ammunition or fireworks manufacture.

(15) Abattoir or meat packing.

(16) Scrap iron or junk storage; automobile wrecking yard; or scrap paper or rag storage, sorting or baling.

(17) Brick, tile or terra cotta manufacture; or sand, gravel or clay pit.

(18) Any industrial uses which may be noxious or offensive by reason of the emission of odor, dust, fumes, smoke, gas, vibration or noise.

(19) The reclaiming, distilling and refining of hydro-carbon material collected from oil separators.

(20) Circus grounds.

(21) Penal or correctional institutions, hospitals or sanitariums for the insane or feeble-minded or for liquor or drug addicts.

(22) Commercial billboards.

(23) Dyeing or dry-cleaning plants or power laundry.

(24) Railroad yards.

(25) Foundries.

(26) [Amended 6-24-75] Farmers market or public markets, subject to the following provisions:

(a) No structure may be erected or used for the operation of a farmers market or public market unless it shall provide a plot area not less than twenty (20) acres.

(b) No vending or selling of any produce, merchandise or other materials shall be permitted outside of any structure or building used or intended to be used as a farmers market or public market and under permit from the Department of Planning and Development of the Town of Oyster Bay and any other body or agency having jurisdiction thereof.[39]

(c) No floodlighting or string of lights shall be permitted beyond the hours of 8:30 p.m., during the months of October through March, and 10:00 p.m., during the months of April through September.

(d) No structure shall be used for the operation of any farmers market or public market, except that it shall conform in all respects to the Building Code[40] and the Zoning Ordinance of the Town of Oyster Bay.

(e) The use of a public address system for the purposes of vending any wares, merchandise or materials is forbidden.

§ 246-273. Prohibited uses.

A. In an H Industrial District, the following uses shall be prohibited, except as hereinbefore permitted:

(1) Acetylene, natural or any type of gas manufacture or storage.

(2) All types and kinds of acid manufacture as a principal industry.

(3) Ammonia, bleaching powder or chlorine manufacture.

(4) Arsenals.

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[39] Editor's Note: Amended at time of adoption of Code; see Ch. 1, General Provisions, Art. I.

[40] Editor's Note: See Ch. 93, Building Construction.

(5) Blast furnaces.

(6) Boiler works.

(7) Burlap manufacture.

(8) Candle manufacture.

(9) Cement, lime, gypsum or plaster of paris manufacture.

(10) Chemical works and manufacture.

(11) Coke ovens.

(12) Crematories (not connected with cemetery).

(13) Creosote treatment or manufacture.

(14) Disinfectant manufacture.

(15) Distillation of bones, coal or wood.

(16) Dyestuff manufacture.

(17) Explosives, manufacture or storage.

(18) Exterminator and insect poisons manufacture.

(19) Emery cloth and sand paper manufacture.

(20) Fat rendering.

(21) Fertilizer manufacture and bone grinding.

(22) Fish smoking and curing.

(23) Garbage, offal or dead animals reduction, dumping or incineration.

(24) Airports. [Added 10-21-75]

(25) Glue, size or gelatine manufacture.

(26) Solid waste management facility. [Added 6-9-87]

(27) Gunpowder manufacture or storage.

(28) Iron, steel, brass or copper foundries.

(29) Oil cloth or linoleum manufacture.

(30) Oiled, rubber or leather goods manufacture.

(31) Oil reduction.

(32) Paint, oil, shellac, turpentine or varnish manufacture.

(33) Paper and pulp manufacture.

(34) Petroleum products, refining.

(35) Manufacture of plastic compounds.

(36) Potash works.

(37) Rock crusher.

(38) Rolling mills.

(39) Rubber or gutta percha manufacture or treatment.

(40) Shoe blacking manufacture.

(41) Smelters.

(42) Soda and compound manufacture.

(43) Stone mill or quarry.

(44) Stockyards.

(45) Stove polish manufacture.

(46) Tallow, grease or lard manufacture or refining from animal fat.

(47) Tar distillation or manufacture.

(48) Tobacco (chewing) manufacture or treatment.

(49) Yeast plants.

(50) Any other uses which may be noxious or offensive by reason of the emission of odor, dust, fumes, smoke, gas, vibration or noise.

§ 246-274. Loading space.

In an H Industrial District, where no off-street parking is provided for on the same lot or plot on which the structure is to be erected, no building shall hereafter be erected or altered or added to in excess of fifty percent (50%) of its floor space area prior to the adoption of this amendment of this chapter, January 27, 1958, unless such building shall be provided with one (1) loading space either as a part of the building or accessory thereto on the same lot for each eight thousand (8,000) square feet or fraction thereof. Such loading space shall be not less than twelve (12) feet in width, twenty-five (25) feet in length and fifteen (15) feet in height.

§ 246-275. Height restrictions.

In an H Industrial District, no building hereafter erected or altered shall exceed fifty (50) feet, except when authorized upon approval of the Board of Appeals as hereinafter provided.

§ 246-276. Lot area.

A. In an H Industrial District, no building shall hereafter be erected or altered on a lot having an area less than one (1) acre or a frontage of less than fifty (50) feet; provided, however, that in the case of a lot held in single or separate ownership at the effective date of this amendment to this chapter, October 1, 1956, and having an area of less than one (1) acre, a building may be erected or altered for any use permitted under this Article, provided further that in such latter case the required minimum depth of front and rear yards shall be twenty-five (25) feet and ten (10) feet, respectively, any other provision of this Article to the contrary notwithstanding.

B. In a case where a new street line with respect to a lot or lots is or will be created by the construction of a service road and the dedication thereof to the town or to the County of Nassau, which road is designed to give access to two (2) or more buildings erected or to be erected in compliance with the provisions of this Article and which is or will be not less than two hundred (200) feet in length and not less than fifty feet in width and which has or will have only one (1) junction with an existing state, county or town street or road, the required minimum lot area, any other provision of this Article notwithstanding, shall be not less than twenty thousand (20,000) square feet.

§ 246-277. Front yards.

A. In an H Industrial District, the required front yard depth shall be not less than fifty (50) feet.

B. If the street frontage on the same side of the street between the two (2) nearest intersecting streets shall have been improved with two (2) or more industrial or business buildings or in the event that building permits shall have been issued therefor, not less than the average front yard depth as so established by such existing or permitted buildings shall be maintained; provided, however, that any such front yard depth shall not be required to be more than sixty (60) feet.

C. In a case where a new street line with respect to a lot has been created by the acceptance by the town or the County of Nassau of dedication of an area designed for public off-street parking, the required depth of front yard along such new street line shall be not less than ten (10) feet; provided, however, that such dedicated area shall be not less than fifty (50) feet in depth for a distance of at least eighty percent (80%) of the width of the lot.

D. In a case where a new street line with respect to a lot or lots is or will be created by the construction of a service road and the dedication thereof to the town or to the County of Nassau, which road is designed to give access to two (2) or more buildings erected or to be erected in compliance with the provisions of this Article and which is or will be not less than two hundred (200) feet in length and not less than fifty (50) feet in width and which has or will have one (1) junction with an existing state, county or town street or road, the required depth of front yard along such new street line, any other provision of this Article to the contrary notwithstanding, shall be not less than ten (10) feet; provided however, that in the case of a building erected along such a service road which building is less than one hundred (100) feet at its nearest point from a residence erected in a residence district the provisions of this subsection shall not apply.

§ 246-278. Double frontage.

In an H Industrial District, the required front yard shall be provided for on both streets.

§ 246-279. Corner lots.

In an H Industrial District, such lots shall have a front yard on each street as is provided for in § 246-277 and, notwithstanding anything to the contrary therein contained, each such front yard shall be not less than twenty (20) feet.

§ 246-280. Rear yards.

A. In an H Industrial District, there shall be a rear yard having a minimum depth of thirty (30) feet.

B. The rear yard may be used for the purpose of off-street parking and loading space up to and within three (3) feet of all side and rear property lines.

§ 246-281. Building area.

In an H Industrial District, the total building area shall not exceed sixty percent (60%) of the total lot area.

§ 246-282. Signs.

In an H Industrial District, such signs as are allowed under the provisions of § 246-37.

§ 246-283. Screening, fences and setbacks.

A. In any case where H Industrial District property, along any of its rear or side line, shall be contiguous to and abut upon any residential district or the rear or either side of which abuts upon a street separating it from any residential district, a ten-foot planting strip of evergreen growth at least eight (8) feet in height shall be planted on such H Industrial District property along said rear line and/or side line wherever it is contiguous to or neighboring upon any residential district before a certificate of occupancy shall be issued for any industrial structure on said property and said planting strip shall be maintained in such manner as to protect the contiguous or neighboring residential district from directed light beams as long as an industrial use shall be maintained on said H Industrial District property. No such screening shall, however, be required or permitted within twenty (20) feet of a front property line. In the event that the width of any H Industrial District property shall exceed three hundred (300) feet at the building line, and it should be adjacent and contiguous to any residential district, no industrial structure shall be erected thereon within sixty (60) feet on any residential line. So much of said setback, however, which is not required for the above-described ten-foot planting strip may be used for parking area, road, drive or loading area.

B. Where a planting screen is installed in compliance with the provisions of Subsection A of this section, it shall also be necessary to install and maintain a woven wire fence to prevent paper and debris from being carried or blown through or under such planting screen.

C. Where a woven, cedar, picket or other type of solid fence is installed, the supporting posts shall be of not less than two and one-half (2½) inch O.D. galvanized iron set in concrete, having a diameter of not less than twelve (12) inches and a depth below grade of not less than eighteen (18) inches. In lieu of the above, certain certified pressure-treated wood posts which have been approved by the Department of Planning and Development, having a diameter of not less than four (4) inches and a depth below grade level of not less than thirty-six (36) inches, may be installed in conformance with standards established by the Department of Planning and Development. **[Added 10-9-79]**

D. With respect to the owner of any presently improved industrial property which abuts or neighbors upon such residential property, the owner of such industrial property shall have a period of not more than one (1) year from the adoption hereof within which to comply with the provisions of the foregoing subsections.

E. The Commissioner of the Department of Planning and Development shall determine whether any installation of such fence as required by Subsection A, B or C hereof is adequate to provide the protection intended to be provided to residential properties adjoining or neighboring industrial zones properties.[41]

ARTICLE XXIV
I Heavy Industrial Districts

§ 246-284. Permitted uses.

A. In an I Industrial District, buildings and premises may be used for any purpose whatsoever not in conflict with any ordinance of the Town of Oyster Bay, except dwellings or residences of any type, provided, however, that no building or occupancy permit shall be issued for any of the following uses until and unless the location of buildings and all other appurtenances of the use shall have been approved by the Planning Board, if existing, and also approved by the Board of Appeals, as hereinafter provided:

(1) Acid manufacture.

(2) Cement, lime, gypsum or plaster of paris manufacture.

(3) Chemical works and manufacture.

(4) Distillation of bones.

(5) Dwellings (all types).

(6) Explosives, manufacture or storage.

(7) Fat rendering.

(8) Fertilizer manufacture.

(9) Garbage, offal or dead animals reduction, dumping or incineration.

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[41] Editor's Note: Amended at time of adoption of Code; see Ch. 1, General Provisions, Art. I.

(10) Gas manufacture (all types).

(11) Glue manufacture.

(12) Ink manufacture.

(13) Petroleum refining.

(14) Manufacture of plastic compounds.

(15) Smelting of tin, copper, zinc or iron ores.

(16) Stockyards or slaughter of animals.

(17) Solid waste management facilities. [Added 6-9-87]

§ 246-285. Loading space.

In an I Industrial District, where no off-street parking is provided for on the same lot or plot on which the structure is to be erected, no building shall hereafter be erected or altered or added to in excess of fifty percent (50%) of its floor space area prior to the adoption of this amendment of this chapter, January 27, 1953, unless such building shall be provided with one (1) loading space either as a part of the building or accessory thereto on the same lot for each eight thousand (8,000) square feet or fraction thereof. Such loading space shall be not less than twelve (12) feet in width, twenty-five (25) feet in length and fifteen (15) feet in height.

§ 246-286. Height restrictions.

In an I Industrial District, no building hereafter erected or altered shall exceed fifty (50) feet, except when authorized as a special exception by the Board of Appeals as hereinafter provided.

§ 246-287. Lot area.

In an I Industrial District, no building shall be erected or altered on a lot having an area less than five (5) acres or upon a lot having a frontage of less than two hundred (200) feet.

§ 246-288. Front yards.

A. In an I Industrial District, the required front yard depth shall be not less than one hundred (100) feet.

B. If the street frontage on the same side of the street between the two (2) nearest intersecting streets shall have been improved with two (2) or more industrial or business buildings or in the event that building permits shall have been issued therefor, not less than the average front yard depth as so established by such existing or permitted buildings shall be maintained; provided, however, that any such front yard depth shall not be required to be more than fifty (50) feet.

C. In a case where a new street line with respect to a lot has been created by the acceptance by the town or the County of Nassau of the dedication of an area designed for public off-street parking, the required depth of front yard along such new street line shall be not less than ten (10) feet; provided, however, that such dedicated area shall be not less than fifty (50) feet in depth for a distance of at least eighty percent (80%) of the width of the lot.

§ 246-289. Double frontage.

In an I Industrial District, the required front yard shall be provided for on both streets.

§ 246-290. Corner lots.

In an I Industrial District, such lots shall have a front yard on each street as is provided for in § 246-288 and, notwithstanding anything to the contrary therein contained, each such front yard shall be not less than twenty (20) feet.

§ 246-291. Rear yards.

A. In an I Industrial District, there shall be a rear yard having a minimum depth of fifty (50) feet.

B. The rear yard may be used for the purpose of off-street parking and loading space up to and within three (3) feet of all rear and side property lines.

§ 246-292. Building area.

In an I Industrial District, the total building area shall not exceed fifty percent (50%) of the total lot area.

§ 246-293. Signs.

In an I Industrial District, such signs as are allowed under the provisions of § 246-37.

§ 246-294. Fences and screening.

A. In any case where I Industrial District property along any of its rear or side line shall be contiguous and abut any residential district or the rear or either side line of which abuts upon a street separating it from any residential district, a ten-foot planting strip of evergreen growth at least eight (8) feet in height shall be planted on such I Industrial District property along said rear line and/or side line wherever it is contiguous or neighbors upon to any residential district before a certificate of occupancy shall be issued for any industrial structure on said property, and said planting strip shall be maintained in such manner as to protect the contiguous or neighboring residential district from directed light beams as long as an industrial use shall be maintained on said I Industrial District property. No such screening shall, however, be required or permitted within twenty (20) feet of a front property line. In the event that the width of any I Industrial District property shall exceed three hundred (300) feet at the building line, and it should be adjacent and contiguous to any residential district, no industrial structure shall be erected thereon within sixty (60) feet of any residential district line, so much of said setback, however, which is not required, for the above-described ten-foot planting strip may be used for parking area, drive or loading area.

B. Where a planting screen is installed in compliance with the provisions of Subsection A of this section, it shall also be necessary to install and maintain a woven wire fence to prevent paper and debris from being carried or blown through or under such planting screen.

C. Where a woven, cedar, picket or other type of solid fence is installed, the supporting posts shall be of not less than two and one-half (2½) inch O.D. galvanized iron set in concrete, having a diameter of not less than twelve (12) inches and a depth below grade of not less than eighteen (18) inches. In lieu of the above, certain certified pressure-treated wood posts which have been approved by the Department of Planning and Development, having a diameter of not less than four (4) inches and a depth below grade level of not less than thirty-six (36) inches, may be installed in conformance with standards established by the Department of Planning and Development. [Amended 10-9-77]

D. With respect to the owner of any presently improved industrial property which abuts or neighbors upon such residential property, the owner of such industrial property shall have a period of not more than one (1) year from the adoption hereof within which to comply with the provisions of the foregoing subsections.

E. The Commissioner of the Department of Planning and Development shall determine whether any installation of such fence as required by Subsection A, B or C hereof is adequate to provide the protection intended to be provided to residential properties adjoining or neighboring industrial zoned properties.[42]

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[42] Editor's Note: Amended at time of adoption of Code; see Ch. 1, General Provisions, Art. I.

APPENDIX B
Soil Sampling Results

Appendix B
Soil Sampling Results
LMS RI, 1997

Soil Gas			
Sample Location	Sampling Period	Analysis	Table Number
Perimeter Probes (PSG-)	5/30/96-7/24/96	Volatiles	3-1
Angled Probes (AGP-)	5/30/96-7/24/96	Volatiles	3-4

Soil			
Sample Location	Sampling Period	Analysis	Table Number
Shallow Probes (GP-, CB-, OCB-)	5/30/96-7/24/96	Volatiles	3-5
		Metals	3-6
		TCLP Metals	3-7
Deep Probes (DGP-)	5/30/96-7/24/96	Volatiles	3-10
		Metals	3-11
Berm Samples (B-)	9/13/96	Volatiles	3-16
		Metals	3-17
		TCLP Metals	3-18
Supplemental Samples (CB-1 & CB-2)	September 1997	Metals (Nickel)	1-1
		TCLP Metals (Nickel)	1-2

TABLE 3-1

PERIMETER PROBES SOIL GAS SUMMARY

Alsy Manufacturing

PARAMETER	PSG-1 (4)	PSG-1 (60)	PSG-2 (4)	PSG-2 (60)	PSG-3 (4)	PSG-3 (60)	PSG-4 (4)	PSG-4 (60)	PSG-5 (4)	PSG-5 (60)
VOLATILE ORGANICS (µg/l)	ND	ND	ND	ND	ND	ND	ND	ND	♦	♦

PARAMETER	PSG-6 (4)	PSG-6 (60)	PSG-7 (4)	PSG-7 (60)	PSG-8 (4)	PSG-8 (60)	PSG-9 (4)	PSG-9 (60)	PSG-10 (4)	PSG-10 (60)
VOLATILE ORGANICS (µg/l)										
Methylene chloride	ND	ND	ND	ND	1.0 b	0.80 b j	ND	ND	ND	0.90 b j

♦ - Not analyzed.
b - Found in associated blanks.
j - Estimated concentration; compound present below quantitation limit.
ND - Not detected at analytical detection limit.

TABLE 3-4

SOIL GAS ANGLED PROBES SUMMARY
Alsy Manufacturing

PARAMETER	AGP-1 (48)	AGP-1 (20)	AGP-2 (60)	AGP-2 (20)	AGP-3 (60)	AGP-3 (20)	AGP-4 (52)	AGP-4 (20)	AGP-5 (60)	AGP-5 (20)
VOLATILE ORGANICS (µg/l)										
Methylene chloride	2.9 b	2.5 b	1.3 b	ND	3.0 b	3.2 b	2.9 b	2.8 b	2.7 b	2.5 b
1,1,1-Trichloroethane	ND	ND	6.2	ND	ND	ND	1.7	1.5	1.3	ND
Tetrachloroethylene	ND	ND	2.2	ND	ND	ND	1.0	1.6	ND	ND

b - Found in associated blanks.
ND - Not detected at analytical detection limit.

TABLE 3-5 (Page 1 of 3)

SHALLOW PROBE SOIL SAMPLES
VOLATILES DATA SUMMARY
Alsy Manufacturing

PARAMETER	GP-1 (4-8)	* GP-1 (10-12)	GP-1 (22-24)	GP-1 (34-36)	GP-1 (44-46)	GP-2 (4-8)	* GP-2 (10-12)	GP-2 (22-24)	GP-2 (34-36)	GP-2 (44-46)	GP-3 (4-8)	* GP-3 (10-12)	NYSDEC TAGM RECOMMENDED CLEANUP OBJECTIVES[2]
VOLATILE ORGANICS[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	

PARAMETER	GP-3 (22-24)	GP-3 (34-36)	GP-3 (44-46)	* GP-4 (4-8)	GP-4 (10-12)	GP-4 (22-24)	GP-4 (34-36)	GP-4 (44-46)	* GP-5 (0-4)	GP-5 (10-12)	GP-5 (22-24)	GP-5 (34-36)	NYSDEC TAGM RECOMMENDED CLEANUP OBJECTIVES[2]
VOLATILE ORGANICS[1]	ND	ND	ND	ND	ND	♦	ND	ND	ND	ND	ND	ND	

PARAMETER	GP-5 (44-46)	* GP-6 (0-4)	GP-6 (10-12)	GP-6 (22-24)	GP-6 (34-36)	GP-6 (44-46)	* GP-7 (0-4)	GP-7 (10-12)	GP-7 (24-26)	GP-7 (34-36)	GP-7 (44-46)	* GP-8 (4-8)	NYSDEC TAGM RECOMMENDED CLEANUP OBJECTIVES
VOLATILE ORGANICS Tetrachloroethylene	ND	ND	ND	ND	ND	ND	0.010 J	ND	ND	ND	ND	ND	1.4

PARAMETER	GP-8 (10-12)	GP-8 (22-24)	GP-8 (34-36)	GP-8 (44-46)	* GP-9 (0-4)	GP-9 (12-14)	GP-9 (22-24)	GP-9 (34-36)	GP-9 (44-46)	GP-10 (0-4)	* GP-10 (4-8)	GP-10 (11-12)	NYSDEC TAGM RECOMMENDED CLEANUP OBJECTIVES[2]
VOLATILE ORGANICS[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	

Results are reported in mg/kg.
♦ - Not analyzed.
* - Confirmatory sample.
1 - If no detectable concentrations of volatile organics were reported (ND), individual compounds are not identified.
2 - Compound specific cleanup objectives are only listed when parameters are detected.

J - Estimated concentration; compound present below quantitation limit.
ND - Not detected at analytical detection limits.

TABLE 3-5 (Page 2 of 3)

SHALLOW PROBE SOIL SAMPLES
VOLATILES DATA SUMMARY
Alsy Manufacturing

PARAMETER	GP-10 (22-24)	GP-10 (34-36)	GP-10 (44-46)	* GP-11 (0-4)	GP-11 (4-8)	GP-11 (10-12)	GP-11 (22-24)	GP-11 (34-36)	GP-11 (44-46)	GP-12 (0-4)	GP-12 (4-8)	* GP-12 (10-12)	NYSDEC TAGM RECOMMENDED CLEANUP OBJECTIVES²
VOLATILE ORGANICS¹	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	

PARAMETER	GP-12 (22-24)	GP-12 (34-36)	GP-12 (44-46)	* GP-13 (4-8)	GP-13 (8-10)	GP-13 (22-24)	GP-13 (36-38)	GP-13 (44-46)	GP-14 (0-4)	* GP-14 (4-8)	GP-14 (8/12)	CB-1 (0-4)	NYSDEC TAGM RECOMMENDED CLEANUP OBJECTIVES²
VOLATILE ORGANICS¹	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	

PARAMETER	* OCB-1 (4-8)	OCB-1 (10-12)	OCB-1 (22-24)	OCB-1 (34-36)	OCB-1 (44-46)	CB-2 (0-4)	CB-3 (0-4)	OCB-3 (0-4)	OCB-3 (4-8)	OCB-3 (10-12)	* OCB-3 (22-24)	OCB-3 (34-36)	NYSDEC TAGM RECOMMENDED CLEANUP OBJECTIVES²
VOLATILE ORGANICS¹	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	

PARAMETER	OCB-3 (44-46)	CB-4 (0-4)	OCB-4 (0-4)	OCB-4 (4-8)	OCB-4 (10-12)	OCB-4 (22-24)	OCB-4 (36-38)	OCB-4 (44-46)	CB-5 (0-4)	CB-5 (4-8)	OCB-5 (0-4)	OCB-5 (4-8)	NYSDEC TAGM RECOMMENDED CLEANUP OBJECTIVES²
VOLATILE ORGANICS¹	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	

Results are reported in mg/kg.

ND - Not detected at analytical detection limit.

* - Confirmatory sample.

1 - If no detectable concentrations of volatile organics were reported (ND), individual compounds are not identified.

2 - Compound specific cleanup objectives are only listed when parameters are detected.

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TABLE 3-5 (Page 3 of 3)

SHALLOW PROBE SOIL SAMPLES
VOLATILES DATA SUMMARY
Alsy Manufacturing

PARAMETER	OCB-5 (10-12)	OCB-5 (22-24)	OCB-5 (34-36)	OCB-5 (44-46)	CB-6 (0-4)	OCB-6 (0-4)	* OCB-6 (4-8)	OCB-6 (10-12)	OCB-6 (22-24)	OCB-6 (34-36)	NYSDEC TAGM RECOMMENDED CLEANUP OBJECTIVES[2]
VOLATILE ORGANICS[1]	ND	ND	ND	ND	ND	ND	ND g	ND	ND	ND	

PARAMETER	OCB-6 (44-46)	CB-7 (0-4)	OCB-7 (0-4)	OCB-7 (4-8)	OCB-7 (10-12)	OCB-7 (22-24)	OCB-7 (34-36)	OCB-7 (44-46)	TB-03 7/1/96	NYSDEC TAGM RECOMMENDED CLEANUP OBJECTIVES[2]
VOLATILE ORGANICS[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	

Results are reported in mg/kg.

* - Confirmatory sample.

1 - If no detectable concentrations of volatile organics were reported (ND), individual compounds are not identified.

2 - Compound specific cleanup objectives are only listed when parameters are detected.

g - Value considered estimated based on data validator's report (Appendix G).

j - Estimated concentration; compound present below quantitation limit.

ND - Not detected at analytical detection limit.

TABLE 3-6 (Page 1 of 12)

SHALLOW PROBE SOIL SAMPLES
METALS DATA SUMMARY
Alsy Manufacturing

PARAMETER	GP-1 (4-8)	GP-1 (10-12)	GP-1 (22-24)	GP-1 (34-36)	GP-1 (44-46)	GP-2 (4-8)	GP-2 (10-12)	GP-2 (22-24)	GP-2 (34-36)	GP-2 (44-46)	RECOMMENDED SOIL CLEANUP OBJECTIVE (b)
METALS (mg/kg)											
Aluminum	♦	7,550	♦	♦	♦	♦	4,360	♦	♦	♦	SB
Antimony	♦	ND N	♦	♦	♦	♦	ND N	♦	♦	♦	SB
Arsenic	2.4	2.5	2.8	1.5	0.97	2.5	2.2	0.68 B	0.57 B	1.3	7.5 or SB
Barium	♦	26	♦	♦	♦	♦	26	♦	♦	♦	300 or SB
Beryllium	♦	0.42 B	♦	♦	♦	♦	0.37 B	♦	♦	♦	0.16 or SB
Cadmium	ND	ND R	ND	ND	ND	ND	ND R	ND	ND	ND	1 or SB
Calcium	♦	623 E R	♦	♦	♦	♦	399 B E R	♦	♦	♦	SB
Chromium	6.9	13	7.9	17	4.6	9.4	8.4	2.4	2.5	1.4	10 or SB
Cobalt	♦	6.2	♦	♦	♦	♦	3.6 B	♦	♦	♦	30 or SB
Copper	6.1	12	6.9	2.7	1.9 B	7.0	7.2	2.0 B	2.6	2.5 B	25 or SB
Iron	♦	13,000 E R	♦	♦	♦	♦	10,000 E R	♦	♦	♦	2,000 or SB
Lead	3.3	5.5	3.7	3.5	2.8	5.9	2.9 G	1.6	1.6	1.6	SB*
Magnesium	♦	2,080 E R	♦	♦	♦	♦	1,110 E R	♦	♦	♦	SB
Manganese	♦	229 E G	♦	♦	♦	♦	99 E G	♦	♦	♦	SB
Mercury	♦	ND	♦	♦	♦	♦	ND	♦	♦	♦	0.1
Nickel	7.7	12	8.7	4.4	1.1 B	8.9	7.6	1.8 B	1.8 B	0.97 B	13 or SB
Potassium	♦	761	♦	♦	♦	♦	410 B	♦	♦	♦	SB
Selenium	♦	ND	♦	♦	♦	♦	ND	♦	♦	♦	2 or SB
Silver	♦	ND G	♦	♦	♦	♦	ND G	♦	♦	♦	SB
Sodium	♦	ND	♦	♦	♦	♦	ND	♦	♦	♦	SB
Thallium	♦	1.0 B N	♦	♦	♦	♦	1.1 N	♦	♦	♦	SB
Vanadium	♦	19 E	♦	♦	♦	♦	11 E	♦	♦	♦	150 or SB
Zinc	18	39	20	6.3	4.4	24	24	6.0	6.4	5.6	20 or SB
Cyanide	♦	ND G	♦	♦	♦	♦	ND G	♦	♦	♦	**

♦ - Not analyzed.
* - Background levels for lead range from 4 - 61 ppm in undeveloped, rural areas to 200 - 500 ppm in metropolitan or suburban areas or near highways.
** - NYSDEC Draft Cleanup Policy and Guidelines, 10/91.
(b) - NYSDEC Division Technical and Administrative Guidance Memorandum (TAGM), 1/94.
B - Value is less than the contract-required detection limit but greater than the instrument detection limit.

E - Value estimated due to interference.
G - Value considered estimated based on data validator's report (Appendix G).
N - Spiked sample recovery is not within control limits.
R - Duplicate analysis not within control limits.
ND - Not detected at analytical detection limit.
SB - Site background.

TABLE 3-6 (Page 2 of 12)

SHALLOW PROBE SOIL SAMPLES
METALS DATA SUMMARY
Alsy Manufacturing

PARAMETER	GP-3 (4-8)	GP-3 (10-12)	GP-3 (22-24)	GP-3 (34-36)	GP-3 (44-46)	GP-4 (4-8)	GP-4 (10-12)	GP-4 (22-24)	GP-4 (34-36)	GP-4 (44-46)	RECOMMENDED SOIL CLEANUP OBJECTIVE (b)
METALS (mg/kg)											
Aluminum	♦	1,060	♦	♦	♦	5,040	♦	♦	♦	♦	SB
Antimony	♦	ND N	♦	♦	♦	3.4 B N	♦	♦	♦	♦	SB
Arsenic	2.1	ND	1.1	1.6	1.4	4.8	0.94 B	0.59 B	0.65 B	1.4	7.5 or SB
Barium	♦	7.4 B	♦	♦	♦	16 B	♦	♦	♦	♦	300 or SB
Beryllium	♦	0.05 B	♦	♦	♦	0.17 B	♦	♦	♦	♦	0.16 or SB
Cadmium	ND	ND R	ND	ND	ND	0.50 R	ND	ND	ND	0.28 B	1 or SB
Calcium	♦	593 E R	♦	♦	♦	6,850 E R	♦	♦	♦	♦	SB
Chromium	4.7	4.0	9.0	1.8	6.4	9.4	7.7	3.9	3.2	4.2	10 or SB
Cobalt	♦	1.2 B	♦	♦	♦	5.9	♦	♦	♦	♦	30 or SB
Copper	4.9	4.5	3.9	5.2	2.4 B	277	6.9	4.0	2.2 B	2.6	25 or SB
Iron	♦	1,820 E R	♦	♦	♦	13,000 E R	♦	♦	♦	♦	2,000 or SB
Lead	3.0	2.0 G	1.8	1.7	1.7	48	1.3	1.5	1.2	2	SB*
Magnesium	♦	451 B E R	♦	♦	♦	3,320 E R	♦	♦	♦	♦	SB
Manganese	♦	72 E G	♦	♦	♦	152 E G	♦	♦	♦	♦	SB
Mercury	♦	ND	♦	♦	♦	ND	♦	♦	♦	♦	0.1
Nickel	3.9 B	2.6 B	6.1	13	1.2 B	517	14	5.8	1.4 B	1.4 B	13 or SB
Potassium	♦	157 B	♦	♦	♦	258 B	♦	♦	♦	♦	SB
Selenium	♦	ND	♦	♦	♦	1.2	♦	♦	♦	♦	2 or SB
Silver	♦	0.47 B G	♦	♦	♦	ND G	♦	♦	♦	♦	SB
Sodium	♦	98 B	♦	♦	♦	104 B	♦	♦	♦	♦	SB
Thallium	♦	1.5 N	♦	♦	♦	ND N	♦	♦	♦	♦	SB
Vanadium	♦	2.0 B E	♦	♦	♦	23 E	♦	♦	♦	♦	150 or SB
Zinc	12	8.9	7.9	11	5.3	404	6.8	5.0	4.7	5.2	20 or SB
Cyanide	♦	ND G	♦	♦	♦	6.3 G	♦	♦	♦	♦	**

♦ - Not analyzed.

* - Background levels for lead range from 4 - 61 ppm in undeveloped, rural areas to 200 - 500 ppm in metropolitan or suburban areas or near highways.

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(b) - NYSDEC Division Technical and Administrative Guidance Memorandum (TAGM), 1/94.

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G - Value considered estimated based on data validator's report (Appendix G).

N - Spiked sample recovery is not within control limits.

R - Duplicate analysis not within control limits.

ND - Not detected at analytical detection limit.

SB - Site background.

TABLE 3-6 (Page 3 of 12)

SHALLOW PROBE SOIL SAMPLES
METALS DATA SUMMARY
Alsy Manufacturing

PARAMETER	GP-5 (0-4)	GP-5 (10-12)	GP-5 (22-24)	GP-5 (34-36)	GP-5 (44-46)	GP-6 (0-4)	GP-6 (10-12)	GP-6 (22-24)	GP-6 (34-36)	GP-6 (44-46)	RECOMMENDED SOIL CLEANUP OBJECTIVE (b)
METALS (mg/kg)											
Aluminum	2,300 R	♦	♦	♦	♦	2,300 R	♦	♦	♦	♦	SB
Antimony	ND N	♦	♦	♦	♦	ND N	♦	♦	♦	♦	SB
Arsenic	1.7 B	1.3	0.54 B	0.43 B	0.88 B	ND	197	0.91 B	0.57 B	ND	7.5 or SB
Barium	13 B	♦	♦	♦	♦	7.7 B	♦	♦	♦	♦	300 or SB
Beryllium	0.12 B	♦	♦	♦	♦	0.12 B	♦	♦	♦	♦	0.16 or SB
Cadmium	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1 or SB
Calcium	413 B R	♦	♦	♦	♦	1,540 R	♦	♦	♦	♦	SB
Chromium	16 R	5.2	2.2	17	3.2	3.3 R	8.8	8.3	2.5	ND	10 or SB
Cobalt	2.9 B	♦	♦	♦	♦	1.5 B	♦	♦	♦	♦	30 or SB
Copper	17	2.8	2.9	5.1	2.8	4.8 B	20	3.8	2.4 B	ND	25 or SB
Iron	6,840	♦	♦	♦	♦	4,450	♦	♦	♦	♦	2,000 or SB
Lead	10	0.68	1.0	0.87	1.1	2.8	4.9	1.1	1.0	ND	SB*
Magnesium	463 B	♦	♦	♦	♦	435 B	♦	♦	♦	♦	SB
Manganese	81 G	♦	♦	♦	♦	63 G	♦	♦	♦	♦	SB
Mercury	ND G	♦	♦	♦	♦	ND	♦	♦	♦	♦	0.1
Nickel	7.3 B	1.8 B	1.2 B	6.9	1.1 B	3.1 B	2.4 B	5.3	0.87 B	ND	13 or SB
Potassium	202 B	♦	♦	♦	♦	206 B	♦	♦	♦	♦	SB
Selenium	ND	♦	♦	♦	♦	ND	♦	♦	♦	♦	2 or SB
Silver	ND G	♦	♦	♦	♦	ND G	♦	♦	♦	♦	SB
Sodium	309 B	♦	♦	♦	♦	183 B	♦	♦	♦	♦	SB
Thallium	ND	♦	♦	♦	♦	ND	♦	♦	♦	♦	SB
Vanadium	6.6 B	♦	♦	♦	♦	4.5 B	♦	♦	♦	♦	150 or SB
Zinc	35	7.2	4.2	6.4	4.7	7.3	6.1	5.3	4.3	ND	20 or SB
Cyanide	ND G	♦	♦	♦	♦	ND G	♦	♦	♦	♦	**

♦ - Not analyzed.
* - Background levels for lead range from 4 - 61 ppm in undeveloped, rural areas to 200 - 500 ppm in metropolitan or suburban areas or near highways.
** - NYSDEC Draft Cleanup Policy and Guidelines, 10/91.
(b) - NYSDEC Division Technical and Administrative Guidance Memorandum (TAGM), 1/94.
B - Value is less than the contract-required detection limit but greater than the instrument detection limit.

E - Value estimated due to interference.
G - Value considered estimated based on data validator's report (Appendix G).
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R - Duplicate analysis not within control limits.
ND - Not detected at analytical detection limit.
SB - Site background.

TABLE 3-6 (Page 4 of 12)

SHALLOW PROBE SOIL SAMPLES
METALS DATA SUMMARY
Alsy Manufacturing

PARAMETER	GP-7 (0-4)	GP-7 (10-12)	GP-7 (24-26)	GP-7 (34-36)	GP-7 (44-46)	GP-8 (4-8)	GP-8 (10-12)	GP-8 (22-24)	GP-8 (34-36)	GP-8 (44-46)	RECOMMENDED SOIL CLEANUP OBJECTIVE (b)
METALS (mg/kg)											
Aluminum	4,410 R	♦	♦	♦	♦	823 R	♦	♦	♦	♦	SB
Antimony	ND N	♦	♦	♦	♦	ND N	♦	♦	♦	♦	SB
Arsenic	3.8	0.63 B	0.22 B	2.0	0.58 B	ND	1.6	0.79 B	0.71 B	0.60 B	7.5 or SB
Barium	20 B	♦	♦	♦	♦	5.1 B	♦	♦	♦	♦	300 or SB
Beryllium	0.19 B	♦	♦	♦	♦	0.08 B	♦	♦	♦	♦	0.16 or SB
Cadmium	0.87 B	ND	ND	ND	ND	ND	0.16 B	ND	ND	ND	1 or SB
Calcium	656 B R	♦	♦	♦	♦	137 B R	♦	♦	♦	♦	SB
Chromium	6.3 R	1.9	4.9	24	2.7	ND R	10	3.9	1.9	1.9	10 or SB
Cobalt	3.0 B	♦	♦	♦	♦	0.72 B	♦	♦	♦	♦	30 or SB
Copper	12	2.8	3.4	5.2	3.2	1.8 B	3.8	2.6	1.3 B	1.5 B	25 or SB
Iron	6,780	♦	♦	♦	♦	2,490	♦	♦	♦	♦	2,000 or SB
Lead	18	0.98	0.89	1.5	0.84	1.7	1.6	1.7	1.5	1.5	SB*
Magnesium	827 B	♦	♦	♦	♦	173 B	♦	♦	♦	♦	SB
Manganese	115 G	♦	♦	♦	♦	41 G	♦	♦	♦	♦	SB
Mercury	ND	♦	♦	♦	♦	ND	♦	♦	♦	♦	0.1
Nickel	5.6 B	1.4 B	1.2 B	14	1.5 B	1.8 B	10	2.1 B	1.1 B	0.60 B	13 or SB
Potassium	280 B	♦	♦	♦	♦	103 B	♦	♦	♦	♦	SB
Selenium	ND	♦	♦	♦	♦	ND	♦	♦	♦	♦	2 or SB
Silver	ND G	♦	♦	♦	♦	ND G	♦	♦	♦	♦	SB
Sodium	218 B	♦	♦	♦	♦	212 B	♦	♦	♦	♦	SB
Thallium	ND	♦	♦	♦	♦	ND	♦	♦	♦	♦	SB
Vanadium	11	♦	♦	♦	♦	1.5 B	♦	♦	♦	♦	150 or SB
Zinc	43	6.1	6.2	13	4.7	3.6 B	5.5	5.6	4.6	3.3	20 or SB
Cyanide	ND G	♦	♦	♦	♦	ND G	♦	♦	♦	♦	**

♦ - Not analyzed.
* - Background levels for lead range from 4 - 61 ppm in undeveloped, rural areas to 200 - 500 ppm in metropolitan or suburban areas or near highways.
** - NYSDEC Draft Cleanup Policy and Guidelines, 10/91.
(b) - NYSDEC Division Technical and Administrative Guidance Memorandum (TAGM), 1/94.
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G - Value considered estimated based on data validator's report (Appendix G).
N - Spiked sample recovery is not within control limits.
R - Duplicate analysis not within control limits.
ND - Not detected at analytical detection limit.
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TABLE 3-6 (Page 5 of 12)

SHALLOW PROBE SOIL SAMPLES
METALS DATA SUMMARY
Alsy Manufacturing

PARAMETER	GP-9 (0-4)	GP-9 (12-14)	GP-9 (22-24)	GP-9 (34-36)	GP-9 (44-46)	GP-10 (0-4)	GP-10 (4-8)	GP-10 (11-12)	GP-10 (22-24)	GP-10 (34-36)	RECOMMENDED SOIL CLEANUP OBJECTIVE (b)
METALS (mg/kg)											
Aluminum	2,430 R	♦	♦	♦	♦	♦	5,430 R	♦	♦	♦	SB
Antimony	ND N	♦	♦	♦	♦	♦	ND N	♦	♦	♦	SB
Arsenic	2.0 B	1.5	1.1	1.4	0.95 B	13	8.8	1.5	2.0	0.64 B	7.5 or SB
Barium	11 B	♦	♦	♦	♦	♦	27 B	♦	♦	♦	300 or SB
Beryllium	0.13 B	♦	♦	♦	♦	♦	0.19 B	♦	♦	♦	0.16 or SB
Cadmium	ND	ND	ND	ND	ND	0.46 B	0.78 B	ND	ND	ND	1 or SB
Calcium	819 B R	♦	♦	♦	♦	♦	1,350 R	♦	♦	♦	SB
Chromium	3.7 R	11	5.8	17	3.1	14	16 R	46	9.6	3.6	10 or SB
Cobalt	1.9 B	♦	♦	♦	♦	♦	3.0 B	♦	♦	♦	30 or SB
Copper	6.6	7.7	6.1	3.7	2.1 B	36	1,050	64	72	7.2	25 or SB
Iron	4,780	♦	♦	♦	♦	♦	9,730	♦	♦	♦	2,000 or SB
Lead	5.6	2.6	1.8	1.5	1.5	58	82	3.8	3.1	2.6	SB*
Magnesium	787 B	♦	♦	♦	♦	♦	1,240	♦	♦	♦	SB
Manganese	81 G	♦	♦	♦	♦	♦	120 G	♦	♦	♦	SB
Mercury	ND	♦	♦	♦	♦	♦	ND	♦	♦	♦	0.1
Nickel	3.5 B	30	1.7 B	12	0.80 B	25	2,120	24	22	4.8	13 or SB
Potassium	223 B	♦	♦	♦	♦	♦	384 B	♦	♦	♦	SB
Selenium	ND	♦	♦	♦	♦	♦	ND	♦	♦	♦	2 or SB
Silver	ND G	♦	♦	♦	♦	♦	ND G	♦	♦	♦	SB
Sodium	225 B	♦	♦	♦	♦	♦	252 B	♦	♦	♦	SB
Thallium	ND	♦	♦	♦	♦	♦	ND	♦	♦	♦	SB
Vanadium	5.6 B	♦	♦	♦	♦	♦	15	♦	♦	♦	150 or SB
Zinc	19	14	7.0	5.2	4.7	79	476	17	13	5.0	20 or SB
Cyanide	ND G	♦	♦	♦	♦	♦	104 G	♦	♦	♦	**

♦ - Not analyzed.
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(b) - NYSDEC Division Technical and Administrative Guidance Memorandum (TAGM), 1/94.
B - Value is less than the contract-required detection limit but greater than the instrument detection limit.

E - Value estimated due to interference.
G - Value considered estimated based on data validator's report (Appendix G).
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ND - Not detected at analytical detection limit.
SB - Site background.

TABLE 3-6 (Page 6 of 12)

SHALLOW PROBE SOIL SAMPLES
METALS DATA SUMMARY
Alsy Manufacturing

PARAMETER	GP-10 (44-46)	GP-11 (0-4)	GP-11 (4-8)	GP-11 (10-12)	GP-11 (22-24)	GP-11 (34-36)	GP-11 (44-46)	GP-12 (0-4)	GP-12 (4-8)	GP-12 (10-12)	RECOMMENDED SOIL CLEANUP OBJECTIVE (b)
METALS (mg/kg)											
Aluminum	♦	3,480 R	♦	♦	♦	♦	♦	♦	♦	2,900 R	SB
Antimony	♦	ND N	♦	♦	♦	♦	♦	♦	♦	ND N	SB
Arsenic	0.16 B	12	2.4	3.4	5.5	0.99	1.8	31	3.6	3.1	7.5 or SB
Barium	♦	58	♦	♦	♦	♦	♦	♦	♦	9.4 B	300 or SB
Beryllium	♦	0.74 B	♦	♦	♦	♦	♦	♦	♦	0.15 B	0.16 or SB
Cadmium	ND	0.20 B	ND	ND	ND	ND	ND	0.42 B	ND	ND	1 or SB
Calcium	♦	1,150 R	♦	♦	♦	♦	♦	♦	♦	1,040 B R	SB
Chromium	2.4	13 R	15	17	10	9.5	3.9	14	8.3	5.1 R	10 or SB
Cobalt	♦	17	♦	♦	♦	♦	♦	♦	♦	2.5 B	30 or SB
Copper	1.5 B	200	33	11	3.5	2.5	2.0 B	20	5.4	7.7	25 or SB
Iron	♦	17,000	♦	♦	♦	♦	♦	♦	♦	10,700	2,000 or SB
Lead	3.0	250	14	10	2.2	2.4	3.2	45	5.2	3.5	SB*
Magnesium	♦	848 B	♦	♦	♦	♦	♦	♦	♦	941 B	SB
Manganese	♦	113 G	♦	♦	♦	♦	♦	♦	♦	53 G	SB
Mercury	♦	ND	♦	♦	♦	♦	♦	♦	♦	0.54	0.1
Nickel	2.6 B	35	477	97	1.6 B	12	1.7 B	6.7	19	57	13 or SB
Potassium	♦	314 B	♦	♦	♦	♦	♦	♦	♦	205 B	SB
Selenium	♦	ND	♦	♦	♦	♦	♦	♦	♦	0.98 B	2 or SB
Silver	♦	ND G	♦	♦	♦	♦	♦	♦	♦	ND G	SB
Sodium	♦	513 B	♦	♦	♦	♦	♦	♦	♦	246 B	SB
Thallium	♦	ND	♦	♦	♦	♦	♦	♦	♦	ND	SB
Vanadium	♦	13	♦	♦	♦	♦	♦	♦	♦	9.4 B	150 or SB
Zinc	4.5	1,890	76	62	11	4.7	6.3	30	16	9.4	20 or SB
Cyanide	♦	ND G	♦	♦	♦	♦	♦	♦	♦	ND G	**

♦ - Not analyzed.
* - Background levels for lead range from 4 - 61 ppm in undeveloped, rural areas to 200 - 500 ppm in metropolitan or suburban areas or near highways.
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TABLE 3-6 (Page 7 of 12)

SHALLOW PROBE SOIL SAMPLES
METALS DATA SUMMARY
Alsy Manufacturing

PARAMETER	GP-12 (22-24)	GP-12 (34-36)	GP-12 (44-46)	GP-13 (4-8)	GP-13 (8-10)	GP-13 (22-24)	GP-13 (36-38)	GP-13 (44-46)	GP-14 (0-4)	GP-14 (4-8)	RECOMMENDED SOIL CLEANUP OBJECTIVE (b)
METALS (mg/kg)											
Aluminum	♦	♦	♦	2,220 R	♦	♦	♦	♦	♦	2,430 R	SB
Antimony	♦	♦	♦	ND N	♦	♦	♦	♦	♦	ND N	SB
Arsenic	1.5	1.0	0.55 B	1.6 B	8.3	0.71 B	1.3	0.37 B	20	2.5 R	7.5 or SB
Barium	♦	♦	♦	10 B	♦	♦	♦	♦	♦	12 B	300 or SB
Beryllium	♦	♦	♦	0.10 B	♦	♦	♦	♦	♦	0.30 B	0.16 or SB
Cadmium	ND	ND	ND	ND	ND	ND	ND	ND	0.25 B	ND	1 or SB
Calcium	♦	♦	♦	129 B R	♦	♦	♦	♦	♦	201 B	SB
Chromium	6.3	8.5	2.8	2.9 R	12	2.3	22	4.0	13	7.4 R	10 or SB
Cobalt	♦	♦	♦	2.0 B	♦	♦	♦	♦	♦	3.2 B	30 or SB
Copper	4.2	1.9 B	0.85 B	3.1 B	6.7	2.7	4.9	0.85 B	21	4.7	25 or SB
Iron	♦	♦	♦	5,430	♦	♦	♦	♦	♦	11,100 R	2,000 or SB
Lead	3.8	2.5	2.9	1.9	6.8	3.0	3.0	2.5	27	2.6	SB*
Magnesium	♦	♦	♦	580 B	♦	♦	♦	♦	♦	612	SB
Manganese	♦	♦	♦	105 G	♦	♦	♦	♦	♦	175 N R	SB
Mercury	♦	♦	♦	0.12	♦	♦	♦	♦	♦	0.24 R	0.1
Nickel	2.5 B	2.8 B	0.82 B	2.7 B	7.2	1.7 B	22	0.86 B	7.7	4.1 B	13 or SB
Potassium	♦	♦	♦	410 B	♦	♦	♦	♦	♦	298 B	SB
Selenium	♦	♦	♦	ND	♦	♦	♦	♦	♦	ND	2 or SB
Silver	♦	♦	♦	ND G	♦	♦	♦	♦	♦	ND N	SB
Sodium	♦	♦	♦	ND	♦	♦	♦	♦	♦	ND	SB
Thallium	♦	♦	♦	ND	♦	♦	♦	♦	♦	ND	SB
Vanadium	♦	♦	♦	4.0 B	♦	♦	♦	♦	♦	6.2	150 or SB
Zinc	8.5	13	7.9	6.9	17	20	7.5	2.6	22	15 R	20 or SB
Cyanide	♦	♦	♦	ND G	♦	♦	♦	♦	♦	ND N	**

♦ - Not analyzed.
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TABLE 3-6 (Page 8 of 12)

SHALLOW PROBE SOIL SAMPLES
METALS DATA SUMMARY
Alsy Manufacturing

PARAMETER	GP-14 (8-12)	CB-1 (0-4)	OCB-1 (4-8)	OCB-1 (10-12)	OCB-1 (22-24)	OCB-1 (34-36)	OCB-1 (44-46)	CB-2 (0-4)	CB-3 (0-4)	OCB-3 (0-4)	RECOMMENDED SOIL CLEANUP OBJECTIVE (b)
METALS (mg/kg)											
Aluminum	♦	♦	2,540	♦	♦	♦	♦	♦	♦	♦	SB
Antimony	♦	♦	ND N	♦	♦	♦	♦	♦	♦	♦	SB
Arsenic	0.85 B	0.97 B	ND	6.0	0.43 B	0.87 B	9.4	1.6	1.1	3.1	7.5 or SB
Barium	♦	♦	17 B	♦	♦	♦	♦	♦	♦	♦	300 or SB
Beryllium	♦	♦	0.14 B	♦	♦	♦	♦	♦	♦	♦	0.16 or SB
Cadmium	0.17 B	ND	ND R	ND	ND	ND	ND	0.45	ND	ND	1 or SB
Calcium	♦	♦	601 E R	♦	♦	♦	♦	♦	♦	♦	SB
Chromium	2.9	1.4	6.2	37	3.7	6.2	26	3.2	10	11	10 or SB
Cobalt	♦	♦	2.4 B	♦	♦	♦	♦	♦	♦	♦	30 or SB
Copper	2.5	97	3.6	93	2.9	9.3	84	128	22	12	25 or SB
Iron	♦	♦	4,100 E R	♦	♦	♦	♦	♦	♦	♦	2,000 or SB
Lead	4.4	2.5	1.5 G	5.1	0.76	0.84	1.2	3.8	25	4.6	SB*
Magnesium	♦	♦	1190 E R	♦	♦	♦	♦	♦	♦	♦	SB
Manganese	♦	♦	90 E G	♦	♦	♦	♦	♦	♦	♦	SB
Mercury	♦	♦	ND	♦	♦	♦	♦	♦	♦	♦	0.1
Nickel	5.2	177	8.6	128	23	31	45	226	38	8.1	13 or SB
Potassium	♦	♦	414 B	♦	♦	♦	♦	♦	♦	♦	SB
Selenium	♦	♦	ND	♦	♦	♦	♦	♦	♦	♦	2 or SB
Silver	♦	♦	ND G	♦	♦	♦	♦	♦	♦	♦	SB
Sodium	♦	♦	ND	♦	♦	♦	♦	♦	♦	♦	SB
Thallium	♦	♦	ND N	♦	♦	♦	♦	♦	♦	♦	SB
Vanadium	♦	♦	7.2 E	♦	♦	♦	♦	♦	♦	♦	150 or SB
Zinc	5.3	18	10	33	12	12	37	27	28	27	20 or SB
Cyanide	♦	♦	ND G	♦	♦	♦	♦	♦	♦	♦	**

♦ - Not analyzed.
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TABLE 3-6 (Page 9 of 12)

SHALLOW PROBE SOIL SAMPLES
METALS DATA SUMMARY
Alsy Manufacturing

PARAMETER	OCB-3 (4-8)	OCB-3 (10-12)	OCB-3 (22-24)	OCB-3 (34-36)	OCB-3 (44-46)	CB-4 (0-4)	OCB-4 (0-4)	OCB-4 (4-8)	OCB-4 (10-12)	OCB-4 (22-24)	RECOMMENDED SOIL CLEANUP OBJECTIVE (b)
METALS (mg/kg)											
Aluminum	•	♦	1,640	♦	♦	♦	♦	♦	♦	♦	SB
Antimony	♦	♦	ND N	♦	♦	♦	♦	♦	♦	♦	SB
Arsenic	0.27 B	1.5	0.59 B	0.93 B	0.69 B	0.19 B	0.42 B	0.21 B	6.1	2.1	7.5 or SB
Barium	♦	♦	7.6 B	♦	♦	♦	♦	♦	♦	♦	300 or SB
Beryllium	♦	♦	0.03 B	♦	♦	♦	♦	♦	♦	♦	0.16 or SB
Cadmium	ND	ND	ND R	ND	ND	ND	ND	ND	ND	ND	1 or SB
Calcium	♦	♦	98 B E R	♦	♦	♦	♦	♦	♦	♦	SB
Chromium	8.1	13	3.4	5.0	2.5	1.5	1.6	1.2	14	4.9	10 or SB
Cobalt	♦	♦	1.0 B	♦	♦	♦	♦	♦	♦	♦	30 or SB
Copper	3.5	17	3.0	30	46	13	1.9 B	1.2 B	4.9	1.6 B	25 or SB
Iron	•	♦	2,050 E R	♦	♦	♦	♦	♦	♦	♦	2,000 or SB
Lead	0.91	4.8	1.4 G	0.83	0.98	0.73	0.84	0.52	3.2	1.0	SB*
Magnesium	♦	♦	207 B E R	♦	♦	♦	♦	♦	♦	♦	SB
Manganese	♦	♦	25 E G	♦	♦	♦	♦	♦	♦	♦	SB
Mercury	•	♦	ND	♦	♦	♦	♦	♦	♦	♦	0.1
Nickel	2.5 B	27	29	22	23	5.1	1.6 B	1.4 B	12	14	13 or SB
Potassium	•	♦	123 B	♦	♦	♦	♦	♦	♦	♦	SB
Selenium	♦	♦	ND	♦	♦	♦	♦	♦	♦	♦	2 or SB
Silver	•	♦	ND G	♦	♦	♦	♦	♦	♦	♦	SB
Sodium	♦	♦	ND	♦	♦	♦	♦	♦	♦	♦	SB
Thallium	♦	♦	1.0 N	♦	♦	♦	♦	♦	♦	♦	SB
Vanadium	♦	♦	2.5 B E	♦	♦	♦	♦	♦	♦	♦	150 or SB
Zinc	9.5	33	7.5	12	10	12	4.1	3.2	7.3	2.7	20 or SB
Cyanide	♦	♦	ND G	♦	♦	♦	♦	♦	♦	♦	**

• - Not analyzed.
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N/A - Not available.
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TABLE 3-6 (Page 10 of 12)

SHALLOW PROBE SOIL SAMPLES
METALS DATA SUMMARY
Alsy Manufacturing

PARAMETER	OCB-4 (36-38)	OCB-4 (44-46)	CB-5 (0-4)	CB-5 (4-8)	OCB-5 (0-4)	OCB-5 (4-8)	OCB-5 (10-12)	OCB-5 (22-24)	OCB-5 (34-36)	OCB-5 (44-46)	RECOMMENDED SOIL CLEANUP OBJECTIVE (b)
METALS (mg/kg)											
Aluminum	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	SB
Antimony	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	SB
Arsenic	0.64 B	1.1	0.19 B	1.4	4.3	0.47 B	1.0	0.56 B	0.64 B	0.69 B	7.5 or SB
Barium	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	300 or SB
Beryllium	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	0.16 or SB
Cadmium	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1 or SB
Calcium	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	SB
Chromium	8.0	4.1	3.3	3.3	11	6.0	5.8	3.0	2.1	1.9	10 or SB
Cobalt	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	30 or SB
Copper	5.0	4.6	2.2	3.0	5.7	1.6 B	4.5	2.1 B	1.4 B	1.2 B	25 or SB
Iron	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	2,000 or SB
Lead	1.3	1.1	3.0	2.9	4.6	2.1	2.0	1.0	0.67	0.62	SB*
Magnesium	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	SB
Manganese	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	SB
Mercury	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	0.1
Nickel	15	30	1.5 B	2.8 B	7.3	1.7 B	4.7	3.1 B	1.6 B	1.1 B	13 or SB
Potassium	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	SB
Selenium	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	2 or SB
Silver	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	SB
Sodium	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	SB
Thallium	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	SB
Vanadium	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	150 or SB
Zinc	3.5	3.2	8.5	11	16	4.2	13	3.1	3.8	2.4	20 or SB
Cyanide	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	**

♦ - Not analyzed.
* - Background levels for lead range from 4 - 61 ppm in undeveloped, rural areas to 200 - 500 ppm in metropolitan or suburban areas or near highways.
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TABLE 3-6 (Page 11 of 12)

SHALLOW PROBE SOIL SAMPLES
METALS DATA SUMMARY
Alsy Manufacturing

PARAMETER	CB-6 (0-4)	OCB-6 (0-4)	OCB-6 (4-8)	OCB-6 (10-12)	OCB-6 (22-24)	OCB-6 (34-36)	OCB-6 (44-46)	RECOMMENDED SOIL CLEANUP OBJECTIVE (b)
METALS (mg/kg)								
Aluminum	♦	♦	898	♦	♦	♦	♦	SB
Antimony	♦	♦	ND N	♦	♦	♦	♦	SB
Arsenic	1.2	0.46 B	ND	2.6	1.3	1.9	0.98 B	7.5 or SB
Barium	♦	♦	5.3 B	♦	♦	♦	♦	300 or SB
Beryllium	♦	♦	0.05 B	♦	♦	♦	♦	0.16 or SB
Cadmium	ND	ND	ND R	ND	0.09 B	ND	0.07 B	1 or SB
Calcium	♦	♦	196 B E R	♦	♦	♦	♦	SB
Chromium	3.7	4.9	2.0	10	8.6	8.4	2.8	10 or SB
Cobalt	♦	♦	0.81 B	♦	♦	♦	♦	30 or SB
Copper	7.9	1.3 B	3.3	6.8	4.8	4.1	1.4 B	25 or SB
Iron	♦	♦	1,930 E R	♦	♦	♦	♦	2,000 or SB
Lead	3.3	2.0	1.6 G	4.7	3.2	4.2	3.2	SB*
Magnesium	♦	♦	244 B E R	♦	♦	♦	♦	SB
Manganese	♦	♦	32 E G	♦	♦	♦	♦	SB
Mercury	♦	♦	ND	♦	♦	♦	♦	0.1
Nickel	6.0	1.5 B	3.7 B	12	14	12	2.8 B	13 or SB
Potassium	♦	♦	98 B	♦	♦	♦	♦	SB
Selenium	♦	♦	ND	♦	♦	♦	♦	2 or SB
Silver	♦	♦	ND G	♦	♦	♦	♦	SB
Sodium	♦	♦	ND	♦	♦	♦	♦	SB
Thallium	♦	♦	1.1 N	♦	♦	♦	♦	SB
Vanadium	♦	♦	2.0 B E	♦	♦	♦	♦	150 or SB
Zinc	14	2.2	6.7	21	6.5	6.2	3.0	20 or SB
Cyanide	♦	♦	ND G	♦	♦	♦	♦	**

♦ - Not analyzed.

* - Background levels for lead range from 4 - 61 ppm in undeveloped, rural areas to 200 - 500 ppm in metropolitan or suburban areas or near highways.

** - NYSDEC Draft Cleanup Policy and Guidelines, 10/91.

(b) - NYSDEC Division Technical and Administrative Guidance Memorandum (TAGM), 1/94.

B - Value is less than the contract-required detection limit but greater than the instrument detection limit.

N/A - Not available.

ND - Not detected at analytical detection limit.

SB - Site Background

TABLE 3-6 (Page 12 of 12)

SHALLOW PROBE SOIL SAMPLES
METALS DATA SUMMARY
Alsy Manufacturing

PARAMETER	CB-7 (0-4)	OCB7 (0-4)	OCB7 (4-8)	OCB7 (10-12)	OCB7 (22-24)	OCB7 (34-36)	OCB7 (44-46)	RECOMMENDED SOIL CLEANUP OBJECTIVE (b)
METALS (mg/kg)								
Aluminum	♦	♦	♦	♦	♦	♦	♦	SB
Antimony	♦	♦	♦	♦	♦	♦	♦	SB
Arsenic	4.2	ND	0.86 B	6.8	0.99	0.44 B	2.0	7.5 or SB
Barium	♦	♦	♦	♦	♦	♦	♦	300 or SB
Beryllium	♦	♦	♦	♦	♦	♦	♦	0.16 or SB
Cadmium	ND	ND	0.20 B	ND	ND	ND	ND	1 or SB
Calcium	♦	♦	♦	♦	♦	♦	♦	SB
Chromium	1.6	2.6	19	11	2.1	3.7	1.9	10 or SB
Cobalt	♦	♦	♦	♦	♦	♦	♦	30 or SB
Copper	2.9	1.8 B	5.7	8.3	1.4 B	2.5	1.6 B	25 or SB
Iron	♦	♦	♦	♦	♦	♦	♦	2,000 or SB
Lead	1.8	0.69	2.0	4.1	1.2	0.83	1.2	SB*
Magnesium	♦	♦	♦	♦	♦	♦	♦	SB
Manganese	♦	♦	♦	♦	♦	♦	♦	SB
Mercury	♦	♦	♦	♦	♦	♦	♦	0.1
Nickel	2.1 B	2.0 B	138	43	2.2 B	4.8	1.8 B	13 or SB
Potassium	♦	♦	♦	♦	♦	♦	♦	SB
Selenium	♦	♦	♦	♦	♦	♦	♦	2 or SB
Silver	♦	♦	♦	♦	♦	♦	♦	SB
Sodium	♦	♦	♦	♦	♦	♦	♦	SB
Thallium	♦	♦	♦	♦	♦	♦	♦	SB
Vanadium	♦	♦	♦	♦	♦	♦	♦	150 or SB
Zinc	8.9	6.9	10	25	7.0	7.0	7.3	20 or SB
Cyanide	♦	♦	♦	♦	♦	♦	♦	**

♦ - Not analyzed.
* - Background levels for lead range from 4 - 61 ppm in undeveloped, rural areas to 200 - 500 ppm in metropolitan or suburban areas or near highways.
** - NYSDEC Draft Cleanup Policy and Guidelines, 10/91.
(b) - NYSDEC Division Technical and Administrative Guidance Memorandum (TAGM), 1/94.

B - Value is less than the contract-required detection limit but greater than the instrument detection limit.
N/A - Not available.
ND - Not detected at analytical detection limit.
SB - Site Background

TABLE 3-7

SHALLOW PROBE SOIL SAMPLES TCLP METALS SUMMARY

Alsy Manufacturing

PARAMETER	GP-1 (4-8)	GP-2 (4-8)	GP-3 (22-24)	GP-4 (10-12)	GP-5 (34-36)	GP-6 (10-12)	GP-7 (34-36)	GP-8 (10-12)	GP-9 (12-14)	GP-10 (0-4)	RCRA HAZARDOUS CRITERIA
TCLP METALS (mg/l)											
Arsenic	ND	ND	ND	ND	ND	ND	ND	ND	0.077 B	0.025	5.0
Barium	0.79	0.77	0.48	0.62	0.50	0.72	0.74	0.66	0.78	0.89	100
Cadmium	ND	ND	0.0051	ND	ND	ND	ND	ND	ND	0.0062	1.0
Chromium	ND	0.0052 B	0.015	0.10	0.020	0.029	0.051	0.033	0.058	0.011	5.0
Lead	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.13 G	5.0
Mercury	♦	ND G	0.00032 G	ND G	ND G	ND G	0.00029 G	ND G	ND G	0.00038 G	0.2
Selenium	ND G N	ND N	ND N	ND N	ND N	ND N	ND N	ND N	ND N	ND	1.0
Silver	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5.0

PARAMETER	GP-11 (4-8)	GP-12 (0-4)	GP-13 (8-10)	OCB-1 (10-12)	OCB-3 (10-12)	OCB-4 (10-12)	OCB-5 (0-4)	OCB-6 (10-12)	OCB-7 (4-8)	CB-3 (0-4)	RCRA HAZARDOUS CRITERIA
TCLP METALS (mg/l)											
Arsenic	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5.0
Barium	0.94	0.69	0.61	0.65	0.82	0.70	0.88	0.69	0.66	0.39	100
Cadmium	0.0014 B	0.0010 B	ND	ND	0.0065	ND Z	ND Z	ND	ND	0.012	1.0
Chromium	0.086	ND	ND	0.025	ND	0.090	ND	ND	0.096	0.0090 B	5.0
Lead	0.023 G	0.021 G	ND Z	ND	ND	0.12	0.034 B	ND	ND	ND	5.0
Mercury	0.00040 G	0.00034 G	0.00021 G	♦	♦	ND	ND	♦	♦	♦	0.2
Selenium	ND	ND	ND	ND G N	ND G N	0.016 B	0.011 B	ND G N	ND G N	ND G N	1.0
Silver	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5.0

♦ - Not analyzed.
B - Value is less than the contract-required detection limit but greater than the instrument detection limit.
G - Value considered estimated based on validator's report (Appendix G).
N - Spiked sample recovery is not within control limits.
Z - Not detected at a detection limit five times the concentration detected in the associated blank (Appendix G).
ND - Not detected at analytical detection limit.

TABLE 3-10

DEEP PROBE SOIL SAMPLES
VOLATILES DATA SUMMARY
Alsy Manufacturing

PARAMETER	DGP-1 (0-4)	* DGP-1 (22-24)	DGP-1 (44-46)	* DGP-3 (0-4)	DGP-3 (22-24)	DGP-3 (44-46)
VOLATILE ORGANICS^1	ND	ND	ND	ND	ND	ND

Results are reported in mg/kg.

* - Confirmatory sample.

1 - If no detectable concentrations of volatile organics were reported (ND), individual compounds are not identified.

ND - Not detected at analytical detection limit.

TABLE 3-11

DEEP PROBE SOIL SAMPLES
METALS DATA SUMMARY
Alsy Manufacturing

PARAMETER	DGP-1 (22-24)	DGP-1 (22-24)	DGP-1 (44-46)	DGP-3 (0-4)	DGP-3 (22-24)	DGP-3 (44-46)	RECOMMENDED SOIL CLEANUP OBJECTIVE (b)
METALS(mg/kg)							
Aluminum	♦	1,760 R	♦	5,030	♦	♦	SB
Antimony	♦	ND N	♦	ND	♦	♦	SB
Arsenic	4.7	0.54 B R	2.0	5.0	0.98 B	1.6	7.5 or SB
Barium	♦	13 B	♦	21	♦	♦	300 or SB
Beryllium	♦	0.05 B	♦	0.16 B	♦	♦	0.16 or SB
Cadmium	ND	ND	ND	0.43 B	ND	ND	1 or SB
Calcium		42 B	♦	2,110 G R	♦	♦	SB
Chromium	18	5.9 R	8.2	13	18	4.8	10 or SB
Cobalt	♦	0.93 B	♦	2.6 B	♦	♦	30 or SB
Copper	20	2.0 B	15	66 G	4.9	35	25 or SB
Iron	♦	3,290 R	♦	7,460	♦	♦	2,000 or SB
Lead	7.1	1.1	1.2	20 R	2.8	1.7	SB*
Magnesium	♦	385 B	♦	975	♦	♦	SB
Manganese	♦	24 N R	♦	121 G	♦	♦	SB
Mercury	♦	ND N	♦	0.15	♦	♦	0.1
Nickel	11	2.7 B	2.3 B	42	22	28	13 or SB
Potassium	♦	508	♦	410 B	♦	♦	SB
Selenium	♦	ND	♦	ND G	♦	♦	2 or SB
Silver	♦	ND N R	♦	ND	♦	♦	SB
Sodium	♦	ND	♦	ND	♦	♦	SB
Thallium	♦	ND	♦	ND	♦	♦	SB
Vanadium	♦	3.3 B	♦	10	♦	♦	150 or SB
Zinc	34	6.0 R	9.0	51	17	19	20 or SB
Cyanide	♦	ND N	♦	1.5 G	♦	♦	**

♦	- Not analyzed.
*	- Background levels for lead range from 4 - 61 ppm in undeveloped, rural areas to 200 - 500 ppm in metropolitan or suburban areas or near highways.
**	- NYSDEC Draft Cleanup Policy and Guidelines, 10/91.
(b)	- NYSDEC Division Technical and Administrative Guidance Memorandum (TAGM), 1/94.
B	- Value is less than the contract-required detection limit but greater than the instrument detection limit.
E	- Value estimated due to interference.
G	- Value considered estimated based on data validator's report (Appendix G).
N	- Spiked sample recovery is not within control limits.
R	- Duplicate analysis not within control limits.
ND	- Not detected at analytical detection limit.
SB	- Site background.

TABLE 3-16

BERM SOIL SAMPLES VOLATILES DATA SUMMARY

Alsy Manufacturing

PARAMETER	B-1 *	B-2 *	B-3 *	B-4 *	B-5 *
VOLATILE ORGANICS[1]	ND	ND	ND	ND	ND

Results are reported in mg/kg.
* - Confirmatory sample.
1 - If no detectable concentrations of volatile organics were reported (ND), individual compounds are not reported.
ND - Not detected at analytical detection limit.

TABLE 3-17

BERM SOIL SAMPLES METALS DATA SUMMARY

Alsy Manufacturing

PARAMETER	B-1	B-2	B-3	B-4	B-5	RECOMMENDED SOIL CLEANUP OBJECTIVE (b)
METALS (mg/kg)						
Aluminum	10,200 E	13,300	9,540 E	10,200 E	11,100 E	SB
Antimony	ND N	ND N	ND N	ND N	ND N	SB
Arsenic	10	14	12	13	11	7.5 or SB
Barium	48	77	84	87	50	300 or SB
Beryllium	0.35 B	0.42 B	0.32 B	0.33 B	0.30 B	0.16 or SB
Cadmium	0.40 B	0.57 B	1.3	1.5	0.35 B	1 or SB
Calcium	1,260 E	3,010 E	3,380 E	4,790 E	6,090 E	SB
Chromium	15	21	53	37	15	10 or SB
Cobalt	4.4 B	5.8 B	4.3 B	4.7 B	7.3	30 or SB
Copper	26	53	200	288	94	25 or SB
Iron	12,100 E	16,000 E	13,400 E	17,100 E	17,800 E	2,000 or SB
Lead	52	91	72	87	61	SB*
Magnesium	1,480 E	2,000 E	1,540 E	1,770 E	3,700 E	SB
Manganese	174 E	196 E	229 E	258 E	192 E	SB
Mercury	0.21	0.26	0.23	0.27	0.20	0.1
Nickel	10	30	334	487	19	13 or SB
Potassium	ND	631 B	ND	634 B	624	SB
Selenium	ND	ND	ND	ND	ND	2 or SB
Silver	ND N	ND N	ND N	ND N	ND N	SB
Sodium	218	261 B	228 B	208	385 B	SB
Thallium	ND G	ND G	ND G	ND G	ND G	SB
Vanadium	22	28	20	24	44	150 or SB
Zinc	44	208	158	231	121	20 or SB

* - Background levels for lead range from 4 - 61 ppm in undeveloped, rural areas to 200 - 500 ppm in metropolitan or suburban areas or near highways.
(b) - NYSDEC Division Technical and Administrative Guidance Memorandum (TAGM), 1/94.
B - Value is less than the contract-required detection limit but greater than the instrument detection limit.
E - Value estimated due to interference.
G - Value considered estimated based on data validator's report (Appendix G).
N - Spiked sample recovery is not within control limits.
SB - Site background.
ND - Not detected at analytical detection limit.

TABLE 3-18

BERM SOIL SAMPLES TCLP METALS DATA SUMMARY

Alsy Manufacturing

PARAMETER	B-3	B-4	RCRA HAZARDOUS CRITERIA
TCLP METALS (mg/l)			
Arsenic	ND	ND	5.0
Barium	0.75	0.62	100
Cadmium	ND	ND	1.0
Chromium	ND Z	0.36 G N R	5.0
Lead	ND	ND	5.0
Mercury	ND	ND	0.2
Selenium	ND	ND	1.0
Silver	ND	ND	5.0

G - Value considered estimated based on data validator's report (Appendix G).
N - Spiked sample recovery is not within control limits.
R - Duplicate analysis not within control limits.
Z - Not detected at a detection limit five times the concentration detected in the associated blank (Appendix G).
ND - Not detected at analytical detection limit.

TABLE 1-1

SUPPLEMENTAL SOIL DATA SUMMARY (SEPTEMBER 1997)

Alsy Manufacturing

PARAMETER	CB-1 (20-22 ft)	CB-1 (30-32 ft)	CB-1 (40-42 ft)	CB-1 (50-52 ft)	CB-1 (60-62ft)	CB-2 (20-22 ft)	CB-2 (30-32 ft)	CB-2 (40-42 ft)	CB-2 (50-52 ft)	CB-2 (60-62ft)	RECOMMENDED SOIL CLEANUP OBJECTIVE (b)
METALS (mg/kg)											
Nickel	85.2	32.6	21.8	33.3	8.5	191	258	18.6	49.1	10.5	13 or SB

(b) - NYSDEC Division Technical and Administrative Guidance Memorandum (TAGM), 1/94.
SB - Site background.

TABLE 1-2

SUPPLEMENTAL TCLP DATA SUMMARY (SEPTEMBER 1997)

Alsy Manufacturing

PARAMETER	CB-1 (20-22 ft)	CB-1 (30-32 ft)	CB-1 (40-42 ft)	CB-1 (50-52 ft)	CB-1 (60-62ft)	CB-2 (20-22 ft)	CB-2 (30-32 ft)	CB-2 (40-42 ft)	CB-2 (50-52 ft)	CB-2 (60-62ft)
TCLP METAL (mg/L)										
Nickel	0.16	0.058	0.073	0.094	0.034	1.2	0.75	0.086	0.20	0.087

APPENDIX C
Ground Water Sampling Results

Appendix C
Groundwater Sampling Results
LMS RI, 1997

Sample Location	Sampling Period	Analysis	Table Number
Probes			
Perimeter Probes (PGW-)	5/30/96-7/24/96	Volatiles	3-2
		Metals	3-3
Shallow Probes (GP- GW, OCB- GW)	5/30/96-7/24/96	Volatiles	3-8
		Metals	3-9
Deep Probes (DGP- GW)	5/30/96-7/24/96	Volatiles	3-12
		Metals	3-13
Supplemental Samples (CB-1GW & CB-2GW)	September 1997	Metals (Total & Dissolved Nickel)	1-3
Monitoring Wells			
Monitoring Wells (AMS-, MW-, LMS-)	9/10-9/12/96	Volatiles	3-14
		Metals	3-15
Supplemental Samples (AMS-2, LMS-4)	September 1997	Metals (Total & Dissolved Nickel)	1-3

TABLE 3-2 (Page 1 of 3)

PERIMETER PROBE GROUNDWATER SAMPLES
VOLATILES DATA SUMMARY
Alsy Manufacturing

PARAMETER	* PGW-1 (68-70)	PGW-1 (66-70)	* PGW-2 (66-70)	PGW-3 (66-70)	PGW-3 (66-70)	PGW-3 (76-80)	PGW-3 (86-90)	NYSDEC CLASS GA STANDARDS
VOLATILE ORGANICS (µg/l)								
1,1-Dichloroethane	ND	1.4	2.0 j	ND	ND	ND	ND	5
1,1,1-Trichloroethane	ND	ND	ND	ND	1.2	ND	ND	5
Tetrachloroethylene	ND	ND	ND	1.8	ND	2.0	ND	5
Xylenes (total)	ND	ND	ND	ND	ND	ND	1.7	5

PARAMETER	PGW-3 (96-100)	* PGW-3 (96-100)	PGW-4 (66-70)	PGW-4 (76-80)	PGW-4 (86-90)	PGW-4 (96-100)	PGW-5 (66-70)	NYSDEC CLASS GA STANDARDS
VOLATILE ORGANICS (µg/l)								
1,1,1-Trichloroethane	ND	ND	ND	ND	ND	ND	7.2	5
Trichloroethylene	ND	ND	ND	ND	ND	4.4	ND	5
Benzene	ND	1.0 j	ND	ND	ND	ND	ND	0.7
Toluene	ND	3.0 j	ND	ND	ND	ND	ND	5
Ethylbenzene	ND	1.0 j	ND	ND	ND	ND	ND	5
Xylenes (total)	ND	1.0 j	ND	ND	ND	ND	ND	5

• - Confirmatory sample.
j - Estimated concentration; compound present below quantitation limit.
ND - Not detected at analytical detection limit.

TABLE 3-2 (Page 2 of 3)

PERIMETER PROBE GROUNDWATER SAMPLES
VOLATILES DATA SUMMARY
Alsy Manufacturing

PARAMETER	PGW-5 (76-80)	PGW-5 (86-90)	PGW-5 (96-100)	PGW-6 (66-70)	PGW-6 (76-80)	PGW-6 (86-90)	PGW-6 (96-100)	PGW-7 (66-70)	NYSDEC CLASS GA STANDARDS
VOLATILE ORGANICS (µg/l)									
1,1-Dichloroethane	1.1	1.9	ND	ND	ND	ND	ND	ND	5
1,1,1-Trichloroethane	12	11	2.4	ND	ND	ND	ND	ND	5
Tetrachloroethylene	ND	ND	ND	7.2	2.9	8.4	ND	ND	5

PARAMETER	PGW-7 (76-80)	PGW-7 (86-90)	* PGW-7 (96-100)	* PGW-8 (66-70)	PGW-8 (76-80)	PGW-8 (86-90)	PGW-8 (96-100)	PGW-9 (66-70)	NYSDEC CLASS GA STANDARDS
VOLATILE ORGANICS (µg/l)									
1,1-Dichloroethane	ND	ND	ND	ND	ND	1.0	1.2	ND	5
1,1,1-Trichloroethane	ND	ND	ND	2.0 j	ND	ND	ND	ND	5
Trichloroethylene	ND	ND	ND	ND	1.1	ND	ND	ND	5

* - Confirmatory sample.

j - Estimated concentration; compound present below quantitation limit.

ND - Not detected at analytical detection limit.

TABLE 3-2 (Page 3 of 3)

PERIMETER PROBE GROUNDWATER SAMPLES
VOLATILES DATA SUMMARY
Alsy Manufacturing

PARAMETER	PGW-9 (76-80)	PGW-9 (86-90)	PGW-9 (96-100)	PGW-10 (66-70)	• PGW-10 (76-80)	PGW-10 (86-90)	PGW-10 (96-100)	NYSDEC CLASS GA STANDARDS
VOLATILE ORGANICS (µg/l)								
Toluene	ND	ND	ND	ND	0.80 j	ND	ND	5
Xylenes (total)	ND	ND	ND	ND	0.70 j	ND	ND	5

- • - Confirmatory sample.
- j - Estimated concentration; compound present below quantitation limit.
- ND - Not detected at analytical detection limit.

TABLE 3-3 (Page 1 of 7)

PERIMETER PROBE GROUNDWATER SAMPLES
METALS DATA SUMMARY
Alsy Manufacturing

PARAMETER	PGW-1 (66-70)	DISSOLVED PGW-1 (66-70)	PGW-1 (76-80)	DISSOLVED PGW-1 (76-80)	PGW-1 (96-100)	DISSOLVED PGW-1 (96-100)	PGW-2 (66-70)	DISSOLVED PGW-2 (66-70)	PGW-2 (76-80)	NYSDEC CLASS GA STANDARDS
METALS (µg/l)										
Aluminum	1,180	ND	♦	♦	♦	♦	15,600	ND	♦	NS
Antimony	4.0 B	ND	♦	♦	♦	♦	4.0 B	5.1 B	♦	3.0 GV
Arsenic	4.0 B	3.2 B	42	ND	37	ND	19	ND	55	25
Barium	226	217	♦	♦	♦	♦	263	153 B	♦	1,000
Beryllium	0.73 B	ND	♦	♦	♦	♦	0.66 B	ND	♦	3.0 GV
Cadmium	ND	ND	2.1 B	ND	3.1 B	ND	ND	ND	ND	10
Calcium	32,300 G	81,100 G	♦	♦	♦	♦	56,600 G	76,400 G	♦	NS
Chromium	85	ND	189	ND	1,330	1.7 B	67	ND	1,120	50
Cobalt	13 B E	13 B E	♦	♦	♦	♦	17 B E	10 B E	♦	NS
Copper	65	6.7 B	323	6.5 B	667	ND	32	ND	525	200
Iron	41,300	39,800	♦	♦	♦	♦	36,500	2,100	♦	300 (m)
Lead	3.5	ND	54	3.3	64	ND	13	ND	143	25
Magnesium	5,430 G	13,900 G	♦	♦	♦	♦	8,020 G	8,950 G	♦	35,000 GV
Manganese	1,090 G	2,470 G	♦	♦	♦	♦	3,390 G	4,030 G	♦	300 (m)
Mercury	0.36	ND	♦	♦	♦	♦	0.33	ND	♦	2.0
Nickel	28 B	14 B	104	11 B	668	30 B	25 B	9.1 B	202	100 GV
Potassium	4,910 B G	10,900 G	♦	♦	♦	♦	8,170	10,600	♦	NS
Selenium	3.8 B	ND	♦	♦	♦	♦	4.7 B	ND	♦	10
Silver	0.70 B N	ND N	♦	♦	♦	♦	ND N	ND N	♦	50
Sodium	16,300 G	42,100 G	♦	♦	♦	♦	14,400 G	19,600 G	♦	20,000
Thallium	2.4 B	3.8 B	♦	♦	♦	♦	3.4 B	ND	♦	4.0 GV
Vanadium	12 B	ND	♦	♦	♦	♦	37 B	ND	♦	NS
Zinc	12 B	9.0 B	100	16 B	476	15 B	32	12 B	190	300
Cyanide	ND N	♦	♦	♦	♦	♦	ND G N	♦	♦	100

♦	- Not analyzed.
(m)	- Iron and manganese not to exceed 500 µg/l.
B	- Value is less than the contract-required detection limit but greater than the instrument detection limit.
E	- Value estimated due to interference.
G	- Value considered estimated based on data validators report (Appendix G).
N	- Spiked sample recovery is not within control limits.
GV	- Guidance value.
ND	- Not detected at analytical detection limit.

TABLE 3-3 (Page 2 of 7)

PERIMETER PROBE GROUNDWATER SAMPLES
METALS DATA SUMMARY
Alsy Manufacturing

PARAMETER	DISSOLVED PGW-2 (76-80)	PGW-2 (96-100)	DISSOLVED PGW-2 (96-100)	PGW-3 (66-70)	DISSOLVED PGW-3 (66-70)	PGW-3 (76-80)	DISSOLVED PGW-3 (76-80)	PGW-3 (96-100)	DISSOLVED PGW-3 (96-100)	NYSDEC CLASS GA STANDARDS
METALS (µg/l)										
Aluminum	♦	♦	♦	♦	♦	♦	♦	2,580	ND	NS
Antimony	♦	♦	♦	♦	♦	♦	♦	ND	7.1 B	3.0 GV
Arsenic	ND	118	ND	34	ND	ND	ND	15	ND	25
Barium	♦	♦	♦	♦	♦	♦	♦	75 B	48 B	1,000
Beryllium	♦	♦	♦	♦	♦	♦	♦	0.94 B	ND	3.0 GV
Cadmium	ND	ND	0.81 B	ND	0.45 B	ND	ND	ND	ND	10
Calcium	♦	♦	♦	♦	♦	♦	♦	5,490 G	16,800 G	NS
Chromium	ND	1,200	ND	421	3.4 B	85	2.4 B	35	ND	50
Cobalt	♦	♦	♦	♦	♦	♦	♦	17 B E	15 B E	NS
Copper	5.9 B	409	9.8 B	194	5.1 B	63	3.0 B	27	ND	200
Iron	♦	♦	♦	♦	♦	♦	♦	32,200	6,340	300 (m)
Lead	ND	88	11	33	3.0 B	19	2.3 B	15	ND	25
Magnesium	♦	♦	♦	♦	♦	♦	♦	1,130 B	4,280 B	35,000 GV
Manganese	♦	♦	♦	♦	♦	♦	♦	299 G	665 G	300 (m)
Mercury	♦	♦	♦	♦	♦	♦	♦	ND	ND	2.0
Nickel	13 B	381	8.7 B	118	30 B	55	18 B	11 B	20 B	100 GV
Potassium	♦	♦	♦	♦	♦	♦	♦	715 B	2,820 B	NS
Selenium	♦	♦	♦	♦	♦	♦	♦	3.5 B	ND	10
Silver	♦	♦	♦	♦	♦	♦	♦	ND N	ND N	50
Sodium	♦	♦	♦	♦	♦	♦	♦	6,470 G	25,500 G	20,000
Thallium	♦	♦	♦	♦	♦	♦	♦	2.8 B	ND	4.0 GV
Vanadium	♦	♦	♦	♦	♦	♦	♦	28 B	ND	NS
Zinc	18 B	284	18 B	1,360	249	16 B	8.2 B	25	4.4 B	300
Cyanide	♦	♦	♦	♦	♦	♦	♦	ND G N	♦	100

♦	- Not analyzed.
(m)	- Iron and manganese not to exceed 500 µg/l.
B	- Value is less than the contract-required detection limit but greater than the instrument detection limit.
E	- Value estimated due to interference.
G	- Value considered estimated based on data validator's report (Appendix G).
N	- Spiked sample recovery is not within control limits.
ND	- Not detected at analytical detection limit.
GV	- Guidance value.

TABLE 3-3 (Page 3 of 7)

PERIMETER PROBE GROUNDWATER SAMPLES
METALS DATA SUMMARY
Alsy Manufacturing

		DISSOLVED		DISSOLVED		DISSOLVED		DISSOLVED		NYSDEC
PARAMETER	PGW-4 (66-70)	PGW-4 (66-70)	PGW-4 (86-90)	PGW-4 (86-90)	PGW-4 (96-100)	PGW-4 (96-100)	PGW-5 (76-80)	PGW-5 (76-80)	PGW-5 (86-90)	CLASS GA STANDARDS
METALS (µg/l)										
Aluminum	♦	♦	♦	♦	♦	♦	♦	♦	♦	NS
Antimony	♦	♦	♦	♦	♦	♦	♦	♦	♦	3.0 GV
Arsenic	35	ND	113	ND	11	2.2 B	5.9 B	3.5 B	50	25
Barium	♦	♦	♦	♦	♦	♦	♦	♦	♦	1,000
Beryllium	♦	♦	♦	♦	♦	♦	♦	♦	♦	3.0 GV
Cadmium	ND	ND	17	ND	18	ND	ND	2.6 B	10	10
Calcium	♦	♦	♦	♦	♦	♦	♦	♦	♦	NS
Chromium	413	ND	681	ND	4,430	4.2 B	516	2.2 B	1,110	50
Cobalt	♦	♦	♦	♦	♦	♦	♦	♦	♦	NS
Copper	119	ND	552	ND	2,600	ND	189	3.3 B	409	200
Iron	♦	♦	♦	♦	♦	♦	♦	♦	♦	300 (m)
Lead	26	ND	139	ND	75	ND	14	31	71	25
Magnesium	♦	♦	♦	♦	♦	♦	♦	♦	♦	35,000 GV
Manganese	♦	♦	♦	♦	♦	♦	♦	♦	♦	300 (m)
Mercury	♦	♦	♦	♦	♦	♦	♦	♦	♦	2.0
Nickel	79	36 B	130	ND	1,210	70	86	25 B	177	100 GV
Potassium	♦	♦	♦	♦	♦	♦	♦	♦	♦	NS
Selenium	♦	♦	♦	♦	♦	♦	♦	♦	♦	10
Silver	♦	♦	♦	♦	♦	♦	♦	♦	♦	50
Sodium	♦	♦	♦	♦	♦	♦	♦	♦	♦	20,000
Thallium	♦	♦	♦	♦	♦	♦	♦	♦	♦	4.0 GV
Vanadium	♦	♦	♦	♦	♦	♦	♦	♦	♦	NS
Zinc	82	33	311	23	6,010	22	60	14 B	353	300
Cyanide	♦	♦	♦	♦	♦	♦	♦	♦	♦	100

♦ - Not analyzed.
(m) - Iron and manganese not to exceed 500 µg/l.
B - Value is less than the contract-required detection limit but greater than the instrument detection limit.
ND - Not detected at analytical detection limit.
GV - Guidance value.

TABLE 3-3 (*Page 4 of 7*)

PERIMETER PROBE GROUNDWATER SAMPLES
METALS DATA SUMMARY
Alsy Manufacturing

PARAMETER	DISSOLVED PGW-5 (86-90)	PGW-5 (96-100)	DISSOLVED PGW-5 (96-100)	PGW-6 (66-70)	DISSOLVED PGW-6 (66-70)	PGW-6 (86-90)	DISSOLVED PGW-6 (86-90)	PGW-6 (96-100)	DISSOLVED PGW-6 (96-100)	NYSDEC CLASS GA STANDARDS
METALS (µg/l)										
Aluminum	♦	♦	♦	♦	♦	♦	♦	♦	♦	NS
Antimony	♦	♦	♦	♦	♦	♦	♦	♦	♦	3.0 GV
Arsenic	ND	72	ND	ND	ND	2.2 B	ND	21	ND	25
Barium	♦	♦	♦	♦	♦	♦	♦	♦	♦	1,000
Beryllium	♦	♦	♦	♦	♦	♦	♦	♦	♦	3.0 GV
Cadmium	ND	23	ND	ND	4.7 B	ND	ND	ND	ND	10
Calcium	♦	♦	♦	♦	♦	♦	♦	♦	♦	NS
Chromium	ND	3,890	ND	167	2.9 B	57	2.1 B	84	2.2 B	50
Cobalt	♦	♦	♦	♦	♦	♦	♦	♦	♦	NS
Copper	ND	1,190	ND	69	3.4 B	69	5.6 B	105	4.6 B	200
Iron	♦	♦	♦	♦	♦	♦	♦	♦	♦	300 (m)
Lead	ND	88	ND	13	51	9.1	2.7 B	27	2.0 B	25
Magnesium	♦	♦	♦	♦	♦	♦	♦	♦	♦	35,000 GV
Manganese	♦	♦	♦	♦	♦	♦	♦	♦	♦	300 (m)
Mercury	♦	♦	♦	♦	♦	♦	♦	♦	♦	2.0
Nickel	26 B	760	ND	34 B	14 B	29 B	13 B	36 B	7.8 B	100 GV
Potassium	♦	♦	♦	♦	♦	♦	♦	♦	♦	NS
Selenium	♦	♦	♦	♦	♦	♦	♦	♦	♦	10
Silver	♦	♦	♦	♦	♦	♦	♦	♦	♦	50
Sodium	♦	♦	♦	♦	♦	♦	♦	♦	♦	20,000
Thallium	♦	♦	♦	♦	♦	♦	♦	♦	♦	4.0 GV
Vanadium	♦	♦	♦	♦	♦	♦	♦	♦	♦	NS
Zinc	30	1,200	21	16 B	29	14 B	12 B	92	15 B	300
Cyanide	♦	♦	♦	♦	♦	♦	♦	♦	♦	100

♦ - Not analyzed.
(m) - *Iron and manganese not to exceed 500 µg/l.*
B - Value is less than the contract-required detection limit but greater than the instrument detection limit.

ND - Not detected at analytical detection limit.
GV - Guidance value.

TABLE 3-3 (Page 5 of 7)

PERIMETER PROBE GROUNDWATER SAMPLES
METALS DATA SUMMARY
Alsy Manufacturing

PARAMETER	PGW-7 (66-70)	DISSOLVED PGW-7 (66-70)	PGW-7 (76-80)	DISSOLVED PGW-7 (76-80)	PGW-7 (96-100)	DISSOLVED PGW-7 (96-100)	PGW-8 (66-70)	DISSOLVED PGW-8 (66-70)	PGW-8 (76-80)	DISSOLVED PGW-8 (76-80)	NYSDEC CLASS GA STANDARDS
METALS (µg/l)											
Aluminum	♦	♦	♦	♦	20,600	68 B	53,500	82 B	♦	♦	NS
Antimony	♦	♦	♦	♦	21 B R	ND R	64 R	ND R	♦	♦	3.0 GV
Arsenic	6.8 B	ND	10 B	ND	108	ND	82	ND	137	ND	25
Barium	♦	♦	♦	♦	168 B	42 B	564	93 B	♦	♦	1,000
Beryllium	♦	♦	♦	♦	3.6 B	ND	3.4 B	ND	♦	♦	3.0 GV
Cadmium	ND	ND	ND	ND	1.2 B	0.64 B	4.1 B	0.89 B	3.7 B	0.65 B	10
Calcium	♦	♦	♦	♦	12,700	13,300	28,400	31,400	♦	♦	NS
Chromium	159	1.2 B	705	1.6 B	118 E	0.65 B E	999 E	1.9 B E	1,220	4.1 B	50
Cobalt	♦	♦	♦	♦	14 B	7.2 B	100	44 B	♦	♦	NS
Copper	48	5.0 B	208	18 B	83	ND	285	ND	603	ND	200
Iron	♦	♦	♦	♦	136,000	4,270	219,000	17,500	♦	♦	300 (m)
Lead	9.0	2.2 B	24	ND	30 G	ND	60	ND	125	1.9 B	25
Magnesium	♦	♦	♦	♦	1,830 B	1,800 B	7,100	4,330 B	♦	♦	35,000 GV
Manganese	♦	♦	♦	♦	655	478	6,040	3,750	♦	♦	300 (m)
Mercury	♦	♦	♦	♦	0.36	ND	0.62 R	ND R	♦	♦	2.0
Nickel	24 B	11 B	95	25 B	25 B	11 B	163	37 B	236	30 B	100 GV
Potassium	♦	♦	♦	♦	3,670 B	3,710 B	5,890 G	5,970	♦	♦	NS
Selenium	♦	♦	♦	♦	7.7	ND	15	ND	♦	♦	10
Silver	♦	♦	♦	♦	ND	ND	ND	ND	♦	♦	50
Sodium	♦	♦	♦	♦	36,300 G	50,000 G	29,500 G	35,100 G	♦	♦	20,000
Thallium	♦	♦	♦	♦	22 G	6.1 B G	33	14	♦	♦	4.0 GV
Vanadium	♦	♦	♦	♦	160	ND	169	ND	♦	♦	NS
Zinc	33	3.7 B	42	16 B	50	ND	229	16 B	617	5.9 B	300
Cyanide	♦	♦	♦	♦	ND G	♦	♦	♦	♦	♦	100

♦ - Not analyzed.
m) - Iron and manganese not to exceed 500 µg/l.
B - Value is less than the contract-required detection limit but greater than the instrument detection limit.
E - Value estimated due to interference.

G - Value considered estimated based on data validator's report (Appendix G).
R - Duplicate analysis not within control limits.
ND - Not detected at analytical detection limit.
GV - Guidance value.

TABLE 3-3 (Page 6 of 7)

PERIMETER PROBE GROUNDWATER SAMPLES
METALS DATA SUMMARY
Alsy Manufacturing

PARAMETER	PGW-8 (96-100)	DISSOLVED PGW-8 (96-100)	PGW-9 (76-80)	DISSOLVED PGW-9 (76-80)	PGW-9 (86-90)	DISSOLVED PGW-9 (86-90)	PGW-9 (96-100)	DISSOLVED PGW-9 (96-100)	PGW-10 (76-80)	NYSDEC CLASS GA STANDARDS
METALS (µg/l)										
Aluminum	♦	♦	♦	♦	♦	♦	♦	♦	134,000	NS
Antimony	♦	♦	♦	♦	♦	♦	♦	♦	13 B	3.0 GV
Arsenic	88	ND	90	ND	85	ND	165	ND	139	25
Barium	♦	♦	♦	♦	♦	♦	♦	♦	524	1,000
Beryllium	♦	♦	♦	♦	♦	♦	♦	♦	5.9	3.0 GV
Cadmium	2.6 B	0.59 B	ND	ND	ND	ND	ND	ND	ND	10
Calcium	♦	♦	♦	♦	♦	♦	♦	♦	36,400	NS
Chromium	427	3.4 B	1,320	4.1 B	1,790	0.67 B	224	3.3 B	576	50
Cobalt	♦	♦	♦	♦	♦	♦	♦	♦	82	NS
Copper	243	ND	462	ND	820	ND	440	ND	440	200
Iron	♦	♦	♦	♦	♦	♦	♦	♦	291,000	300 (m)
Lead	150	ND	101	ND	77	ND	96	ND	117	25
Magnesium	♦	♦	♦	♦	♦	♦	♦	♦	5,890	35,000 GV
Manganese	♦	♦	♦	♦	♦	♦	♦	♦	2,650	300 (m)
Mercury	♦	♦	♦	♦	♦	♦	♦	♦	0.61 N	2.0
Nickel	110	16 B	301	54	465	65	134	27 B	207	100 GV
Potassium	♦	♦	♦	♦	♦	♦	♦	♦	9,290	NS
Selenium	♦	♦	♦	♦	♦	♦	♦	♦	40	10
Silver	♦	♦	♦	♦	♦	♦	♦	♦	2.2 B	50
Sodium	♦	♦	♦	♦	♦	♦	♦	♦	16,900	20,000
Thallium	♦	♦	♦	♦	♦	♦	♦	♦	44 G	4.0 GV
Vanadium	♦	♦	♦	♦	♦	♦	♦	♦	305	NS
Zinc	237	8.6 B	392	16 B	407	101	105	25	364	300
Cyanide	♦	♦	♦	♦	♦	♦	♦	♦	ND G N	100

♦ - Not analyzed.
(m) - Iron and manganese not to exceed 500 µg/l.
B - Value is less than the contract-required detection limit but greater than the instrument detection limit.

G - Value considered estimated on data validator's report (Appendix G).
N - Spiked sample recovery is not within control limits.
GV - Guidance value.
ND - Not detected at analytical detection limit.

TABLE 3-3 (Page 7 of 7)

PERIMETER PROBE GROUNDWATER SAMPLES
METALS DATA SUMMARY
Alsy Manufacturing

PARAMETER	DISSOLVED PGW-10 (76-80)	PGW-10 (86-90)	DISSOLVED PGW-10 (86-90)	PGW-10 (96-100)	DISSOLVED PGW-10 (96-100)	NYSDEC CLASS GA STANDARDS
METALS (µg/l)						
Aluminum	ND	♦	♦	♦	♦	NS
Antimony	ND	♦	♦	♦	♦	3.0 GV
Arsenic	ND	18	3.2 B	65	2.6 B	25
Barium	70 B	♦	♦	♦	♦	1,000
Beryllium	ND	♦	♦	♦	♦	3.0 GV
Cadmium	ND	ND	ND	ND	ND	10
Calcium	31,800	♦	♦	♦	♦	NS
Chromium	ND	392	0.68 B	221	6.4 B	50
Cobalt	21 B	♦	♦	♦	♦	NS
Copper	2.5 B	533	ND	473	ND	200
Iron	26,100	♦	♦	♦	♦	300 (m)
Lead	2.3 B	40	ND	62	ND	25
Magnesium	4,480 B	♦	♦	♦	♦	35,000 GV
Manganese	2,010	♦	♦	♦	♦	300 (m)
Mercury	0.28 N	♦	♦	♦	♦	2.0
Nickel	28 B	169	33 B	132	42	100 GV
Potassium	4,900 B	♦	♦	♦	♦	NS
Selenium	ND	♦	♦	♦	♦	10
Silver	ND	♦	♦	♦	♦	50
Sodium	16,300	♦	♦	♦	♦	20,000
Thallium	6.6 B G	♦	♦	♦	♦	4.0 GV
Vanadium	ND	♦	♦	♦	♦	NS
Zinc	32	205	56	129	7.5 B	300
Cyanide	♦	♦	♦	♦	♦	100

♦	- Not analyzed.
(m)	- Iron and manganese not to exceed 500 µg/l.
B	- Value is less than the contract-required detection limit but greater than the instrument detection limit.
G	- Value considered estimated based on data validator's report (Appendix G).
GV	- Guidance value.
ND	- Not detected at analytical detection limit.

TABLE 3-8 (Page 1 of 2)

SHALLOW PROBE GROUNDWATER SAMPLES
VOLATILES DATA SUMMARY
Alsy Manufacturing

PARAMETER	GP-1GW (66-70)	* GP-2GW (66-70)	* GP-3GW (66-70)	GP-4GW (66-70)	GP-5GW (66-70)	GP-6GW (66-70)	NYSDEC CLASS GA STANDARDS
VOLATILE ORGANICS (µg/l)							
1,1,1,-Trichloroethane	ND	ND	1.4	1.2	ND	ND	5 GV
Tetrachloroethene	ND	ND	ND	1.0	2.2	ND	5 GV

PARAMETER	GP-7GW (66-70)	* GP-8GW (66-70)	GP-9GW (66-70)	GP-10GW (66-70)	GP-11GW (66-70)	GP-12GW (66-70)	* GP-13GW (66-70)	NYSDEC CLASS GA STANDARDS
VOLATILE ORGANICS (µg/l)								
1,1,1,-Trichloroethane	8.6	6.0 J	1.8	ND	ND	2.9	1.0 J	5 GV
1,2-Dichloroethene (total)	5.3	2.0 J	ND	ND	ND	ND	ND	5 GV
Trichloroethene	1.8	1.0 J	ND	ND	ND	ND	ND	5 GV
Tetrachloroethene	1.9	2.0 J	ND	ND	ND	1.8	2.0 J	0.7 GV
1,1-Dichloroethane	1.4	ND	ND	ND	ND	ND	ND	5 GV
Xylenes (total)	ND	ND	2.9	ND	ND	ND	ND	1.2

* - Confirmatory sample.
J - Estimated concentration; compound present below quantitation limit.
ND - Not detected at analytical detection limit.

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TABLE 3-8 (Page 2 of 2)

SHALLOW PROBE GROUNDWATER SAMPLES
VOLATILES DATA SUMMARY
Alsy Manufacturing

PARAMETER	OCB-1GW (66-70)	OCB-3GW (66-70)	OCB-4GW (66-70)	OCB-5GW (66-70)	OCB-6GW (66-70)	• OCB-7GW (66-70)	TRIP BLANK
VOLATILE ORGANICS (μg/l)[1]	ND	ND	ND	ND	ND	ND	ND

• - Confirmatory sample.
1 - If no detectable concentrations of volatile organics were reported (ND), individual compounds are not identified.
ND - Not detected at analytical detection limit.

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TABLE 3-9 (Page 1 of 4)

SHALLOW PROBES GROUNDWATER SAMPLES
METALS DATA SUMMARY
Alsy Manufacturing

PARAMETER	GP-1GW (66-70)	DISSOLVED GP-1GW (66-70)	GP-2GW (66-70)	DISSOLVED GP-2GW (66-70)	GP-3GW (66-70)	DISSOLVED GP-3GW (66-70)	GP-4GW (66-70)	DISSOLVED GP-4GW (66-70)	NYSDEC CLASS GA STANDARDS
METALS (µg/l)									
Aluminum	♦	♦	28,600 G N	ND N R	♦	♦	♦	♦	NS
Antimony	♦	♦	ND	ND	♦	♦	♦	♦	3.0 GV
Arsenic	94	ND	13	ND	81	ND	24	ND	25
Barium	♦	♦	329	138 B	♦	♦	♦	♦	1,000
Beryllium	♦	♦	2.0 B	ND	♦	♦	♦	♦	3.0 GV
Cadmium	ND	ND	ND	ND	ND	ND	ND	ND	10
Calcium	♦	♦	40,600 G	39,300	♦	♦	♦	♦	NS
Chromium	356	9.6 B	217 G	ND	982	36	204	ND	50
Cobolt	♦	♦	13 B	3.4 B	♦	♦	♦	♦	NS
Copper	180	7.2 B	41 G	ND	541	9.6 B	100	8.8 B	200
Iron	♦	♦	70,500 G	745 r	♦	♦	♦	♦	300 (m)
Lead	80	ND	17	ND	161	ND	45	3.8 B	25
Magnesium	♦	♦	4,590 B	3,930 B	♦	♦	♦	♦	35,000 GV
Manganese	♦	♦	4,080 G	2,510	♦	♦	♦	♦	300 (m)
Mercury	♦	♦	0.59 r	0.36 r	♦	♦	♦	♦	2.0
Nickel	123	28 B	96	46	396	48	98	12 B	100
Potassium	♦	♦	7,970	6,690	♦	♦	♦	♦	NS
Selenium	♦	♦	ND	ND	♦	♦	♦	♦	10
Silver	♦	♦	ND	ND	♦	♦	♦	♦	50
Sodium	♦	♦	12,900	13,100	♦	♦	♦	♦	20,000
Thallium	♦	♦	ND	ND	♦	♦	♦	♦	4.0 GV
Vanadium	♦	♦	42 B G	ND	♦	♦	♦	♦	NS
Zinc	173	17 B	44 r	17 B r	605	31	98	24	300
Cyanide	♦	♦	ND r	♦	♦	♦	♦	♦	100

♦ - Not analyzed.
(m) - Iron and manganes - Iron and manganese not to exceed 500 µg/l.
r - Value rejected by data validator but usable to show magnitude of contaminated level (Appendix G).
B - Value is less than the contract-required detection limit but greater than the instrument detection limit.
G - Value considered estimated based on data validator's report (Appendix G).

N - Spiked sample recovery is not within control limits.
R - Duplicate analysis not within control limits.
GV - Guidance value.
ND - Not detected at analytical detection limit.

SHALLOW PROBES GROUNDWATER SAMPLES
METALS DATA SUMMARY
Alsy Manufacturing

PARAMETER	GP-5GW (66-70)	DISSOLVED GP-5GW (66-70)	GP-6GW (66-70)	DISSOLVED GP-6GW (66-70)	GP-7GW (66-70)	DISSOLVED GP-7GW (66-70)	GP-8GW (66-70)	DISSOLVED GP-8GW (66-70)	GP-9GW (66-70)	DISSOLVED GP-9GW (66-70)	NYSDEC CLASS GA STANDARDS
METALS (µg/l)											
Aluminum	♦	♦	♦	♦	♦	♦	27,500 G	ND	♦	♦	NS
Antimony	♦	♦	♦	♦	♦	♦	ND G	ND	♦	♦	3.0 GV
Arsenic	26	ND	55	5.9 B	62	ND	19 G	ND	57	ND	25
Barium	♦	♦	♦	♦	♦	♦	399 G	103 B	♦	♦	1,000
Beryllium	♦	♦	♦	♦	♦	♦	1.8 B	ND	♦	♦	3.0 GV
Cadmium	ND	ND	ND	ND	0.83 B	ND	ND	ND	0.93 B	ND	10
Calcium	♦	♦	♦	♦	♦	♦	33,700 G	32,200	♦	♦	NS
Chromium	301	ND	423	11	473	32	184 G	ND	696	ND	50
Cobolt	♦	♦	♦	♦	♦	♦	23 B	5.2 B	♦	♦	NS
Copper	104	ND	126	7.4 B	163	17 B	194 r	6.1 B	208	ND	200
Iron	♦	♦	♦	♦	♦	♦	55,300 G	3,250	♦	♦	300 (m)
Lead	31	ND	43	2.5 B	41	ND	27 G	ND	65	ND	25
Magnesium	♦	♦	♦	♦	♦	♦	6,310 r	4,050 B	♦	♦	35,000 GV
Manganese	♦	♦	♦	♦	♦	♦	2,830 G	852	♦	♦	300 (m)
Mercury	♦	♦	♦	♦	♦	♦	0.28	ND	♦	♦	2.0
Nickel	85	13 B	111	10 B	132	21 B	129 G	33 B	181	12 B	NS
Potassium	♦	♦	♦	♦	♦	♦	4,920 B r	3,170 B	♦	♦	NS
Selenium	♦	♦	♦	♦	♦	♦	ND	ND	♦	♦	10
Silver	♦	♦	♦	♦	♦	♦	ND	ND	♦	♦	50
Sodium	♦	♦	♦	♦	♦	♦	31,900 r	32,100 r	♦	♦	20,000
Thallium	♦	♦	♦	♦	♦	♦	ND	ND	♦	♦	4.0 GV
Vanadium	♦	♦	♦	♦	♦	♦	44 B G	ND	♦	♦	NS
Zinc	66	10 B	95	12 B	97	15 B	71 r	24 r	145	13 B	300
Cyanide	♦	♦	♦	♦	♦	♦	ND N	♦	♦	♦	100

- Not analyzed.
m) - Iron and manganese not to exceed 500 µg/l.
- Value rejected by data validator but usable to show magnitude of contaminated level (Appendix G).
- Value is less than the contract-required detection limit but greater than the instrument detection limit.

G - Value considered estimated based on data validator's report (Appendix G).
N - Spiked sample recovery is not within control limits.
GV - Guidance value.
ND - Not detected at analytical detection limit.

TABLE 3-9 (Page 3 of 4)

SHALLOW PROBES GROUNDWATER SAMPLES
METALS DATA SUMMARY
Alsy Manufacturing

PARAMETER	GP-10GW (66-70)	DISSOLVED GP-10GW (66-70)	GP-11GW (66-70)	DISSOLVED GP-11GW (66-70)	GP-12GW (66-70)	DISSOLVED GP-12GW (66-70)	GP-13GW (66-70)	DISSOLVED GP-13GW (66-70)	OCB-1GW (66-70)	DISSOLVED OCB-1GW (66-70)	NYSDEC CLASS GA STANDARDS
METALS (µg/l)											
Aluminum	♦	♦	♦	♦	♦	♦	149,000 G	187	♦	♦	NS
Antimony	♦	♦	♦	♦	♦	♦	61 G	ND	♦	♦	3.0 GV
Arsenic	40	ND	68	5.5 B	6.8 B	ND	76 G	7.9 B	264	2.2 B	25
Barium	♦	♦	♦	♦	♦	♦	1,480 G	255	♦	♦	1,000
Beryllium	♦	♦	♦	♦	♦	♦	6.0	ND	♦	♦	3.0 GV
Cadmium	1.2 B	ND	1.3 B	ND	0.89 B	ND	3.1 B	ND	ND	ND	10
Calcium	♦	♦	♦	♦	♦	♦	32,900 G	31,700	♦	♦	NS
Chromium	617	26	443	34	227	ND	45 B G	ND	992	8.9 B	50
Cobolt	♦	♦	♦	♦	♦	♦	45 B	ND	♦	♦	NS
Copper	270	10 B	284	47	172	8.0 B	151 r	11 B	975	4.7 B	200
Iron	♦	♦	♦	♦	♦	♦	156,000 G	1,260 r	♦	♦	300 (m)
Lead	89	ND	79	ND	76	ND	59 G	2.9 B	266	3.0 B	25
Magnesium	♦	♦	♦	♦	♦	♦	10,700 r	4,280 B	♦	♦	35,000 GV
Manganese	♦	♦	♦	♦	♦	♦	3,540 G	329 G	♦	♦	300 (m)
Mercury	♦	♦	♦	♦	♦	♦	0.28 N	ND G	♦	♦	2.0
Nickel	209	24 B	156	43	111	20 B	177 G	15 B	964	197	NS
Potassium	♦	♦	♦	♦	♦	♦	12,700 r	5,020	♦	♦	NS
Selenium	♦	♦	♦	♦	♦	♦	ND	4.9 B	♦	♦	10
Silver	♦	♦	♦	♦	♦	♦	ND N	ND	♦	♦	50
Sodium	♦	♦	♦	♦	♦	♦	28,700 r	28,900 r	♦	♦	20,000
Thallium	♦	♦	♦	♦	♦	♦	ND	ND	♦	♦	4.0 GV
Vanadium	♦	♦	♦	♦	♦	♦	169 G	ND	♦	♦	NS
Zinc	155	16 B	114	22	105	20 B	183 r	16 B r	266	6.2 B	300
Cyanide	♦	♦	♦	♦	♦	♦	ND	♦	♦	♦	100

♦ - Not analyzed.
(m) - Iron and manganese not to exceed 500 µg/l.
r - Value rejected by data validator but usable to show magnitude of contaminated level (Appendix G).
B - Value is less than the contract-required detection limit but greater than the instrument detection limit.
G - Value considered estimated based on data validator's report (Appendix G).
N - Spiked sample recovery is not within control limits.
GV - Guidance value.
ND - Not detected at analytical detection limit.

TABLE 3-9 (Page 4 of 4)

SHALLOW PROBES GROUNDWATER SAMPLES
METALS DATA SUMMARY
Alsy Manufacturing

PARAMETER	OCB-3GW (66-70)	DISSOLVED OCB-3GW (66-70)	OCB-4GW (66-70)	DISSOLVED OCB-4GW (66-70)	OCB-5GW (66-70)	OCB-6GW (66-70)	DISSOLVED OCB-6GW (66-70)	OCB-7GW (66-70)	DISSOLVED OCB-7GW (66-70)	FIELD BLANK 01	DISSOLVED FIELD BLANK 01	NYSDEC CLASS GA STANDARDS
METALS (µg/l)												
Aluminum	♦	♦	♦	♦	♦	♦	♦	62,900 G	ND	138 B	ND	NS
Antimony	♦	♦	♦	♦	♦	♦	♦	ND N	ND	ND N R	ND	3.0 GV
Arsenic	284	ND	71	4.1 B	48	35	5.4 B	41	11	ND R	ND	25
Barium	♦	♦	♦	♦	♦	♦	♦	390	152 B	ND	ND	1,000
Beryllium	♦	♦	♦	♦	♦	♦	♦	5.7	ND	ND	ND	3.0 GV
Cadmium	ND	ND	ND	ND	ND	ND	ND	0.76 B	ND	ND	ND	10
Calcium	♦	♦	♦	♦	♦	♦	♦	76,500 G	80,000	1,070 B E	653 B	NS
Chromium	947	ND	273	ND	219	263	ND	116 G	ND	21 N R	40	50
Cobolt	♦	♦	♦	♦	♦	♦	♦	41 B	13 B	ND	ND	NS
Copper	666	17 B	293	ND	224	204	6.1 B	180 r	6.3 B	63 N R	45	200
Iron	♦	♦	♦	♦	♦	♦	♦	166,000 G	58,500	1,440 R	259 R	300 (m)
Lead	200	ND	53	ND	45	46	2.3 B	39 G	ND G	ND R	ND	25
Magnesium	♦	♦	♦	♦	♦	♦	♦	12,300 r	12,600	6,260	4,390 B	35,000 GV
Manganese	♦	♦	♦	♦	♦	♦	♦	5,100 G	4,830	16 E R	8.3 B R	300 (m)
Mercury	♦	♦	♦	♦	♦	♦	♦	0.39 G	ND G	ND N	ND	2.0
Nickel	695	93	115	15 B	86	76	14 B	43	11 B	22 B R	23 B	NS
Potassium	♦	♦	♦	♦	♦	♦	♦	8,010 r	7,440	5,280	4,340 B	NS
Selenium	♦	♦	♦	♦	♦	♦	♦	ND	ND	ND	ND	10
Silver	♦	♦	♦	♦	♦	♦	♦	ND	ND	ND N	ND	50
Sodium	♦	♦	♦	♦	♦	♦	♦	33,700 r	37,200 r	47,700	49,800	20,000
Thallium	♦	♦	♦	♦	♦	♦	♦	ND	ND	ND	9.4 B	4.0 GV
Vanadium	♦	♦	♦	♦	♦	♦	♦	152 G	ND	ND N R	ND	NS
Zinc	321	18 B	58	8.0 B	67	77	19 B	59 r	21 r	56 R	46	300
Cyanide	♦	♦	♦	♦	♦	♦	♦	ND r	♦	ND	♦	100

- Not analyzed.
- Iron and manganese not to exceed 500 µg/l.
- Value rejected by data validator but usable to show magnitude of contaminated level (Appendix G).
- Value is less than the contract-required detection limit but greater than the instrument detection limit.

G - Value considered estimated based on data validator's report (Appendix G).
N - Spiked sample recovery is not within control limits.
R - *Duplicate analysis not within control limits.*
GV - Guidance value.
ND - Not detected at analytical detection limit.

TABLE 3-12

DEEP PROBES GROUNDWATER SAMPLES
VOLATILES DATA SUMMARY
Alsy Manfacturing

PARAMETER	• DGP-1GW (66-70)	DGP-1GW (86-90)	DGP-1GW (96-100)	• DGP-2GW (68-70)	DGP-2GW (88-90)	DGP-2GW (98-100)	DGP-3GW (66-70)	DGP-3GW (86-90)	DGP-3GW (96-100)	NYSDEC CLASS GA STANDARDS
VOLATILE ORGANICS (μg/l)										
1,2-Dichloroethane (total)	2.0 j	ND	ND	2.0 j	ND	ND	♦	ND	ND	0.8
1,1,1-Trichloroethane	3.0 j	ND	ND	5.0 j	ND	ND	♦	ND	ND	5
Trichloroethane	ND	ND	ND	1.0 j	ND	ND	♦	ND	ND	5
Tetrachloroethene	ND	ND	ND	2.0 j	ND	ND	♦	ND	ND	5

♦ - Not analyzed.
• - Confirmatory sample.
j - Estimated concentration; compound present below quantitation limit.
ND - Not detected at analytical detection limit.

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TABLE 3-13 (Page 1 of 2)

DEEP PROBES GROUNDWATER SUMMARY
METALS DATA SUMMARY
Alsy Manufacturing

PARAMETER	DGP-1GW (66-70) 7/19/96	DISSOLVED DGP-1GW (66-70) 7/19/96	DGP-1GW (86-90) 7/19/96	DISSOLVED DGP-1GW (86-90) 7/19/96	DGP-1GW (96-100) 7/19/96	DISSOLVED DGP-1GW (96-100) 7/19/96	DGP-2GW (68-70) 7/23/96	DISSOLVED DGP-2GW (68-70) 7/23/96	DGP-2GW (88-90) 7/23/96	DISSOLVED DGP-2GW (88-90) 7/23/96	NYSDEC CLASS GA STANDARDS
METALS(µg/l)											
Aluminum	14,100 G	ND	◆	◆	◆	◆	6,840 G N	ND N	◆	◆	NS
Antimony	ND	ND	◆	◆	◆	◆	ND	ND	◆	◆	3.0 GV
Arsenic	22	ND	25	ND	101	ND	ND	ND	65	ND	25
Barium	173 B	69 B	◆	◆	◆	◆	184 B	108 B	◆	◆	1,000
Beryllium	0.58 B	ND	◆	◆	◆	◆	0.48 B	ND	◆	◆	3.0 GV
Cadmium	ND	ND	ND	ND	1.9 B	ND	ND	ND	ND	ND	10
Calcium	22,800 G	22,100	◆	◆	◆	◆	38,800 G	36,800	◆	◆	NS
Chromium	359 G	ND	110	ND	245	ND	192 G	ND	122	9.4 B	50
Cobalt	15 B	3.1 B	◆	◆	◆	◆	8.0 B	2.8 B	◆	◆	NS
Copper	159 G	10 B	352	9.5 B	141	5.5 B	92 G	9.1 B	152	6.0 B	200
Iron	74,500 G	1,150	◆	◆	◆	◆	53,900 G	1,750 r	◆	◆	300 (m)
Lead	19	ND	83	3.2 B	70	2.7 B	10	ND	63	4.0 B	25
Magnesium	4,300 B	3,300 B	◆	◆	◆	◆	5,080	4,480 B	◆	◆	35,000 GV
Manganese	1,200 G	302	◆	◆	◆	◆	976 G	375	◆	◆	300 (m)
Mercury	ND G	ND G	◆	◆	◆	◆	0.68 r	0.22 r	◆	◆	2.0
Nickel	150	13 B	49	6.6 B	88	12 B	44	10 B	50	12 B	100 GV
Potassium	ND	3,100 B	◆	◆	◆	◆	5,880	5,150	◆	◆	NS
Selenium	ND	ND	◆	◆	◆	◆	ND	ND	◆	◆	10
Silver	ND	ND	◆	◆	◆	◆	ND	ND	◆	◆	50
Sodium	33,900	31,700	◆	◆	◆	◆	36,900	36,200	◆	◆	20,000
Thallium	ND	ND	◆	◆	◆	◆	ND	ND	◆	◆	4.0 GV
Vanadium	42 B G	ND	◆	◆	◆	◆	12 B G	ND	◆	◆	NS
Zinc	237	45	153	47	77	12 B	283	60 r	243	29	300
Cyanide	ND r	◆	◆	◆	◆	◆	ND r	◆	◆	◆	100

● - Not analyzed.
(m) - Iron and manganese not to exceed 500 µg/l.
r - Value rejected by data validator but usable to show magnitude of contaminated level (Appendix G).
B - Value is less than the contract-required detection limit but greater than the instrument detection limit.

G - Value considered estimated based on data validator's report (Appendix G).
N - Spiked sample recovery is not within control limits.
R - Duplicate analysis not within control limits.
GV - Guidance value.
ND - Not detected at analytical detection limit.

TABLE 3-13 (Page 2 of 2)

DEEP PROBES GROUNDWATER SUMMARY
METALS DATA SUMMARY
Alsy Manufacturing

PARAMETER	DGP-2GW (98-100) 7/23/96	DISSOLVED DGP-2GW (98-100) 7/23/96	DGP-3GW (66-70) 7/23/96	DISSOLVED DGP-3GW (66-70) 7/23/96	DGP-3GW (86-90) 7/25/96	DISSOLVED DGP-3GW (86-90) 7/25/96	DGP-3GW (96-100) 7/25/96	DISSOLVED DGP-3GW (96-100) 7/25/96	NYSDEC CLASS GA STANDARDS
METALS(µg/l)									
Arsenic	66	ND	81	ND	113	ND	164	ND	25
Cadmium	1.6 B	ND	ND	ND	ND	ND	ND	ND	10
Chromium	3,310	ND	982	36	757	8.7 B	238	11	50
Copper	1,160	7.6 B	541	9.6 B	469	12 B	284	8.3 B	200
Lead	222	5.9	161	ND	60	ND	68	ND	25
Nickel	770	30 B	396	48	254	35	98	21 B	100 GV
Zinc	1,590	31	605	31	154	13 B	159	13 B	300

B - Value is less than the contract-required detection limit but greater than the instrument detection limit.
GV - Guidance value.
ND - Not detected at analytical detection limit.

TABLE 3-14

MONITORING WELLS VOLATILES DATA SUMMARY

Alsy Manufacturing

PARAMETER	AMS-1	AMS-2	MW-3	LMS-1	LMS-2	LMS-3	LMS-4	LMS-5	LMS-6	FIELD BLANK	TRIP BLANK-1	TRIP BLANK-2	TRIP BLANK-3	NYSDEC CLASS GA STANDARDS
VOLATILE ORGANICS (µg/l)														
1,1,1-Trichloroethane	ND	ND	2.0 j	2.0 j	4.0 j	ND	ND	ND	4.0 j	ND	ND	ND	ND	5.0
Tetrachloroethene	ND	ND	ND	5.0 j	ND	9.0 j	ND	ND	ND	ND	ND	ND	ND	5.0
Benzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.7
Toluene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5.0
Ethylbenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5.0
Xylenes (total)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5.0

j - Estimated concentration; compound present below quantitation limit.
ND - Not detected at analytical detection limit.

TABLE 3-15 (Page 1 of 2)

MONITORING WELLS METALS DATA SUMMARY

Alsy Manufacturing

PARAMETER	AMS-1	DISSOLVED AMS-1	AMS-2	DISSOLVED AMS-2	MW-3	DISSOLVED MW-3	LMS-1	DISSOLVED LMS-1	LMS-2	NYSDEC CLASS GA STANDARDS
METALS (µg/l)										
Aluminum	1,340 G	ND G	469 G	ND G	633 G	ND G	16,600 E G N	ND G	7,690 E G N	NS
Antimony	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.0 GV
Arsenic	14	ND	15	ND	ND	ND	40	ND	19	25
Barium	273	127 B	130 B	97 B	99	98 B	372	198 B	280	1,000
Beryllium	ND	ND	ND	ND	ND	ND	1.4 B	ND	0.67 B	3.0 GV
Cadmium	ND	ND	ND	ND	0.53 B	ND	1.3 B	1.1 B	ND	10
Calcium	13,700 G R	14,200 R	40,000 G R	37,000 R	5,890 G	6,040	32,900 E G	36,400	39,700 E G	NS
Chromium	94 R	ND R	ND R	ND R	ND	ND	52	ND	16	50
Cobalt	41 B	ND	ND	ND	ND	ND	13 B	ND	8.3 B	NS
Copper	14 B	ND	22	ND	6.1 B	ND	50	ND	22 B	200
Iron	46,100 G N R	55 B G N R	9,230 G N R	225 G N R	668 G	ND G	43,900 G R	ND G	19,400 G R	300 (m)
Lead	12 N R	ND N R	8.4 N R	ND N R	ND	ND	37	ND	9.2	25
Magnesium	1,800 B R	1,890 B R	6,220 R	5,600 R	1,080 B	1,070 B	5,630	4,740 B	4,940 B	35,000 GV
Manganese	4,710	53 G	1,110	1,030 G	33	11 B G	3,260 N	1,560 G	704 N	300 (m)
Mercury	1.0	ND	ND	ND	ND	ND	0.50	ND	0.38	2.0
Nickel	58	ND	3,280	3,190	ND	ND	22 B	7.2 B	12 B	NS
Potassium	3,680 B R	3,640 B R	9,810 R	9,580 R	2,390 B	2,620 B	5,880	4,530	8,760	NS
Selenium	ND R	ND R	7.9 R	6.9 R	ND	ND	ND	ND	ND	10
Silver	ND G	ND G	ND G	ND G	ND G	ND G	ND G N	ND G	ND G N	50
Sodium	9,910 R	10,600 R	25,000 R	24,300 R	9,040	8,810	31,200	33,500	32,700	20,000
Thallium	18	ND	ND	ND	ND	ND	ND	ND	ND	4.0 GV
Vanadium	6.8 B	ND	5.6 B	ND	ND	ND	64	ND	24	NS
Zinc	59 r	110 r	28 r	119 r	73	76	115	23	33	300
Cyanide	ND G N	♦	ND G N	♦	ND G N	♦	ND G N	♦	ND G N	100

♦ - Not analyzed.
(m) - Iron and manganese not to exceed 500 µg/l.
r - Value rejected by data validator but usable to show magnitude of contaminated level (Appendix G).
B - Value is less than the contract-required detection limit but greater than the instrument detection limit.
E - Value estimated due to interference.
G - Value considered estimated based on data validator's report (Appendix G).

N - Spiked sample recovery is not within control limits.
R - Duplicate analysis not within control limits.
GV - Guidance value.
ND - Not detected at analytical detection limit.
NS - No standard.

TABLE 3-15 (Page 2 of 2)

MONITORING WELLS METALS DATA SUMMARY

Alsy Manufacturing

PARAMETER	DISSOLVED LMS-2	LMS-3	DISSOLVED LMS-3	LMS-4	DISSOLVED LMS-4	LMS-5	DISSOLVED LMS-5	LMS-6	DISSOLVED LMS-6	FIELD BLANK-0	NYSDEC CLASS GA STANDARDS
METALS (µg/l)								[Blind duplicate of LMS-2]	[Blind duplicate of LMS-2]		
Aluminum	ND G	726 E G N	250 G	14,200 G	ND G	11,300 G	ND G	7,920 E G N	ND G	ND G	NS
Antimony	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.0 GV
Arsenic	ND	ND	ND	16.7	ND	30	ND	15	ND	ND	25
Barium	178 B	253	234	369	264	470	373	285	136 B	81 B	1,000
Beryllium	ND	ND	ND	0.90 B	ND	1.2 B	ND	0.96 B	ND	ND	3.0 GV
Cadmium	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	10
Calcium	37,800	189,000 E G	147,000	20,200 G	20,400	87,800 G	91,100	38,800 E G	38,600	894 B G	NS
Chromium	ND	15	14	37	ND	30	ND	15	ND	ND	50
Cobalt	ND	ND	ND	12 B	7.6 B	8.2 B	3.0 B	9.1 B	ND	ND	NS
Copper	ND	8.5 B	ND	105	16 B	46	ND	27	ND	7.6 B	200
Iron	69 B G	289 G R	ND G	28,400 G	ND G	27,500 G	ND G	15,600 G R	ND G	59 B G	300 (m)
Lead	ND	ND	ND	15	ND	24	ND	11	ND	ND	25
Magnesium	4,090 B	1,420 B	ND	2,380 B	1,990 B	7,340	7,590	4,730 B	4,150 B	628 B	35,000 GV
Manganese	190 G	20 N	1.8 B G	518	461 G	7,640	7,060 G	763 N	191 G	ND	300 (m)
Mercury	ND	ND	ND	ND	ND	0.28	ND	ND	ND	ND	2.0
Nickel	7.2 B	ND	4.9 B	8,770	8,860	14	6.6 B	11 B	5.5 B	17 B	NS
Potassium	7,440	31,000	34,400	4,530 B	3,950 B	20,100	21,000	8,240	460	ND	NS
Selenium	ND	ND	ND	7.5	8.0	ND	ND	ND	ND	ND	10
Silver	ND G	ND G N	ND G	ND G	ND G	ND G	ND G	ND G N	ND G	ND G	50
Sodium	32,800	37,400	39,500	34,800	37,700	39,800	44,800	32,200	32,300	3,410 B	20,000
Thallium	ND	ND	ND	ND G	ND	21	20	ND	ND	ND	4.0 GV
Vanadium	ND	3.6 B	ND	37 B	ND	72	ND	20 B	ND	ND	NS
Zinc	15 B	ND	10	1,380	1,250	71	52	35	16 B	15 B	300
Cyanide	♦	ND G N	♦	ND G N	♦	ND G N	♦	ND G N	♦	ND G N	100

♦	- Not analyzed.
(m)	- Iron and manganese not to exceed 500 µg/l.
r	- Value rejected by data validator but usable to show magnitude of contaminated level (Appendix G).
B	- Value is less than the contract-required detection limit but greater than the instrument detection limit.
E	- Value estimated due to interference.
G	- Value considered estimated based on data validator's report (Appendix G).
N	- Spiked sample recovery is not within control limits.
R	- Duplicate analysis not within control limits.
GV	- Guidance value.
ND	- Not detected at analytical detection limit.
NS	- No standard.

TABLE 1-3

SUPPLEMENTAL GROUNDWATER DATA SUMMARY (SEPTEMBER 1997)

Alsy Manfacturing

PARAMETER	AMS-2	LMS-4	CB-1GW	CB-2GW	NYSDEC CLASS GA STANDARDS	RISK BASED EPA STANDARDS[a]
METALS (µg/L)						
Nickel, total	3,050	5,290	4,660	790	NS	730
Nickel, dissolved	3,130	5,100	1,530	20.6	NS	730

(a) - USEPA Region III Table of Risk Based Concentrations (USEPA, Region III, 19 April 1996).
NS - No Standard.

APPENDIX D
Ground Water Model Documentation

APPENDIX D
GROUND WATER TRANSPORT MODELING FOR OFF-SITE PLUME EVALUATION

D1.0 INTRODUCTION

Pursuant to the "Work Plan for Additional Investigation Activities" (ERM, April 2001), and in accordance with prior discussions with the New York State Department of Environmental Conservation (NYSDEC), transport modeling was performed for the Alsy project to provide a conservative analysis of the off-site extent of the dissolved nickel plume identified in on-site and nearby off-site wells. The model used for this exercise consisted of a two-dimensional ground water flow and solute transport model and is entitled WinTran (Environmental Simulations, Inc., 2000). Specifically, the model was used to develop a conservative estimate of dissolved nickel concentrations in the shallow water table aquifer downgradient of the site. The model study area is shown in Figure D-1.

D2.0 NUMERICAL MODEL AND TECHNICAL APPROACH

WinTran contains a steady-state flow model that uses analytic element functions to simulate the hydraulic effects of features such as pumping wells, injection wells, etc. This approach was developed by Strack (1989) and is based on the principle of superposition to compute the head at any point in the aquifer system by summing the effects of any number of pertinent hydraulic functions. The WinTran flow component assumes an infinite, homogeneous aquifer of constant thickness.

The solute transport component of WinTran uses a finite-element formulation. A finite-element mesh is automatically determined by the model based on the size of the model domain and the distribution of the head values generated by the flow model. WinTran computes a ground water velocity for each "node" in the model for use in the solute transport simulation.

The model requires input of a solute source (i.e., size and mass flux) to simulate the dissolved nickel plume identified at the site. This was accomplished by using available operations data regarding nickel levels in wastewater generated at the site for an eight-year period (1977 through 1985). As discussed later in this appendix, these data were used to extrapolate a nickel source in subsequent years for which there are no historic data. The development of a source term for a period of years beyond 1985 was found to be necessary to match the observed dissolved nickel concentrations in groundwater.

Consistent with site observations, the source was simulated in the model as a point source. The source strength and duration was then varied within reasonable bounds, using the available historic data as a guide, until a reasonable match was obtained with the nickel concentrations observed in ground water at the site. Once an acceptable match between the model and ground water sampling data was achieved, the model was used in a predictive mode to evaluate the extent of the dissolved nickel plume downgradient of the site. In addition, the model was run out into the future to predict future ground water concentrations.

The model has been designed to provide a conservative estimate of dissolved nickel concentrations in the shallow aquifer downgradient of the site (i.e., the result overestimates the nickel concentrations that may be present).

D3.0 HYROGEOLOGIC FRAMEWORK

The RI results have identified the presence of a dissolved nickel plume within the unconfined upper aquifer beneath the site (see Figures 1-5 and 1-6 in the FS document). The water table occurs within the Upper Glacial Aquifer, a glacial outwash deposit of Pleistocene Age. The Upper Glacial occurs throughout most of Long Island and its hydrogeology has been extensively studied. The Upper Glacial consists of relatively homogeneous, well stratified, fine to coarse sand and gravel. All monitoring wells installed as part of the Alsy project were screened within this unit. In the area of the site, the Upper Glacial deposits are approximately 110 feet thick and extend from ground surface down to the underlying Magothy Formation. The water table is situated at approximately 65 feet below grade. The ground water flow direction measured at the site is south-southeast at a head gradient of 0.0011 ft/ft (see Figures 1-5 and 1-6 in the FS document).

The Magothy Aquifer directly underlies the Upper Glacial. It consists of fine to medium sand, interbedded with lenses of clay and sandy clay. The Magothy is approximately 500 feet thick in the Hicksville area and hydrologically behaves as a semi-confined aquifer.

D4.0 CONCEPTUAL MODEL

The conceptual model organizes the existing information on physical setting, meteorology, geology and hydrogeology into a simplified, but consistent, framework that will adequately represent the actual conditions in the area to be modeled. The dissolved nickel plume is contained within the Upper Glacial Aquifer, whose characteristics with respect to its areal extent and homogeneity match well with the inherent assumptions of the WinTran model. As a result, this problem has been conceptualized as an unconfined, one-layer system in an infinite aquifer with a thickness defined by the known depth of the dissolved nickel plume.

The flow component of WinTran also requires that the aquifer have a uniform hydraulic conductivity. This input value was taken from the published literature on the Upper Glacial Aquifer. The contaminant source for solute transport component is conceptualized as an injection well, or point source.

D5.0 MODEL LIMITATIONS

This modeling exercise has been designed to evaluate the off-site extent of dissolved nickel in the shallow portion of the Upper Glacial Aquifer. It is a conservative analysis in that it is designed to overestimate the nickel concentrations present. Those aspects of the model that may contribute to this overestimation are summarized below:

ξ This is a two-dimensional model, therefore vertical dispersion and dilution is not considered. This results in higher simulated concentration within the modeled aquifer.

ξ The model assumes there is no loss of nickel mass in the system. In reality, reactions may occur that would remove nickel via formation of insoluble precipitates or other reactions with the solid aquifer matrix.

ξ As discussed in Section D5.0 below, the model-simulated nickel plume is wider in the transverse direction than what would normally be expected for the Upper Glacial Aquifer. This additional spreading of the modeled plume caused a need to add more nickel mass in the simulated source in order to match the ground water concentrations measured in the field. As a result the model overestimates the mass of nickel discharged in the shallow Upper Glacial Aquifer.

D5.0 MODEL INPUT PARAMETERS

The flow model input parameters are provided in Table D-1, which also provides the source of these data. In setting the hydraulic conductivity in the model, published data were used instead of historic slug test data from the site. This was done because the historic slug test results appear to be anomalously low when compared to other data representative of the Upper Glacial Aquifer. There are several factors that might affect the results obtained from historic slug testing, including poor well construction and/or inadequate well development.

The reference head is a fixed point where the head, gradient and flow direction does not change during the model simulation. For this reason, it is important that this point is located far from the site to ensure that the model accurately simulates the impacts of the key hydraulic features in the area of interest. The location of the reference head was set at the regional ground water flow divide, approximately 1.5 miles north of the site.

The transport model input parameters are provided in Table D-2. The model requires three types of input data: dispersion coefficients; a retardation factor; and a contaminant source term (source location, size, strength, and timing). Each is discussed below.

The dispersion coefficients control the inherent resistance of the aquifer to diffusive and dispersive spread of the solute. For the Upper Glacial Aquifer, low dispersivity (high resistance to dispersion) is typical. However, the stability of the mathematical solution is quite sensitive to the magnitude of these dispersion parameters. As a result, these values were set as low as possible without causing numerical instability (i.e., the model being unable to calculate a solution). Nevertheless, the model-predicted plume configuration is wider in the transverse direction (perpendicular to ground water flow) than expected based on our experience with plume behavior in the Upper Glacial Aquifer. If the model tolerated lower input dispersion parameters, a narrower plume would have been produced, more typical of those found in the Upper Glacial Aquifer. This artifact is a limitation of the model and, as previously discussed in Section D4.0, required the input of excess nickel mass in order to match the aquifer concentrations observed in the field along the longitudinal centerline of the plume.

A retardation factor of 2.0 was used in the model, indicating that the solute moves at half the velocity of ground water. This factor was determined through the model calibration process. Retardation occurs in the subsurface via reversible reactions between the solute and the aquifer matrix. As previously mentioned, the model assumes no mechanism for loss of nickel mass (i.e., decay) in the system.

As previously stated, based on what is known about historical discharges at the site, the solute source in the model is simulated as a point source. The strength of this source (concentration and discharge rate) and its changes over time were evaluated using the available information regarding historic operations, in combination with the model calibration process.

The available information on the discharge rate of nickel-containing wastewater consists of a single evaluation documented in a report entitled *"Engineering Study and Report; Industrial Wastewater Collection, Treatment and Disposal; Alsy Manufacturing, Hicksville, NY"* (H2M, 1984). This study indicated an approximate average discharge rate of 5,000 gallons per day or 3.47 gallons per minute (gpm) for the nickel-containing component of the wastewater generated at the site.

Nickel discharge sampling data is limited and consists of a few effluent samples and a few samples from the standing liquid in the discharge dry well(s). These data are provided in Table D-3. This information served as the basis to define a source term for the model. As shown in Table D-2, the temporal variation in the source was divided into five periods described below:

1975 to 1985 - This period represents the early operational years of the Alsy facility. The source strength at this time was taken as the approximate average of the discharge sampling data from pre-1984 (see Table D-3).

1985 to 1992 – This period covers the remainder of Alsy's operations at the site. The source strength at this time was derived using the post-1984 discharge sampling data as a guide (see Table D-3). However, due to the absence of actual sampling data for most of this period (i.e. beyond 1985), the source term was largely determined through the model calibration process.

1992 to 2001 – This covers the initial period after Alsy ceased operations. The source during this period is conceptualized as leaching from contaminanted dry well sediment due to run-off passing through the structure(s). Due to the absence of actual sampling data for this period, the source term was determined solely through the model calibration process.

2001 to 2003 – As leaching continues, it is conceptualized that the source strength decreases with time. The source term for this was selected as the approximate average of SPLP sampling results collected during 2001.

Post 2003 – During this period, it is assumed that the source has been eliminated due to remedial action.

D6.0 MODEL CALIBRATION

Model calibration is the process by which the initial input parameters are refined by trial and error matching to a known historical condition. Two calibration targets were utilized for the flow portion of the model: the configuration of the water table measured at the site; and the regional configuration of the water table as reported in the published literature. A summary of the flow model calibration is provided in Table D-4. Based on the information provided in this table, the flow model reasonably matches the field data.

The calibration targets for the solute transport model used the two monitoring wells located within the plume for which there are data (LMS-4 and AMS-2). The comparison between the nickel concentrations measured in these wells and the output of the model is provided in Figures D-2 and D-3. These figures demonstrate agreement between the model and the field data. As another check on the transport model calibration, the result of the only sampling event conducted on well ERM-3 (January 2003) was also compared to the model output. The model predicts a concentration of 2,852 Πg/L in ERM-3 while the measured nickel concentration in this well was 3,580 Πg/L.

It was also noted as part of the calibration process that there is a divergence between the model and the measured concentrations in wells AMS-1 and MW-3. Although the sampling results indicate no detectable nickel in these wells, due to the excess horizontal dispersion in the model discussed above in Section D5.0, the simulated plume indicates the presence of nickel solute at these locations. These sampling results are consistent with the tendency of the Upper Glacial Aquifer to produce very narrow plumes. The excess horizontal dispersion of the model, which predicts nickel concentrations where the sampling fails to detect nickel, demonstrates the conservatism to the model predictions, as discussed in Section D4.0.

Based on these data, the model is considered to be adequately calibrated and is suitable for the screening effort to predict plume behavior within the scope of the project objectives.

D7.0 PREDICTIVE MODELING

The calibrated model was used to predict dissolved nickel concentrations in the shallow aquifer downgradient of the site as of January 2003. The result of this run is presented as Figure D-4. This output shows that the plume reaches the vicinity of Hempstead Avenue in the shallow Upper Glacial Aquifer at an estimated concentration of 195 Πg/L, a value in excess of the NYS ground water standard of 100 Πg/L.

The model was also run into the future to estimate the maximum nickel concentration in the shallow Upper Glacial Aquifer in the vicinity of Hempstead Avenue. The result of this run predicts a maximum nickel concentration at the water table of approximately 1,500 Πg/L reaching the area in the year 2015.

D8.0 HEMPSTEAD AVENUE SUPPLY WELLS

Three public supply wells are located near Hempstead Avenue approximately one mile from the site (see Figures D-1 and D-4). These supply wells withdraw water from the Magothy Aquifer at a depth of more than 450 feet below grade. The well completion logs for these wells (see FS Appendix P) demonstrate the presence of numerous clay horizons that will serve to impede the downward migration of nickel solute in the Upper Glacial Aquifer.

The nickel data for the supply wells through 2002 is summarized in Table 1-16 of the FS. These data show that nickel was not detected (at a reporting limit of 40 µg/L) in any of the supply wells with the exception of well N-9212 in June 1985, in which nickel was detected at a concentration of 20 µg/L, below the New York State Class GA ground water standard for nickel of 100 µg/L. Nickel was not detected in prior or subsequent sampling of the well.

The modeling shows the shallow plume missing the area of the supply wells by approximately 1,000 feet (see Figure D-4). In addition, as previously stated, the model overestimates the width of the nickel plume. The location of the supply wells in relation to the predicted direction of the plume within the shallow aquifer and the substantial depth of the wells would significantly limit possible impacts to the supply wells.

Nevertheless, if a very conservative and improbable assumption were made that all of the dissolved nickel was captured by one public supply well, its normal pumping rate would still result in significant dilution of the nickel concentration. Estimates of this dilution effect are provided in Attachment 1 and show that the pumped water quality would be below the contract required detection limit (CRDL) for nickel. The CRDL is below the New York State Class GA standard and is the current reporting limit for the Hicksville Water District[1].

Finally, it is understood that future groundwater monitoring will be required to demonstrate that the removal of the source area will result in a decrease in groundwater nickel levels. This will provide an added layer of information and protection with respect to the possibility of future impacts.

---

[1] CRDL = 40 µg/L

TABLE D-1
Flow Model Input Parameters
Former Alsy Site – Hicksville, NY

PARAMETER	INPUT VALUE (units)	SOURCE
Hydraulic Conductivity	250 (feet/day)	McClymonds and Franke, 1972. Plate 1C.
Aquifer Bottom Elevation	40 (feet MSL)	ERM, 2002. Site data on plume thickness.
Reference Head	72 (feet MSL)	Nassau County Dept. of Public Works, 1997. Reference head is set at location and elevation of the regional ground water divide.
Hydraulic Gradient at Reference Head	0.0009 (dimensionless)	Determined through model calibration process.
Effective Porosity	0.25 (dimensionless)	Assumed within normal range of 0.25 to 0.35.

TABLE D-2

Solute Transport Model Input Parameters

Former Alsy Site – Hicksville, NY

PARAMETER	INPUT VALUE (units)	SOURCE
Source Term Mass Flux 1975 – 1985	0.04 (kg/day) Flow = 3.38 gpm Conc. = 2.0 mg/L	Determined via calibration. Within range of pre-1984 nickel discharge data (see Table D-3).
Source Term Mass Flux 1985 - 1992	0.46 (kg/day) Flow = 3.38 gpm Conc. = 25 mg/L	Determined via calibration. Within range of 1984-1985 nickel discharge data (see Table D-3).
Source Term Mass Flux 1992 - 2001	0.23 (kg/day) Flow = 2.08 gpm Conc. = 20 mg/L	Determined via calibration. Assumes decaying source strength after facility ceased operations.
Source Term Mass Flux 2001 - 2003	0.06 (kg/day) Flow = 2.08 gpm Conc. = 5.0 mg/L	Determined via calibration. Within range of SPLP sampling results (ERM, 2001). Assumes further decay in source strength as residual in-ground source is leached out.
Source Term Mass Flux Post 2003	0.0 kg/day	Assumes source is eliminated through remedial action.
Retardation Factor	2.0 (dimensionless)	Determined via calibration. (Indicates solute moves at half the velocity of ground water flow.)
Longitudinal Dispersivity	40 (feet)	Determined via calibration. The lowest value that prevents excessive numerical instability was selected.
Transverse Dispersivity	2.0 (feet)	Determined via calibration. The lowest value that prevents excessive numerical instability was selected.

TABLE D-3
Historic Nickel Discharge Sampling Data
Former Alsy Site – Hicksville, NY

SAMPLER	DATE	NICKEL (mg/L)	DATA SOURCE
Unknown	8/1/1977	4.97	LMS, 1997[1]
Unknown	1/11/1978	12.70	LMS, 1997[1]
Unknown	6/29/1978	5.80	LMS, 1997[1]
Unknown	8/8/1978	3.55	LMS, 1997[1]
Unknown	12/4/1979	2.40	LMS, 1997[1]
Unknown	11/18/1980	6.60	LMS, 1997[1]
Unknown	1/20/1981	2.39	LMS, 1997[1]
Unknown	1/27/1981	6.89	LMS, 1997[1]
NYSDEC	2/21/1984	88.50	Hart, 1990[2]
NYSDEC	2/21/1984	42.70	Hart, 1990[2]
NYSDEC	2/21/1984	29.20	Hart, 1990[2]
Soil Mechanics	11/14/1984	17.18	Hart, 1990[2]
Soil Mechanics	11/14/1984	0.10	Hart, 1990[2]
Soil Mechanics	11/14/1984	0.10	Hart, 1990[2]
H2M	4/12/1985	3.56	Hart, 1990[2]
H2M	4/12/1985	0.86	Hart, 1990[2]
H2M	4/12/1985	1.46	Hart, 1990[2]
H2M	4/12/1985	0.46	Hart, 1990[2]
NYSDEC	5/8/1985	2.40	Hart, 1990[2]
NYSDEC	5/8/1985	0.00	Hart, 1990[2]
NYSDEC	5/8/1985	0.00	Hart, 1990[2]
NYSDEC	5/8/1985	0.00	Hart, 1990[2]
NYSDEC	5/8/1985	169.00	Hart, 1990[2]
NYSDEC	5/8/1985	29.30	Hart, 1990[2]
NYSDEC	5/8/1985	29.30	Hart, 1990[2]
NYSDEC	5/8/1985	0.00	Hart, 1990[2]
NYSDEC	5/8/1985	0.00	Hart, 1990[2]

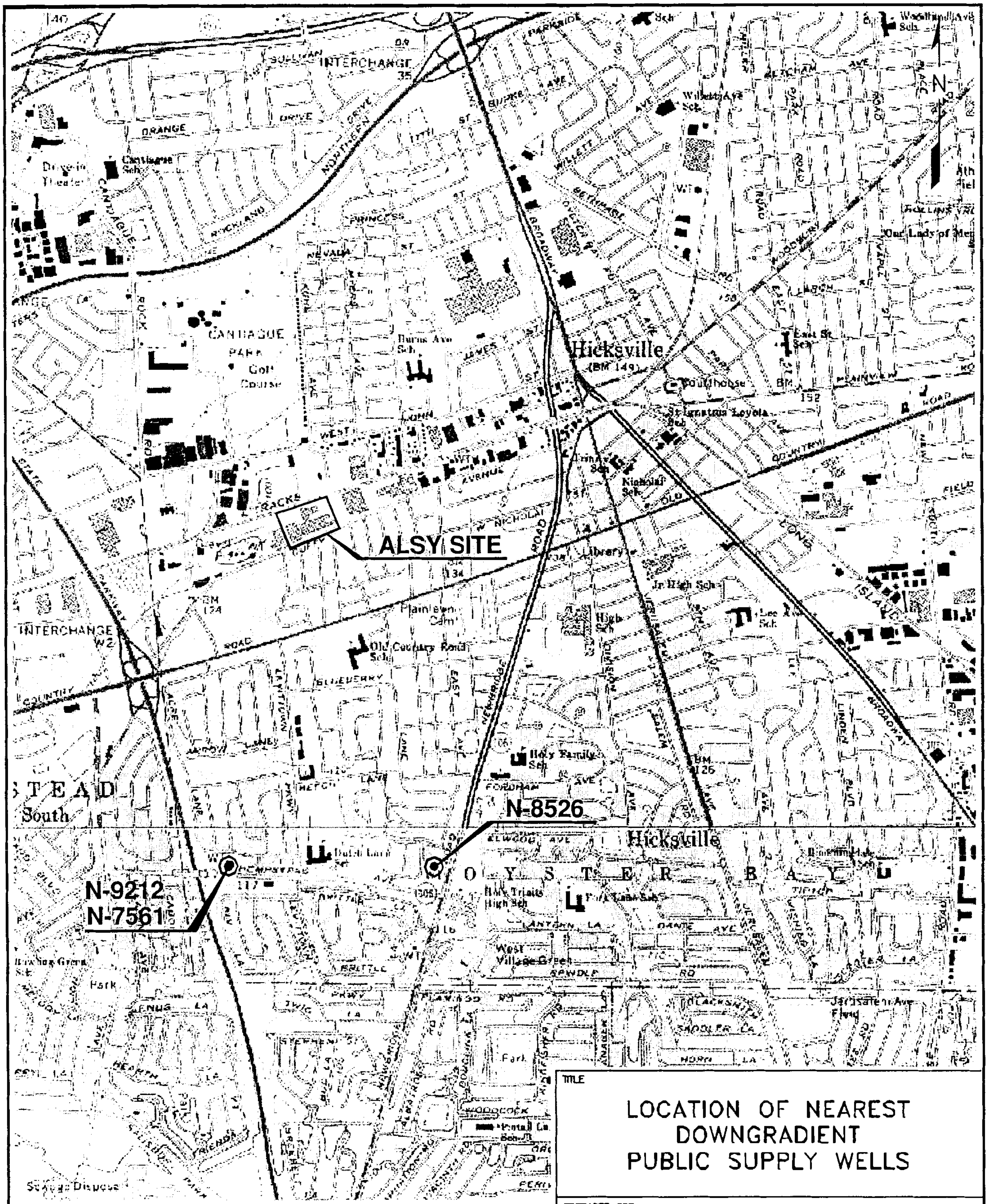
Mean	17.02
Median	3.55
Min	0.00
Max	169.00

[1] Remedial Investigation Report, Alsy Manufacturing Site. Lawler, Matusky & Skelly Engineers; December 1997.

[2] Site Investigation Work Plan, Alsy Manufacturing Site. Fred C. Hart Associates; January 1990.

TABLE D-4
Flow Model Calibration Data
Former Alsy Site – Hicksville, NY

PARAMETER	MEASURED VALUE (source)	MODELED VALUE	ERROR
Flow Vector at Site	South 12° East (average of 12/30/02 and 1/6/03 data sets)	South 10° East	0.56 %
Flow Vector Downgradient of Site	South 10° East (NCDPW, 1997)	South 10° East	0.00 %
Flow Gradient at Site	0.00110 dimensionless (measured on 1/6/03)	0.00105 dimensionless	4.55 %
Flow Gradient Downgradient of Site	0.00146 dimensionless (NCDPW, 1997)	0.00134 dimensionless	8.22 %



LEGEND

◉ DEEP PUBLIC SUPPLY WELL SCREENED IN MAGOTHY AQUIFER

SOURCE: USGS QUADRANGLE MAP, HICKSVILLE & HEPSTEAD, NY, 1997

TITLE

LOCATION OF NEAREST DOWNGRADIENT PUBLIC SUPPLY WELLS

PREPARED FOR

SURREY CO. AND SURREY CORP.

ERM Environmental Resources Management

SCALE	1"=2000'	FIGURE	D-1
DATE	10/29/03		
DRAWN: Y.S.	JOB NO.: 0001328-02	FILE NAME: 0001328-02-005	

Figure D-2
Solute Transport Model Calibration: Well LMS-4
Former Alsy Site - Hicksville, NY

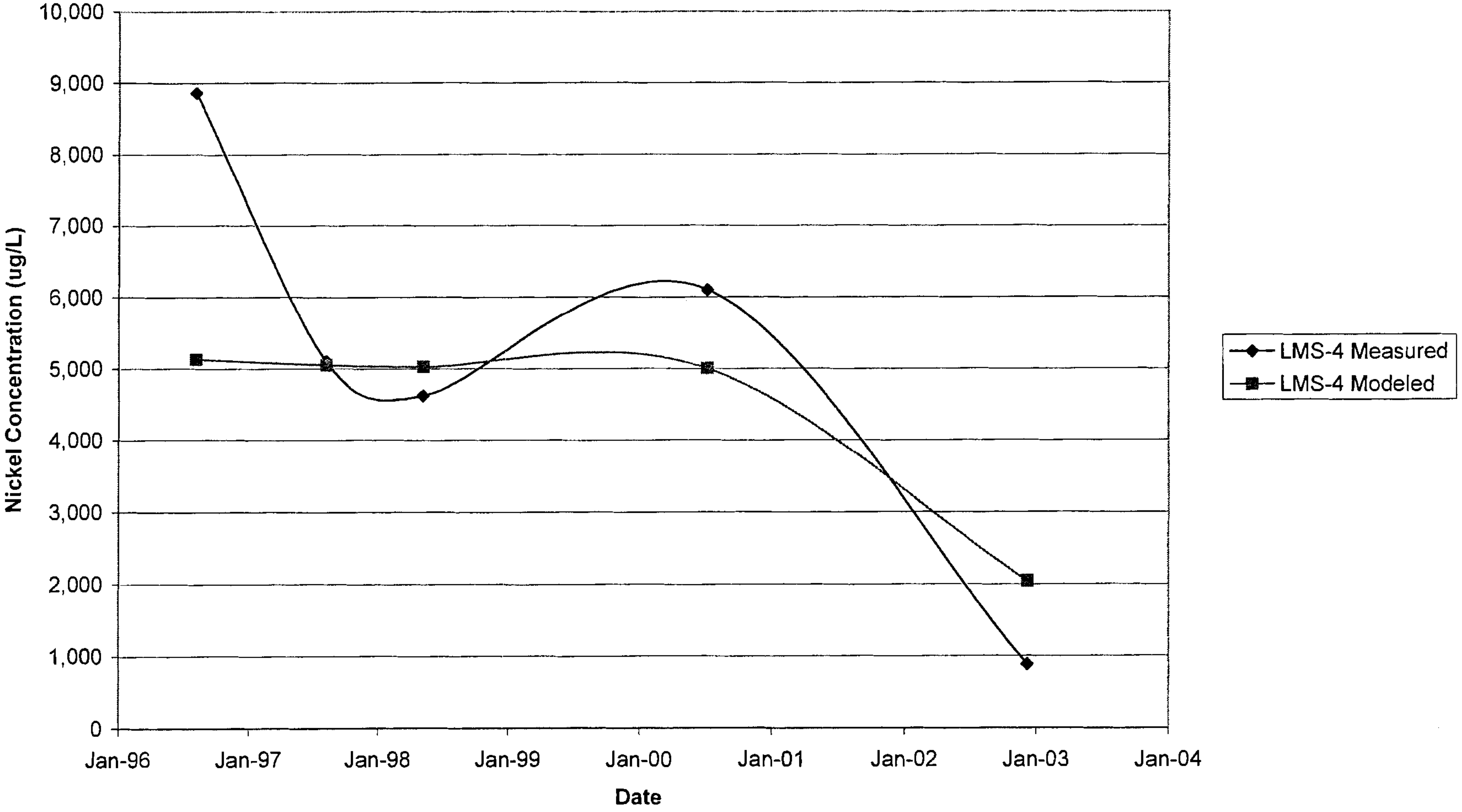
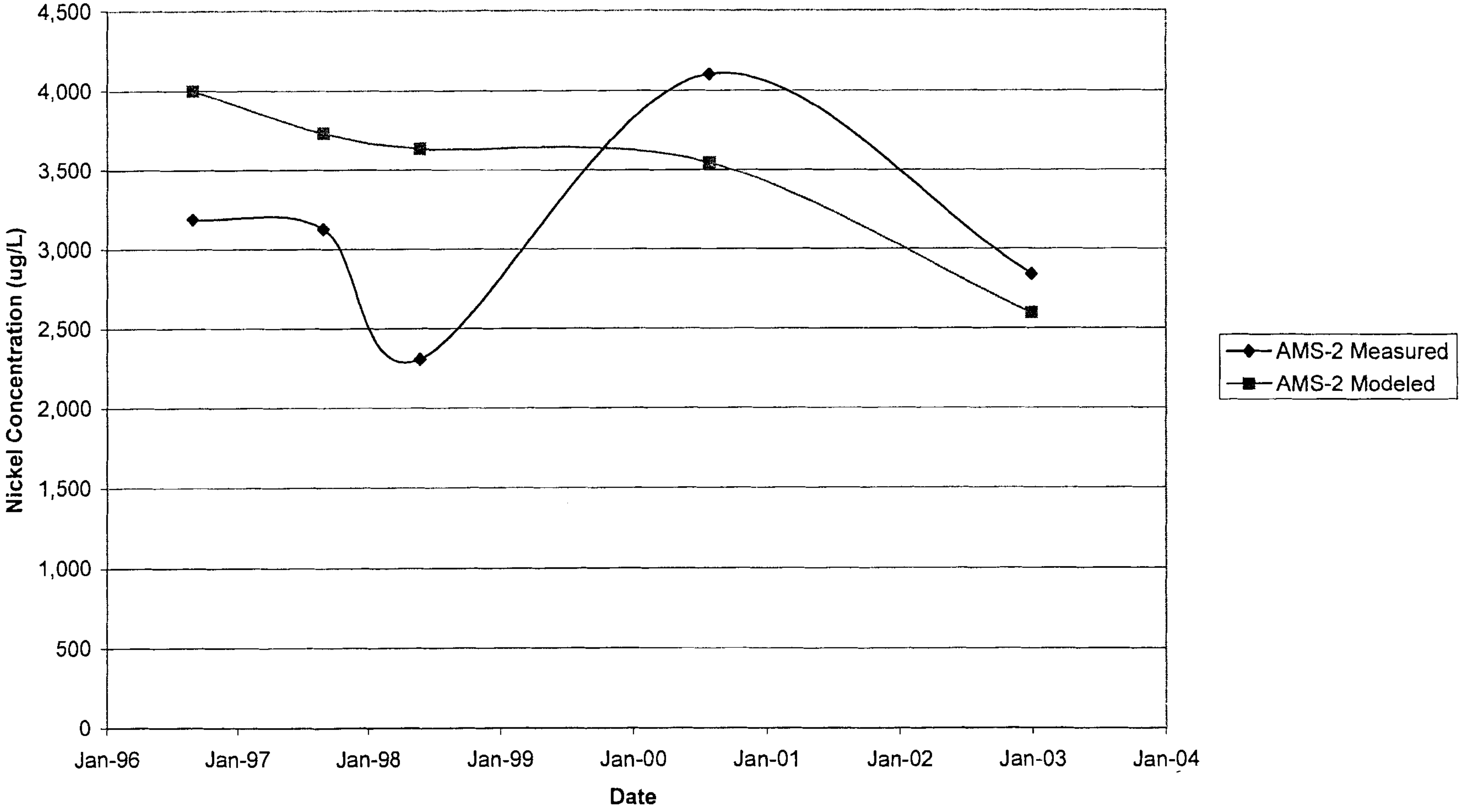
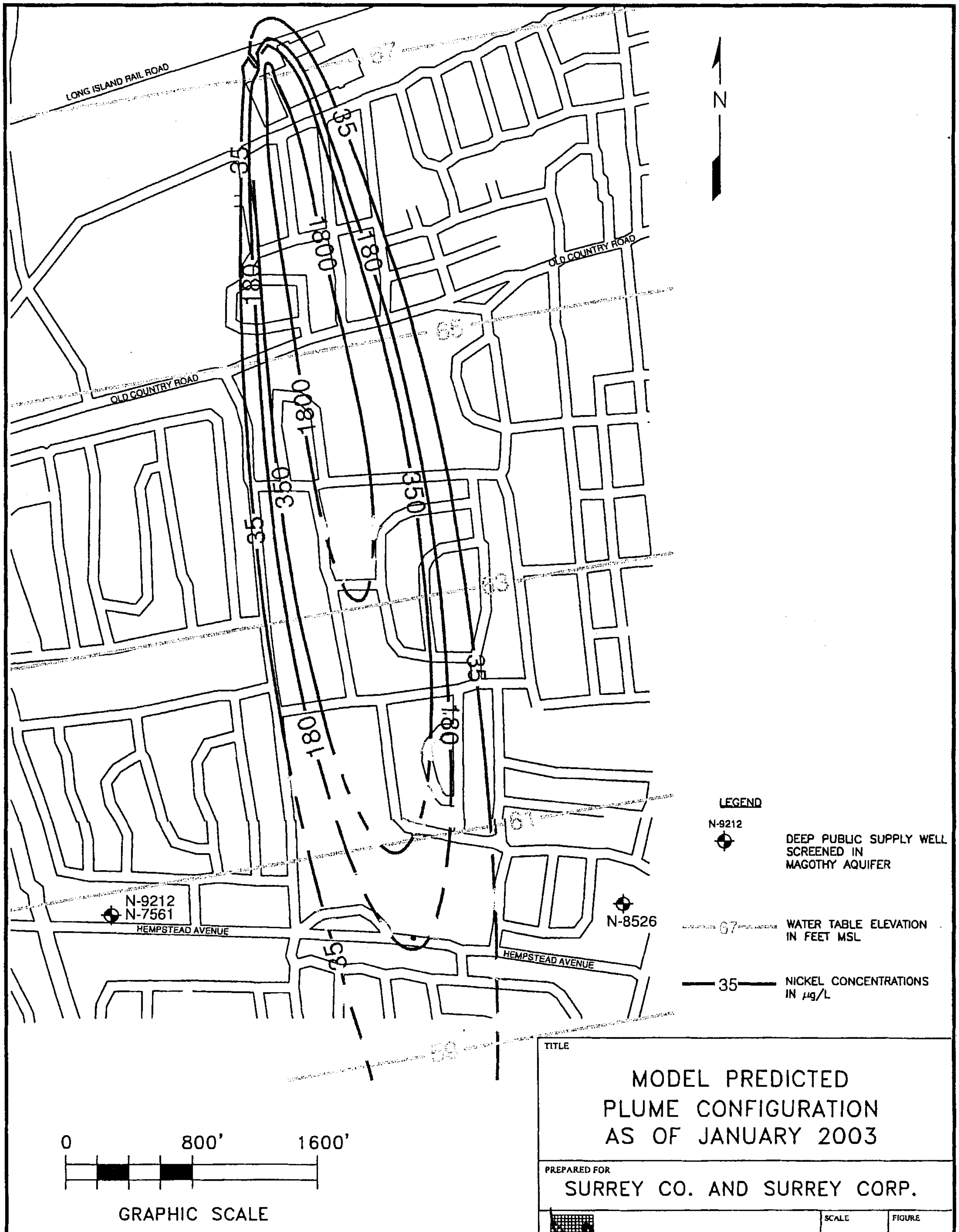


Figure D-3
Solute Transport Model Calibration: Well AMS-2
Former Alsy Site - Hicksville, NY





TITLE

MODEL PREDICTED PLUME CONFIGURATION AS OF JANUARY 2003

PREPARED FOR

SURREY CO. AND SURREY CORP.

Environmental Resources Management

ERM

SCALE
GRAPHIC

FIGURE
D–4

DATE
10/21/03

DRAWN:
Y.S.

JOB NO.:
0001328.02

FILE NAME:
0001328–02–001

ATTACHMENT 1

Public Supply Well Dilution Model Results

Estimate of Plume Discharge
Alsy Project - Hicksville, NY
Based on Model Run No. 5
Current Condition (2003)

Plume Data (Concentration Band of 1 - 5 mg/ft^3)

Plume Width (feet) = 800 (from simulated plume distribution near supply well location)
Plume Thickness (feet) = 25 (measured at the site)
Gradient (dimensionless) = 0.011 (one order of magnitude greater than that measured at the site)
Hydraulic Conductivity (feet/day) = 50 (regional value for Magothy Aquifer)

Discharge Calculation

Darcy's Law: Q = K x I x A = K x I x W x Thick
Q = 11000.00 feet^3/day
Q = 57.15 gal/min
Q = 216.32 L/min

Mass Flux Calculation

Nickel Concentration in Plume = 0.11 mg/L (assumes avg concentration of 3 mg/m^3)
Plume Mass Flux = 22.92 mg/min

===

Plume Data (Concentration Band >5 mg/ft^3)

Plume Width (feet) = 300 (from simulated plume distribution near supply well location)
Plume Thickness (feet) = 25 (measured at the site)
Gradient (dimensionless) = 0.011 (one order of magnitude greater than that measured at the site)
Hydraulic Conductivity (feet/day) = 50 (regional value for Magothy Aquifer)

Discharge Calculation

Darcy's Law: Q = K x I x A = K x I x W x Thick
Q = 4125.00 feet^3/day
Q = 21.43 gal/min
Q = 81.12 L/min

Mass Flux Calculation

Nickel Concentration in Plume = 0.18 mg/L (assumes avg concentration of 5.2 mg/m^3)
Plume Mass Flux = 14.90 mg/min

===

Supply Well Concentration Calculation

Assumed Well Discharge = 1000.00 gal/min
Assumed Well Discharge = 3785.40 L/min
Total Max Flux (sum concentration bands) = 37.81 mg/min
Max Supply Well Concentration* = 0.010 mg/L
NY State GW Standard = 0.10 mg/L

* - Assuming no other nickel in system

Estimate of Plume Discharge
Alsy Project - Hicksville, NY
Based on Model Run No. 5
Maximum Future Concentration Condition (2015)

Plume Data (Concentration Band of 1 - 5 mg/ft^3)
Plume Width (feet) = 450 (from simulated plume distribution near supply well location)
Plume Thickness (feet) = 25 (measured at the site)
Gradient (dimensionless) = 0.011 (one order of magnitude greater than that measured at the site)
Hydraulic Conductivity (feet/day) = 50 (regional value for Magothy Aquifer)

Discharge Calculation
Darcy's Law: Q = K x I x A = K x I x W x Thick
Q = 6187.50 feet^3/day
Q = 32.14 gal/min
Q = 121.68 L/min

Mass Flux Calculation
Nickel Concentration in Plume = 0.11 mg/L (assumes avg concentration of 3 mg/m^3)
Plume Mass Flux = 12.89 mg/min

Plume Data (Concentration Band of 5 - 10 mg/ft^3)
Plume Width (feet) = 250 (from simulated plume distribution near supply well location)
Plume Thickness (feet) = 25 (measured at the site)
Gradient (dimensionless) = 0.011 (one order of magnitude greater than that measured at the site)
Hydraulic Conductivity (feet/day) = 50 (regional value for Magothy Aquifer)

Discharge Calculation
Darcy's Law: Q = K x I x A = K x I x W x Thick
Q = 3437.50 feet^3/day
Q = 17.86 gal/min
Q = 67.60 L/min

Mass Flux Calculation
Nickel Concentration in Plume = 0.26 mg/L (assumes avg concentration of 7.5 mg/m^3)
Plume Mass Flux = 17.90 mg/min

Plume Data (Concentration Band of >10 mg/ft^3)
Plume Width (feet) = 448 (from simulated plume distribution near supply well location)
Plume Thickness (feet) = 25 (measured at the site)
Gradient (dimensionless) = 0.011 (one order of magnitude greater than that measured at the site)
Hydraulic Conductivity (feet/day) = 50 (regional value for Magothy Aquifer)

Discharge Calculation
Darcy's Law: Q = K x I x A = K x I x W x Thick
Q = 6160.00 feet^3/day
Q = 32.00 gal/min
Q = 121.14 L/min

Mass Flux Calculation
Nickel Concentration in Plume = 0.88 mg/L (assumes avg concentration of 25 mg/m^3)
Plume Mass Flux = 106.94 mg/min

Supply Well Concentration Calculation
Assumed Well Discharge = 1000.00 gal/min
Assumed Well Discharge = 3785.40 L/min
Total Max Flux (sum concentration bands) = 137.73 mg/min
Max Supply Well Concentration* = 0.036 mg/L
NY State GW Standard = 0.10 mg/L

* - Assuming no other nickel in system

APPENDIX E

Soil Volume Calculations

Figure E-1

Locations of Soil Areas with Soil Concentrations Above the NYSDEC RSCOs

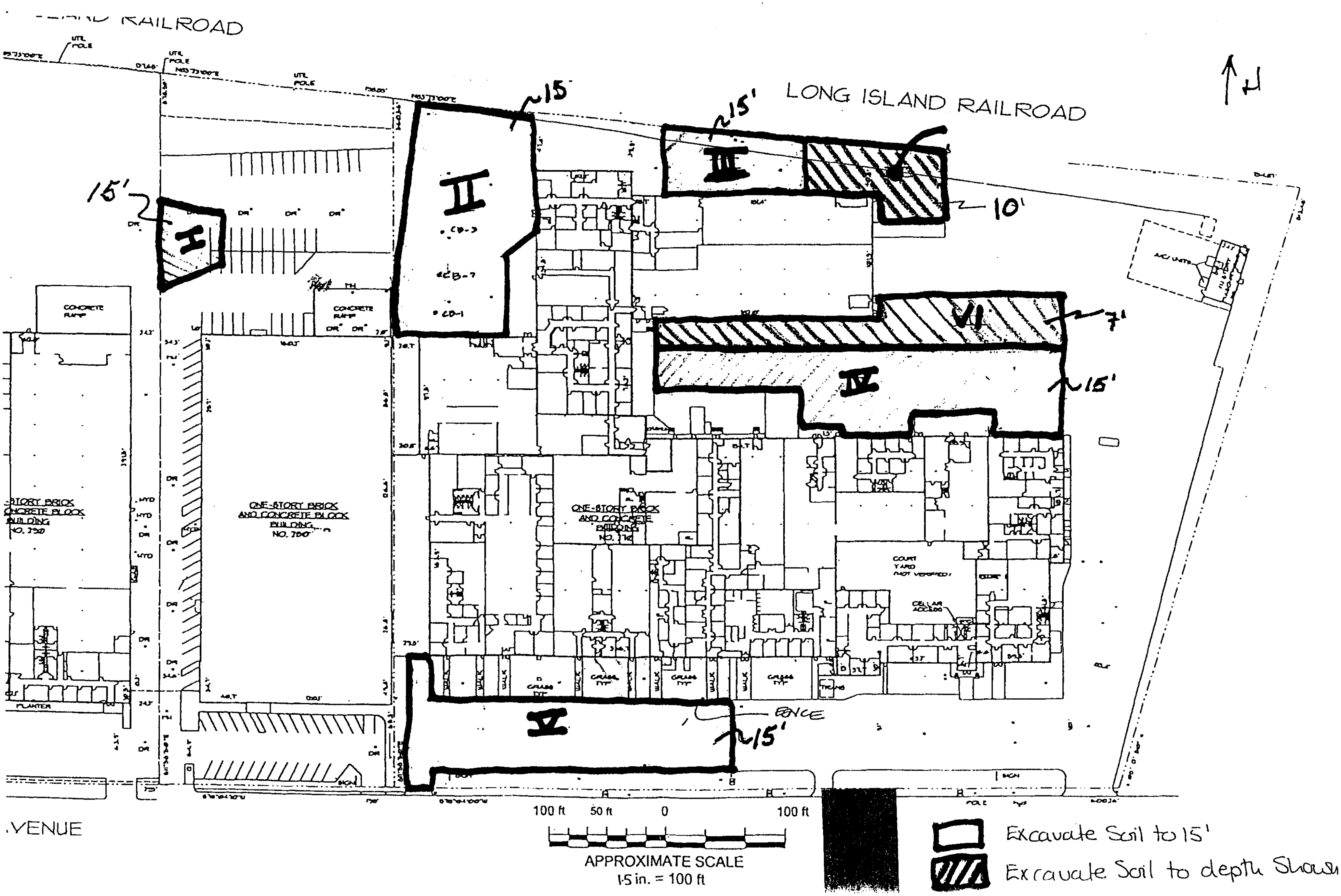


Table E-1

Volume of Accessible Soil Exceeding the NYSDEC RSCOs and Other Related Measurements

Alsy Manufacturing Site

Soil Excavation and Regrading

Treatment Location	Area	Depth	Soil Volume		Soil Weight
	(ft^2)	(ft)	(ft^3)	(yd^3)	(Tons)
Area I	3,080	15	46,200	1,711	2,396
Area II	20,070	15	301,050	11,150	15,610
Area III	6,045	15	90,675	3,358	4,702
Area IV	18,845	15	282,675	10,469	14,657
Area V	24,710	15	370,650	13,728	19,219
Area VI	5,765	10	57,650	2,135	2,989
Area VII	11,155	7	78,085	2,892	4,049
Total Area	89,670	92	1,226,985	45,444	63,621

Notes:

27 ft^3 = 1 yd^3

Assumes soil density of 1.4 tons/yd^3

The above volumes are calculated from areas identified in Figure F-1 using a planometer and/or a scale.

Map scale: 1.5 inch = 100 ft => 2.25 in^2 = 10000 ft^2

Table E-1
Volume of Accessible Soil Exceeding the NYSDEC RSCOs and Other Related Measurements
Alsy Manufacturing Site

Sheeting/Shoring, Fencing and Paving, and Post Excavation Sampling

Treatment Location	Shoring and Sheeting			Fencing	Paving	Seeding	Post-Excavation Sampling
	Length (ft)	Depth (ft)	Area (ft^2)	(ft)	(ft^2)	(ft^2)	(ft)
Area I	0	0	0	0	3080	0	230
Area II	215	20	4,300	0	18,445	1,625	335
Area III	115	20	2,300	0	6,045	0	175
Area IV	445	20	8,900	0	18,845	0	75
Area V	280	20	5,600	285	17,870	6,840	465
Area VI	140	15	2,100	0	5,765	0	175
Area VII	235	12	2,820	0	11,155	0	200
Totals	1,430	107	26,020	285	81,205	8,465	1,655

APPENDIX F
Detailed Cost Estimate Tables

TABLE F-1

PROPOSED REMEDIAL ACTION COST ESTIMATE

ALTERNATIVE II: CONTINUED COMMERCIAL USE WITH SOURCE REMOVAL/STORM WATER CONTROL AND GROUND WATER MONITORING

Item Description	Unit	Unit Cost	Quantity	Cost	Ref*	
<u>CAPITAL COSTS</u>						
Source Control						
DW-4 Delineation Sampling	ls	see note	1	$5,100	1	
Health and Safety Plan	ls	$5,000	1	$5,000	2	
Develop and Implement a Perimeter Air Monitoring Plan	ls	see note	1	$15,550	3	
Monitoring Well Abandonment	ls	$500	1	$500		
Excavate Soil and Install Perimeter Sheet Piles	cy	$371	105	$38,955	4	5
Install Shoring for Building Stability	sf	$30	900	$27,000	6	
Subtotal, Source Control				**$92,105**		
Storm Water Reconfiguration	ls	$33,500	1	**$33,500**	7	
Disposal						
Waste Characterization Sampling	sample	$800	2	$1,600	8	
Transportation and Disposal of Hazardous Soil	ton	$185	115	$21,238	9	10
Transportation and Disposal of Concrete and Asphalt	ton	$60	51	$3,060	9	11
Subtotal, Disposal				**$25,898**		
Site Restoration						
Supply Backfill	cy	$30	126	$3,780	12	
Install Backfill	cy	$4	126	$504	12	
Restore Pavement	sf	$3.50	113	$396	13	
Monitoring Well Replacement	ls	$3,000	1	$3,000	15	
Subtotal, Site Restoration				**$7,680**		
Well Siting and Installation of Monitoring Well						
Permitting (Escrow and Fees)	ls	$20,000	1	$20,000	14	
Install 4 temporary wells with 25' sample intervals	well	$12,000	4	$48,000	16	
Pumping time for temporary wells	hr	$140	112	$15,680	17	
Sample ground water for nickel	sample	$26	88	$2,288	18	
Install Permanent Monitoring Well(s)	well	$10,000	2	$20,000	19	
Containment, Transportation and Disposal of Water	gal	$1	10,000	$10,000	20	
Subtotal, Well Siting and Monitoring Well Installation				**$115,968**		
Remedial Action Report	ls	$30,000	1	$30,000		
Subtotal Remedial Action Capital Cost				$305,151		
Contingency (10%)				$30,515		
SUBTOTAL				$335,666		
Remedial Design			*(7.5%)*	$25,175		
Project Management			*(4%)*	$13,427		
Construction Management			*(5%)*	$16,783		
Total Remedial Action Capital Cost				$391,051	21	

TABLE F-1

PROPOSED REMEDIAL ACTION COST ESTIMATE

ALTERNATIVE II: CONTINUED COMMERCIAL USE WITH SOURCE REMOVAL/STORM WATER CONTROL AND GROUND WATER MONITORING

Item Description	Unit	Unit Cost	Quantity	Cost	Ref*	
OPERATIONS AND MAINTENANCE COSTS						
Cover Maintenance				See note	24	
Groundwater Monitoring for Five Years**						
Three to Six Wells for Five Years						
Years 1-5, annual	round	$8,000	1	$8,000	22	
Disposal of Discharge Water	drum	$300	4	$1,200		
(5 yrs, discount rate of 5%, PWF = 4.329)				$39,827		
Maintain Insurance Policy for Five Years	annual	$7,500	1	$7,500	23	
(5 yrs, discount rate of 5%, PWF = 4.329)				$32,468	27	
Subtotal, Ground Water Monitoring				$72,294		
Implement Soil Management Plan						
Year 3	year	10,000	1	$8,640	26	28
Year 15	year	5,000	1	$2,405	26	28
Year 30	year	5,000	1	$1,155	26	28
Subtotal, Soil Management Plan Implementation				$12,200		
Total O&M Costs				$84,494		
Project Management (10%)				$8,449		
Total Present Worth of Annual Costs				$92,944		
TOTAL PRESENT WORTH OF COSTS				**$483,995**		

*Notes references, and definitions are provided on pages 3 through 5.

** Ground water monitoring is assumed for a five year duration. Ground water data will be evaluated at the end of five years to confirm that ground water monitoring may be discontinued.

*** Deed restriction and legal fees are not included in the FS cost estimate.

TABLE F-1
PROPOSED REMEDIAL ACTION COST ESTIMATE NOTES
ALTERNATIVE II: CONTINUED COMMERCIAL USE WITH SOURCE REMOVAL/STORM WATER CONTROL AND GROUND WATER MONITORING

1 Cost includes two days of geoprobe field work at $1,200 per day. Quantity assumes five additional borings to delineate soil within and surrounding the abandoned dry well with three samples per boring down to 60 feet bgs. Cost is for analysis of 45 samples for nickel and SPLP nickel at $60/sample. Cost does not include any waste characterization analysis.

2 Cost for preparation of health and safety plan. Based upon similar project experience.

3 Cost to prepare air monitoring plan at $5,000. Plus, cost includes one on-site health and safety person for air monitoring at $4000/week for 2 weeks.
This person would also monitor particulate levels. Cost also includes the rental price of two MIE particulate monitor ($1800 a month) and a photoioinzation detector ($750 a month).

4 Cost to excavate soil and install perimeter sheet piles includes labor, equipment and materials required for excavation and sheeting and sheet piles. Estimate provided by ECOR Solutions of West Chester, PA. Cost does not reflect expenses associated with interruption of business at the site. Perimeter sheet piling would be installed and 45-ton crane with clamshell bucket would be mobilized to the Site to perform excavation. Excavated material would need to be stabilized to pass a paint filter test before trasnprotation and disposal.

5 Volume is based upon removing visually impacted soils from abandoned dry well DW-4:
Assume 12' centered on DW-4 to 25' below grade:
Volume = πr2 * depth = π*6^2*25 = 2,827 cf * 1 cy/27 cf = 105 cy

6 Shoring beneath the building is assumed to be necessary to excvate DW-4 to 25' below grade. Shoring is assumed to be needed along 30 feet of the adjacent building to a depth of 30 feet below grade. The shoring will consit of I-beams driven at depth connected by steel plates. Unit pricing was provided by ECOR Solutions of West Chester, PA. Alternatively, during the design phase use of three to four foot diameter caseons to perform excavation could be evaluated in lieu of sheeting and shoring.

7 Storm water reconfiguration lump sum estimate is based upon the following cost breakdown. Costs were based upon contractor submittals to ERM for similar scoped tasks:

Remove 4 feet of soil from Dry Wells 1 & 2, including sampling for disposal purposes and excavation and removal of concrete domes. Removal of 4 feet of soil from the base of Dry Well 3 to promote infiltration...$8,200

Soil Disposal, including broken asphalt and concrete; ($68/ton, estimate 7.5 cy per dry well and 1.5 tons per yard plus 4 tons of concrete and asphalt for Dry Wells 1 &2 and 7.5 cy per Dry Well 3 (no concrete and asphalt for Dry Well 3) =37.75 tons)... $2,600

Saw cutting asphalt... $2,000

Backfill (clean soil for Dry Wells 1 & 2, estimated 25$/cy, 65cy per DW after compaction)... $3,225

New Catch Basins with grates and pipe penetrations $7,500 per catch basin, install two at former locations of DW 1 & 2... $15,000

New Storm water piping, including trenching for installation (estimate $30/ft and 55 ft.)... $1,650

Repair and restore asphalt surfaces. $3.5/sqf, estimate 225 sf... $787

8 Cost provided by Accutest Laboratories of Dayton, NJ. Analysis includes TCLP VOCs, SVOCs, Metals, and RCRA Characteristics. Two samples are assumed for DW-4.

9 Costs for hazardous and non-hazardous waste transportation and disposal provided by ECOR Solutions of West Chester, PA.

10 Unit weight of 1.4 tons/cy was used based upon volume of excavated material, less the volume of concrete excavated as the dry well ring (1 foot thick concrete wall * 8 foot diameter * π * 25 foot depth * 1 cy / 27 cf = 23 cy).

11 Concrete ring of abandoned dry well DW-4 is assumed to be one-foot thick, an eight-foot diameter, 25 feet deep, and a unit weight of 2 tons/cy. Overlying asphalt is assumed to be 4 tons.
Weight = 1 ft* 8 ft * p *25 ft * 1 cy/27 cf * 2 tons/cy = 47 tons + 4 tons = 51 tons

12 Cost to supply and install backfill that is either from a virgin source or approved by NYSDEC based upon similar project experience. Volume is based upon volume excavated and a 20% increase for compaction.

13 Cost to repair and install asphalt based upon installing a 4-inch asphalt cover over a small area surrounding the former dry well.

14 Cost to obtain permits from Town of Oyster Bay. Cost based upon previous project experience.

15 Monitoring well installation cost based upon Delta Well and Pump Co. of Ronkonkoma, NY previous contracted work for the Site. Pricing based on Delta's 4/8/02 invoice to ERM.

16 Temporary well costs based upon Delta Well and Pump Co. of Ronkonkoma pricing. Vertical profiles with ground water samples at 25' intervals to 300 feet bgs were at a unit price of $12,000.

17 Pumping time for temporary wells based upon 2 hours per sample interval. It is assumed there will be 14 sample intervals at each of 4 locations. Time = 2 hours * 14 intervals * 4 locations = 112 hours. Pricing based upon invoice referenced in note #28.

18 Analysis of fourteen nickel samples per sample location, including field blanks and duplicate samples Assumes two matrix spike/matrix spike duplicate (MS/MSD) samples, for a total of 88 samples. Pricing based upon STL-CT of Shelton, CT March 22, 2002 invoice for nickel analysis.

19 Depth of permanent monitoring well is not known at this time. Estimate of $10,000 assumed to cover a 200 to 300 foot monitoring well.

20 Approximately 1,600 gallons of purge water are estimated to be generated at each temporary well location prior to collection of ground water samples. It is assumed a minimum of one casing volume will be purged per sample interval. A four inch diameter well casing diameter would yield 6.5 gallons of water per 10 foot depth.

21 A 10% contingency was applied to the subtotal of capital costs. Indirect costs for project management, remedial design, and construction management are based on a percentage of capital costs, and were estimated at 7.5%, 4%, and 5%, respectively. O&M project management costs for were estimated as 10% of O&M costs.

22 Assuming that six wells will be sampled over the course of two days with samples for nickel analysis and that the discharge will be containerized. Also includes preparation of data summary memo.

23 Annual insurance premium to maintain off-site permanent well based upon Town of Oyster Bay

24 It is assumed that cover maintenance will be part of routine maintenance conducted by the property owner to maintain the Site for its current use.

25 Assuming that five wells will be sampled over the course of two days with samples for nickel analysis and that the discharge will be drummed in four drums for off-site disposal. Also includes preparation of data summary memo and data validation report.

26 Implementation of soil management plan does not cover the cost of disposal of excavated soil and could vary greatly depending upon the scope of future work.

27 PWF = Present Worth Factor The value shown, 15.372, is for a 5% multi-year discount for a period of 20 years and is applied when annual costs are constant.

$$PWF = \sum_{t=1}^{t=n} [1/(1+i)^t]$$

where, n = 20 years, i = 0.05

28 5% discount factors of 0.864, 0.481, and 0.231 were applied to the Soil Management Plan costs at years 3, 15, and 30, respectively.

Table F-2
Cost Estimate

Alternative III: EXCAVATION AND OFF-SITE DISPOSAL OF SOIL EXCEEDING THE NYSDEC RSCO GUIDELINES TO A DEPTH OF 15 FEET, SOURCE REMOVAL/STORMWATER CONTROL AND ACTIVE GROUND WATER REMEDIATION

Alsy Manufacturing Site, Hicksville, New York

Item Description	**Unit**	**Unit Cost**	**Quantity**	**Total Cost**	**Ref**
CAPITAL COSTS					
Soil Excavation					
Install Sheeting/Shoring					
Area II	sf	35	4,300	$150,500	(2)
Area III	sf	35	2,300	$80,500	
Area IV	sf	35	8,900	$311,500	
Area V	sf	35	5,600	$196,000	
Area VI	sf	35	2,100	$73,500	
Area VII	sf	35	2,820	$98,700	
Excavate Soil	cy	8.50	44,582	$378,947	(3)
Post Excavation Sampling - 1/100 ft	sample	100	20	$2,040	(4)
Supply and Install Backfill	cy	22	44,582	$980,804	(5)
Regrade	sf		26,020		
Develop and Implement a Perimeter Air Monitoring Plan	ls	25,000	1	$25,000	(8)
Demobilization	ls	2,000	1	$2,000	(10)
			Subtotal, Excavation	$2,299,491	
Site Restoration					
Seeding	sf	0.15	6,840	$1,026	(6)
Restore Pavement	sf	1.20	81,205	$97,446	(7)
			Subtotal, Site Restoration	$98,472	
Dry Well Replacement					
Install New Replacement Dry Wells	each	5,500	3	$16,500	(11)
			Subtotal, Dry Wells	$16,500	
Disposal					
Testing for Soil Disposal - 1/1,000 cy	sample	700	54	$37,800	(9)
Soil as Non-Hazardous Waste	ton	62	62,415	$3,869,718	(12)
Pavement	ton	62	2,005	$124,314	(13)
			Subtotal, Disposal	$4,031,831	
			Subtotal, Baseline Soil Excavation and Disposal	*$6,446,294*	

Table F-2
Cost Estimate
Alternative III: EXCAVATION AND OFF-SITE DISPOSAL OF SOIL EXCEEDING THE NYSDEC RSCO GUIDELINES TO A DEPTH OF 15 FEET, SOURCE REMOVAL/STORMWATER CONTROL AND ACTIVE GROUND WATER REMEDIATION
Alsy Manufacturing Site, Hicksville, New York

Item Description	Unit	Unit Cost	Quantity	Total Cost	Ref
Additional Soil Excavation and Disposal (20% of Areas IV & VII & 50% of Area VI)					(14)
Excavate Soil	cy	8.50	3,740	$31,787	(15)
Post Excavation Sampling - 1/100 ft	sample	100	4	$400	(16)
Supply and Install Backfill	cy	22	3,740	$82,273	(17)
Restore Pavement	sf	1.20	8,883	$10,659	(18)
Testing for Soil Disposal - 1/1,000 cy	sample	700	5	$3,500	(19)
Soil Disposal as Non-Hazardous Waste	ton	62	5,236	$324,606	(20)
Pavement Disposal	ton	62	219	$13,598	(21)
Subtotal, Additional Soil Excavation & Disposal				*$466,824*	
Subtotal Remedial Action Capital Cost				$6,913,118	
Indirect Costs (44%)				$3,041,772	(22)
Total Remedial Action Capital Cost				$9,954,890	
<u>OPERATIONS AND MAINTENANCE COSTS</u>					
Ground Water Monitoring (On-Site)	annual	1	2,410	2,410	(23)
Subtotal, Annual O&M				$2,410	
(5 yrs, discount rate of 5%, PWF=1.81)				10,433	
Contingency (10%)				1,043	
Total Present Worth of Operating and Maintenance Costs				11,476	
Remedial Action Work Plan	ls	1	75,000	$75,000	(24)
TOTAL PRESENT WORTH OF ALTERNATIVE III COSTS (1998 COSTS)				**$10,041,366**	
TOTAL PRESENT WORTH OF ALTERNATIVE III SOIL COSTS (2003 COSTS)				**$11,086,480**	(25)
TOTAL PRESENT WORTH OF ALTERNATIVE III GROUND WATER P&T COSTS (2003 Costs)					
Precipitation and Filtration or Ion Exchange (10 Years) (see Table F-2A through F-2D for additional detail)				**$5.0 to $6,300,000**	
TOTAL PRESENT WORTH OF ALTERNATIVE III (10 years)				**$16.1 to $17,400,000**	
TOTAL PRESENT WORTH OF ALTERNATIVE III GROUND WATER COSTS (2003 Costs)					
Precipitation and Filtration or Ion Exchange (20 Years) (see Table F-2A through F-2D for additional detail)				**$6.7 to $8,600,000**	
TOTAL PRESENT WORTH OF ALTERNATIVE III (20 years)				**$17.8 to $19,700,000**	

Table F-2
Cost Estimate
Alternative III: Excavation and Off-Site Disposal of Soil Exceeding the NYSDEC RSCOs
Alsy Manufacturing Site, Hicksville, New York

(1) The cost includes mobilization of all equipment and materials to the Site, supply of a trailer and bathroom facilities for the duration of the remedial action and provision of potable water.

(2) Sheeting/shoring cost assumes installation of sheeting to a depth five (5) feet below the vertical limit of excavation. Calculation of the sheeting quantities are presented in Table E-1.

(3) Cost includes labor, equipment and materials required for excavation and assumes that two (2) trackhoes can be used daily to excavate soil. Calculation of soil excavation quantities are presented in Table E-1. Cost does not reflect expenses associated with interruption of business at the Site.

(4) Quantity assumes that one sample will be required every 100 feet and approximately 20% more samples will be required for QA/QC. Cost assumes that samples will be analyzed for TAL metals.

(5) Cost includes labor, equipment and materials required to backfill the excavated areas. Quantity is equal to the soil excavation volume provided in Note (3).

(6) Cost is based on seeding a large area. Quantity is based on the size of the grassy areas shown in Figure E-1.

(7) Cost is based on installing a 4-inch asphalt cover over a large area. Quantity assumes that all the paved areas disturbed during soil excavation will be repaved. The calculation of the area of pavement restoration is presented in Table E-1.

(8) Cost for development and implementation of an air monitoring plan for particulates. Cost based on experience with similar projects.

(9) Quantity assumes one sample is collected every 1,000 cy disposed; and a 20% increase in the number of samples for QA/QC samples. Cost for limited characterization testing.

(10) The cost includes demobilization of all equipment and materials from the Site.

(11) Cost includes labor, equipment and materials to supply and install four 8-foot diameter rings, a dome and a manhole cover. Quantity based on the number of dry wells that will be abandoned during excavation of Soil Area II.

(12) Cost for transport to and disposal at a Subtitle D, non-hazardous waste landfill at $62/ton. Quantity assumes all soil excavated (see Note (3)) will be transported off-site for disposal and a soil density of 1.4 tons/cy.

(13) Quantity is based on the area of pavement to be removed (i.e., 81,205 sf), a pavement thickness of 4-inches and a asphalt density of approximately 2 tons/cy. The cost assumes that the asphalt will be mixed will the soil and disposed along with the soil (see Note (12)).

(14) As shown in Figures 2-2 and 2-3, there is limited analytical data for the eastern portion of the Site. As a result, the eastern limits of excavation for Soil Areas IV, VII and VI have been estimated. To account for possibility that additional excavation to the east of these Soil Areas will be required after post-excavation sampling has been conducted, it has been assumed that an additional 20% of Soil Areas IV and VII and an additional 50% of Soil Area VI will require excavation. The additional volume of soil requiring excavation would therefore be 3,740 cy. The calculation of this volume is provided below.

Table F-2
Cost Estimate
Alternative III: Excavation and Off-Site Disposal of Soil Exceeding the NYSDEC RSCOs
Alsy Manufacturing Site, Hicksville, New York

	Baseline Soil Volume, cy		Contingency Percentage		Additional Soil Volume, cy
Soil Area IV:	10,469	x	20%	=	2,094
Soil Area VI:	2,135	x	50%	=	1,068
Soil Area VII:	2,892	x	20%	=	578
					3,740

(15) See Note (3) for the excavation unit cost. As discussed in Note (14) the quantity assumes that an additional 20% of Soil Areas IV and VII will require excavation and an additional 50% of Soil Area VI will require excavation.

(16) Based on the additional soil excavation required, approximately three (3) additional post-excavation samples would be required. See Note (4) for unit cost.

(17) See Note (5) for backfill unit cost. Quantity equal to the soil quantity excavated (see Note (15)).

(18) Cost is based on installing a 4-inch asphalt cover over a large area. Quantity assumes that all the paved areas disturbed during additional soil excavation will be repaved. That is, an additional 20% of Soil Areas IV and VII and an additional 50% of Soil Area VI.

(19) Quantity assumes one sample is collected every 1,000 cy disposed; and a 20% increase in the number of samples for QA/QC samples. Cost for limited characterization testing.

(20) Cost for transport to and disposal at a Subtitle D, non-hazardous waste landfill at $62/ton. Quantity assumes all additional soil excavated (see Note (15)) will be transported off-site for disposal and a soil density of 1.4 tons/cy.

(21) Quantity is based on the area of additional pavement to be removed (i.e., 8,883 sf), a pavement thickness of 4-inches and a asphalt density of approximately 2 tons/cy. The cost assumes that the asphalt will be mixed will the soil and disposed along with the soil (see Note (20)).

(22) Indirect costs are calculated as a percentage of the capital costs to account for project management, construction management, remedial design, and a 20% contingency. The indirect costs for Alternative III are higher than for Alternative II due to the expanded scope of work.

(23) Cost assumes quarterly ground water monitoring of two on-site wells for nickel. Cost includes labor, equipment, materials and lab costs.

(24) Cost for preparation of a Remedial Action Work Plan. This work plan will discuss sheeting and shoring, excavation, dry well abandonment and replacement, if needed, and ground water monitoring. Existing HASPs and QA\QC procedures will be used to the extent practical.

(25) The 2003 soil costs were calculated based upon a 2% per year inflation rate.

Table F-2A
Cost Estimates for Groundwater Treatment - Precipitation Filtration
Former Alsy Manufacturing Site
Hicksville, New York

Description	Unit	No. of Units	Cost per Unit	Cost	Reference
Design Investigation for Location of Recovery Wells	LS	1	$130,000	$130,000	0
Recovery Well Installation (two wells)					
Mobilization/demobilization for drill rig	L.S.	1	$1,000	$1,000	1
Drilling	Day	8	$1,450	$11,600	2
6" stainless screen well screen (80-100 ft)	Ft	40	$44.05	$1,762	3
6" carbon steel riser (0-80 ft)	Ft	160	$16.00	$2,560	4
Gravel pack	Ft	40	$7.06	$282	5
Grout and seal	Ft	160	$6.63	$1,061	6
Traffic-rated manhole	Each	2	$4,000	$8,000	7
Well development	Hr	20	$132	$2,640	8
Disposal of drill cuttings (non-hazardous)	Drum	32	$155	$4,968	9
			Subtotal =	*$33,873*	
Treatment Plant Equipment					
Groundwater recovery pump	Each	2	$3,995	$7,990	10
1000-gal alum tank	Each	1	$865	$865	11
Mixers	Each	3	$1,500	$4,500	12
2000-gal caustic tank	Each	1	$1,835	$1,835	13
1500-gal acid tank	Each	1	$1,355	$1,355	14
Secondary containment for chemical tanks	Each	3	$3,070	$9,210	15
Chemical feed pumps	Each	3	$870	$2,610	16
Process pumps (two duplex pump stations, 5 single pumps)	Each	9	$975	$8,775	17
pH adjust tank (750-gal)	Each	1	$805	$805	18
Polymer feed system	Each	1	$3,600	$3,600	19
Clarifier	Each	1	$80,000	$80,000	20
Clear well (750-gal)	Each	1	$805	$805	21
Filtration system	Each	1	$26,837	$26,837	22
Neutralization tank (750-gal)	Each	1	$805	$805	23
Activated carbon vessels (pre-filled)	Each	4	$4,750	$19,000	24
Effluent holding tank (1000-gal)	Each	1	$865	$865	25
Supernatant tank (1000-gal)	Each	1	$865	$865	26
Sludge thickener - conical bottom (5500-gal)	Each	1	$11,010	$11,010	27
Sludge holding tank (5000-gal)	Each	1	$4,205	$4,205	28
Instrumentation	L.S.	1	$28,000	$28,000	29
Temporary facilities	Month	4	$800	$3,200	30
Treatment building with 6" concrete slab (40 ft x 60 ft)	SF	2400	$67	$159,720	31
Freight (5%)				$18,843	32
Contractor markup (10%)				$39,570	33
			Subtotal =	*$435,269*	
Treatment Plant Installation					
Mechanical installation	L.S.	1	$160,000	$160,000	34
Contractor mobilization/demobilization	L.S.	1	$30,000	$30,000	35
Electrical and control system installation	L.S.	1	$300,000	$300,000	36
Recovery well piping	Ft	9600	$7.95	$76,320	37
Trench for recovery wells	CY	3111	$4.85	$15,089	38
Backfill recovery well trench	CY	3111	$3.30	$10,267	39
Pavement restoration of recovery well trench	SY	2333	$36	$84,000	40
Discharge piping to catch basin	Ft	600	$7.95	$4,770	41
Trench for discharge piping	CY	267	$4.85	$1,293	42
Backfill discharge piping trench	CY	267	$3.30	$880	43
Pavement restoration of discharge piping trench	SY	200	$36	$7,200	44
Connection to catch basin	L.S.	1	$2,500	$2,500	45
			Subtotal =	*$692,319*	

Table F-2A
Cost Estimates for Groundwater Treatment - Precipitation Filtration
Former Alsy Manufacturing Site
Hicksville, New York

Engineering, Mobilization, Project Management, Construction Management, and Miscellaneous Items					
Access negotiation and legal fees	L.S.	1	$75,000	$75,000	46
Bench-scale testing	L.S.	1	$50,000	$50,000	47
Permitting	L.S.	1	$25,000	$25,000	48
Startup and shakedown	L.S.	1	$42,100	$42,100	49
O&M manual	L.S.	1	$8,200	$8,200	50
			Subtotal=	*$200,300*	
			Subtotal =	*$1,491,761*	
		Contingency (20%) =		*$298,352*	51
			Subtotal =	*$1,790,113*	
Remedial design (15%)				*$268,517*	52
Mobilization (5%)				*$89,506*	
Project Management (8%)				*$143,209*	
Construction management (10%)				*$179,011*	
		Total capital costs =		$2,470,356	
Annual O&M Costs (see Table F-2A)				*$491,569*	
Present worth of annual O&M costs =				*$3,795,893*	
(10 years, 5% discount rate)					
Present worth of annual O&M costs =				$6,125,929	
(20 years, 5% discount rate)					
Total Present Worth of Project (assuming 10 years operation) =				$6,266,250	
Total Present Worth of Project (assuming 20 years operation) =				*$8,596,285*	

Table F-2A
References for Capital Costs for Groundwater Treatment - Precipitation Filtration
Former Alsy Manufacturing Site
Hicksville, New York

0 - based upon Alternative II estimate for well siting, utilizing 8 temporary well locations
1 - quote from Talon Drilling
2 - quote from Talon Drilling
3 - 6" stainless steel screen, RS Means Environmental Remediation Cost Data - Unit Price 2002
4 - 6" carbon steel riser, RS Means Environmental Remediation Cost Data - Unit Price 2002
5 - 6" PVC Sch 40 screen, RS Means Environmental Remediation Cost Data - Unit Price 2002
6 - Bentonite seal for 6" well, RS Means Environmental Remediation Cost Data - Unit Price 2002
7 - estimate for recent ground water pump and great proposal
8 - quote from Delta Well and Pump
9 - quote from American Environmental Assessment Corporation
10 - 4" submersible pump 5HP, 56-95 gpm at 100-220 ft head. Includes level controls. From RS Means Environmental Remediation Cost Data - Unit Prices 2002
11 - 64"x81" tank, list price from Chemtainer
12 - 3/4 HP JG mixer, list price from USA Bluebook
13 - 64"x144" tank, list price from Chemtainer
14 - 64"x121" tank, list price from Chemtainer
15 - 84"x84" tank, list price from Chemtainer
16 - LMI Series A7 pumps, list price from USA Bluebook, includes repair kit
17 - Ebara 32-160 5 HP centrifugal pumps, capable of 120 gpm at 70 ft head, list price from USA Bluebook. Assume one pump is electric diaphragm pump for similar cost.
18 - 46"x119", list price from Chemtainer
19 - Polyblend Model A100, list price from USA Bluebook
20 - double quote from Parkson for 50 gpm slant-plate clarifier
21 - 46"x119", list price from Chemtainer
22 - Yardney Model MM2460AS with Programmable Logic Automation, December 2000 quote increased by 10%
23 - 46"x119", list price from Chemtainer
24 - Model LP-340P with max flow of 65 gpm and max. pressure 150 psig, each with 1100 lb GAC, list price from Envirotrol
25 - 64"x81" tank, list price from Chemtainer
26- 64"x81" tank, list price from Chemtainer
27 - 119"x146", list price from Chemtainer for tank and stand
28 - 102"x152" tank, list price from Chemtainer
29 - cost for similar metals removal treatment system. Includes level switches, variable speed drives, pressure gauges, pH controllers, level transmitters, pH probes, etc.
30 - estimate from recent ground water pump and treat proposal
31 - estimate from recent ground water pump and treat proposal. Add $1.55 per sf for concrete slab
32 - estimate 5% on cost of equipment for freight
33 - contractor markup of 10% is estimated on all equipment and freight
34 - contractor bid for similar metals removal treatment system. Includes labor, piping, pipe supports, fittings, etc.
35 - contractor bid for similar metals removal treatment system for transfer of construction equipment (such as forklifts, tools, cranes, etc.) to and from the site
36 - contractor bid for similar metals removal system. Includes instrumentation and controls, wiring, PLC programming, electrical system, and control panels.
37 - 4" HDPE piping, RS Means Environmental Remediation Cost Data - Unit Price 2002
38 - 7000 ft x 3 ft wide x 4 ft deep = 3111 cy. Excavation with backhoe. Unit cost is from RS Means Building Construction Cost Data - 2003
39 - 7000 ft x 3 ft wide x 4 ft deep = 3111 cy. Includes compaction with vibrating plate. Unit cost is from RS Means Environmental Remediation Cost Data - Unit Price 2002
40 - 7000 ft x 3 ft / 9 = 2333 sy, 4" pavement relacement over trench, RS Means Building Construction Cost Data - 2003
41 - 4" HDPE piping, RS Means Environmental Remediation Cost Data - Unit Price 2002
42 - 600 ft x 3 ft wide x 4 ft deep = 267 cy. Excavation with backhoe. Unit cost is from RS Means Building Construction Cost Data - 2003
43 - 600 ft x 3 ft wide x 4 ft deep = 267 cy. Includes compaction with vibrating plate. Unit cost is from RS Means Environmental Remediation Cost Data - Unit Price 2002
44- 600 ft x 3 ft / 9 = 200 sy, 4" pavement relacement over trench, RS Means Building Construction Cost Data - 2003
45 - 1 ten-hr day for 3 laborers at $150/hr + $500 for backhoe rental + $500 for tools, concrete, and fittings
46 - estimate
47 - estimate
48 - estimate
49 - 3 weeks of startup/shakedown. Engineer at $100/hr x 15 day x 10 hr/day = $15000. Operator at $90/hr x 15 day x 10 hr/day = $13,500. Office support 2 hr/day x 15 day x $120/hr = $3600. Assume miscellaneous supplies, expenses, subcontractors for $10,000.
50 - Engineer at $100/hr @ 60 hr = $6000, Manager at $150/hr at 8 hr = $1200. $1000 office expenses
51 - 20% contingency on all costs
52- Percentages for remedial design, project management, and construction management obtained from USEPA "A Guide to Developing and Documenting Cost Estimates During the Feasibility Study", (USEPA, July 2000). The indirect costs for Alternative III are higher than for Alternative II due to the expanded scope of work.

Table F-2B
Estimated Operating Costs for Groundwater Treatment - Precipitation and Filtration
Former Alsy Manufacturing Site
Hicksville, New York

Labor

Staff	Units	Unit cost	# of units per month	Cost per month	Annual Cost	Ref.
Operations	L.S.	$9,700	1	$9,700	$116,400	1
Engineering support	Hr	$120	24	$2,880	$34,560	2
		Labor subtotal =	25	*$12,580*	*$150,960*	

Expenses

	Units	Unit cost	# of units per month	Cost		Ref.
Groundwater VOC analysis via 624	Sample	$120	8	$960	$11,520	3
Groundwater metals analysis - process samples (Ni, Fe, Ca, Mn, Na, and Mg)	Sample	$84	7	$588	$7,056	4
Groundwater metals analysis - effluent samples (Priority Pollutant metals + Fe, Ca, Mn, Na, & Mg)	Sample	$291	1	$291	$3,492	5
Vehicle and tools	Day	$50	15	$750	$9,000	6
H&S items, sampling equipment	Day	$25	15	$375	$4,500	7
Sodium hydroxide	Gal	$2.99	2,304	$6,896	$82,749	8
Sulfuric acid	Gal	$2.35	1,512	$3,550	$42,599	9
Alum	Gal	$3.42	200	$684	$8,208	10
Polymer	Lb	$4.86	200	$972	$11,664	11
Annual sludge RCRA characterization	Sample	$1,827	0.083	$152	$1,827	12
Sludge disposal	Gal	$0.25	1,860	$465	$5,580	13
Regeneration and replacement of liquid-phase GAC	Lb	$1.25	367	$460	$5,515	14
Freight for regeneration of liquid-phase GAC	Changeout	$2,070	0.167	$345	$4,140	15
Electric costs	kW-hr	$0.11	13,265	$1,459	$17,510	16
Shipping for samples	Shipment	$55	2	$110	$1,320	17
Parts replacement	L.S.	$1,000	1	$1,000	$12,000	18
Operator travel expenses	L.S.	$250	1	$250	$3,000	19
Repairs	L.S.	$1,250	1	$1,250	$15,000	20
Electrician	L.S.	$1,000	1	$1,000	$12,000	21
		Expenses subtotal =		*$21,557*	*$258,681*	
		Subtotal operating costs =		*$34,137*	*$409,641*	
		Contingency (20%) =		*$6,827*	*$81,928*	22
		Total operating costs =		*$40,964*	*$491,569*	

Table F-2B

References for Operating Costs for Groundwater Treatment - Precipitation and Filtration

Former Alsy Manufacturing Site

Hicksville, New York

0 - 0 - based upon Alternative II estimate for well siting, utilizing 8 temporary well locations

1 - costs for operation of a similar metals removal system

2 - 24 hr per month for engineer to provide support - sampling coordination, reporting, performance tracking

3 - monthly extraction well, influent and effluent sample plus four additional process samples, cost from Accutest Labs

4 - monthly extraction well, influent sample plus four additonal process samples, cost from Lancaster Labs

5 - monthly effluent sample, cost from Lancaster Labs

6 - assume 15 visits to the plant per month, unit cost is estimated based on experience

7 - assume 15 visits to the plant per month, unit cost is estimated based on experience

8 - unit cost is obtained from contract for operation of similar metals removal system, with estimated 25% volume discount. For the similar system, 3325 gal NaOH were added over one year to 5,687,987 gal. Assume current system operates 75% of the time. (3325 gal/5,687,987 gal) x (0.75 x 120 gpm x 525,600 min/yr) = 27,652 gal NaOH / yr = 2304 gal NaOH / month

9 - unit cost is obtained from contract for operation of similar metals removal system, with estimated 25% volume discount. For the similar system, 2182 gal H_2SO_4 were added over one year to 5,687,987 gal. Assume current system operates 75% of the time. (2182 gal/5,687,987 gal) x (0.75 x 120 gpm x 525,600 min/yr) = 18,147 gal H_2SO_4 / yr = 1512 gal H_2SO_4 / month

10 - unit cost is obtained from contract for operation of similar metals removal system. Double use for 120 gpm system

11 - unit cost is obtained from contract for operation of similar metals removal system. Double use for 120 gpm system

12 - one yearly sample for disposal agency. Cost from Accutest Labs

13 - 62 gal/day, changeout of 5000 gal tank every 81 days. Cost quote from Russell Reid

14 - two changeouts per year for two 1100 lb vessels. Cost quote from Envirotrol, Inc.

15 - costs for shipment of 2500 lb of carbon from Garden City NY to Envirotrol, Inc.

16 - Electric cost is typical for Nassau County. 3 process pumps (5 HP) operating continuously, 3 mixers (0.75 HP) operating continuously, 3 chemical pumps (0.1 HP) operating continuously, 3 process pumps (5 HP) operating 0.3% of the time, 25 kW heaters operating 1/3 of the time. For process items: 0.7455 kW/HP x (5+5+5+(3x5x0.003)+(3x0.75)+(3*0.1)) = 13.11 kW. 13.12 kW x 8760 hr x 75% runtime = 86,179 kW-hr per year = 7182 kW-hr per month. For heating: 1/3 (25 kW) x 8760 hr = 73,000 kW-hr per year = 6083 kW-hr per month. (7182 + 6,083) kW-hr per month = 13,265 kW-hr per month

17 - typical cost to ship cooler via overnight courier

18 - cost is obtained from contract for operation of similar metals removal system

19 - cost is obtained from contract for operation of similar metals removal system

20 - cost is obtained from contract for operation of similar metals removal system

21 - cost is obtained from contract for operation of similar metals removal system

22 - 20% contingency on all costs

Table F-2C
Cost Estimate for Groundwater Treatment - Ion Exchange
Former Alsy Manufacturing Site
Hicksville, New York

Description	Unit	No. of Units	Cost per Unit	Cost	Reference
Design Investigation for Location of Recovery Wells	LS	1	$130,000	$130,000	0
Recovery Well Installation (two wells)					
Mobilization/demobilization for drill rig	L.S.	1	$1,000	$1,000	1
Drilling	Day	8	$1,450	$11,600	2
6" stainless screen well screen (80-100 ft)	Ft	40	$44.05	$1,762	3
6" carbon steel riser (0-80 ft)	Ft	160	$16.00	$2,560	4
Gravel pack	Ft	40	$7.06	$282	5
Grout and seal	Ft	160	$6.63	$1,061	6
Traffic-rated manhole	Each	2	$4,000	$8,000	7
Well development	Hr	20	$132	$2,640	8
Disposal of drill cuttings (non-hazardous)	Drum	32	$155	$4,968	9
			Subtotal =	*$33,873*	
Treatment Plant Equipment					
Groundwater recovery pump	Each	2	$3,995	$7,990	10
Acid feed pump	Each	0	$1,290	$0	11
Mixers	Each	2	$1,500	$3,000	12
1000-gal caustic tank	Each	0	$865	$0	13
500-gal acid tank	Each	0	$565	$0	14
Secondary containment for chemical tanks	Each	2	$1,605	$3,210	15
Caustic feed pump	Each	0	$870	$0	16
Process pumps (four duplex pump stations)	Each	4	$975	$3,900	17
Bag filtration system	Each	0	$1,350	$0	18
Filtration and ion exchange system (bag filtration system, carbon filter system, four resin columns with resin, caustic tank, acid tank, caustic pump, acid pump, probes, control panel, PLC)	Each	1	$289,000	$289,000	19
Static mixer	Each	1	$727	$727	20
Activated carbon vessels (pre-filled)	Each	0	$4,750	$0	21
Effluent holding tank (1000-gal)	Each	1	$865	$865	22
Waste holding tank (5000-gal)	Each	1	$4,205	$4,205	23
Instrumentation	L.S.	1	$28,000	$28,000	24
Temporary facilities	Month	4	$800	$3,200	25
Treatment building with 6" concrete slab (40 ft x 60 ft)	SF	2400	$67	$159,720	26
Freight (5%)				$25,191	27
Contractor markup (10%)				$52,901	28
			Subtotal =	*$581,909*	
Treatment Plant Installation					
Mechanical installation	L.S.	1	$160,000	$160,000	29
Contractor mobilization/demobilization	L.S.	1	$30,000	$30,000	30
Electrical and control system installation	L.S.	1	$200,000	$200,000	31
Recovery well piping	Ft	9600	$7.95	$76,320	32
Trench for recovery wells	CY	3111	$4.85	$15,089	33
Backfill recovery well trench	CY	3111	$3.30	$10,267	34
Pavement restoration of recovery well trench	SY	2333	$36	$84,000	35
Discharge piping to catch basin	Ft	600	$7.95	$4,770	36
Trench for discharge piping	CY	267	$4.85	$1,293	37
Backfill discharge piping trench	CY	267	$3.30	$880	38
Pavement restoration of discharge piping trench	SY	200	$36	$7,200	39
Connection to catch basin	L.S.	1	$2,500	$2,500	40
			Subtotal =	*$592,319*	

Table F-2C
Cost Estimate for Groundwater Treatment - Ion Exchange
Former Alsy Manufacturing Site
Hicksville, New York

Engineering					
Bench-scale testing	L.S.	1	$50,000	$50,000	41
Permitting	L.S.	1	$25,000	$25,000	42
Startup and shakedown	L.S.	1	$42,100	$42,100	43
O&M manual	L.S.	1	$8,200	$8,200	44
			Subtotal=	*$125,300*	
			Subtotal =	*$1,463,400*	
			Contingency (20%) =	*$292,680*	45
			Subtotal =	*$1,756,080*	
Remedial design (15%)				*$263,412*	46
Mobilization (5%)				*$87,804*	
Project Management (8%)				*$140,486*	
Construction management (10%)				*$175,608*	
			Total capital costs =	$2,423,391	
Annual O&M Costs (see Table F-2D)				*$339,475*	
Present worth of annual O&M costs =				*$2,621,427*	
(10 years, 5% discount rate)					
Present worth of annual O&M costs =				$4,230,538	
(20 years, 5% discount rate)					
Total Present Worth of Project (assuming 10 years operation) =				*$5,044,817*	
Total Present Worth of Project (assuming 20 years operation) =				*$6,653,929*	

Table F-2C
References for Capital Costs for Groundwater Treatment - Ion Exchange
Former Alsy Manufacturing Site
Hicksville, New York

1 - quote from Talon Drilling
2 - quote from Talon Drilling
3 - 6" stainless steel screen, RS Means Environmental Remediation Cost Data - Unit Price 2002
4 - 6" carbon steel riser riser, RS Means Environmental Remediation Cost Data - Unit Price 2002
5 - 6" PVC Sch 40 screen, RS Means Environmental Remediation Cost Data - Unit Price 2002
6 - Bentonite seal for 6" well, RS Means Environmental Remediation Cost Data - Unit Price 2002
7 - estimate for recent ground water pump and treat proposal
8 - quote from Delta Well and Pump
9 - quote from American Environmental Assessment Corporation
10 - 4" submersible pump 5HP, 56-95 gpm at 100-220 ft head. Includes level controls. From RS Means Environmental Remediation Cost Data - Unit Prices 2002
11 - quote from Barish Pump Co. for 1 HP magnetic drive pump with Kynar construction for pumping acid
12 - 3/4 HP JG mixer, list price from USA Bluebook
13 - 64"x81" tank, list price from Chemtainer
14 - 46"x76" tank, list price from Chemtainer
15 - 84"x46" tank, list price from Chemtainer
16 - LMI Series A7 pumps, list price from USA Bluebook, includes repair kit
17 - Ebara 32-160 5 HP centrifugal pumps, capable of 120 gpm at 70 ft head, list price from USA Bluebook
18 - Two Harmsco Waterbetter filters rated for 170 gpm (two different micron ratings), list price from USA Bluebook
19 - quote from ion exchange vendor (Kontek Ecology Systems, Inc.).
20 - 4" static mixer with injection port, list price from USA Bluebook
21 - Model LP-340P with max flow of 65 gpm and max. pressure of 150 psig, each with 1100 lb GAC, list price from Envirotrol
22- 64"x81" tank, list price from Chemtainer
23 - 102"x152" tank, list price from Chemtainer
24 - cost for similar metals removal treatment system. Includes level switches, variable speed drives, pressure gauges, pH controllers, level transmitters, pH probes, etc.
25 - estimate from recent ground water pump and treat proposal
26 - estimate from recent ground water pump and treat proposal. Add $1.55 per sf for concrete slab
27 - estimate 5% on cost of equipment for freight
28 - contractor markup of 10% is estimated on all equipment and freight
29 - contractor bid for similar metals removal treatment system. Includes labor, piping, pipe supports, fittings, etc.
30 - contractor bid for similar metals removal treatment system for transfer of construction equipment (such as forklifts, tools, cranes, etc.) to and from the site
31 - contractor bid for similar metals removal system. Includes instrumentation and controls, wiring, PLC programming, electrical system. Control panels and PLC provided with cost from ion exchange vendor in Item #19. Estimate $100,000 less than contractor bid ($300,000-$100,000 = $200,000).
32 - 4" HDPE piping, RS Means Environmental Remediation Cost Data - Unit Price 2002
33 - 7000 ft x 3 ft wide x 4 ft deep = 3111 cy. Excavation with backhoe. Unit cost is from RS Means Building Construction Cost Data - 2003
34 - 7000 ft x 3 ft wide x 4 ft deep = 3111 cy. Includes compaction with vibrating plate. Unit cost is from RS Means Environmental Remediation Cost Data - Unit Price 2002
35 - 7000 ft x 3 ft / 9 = 2333 sy, 4" pavement relacement over trench, RS Means Building Construction Cost Data - 2003
36 - 4" HDPE piping, RS Means Environmental Remediation Cost Data - Unit Price 2002
37 - 600 ft x 3 ft wide x 4 ft deep = 267 cy. Excavation with backhoe. Unit cost is from RS Means Building Construction Cost Data - 2003
38 - 600 ft x 3 ft wide x 4 ft deep = 267 cy. Includes compaction with vibrating plate. Unit cost is from RS Means Environmental Remediation Cost Data - Unit Price 2002
39- 600 ft x 3 ft / 9 = 200 sy, 4" pavement relacement over trench, RS Means Building Construction Cost Data - 2003
40 - 1 ten-hr day for 3 laborers at $150/hr + $500 for backhoe rental + $500 for tools, concrete, and fittings
41 - estimate
42 - estimate
43 - 3 weeks of startup/shakedown. Engineer at $100/hr x 15 day x 10 hr/day = $15000. Operator at $90/hr x 15 day x 10 hr/day = $13,500. Office support 2 hr/day x 15 day x $120/hr = $3600. Assume miscellaneous supplies, expenses, subcontractors for $10,000.
44 - Engineer at $100/hr @ 60 hr = $6000, Manager at $150/hr at 8 hr = $1200. $1000 office expenses
45 - 20% contingency on all costs
46 - Percentages for remedial design, project management, and construction management obtained from USEPA "A Guide to Developing and Documenting Cost Estimates During the Feasibility Study", (USEPA, July 2000). The indirect costs for Alternative III are higher than for Alternative II due to the expanded scope of work.

Table F-2D

Estimated Operating Costs for Groundwater Treatment - Ion Exchange

Former Alsy Manufacturing Site

Hicksville, New York

Labor Staff	Units	Unit cost	# of units per month	Cost per month	Annual Cost	Ref.
Operations	L.S.	$9,700	1	$9,700	$116,400	1
Engineering support	Hr	$120	24	$2,880	$34,560	2
		Labor subtotal =	25	***$12,580***	***$150,960***	

Expenses	Units	Unit cost	# of units per month	Cost		Ref.
Groundwater VOC analysis via 624	Sample	$120	8	$960	$11,520	3
Groundwater metals analysis - process samples (Ni, Fe, Ca, Mn, Na, and Mg)	Sample	$84	7	$588	$7,056	4
Groundwater metals analysis - effluent samples (Priority Pollutant metals + Fe, Ca, Mn, Na, & Mg)	Sample	$291	1	$291	$3,492	5
Vehicle and tools	Day	$50	15	$750	$9,000	6
H&S items, sampling equipment	Day	$25	15	$375	$4,500	7
Sodium hydroxide	Gal	$3.99	42	$166	$1,995	8
Sulfuric acid	Gal	$2.35	95	$223	$2,676	9
Annual RCRA characterization for waste ion exchange rgenerant	Sample	$1,827	0.083	$152	$1,827	10
Disposal of waste ion exchange rgenerant	Gal	$0.47	1,900	$893	$10,716	11
Regeneration and replacement of liquid-phase GAC	Lb	$1.25	367	$460	$5,515	12
Freight for regeneration of liquid-phase GAC	Changeout	$2,070	0.167	$345	$4,140	13
Cartridge filters	Cartridge	$165	4	$660	$7,920	14
Electric costs	kW-hr	$0.11	11,224	$1,235	$14,816	15
Shipping for samples	Shipment	$55	2	$110	$1,320	16
Parts replacement	L.S.	$1,000	1	$1,000	$12,000	17
Operator travel expenses	L.S.	$250	1	$250	$3,000	18
Repairs	L.S.	$1,250	1	$1,250	$15,000	19
Electrician	L.S.	$1,000	1	$1,000	$12,000	20
Replacement of ion exchange resin	Lb	$3.00	96	$287	$3,443	21
		Expenses subtotal =		***$10,995***	***$131,936***	
		Subtotal operating costs =		***$23,575***	***$282,896***	
		Contingency (20%) =		***$4,715***	***$56,579***	22
		Total =		***$28,290***	***$339,475***	

Table F-2D
References for Operating Costs for Groundwater Treatment - Ion Exchange
Former Alsy Manufacturing Site
Hicksville, New York

1 - costs for operation of a similar metals removal system
2 - 24 hr per month for engineer to provide support - sampling coordination, reporting, performance tracking
3 - monthly extraction well, influent and effluent sample plus four additional process samples, cost from Accutest Labs
4 - monthly extraction well, influent sample plus four additonal process samples, cost from Lancaster Labs
5 - monthly effluent sample, cost from Lancaster Labs
6 - assume 15 visits to the plant per month, unit cost is estimated based on experience
7 - assume 15 visits to the plant per month, unit cost is estimated based on experience
8 - unit cost is obtained from contract for operation of similar metals removal system. Estimate 500 gal/yr use to raise pH slightly.
9 - Assume 5% acid solution for regeneration (1900 gal/month x 0.05 = 95 gal/month).
10 - one yearly sample for disposal agency. Cost from Accutest Labs
11 - 3800 gallon per regeneration per vendor. Changeout frequency unknown. Need to perform bench tests. Assume every two months. Cost quote from United Recycling in Connecticut for hazardous wastewater. Waste regenerant will likely be D002 corrosive hazardous waste.
12 - 2 changeouts per year for two 1100 lb vessels. Cost quote from Envirotrol, Inc.
13 - costs for shipment of 2500 lb of carbon from Garden City NY to Envirotrol, Inc.
14 - list price for 5 to 100 micron cartridge filters from USA Bluebook
15 - Electric cost is typical for Nassau County. 2 process pumps (5 HP) operating continuously, 3 mixers (0.75 HP) operating continuously, 3 chemical pumps (0.1 HP) operating continuously, 3 process pumps (5 HP) operating 0.3% of the time, 25 kW heaters operating 1/3 of the time. For process items: 0.7455 kW/HP x (5+5+3*0.75+3*0.1+(3*5*0.003)) = 9.39 kW. 9.39 kW x 8760 hr x 75% runtime = 61,689 kW-hr per year = 5141 kW-hr per month. For heating: 1/3 (25 kW) x 8760 hr = 73,000 kW-hr per year = 6083 kW-hr per month. (6083 + 5141) kW-hr per month = 11,224 kW-hr per month
16 - typical cost to ship cooler via overnight courier
17 - cost is obtained from contract for operation of similar metals removal system
18 - cost is obtained from contract for operation of similar metals removal system
19 - cost is obtained from contract for operation of similar metals removal system
20 - cost is obtained from contract for operation of similar metals removal system
21 - 170 cf of resin to be replaced every 4 yr. Assume density similar to carbon (27 lb/cf)
22 - 20% contingency on all costs

APPENDIX G
Data Packages (FORM 1s and DUSR)

DATA VALIDATION REVIEW
GROUND WATER SAMPLE ANALYSES
SURREY CORP.
ALSY MANUFACTURING
HICKSVILLE, NEW YORK
ERM-NORTHEAST PROJECT NUMBER 1426.001.9
ENVIROTECH RESEARCH, INC., LAB PROJECT NOs. F031 & F077

Deliverables:

The above referenced Data Summary Package and Sample Data Package for 8 ground water samples, one field duplicate, one field blank and two trip blanks contain all required deliverables as stipulated under the 1991 New York State Department of Environmental Conservation (NYSDEC) Analytical Services Protocols (ASP) for Category B deliverables for Volatile Organic Compound (VOC) analyses performed by USEPA Method 8260 and nickel and zinc analyses performed by USEPA Inductively Coupled Plasma (ICP) emission spectroscopy Method 6010A. However, the package was not formatted in accordance with the strict ASP deliverables format. There is no technical impact to the data. The laboratory has been made aware that the package deliverables were not in accordance with the format laid out in the protocol. Analytical methods follow *"Test Methods for Evaluating Solid Waste, USEPA SW-846, Third Edition, September 1986, with revisions"*. The data have been validated according to the protocols and QC requirements of the specific analytical methods and reference documents used, the ASP, the USEPA National Functional Guidelines for Organic and Inorganic Data Review (February 1994), and the reviewer's professional judgment.

This validation report pertains to the following samples:

Samples

LMS-4
VP-N_120
VP-N_95
VP-N_60
AMS-2
VP-S_120
VP-S_95
VP-S_60

QC Samples

VP-S_DUP (Field duplicate of VP-S_120)
FB625 (Field Blank)
Trip Blank (sampled on 06/25/98)
Trip Blank (sampled on 06/26/98)
AMS-2 MS/MSD

Due to software limitations, the laboratory was unable to utilize specific characters in use with the sample identification. The character representing the depth of the sample (') has been replaced with an underscore (_).

The following items/criteria were reviewed:

- Quantitation/detection limits
- Holding times and sample preservation (including pH and Temperature)
- GC/MS tuning and performance
- Initial and continuing calibration data
- Method blank data
- Field and trip blank data
- Field duplicate sample results
- Internal standard areas, retention times, summary and data
- Surrogate recoveries, summary and data
- MS/MSD recoveries, summary and data
- Organic analysis data sheets (Form I)
- Chromatograms and mass spectra
- Qualitative and quantitative compound identification
- Case narrative and deliverables compliance

The items listed above were in compliance with USEPA CLP and NYSDEC ASP protocols with exceptions discussed in the text below. The data have been validated according to the procedures outlined above and qualified accordingly.

- Note that the laboratory analyzed one sample contained within package F031 as a matrix spike/matrix spike duplicate and included this information in both data packages (batch QC in package F077). This is acceptable under SW-846 procedures.

- Matrix Spike Blank (MSB) analysis was not performed by the laboratory. The matrix spike (MS) and matrix spike duplicate (MSD) were analyzed and met all required QC criteria. The method protocol does require an MSB to be analyzed, however, given the fact that the MS/MSD met all QC criteria it is the reviewers professional judgement that no qualification of the data are required.

- The table below lists the following:

    - Compounds that exceeded 30% relative standard deviation (%RSD) between response factors in the initial calibration (ICAL). Compounds that exceeded 25% difference (%D) between the ICAL average response factor and the continuing calibration check (CCC) response factor. Associated field samples are also listed. Positive results for these compounds in associated samples are considered estimated and flagged "J." All non-detect results for the compound of interest in the appropriate sample are flagged "UJ".

- Compounds with an ICAL average relative response factor (RRF) less than 0.05 and compounds with a CCC RRF less than 0.05. Positive results for these compounds in associated samples are considered estimated and flagged "J." All non-detect results are unusable and rejected and flagged "UR".

Calibration	Compound	Deficiency	Associated Samples
ICAL 06/17/98	Acetone 2-butanone	%RSD= 31.1 RRF=0.027	All samples
CCC 07/02/98	Acetone 2-butanone	%D=26.0 RRF=0.026	AMS-2, AMS-2MS/MSD, VP-S_120, VP-S_95, VP-S_60, VP-S_DUP, FB625, Trip Blank (sampled on 06/25/98)
CCC 07/03/98	Chloroethane 2-butanone	%D=25.6 RRF = 0.026	LMS-4, VP-N_120, VP-N_95, VP-N_60, Trip Blank (sampled on 06/26/98)

INORGANICS

The following items/criteria were reviewed:

- Case Narrative and deliverable requirements
- Holding Times and pH
- Calibrations
- Lab and field blanks
- ICP interference check sample analysis
- Matrix spike and matrix spike duplicate analysis
- Lab and field duplicate analysis
- Laboratory control sample results
- ICP serial dilution analyses
- Detection limits

The items listed above were technically acceptable and in compliance with USEPA protocols with the exceptions discussed in the text below. The data have been validated according to the procedures outlined above and qualified accordingly.

- The field blank contained 7.8 μg/l of zinc. Sample concentrations less than five times this concentration (38.5 μg/l) are therefore negated based on blank contamination.

- Note that the laboratory analyzed one sample contained within package F031 as a matrix spike, matrix spike duplicate, laboratory duplicate and ICP serial dilution analysis and included this information in both data packages (batch QC in package F077). This is acceptable under SW-846 procedures.

Package Summary:

Note that any protocol deficiencies that may have been noted associated with the analyses of the samples contained within this data package will not affect the technical usability of the sample data. Qualification of sample results is based on technical deficiencies only.

All sample data are valid and usable with qualifications as noted in this review.

Signed: ______________________ Dated: 12 August 1998
Andrew J. Coenen
Environmental Chemist

Reviewed: ______________________ Dated: 13 August 1998
Douglas A. Wolf, P.G.
Manager, Data Quality Assurance

ENVIROTECH RESEARCH, INC.

Client ID: AMS-2
Site: Alsy Manufacturing

Lab Sample No: 68426
Lab Job No: F031

Date Sampled: 06/25/98
Date Received: 06/26/98
Date Analyzed: 07/02/98
GC Column: DB624
Instrument ID: VOAMS2.i
Lab File ID: b6838.d

Matrix: WATER
Level: LOW
Purge Volume: 5.0 ml
Dilution Factor: 1.0

VOLATILE ORGANICS - GC/MS
METHOD 8260

Parameter	Analytical Result Units: ug/l	Quantitation Limit Units: ug/l
Chloromethane	ND	5.0
Bromomethane	ND	5.0
Vinyl Chloride	ND	5.0
Chloroethane	ND	5.0
Methylene Chloride	ND	3.0
Acetone	~~ND~~ J	5.0
Carbon Disulfide	ND	5.0
1,1-Dichloroethene	ND	2.0
1,1-Dichloroethane	ND	5.0
trans-1,2-Dichloroethene	ND	5.0
cis-1,2-Dichloroethene	ND	5.0
Chloroform	ND	5.0
1,2-Dichloroethane	ND	2.0
2-Butanone	~~ND~~ R	5.0
1,1,1-Trichloroethane	ND	5.0
Carbon Tetrachloride	ND	2.0
Bromodichloromethane	ND	1.0
1,2-Dichloropropane	ND	1.0
cis-1,3-Dichloropropene	ND	5.0
Trichloroethene	ND	1.0
Dibromochloromethane	ND	5.0
1,1,2-Trichloroethane	ND	3.0
Benzene	ND	1.0
trans-1,3-Dichloropropene	ND	5.0
Bromoform	ND	4.0
4-Methyl-2-Pentanone	ND	5.0
2-Hexanone	ND	5.0
Tetrachloroethene	ND	1.0
1,1,2,2-Tetrachloroethane	ND	1.0
Toluene	ND	5.0
Chlorobenzene	ND	5.0
Ethylbenzene	ND	4.0
Styrene	ND	5.0
Xylene (Total)	ND	5.0

8/11/98

Client ID: AMS-2
Site: Alsy Manufacturing

Lab Sample No: 68426
Lab Job No: F031

Date Sampled: 06/25/98
Date Received: 06/26/98
Date Analyzed: 07/02/98
GC Column: DB624
Instrument ID: VOAMS2.i
Lab File ID: b6838.d

Matrix: WATER
Level: LOW
Purge Volume: 5.0 ml
Dilution Factor: 1.0

VOLATILE ORGANICS - GC/MS
TENTATIVELY IDENTIFIED COMPOUNDS
METHOD 8260B

COMPOUND NAME	RT	EST. CONC. ug/l	Q
1. NO VOLATILE ORGANIC COMPOUNDS FOUND			
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TOTAL ESTIMATED CONCENTRATION 0.0

ENVIROTECH RESEARCH, INC.

Client ID: FB625
Site: Alsy Manufacturing

Lab Sample No: 68427
Lab Job No: F031

Date Sampled: 06/25/98
Date Received: 06/26/98
Date Analyzed: 07/02/98
GC Column: DB624
Instrument ID: VOAMS2.i
Lab File ID: b6836.d

Matrix: WATER
Level: LOW
Purge Volume: 5.0 ml
Dilution Factor: 1.0

VOLATILE ORGANICS - GC/MS
METHOD 8260

Parameter	Analytical Result Units: ug/l	Quantitation Limit Units: ug/l
Chloromethane	ND	5.0
Bromomethane	ND	5.0
Vinyl Chloride	ND	5.0
Chloroethane	ND	5.0
Methylene Chloride	ND	3.0
Acetone	~~ND~~ J	5.0
Carbon Disulfide	ND	5.0
1,1-Dichloroethene	ND	2.0
1,1-Dichloroethane	ND	5.0
trans-1,2-Dichloroethene	ND	5.0
cis-1,2-Dichloroethene	ND	5.0
Chloroform	ND	5.0
1,2-Dichloroethane	ND	2.0
2-Butanone	~~ND~~ R	5.0
1,1,1-Trichloroethane	ND	5.0
Carbon Tetrachloride	ND	2.0
Bromodichloromethane	ND	1.0
1,2-Dichloropropane	ND	1.0
cis-1,3-Dichloropropene	ND	5.0
Trichloroethene	ND	1.0
Dibromochloromethane	ND	5.0
1,1,2-Trichloroethane	ND	3.0
Benzene	ND	1.0
trans-1,3-Dichloropropene	ND	5.0
Bromoform	ND	4.0
4-Methyl-2-Pentanone	ND	5.0
2-Hexanone	ND	5.0
Tetrachloroethene	ND	1.0
1,1,2,2-Tetrachloroethane	ND	1.0
Toluene	ND	5.0
Chlorobenzene	ND	5.0
Ethylbenzene	ND	4.0
Styrene	ND	5.0
Xylene (Total)	ND	5.0

8/11/98

ENVIROTECH RESEARCH, INC.

Client ID: FB625
Site: Alsy Manufacturing

Lab Sample No: 68427
Lab Job No: F031

Date Sampled: 06/25/98
Date Received: 06/26/98
Date Analyzed: 07/02/98
GC Column: DB624
Instrument ID: VOAMS2.i
Lab File ID: b6836.d

Matrix: WATER
Level: LOW
Purge Volume: 5.0 ml
Dilution Factor: 1.0

VOLATILE ORGANICS - GC/MS
TENTATIVELY IDENTIFIED COMPOUNDS
METHOD 8260B

COMPOUND NAME	RT	EST. CONC. ug/l	Q
1. NO VOLATILE ORGANIC COMPOUNDS FOUND			
2.			
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TOTAL ESTIMATED CONCENTRATION 0.0

Client ID: Trip_Blank
Site: Alsy Manufacturing

Lab Sample No: 68428
Lab Job No: F031

Date Sampled: 06/25/98
Date Received: 06/26/98
Date Analyzed: 07/02/98
GC Column: DB624
Instrument ID: VOAMS2.i
Lab File ID: b6837.d

Matrix: WATER
Level: LOW
Purge Volume: 5.0 ml
Dilution Factor: 1.0

VOLATILE ORGANICS - GC/MS
METHOD 8260

Parameter	Analytical Result Units: ug/l	Quantitation Limit Units: ug/l
Chloromethane	ND	5.0
Bromomethane	ND	5.0
Vinyl Chloride	ND	5.0
Chloroethane	ND	5.0
Methylene Chloride	ND	3.0
Acetone	~~ND~~ J	5.0
Carbon Disulfide	ND	5.0
1,1-Dichloroethene	ND	2.0
1,1-Dichloroethane	ND	5.0
trans-1,2-Dichloroethene	ND	5.0
cis-1,2-Dichloroethene	ND	5.0
Chloroform	ND	5.0
1,2-Dichloroethane	ND	2.0
2-Butanone	~~ND~~ R	5.0
1,1,1-Trichloroethane	ND	5.0
Carbon Tetrachloride	ND	2.0
Bromodichloromethane	ND	1.0
1,2-Dichloropropane	ND	1.0
cis-1,3-Dichloropropene	ND	5.0
Trichloroethene	ND	1.0
Dibromochloromethane	ND	5.0
1,1,2-Trichloroethane	ND	3.0
Benzene	ND	1.0
trans-1,3-Dichloropropene	ND	5.0
Bromoform	ND	4.0
4-Methyl-2-Pentanone	ND	5.0
2-Hexanone	ND	5.0
Tetrachloroethene	ND	1.0
1,1,2,2-Tetrachloroethane	ND	1.0
Toluene	ND	5.0
Chlorobenzene	ND	5.0
Ethylbenzene	ND	4.0
Styrene	ND	5.0
Xylene (Total)	ND	5.0

A 8/11/98

Client ID: **Trip_Blank**
Site: Alsy Manufacturing

Lab Sample No: **68428**
Lab Job No: F031

Date Sampled: 06/25/98
Date Received: 06/26/98
Date Analyzed: 07/02/98
GC Column: DB624
Instrument ID: VOAMS2.i
Lab File ID: b6837.d

Matrix: WATER
Level: LOW
Purge Volume: 5.0 ml
Dilution Factor: 1.0

VOLATILE ORGANICS - GC/MS
TENTATIVELY IDENTIFIED COMPOUNDS
METHOD 8260B

COMPOUND NAME	RT	EST. CONC. ug/l	Q
1. NO VOLATILE ORGANIC COMPOUNDS FOUND			
2.			
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TOTAL ESTIMATED CONCENTRATION 0.0

ENVIROTECH RESEARCH, INC.

Client ID: VP-S_120
Site: Alsy Manufacturing

Lab Sample No: 68429
Lab Job No: F031

Date Sampled: 06/25/98
Date Received: 06/26/98
Date Analyzed: 07/02/98
GC Column: DB624
Instrument ID: VOAMS2.i
Lab File ID: b6839.d

Matrix: WATER
Level: LOW
Purge Volume: 5.0 ml
Dilution Factor: 1.0

VOLATILE ORGANICS - GC/MS
METHOD 8260

Parameter	Analytical Result Units: ug/l	Quantitation Limit Units: ug/l
Chloromethane	ND	5.0
Bromomethane	ND	5.0
Vinyl Chloride	ND	5.0
Chloroethane	ND	5.0
Methylene Chloride	ND	3.0
Acetone	~~ND~~ J	5.0
Carbon Disulfide	ND	5.0
1,1-Dichloroethene	ND	2.0
1,1-Dichloroethane	0.7J	5.0
trans-1,2-Dichloroethene	ND	5.0
cis-1,2-Dichloroethene	ND	5.0
Chloroform	ND	5.0
1,2-Dichloroethane	ND	2.0
2-Butanone	~~ND~~ R	5.0
1,1,1-Trichloroethane	0.9J	5.0
Carbon Tetrachloride	ND	2.0
Bromodichloromethane	ND	1.0
1,2-Dichloropropane	ND	1.0
cis-1,3-Dichloropropene	ND	5.0
Trichloroethene	ND	1.0
Dibromochloromethane	ND	5.0
1,1,2-Trichloroethane	ND	3.0
Benzene	ND	1.0
trans-1,3-Dichloropropene	ND	5.0
Bromoform	ND	4.0
4-Methyl-2-Pentanone	ND	5.0
2-Hexanone	ND	5.0
Tetrachloroethene	ND	1.0
1,1,2,2-Tetrachloroethane	ND	1.0
Toluene	ND	5.0
Chlorobenzene	ND	5.0
Ethylbenzene	ND	4.0
Styrene	ND	5.0
Xylene (Total)	ND	5.0

AB 8/11/98

ENVIROTECH RESEARCH, INC.

Client ID: VP-S_120
Site: Alsy Manufacturing

Lab Sample No: 68429
Lab Job No: F031

Date Sampled: 06/25/98
Date Received: 06/26/98
Date Analyzed: 07/02/98
GC Column: DB624
Instrument ID: VOAMS2.i
Lab File ID: b6839.d

Matrix: WATER
Level: LOW
Purge Volume: 5.0 ml
Dilution Factor: 1.0

VOLATILE ORGANICS - GC/MS
TENTATIVELY IDENTIFIED COMPOUNDS
METHOD 8260B

COMPOUND NAME	RT	EST. CONC. ug/l	Q
1. NO VOLATILE ORGANIC COMPOUNDS FOUND			
2.			
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TOTAL ESTIMATED CONCENTRATION 0.0

ENVIROTECH RESEARCH, INC.

Client ID: VP-S_Dup
Site: Alsy Manufacturing

Lab Sample No: 68430
Lab Job No: F031

Date Sampled: 06/25/98
Date Received: 06/26/98
Date Analyzed: 07/02/98
GC Column: DB624
Instrument ID: VOAMS2.i
Lab File ID: b6840.d

Matrix: WATER
Level: LOW
Purge Volume: 5.0 ml
Dilution Factor: 1.0

VOLATILE ORGANICS - GC/MS
METHOD 8260

Parameter	Analytical Result Units: ug/l	Quantitation Limit Units: ug/l
Chloromethane	ND	5.0
Bromomethane	ND	5.0
Vinyl Chloride	ND	5.0
Chloroethane	ND	5.0
Methylene Chloride	ND	3.0
Acetone	~~ND~~ J	5.0
Carbon Disulfide	ND	5.0
1,1-Dichloroethene	ND	2.0
1,1-Dichloroethane	0.7J	5.0
trans-1,2-Dichloroethene	ND	5.0
cis-1,2-Dichloroethene	ND	5.0
Chloroform	ND	5.0
1,2-Dichloroethane	ND	2.0
2-Butanone	~~ND~~ R	5.0
1,1,1-Trichloroethane	0.9J	5.0
Carbon Tetrachloride	ND	2.0
Bromodichloromethane	ND	1.0
1,2-Dichloropropane	ND	1.0
cis-1,3-Dichloropropene	ND	5.0
Trichloroethene	ND	1.0
Dibromochloromethane	ND	5.0
1,1,2-Trichloroethane	ND	3.0
Benzene	ND	1.0
trans-1,3-Dichloropropene	ND	5.0
Bromoform	ND	4.0
4-Methyl-2-Pentanone	ND	5.0
2-Hexanone	ND	5.0
Tetrachloroethene	ND	1.0
1,1,2,2-Tetrachloroethane	ND	1.0
Toluene	ND	5.0
Chlorobenzene	ND	5.0
Ethylbenzene	ND	4.0
Styrene	ND	5.0
Xylene (Total)	ND	5.0

AO 1/11/98

ENVIROTECH RESEARCH, INC.

Client ID: **VP-S_Dup**
Site: Alsy Manufacturing

Lab Sample No: **68430**
Lab Job No: F031

Date Sampled: 06/25/98
Date Received: 06/26/98
Date Analyzed: 07/02/98
GC Column: DB624
Instrument ID: VOAMS2.i
Lab File ID: b6840.d

Matrix: WATER
Level: LOW
Purge Volume: 5.0 ml
Dilution Factor: 1.0

VOLATILE ORGANICS - GC/MS
TENTATIVELY IDENTIFIED COMPOUNDS
METHOD 8260B

COMPOUND NAME	RT	EST. CONC. ug/l	Q
1. NO VOLATILE ORGANIC COMPOUNDS FOUND			
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TOTAL ESTIMATED CONCENTRATION	0.0

ENVIROTECH RESEARCH, INC.

Client ID: VP-S_95	Lab Sample No: 68431
Site: Alsy Manufacturing	Lab Job No: F031
Date Sampled: 06/25/98	Matrix: WATER
Date Received: 06/26/98	Level: LOW
Date Analyzed: 07/02/98	Purge Volume: 5.0 ml
GC Column: DB624	Dilution Factor: 1.0
Instrument ID: VOAMS2.i	
Lab File ID: b6841.d	

VOLATILE ORGANICS - GC/MS
METHOD 8260

Parameter	Analytical Result Units: ug/l	Quantitation Limit Units: ug/l
Chloromethane	ND	5.0
Bromomethane	ND	5.0
Vinyl Chloride	ND	5.0
Chloroethane	ND	5.0
Methylene Chloride	ND	3.0
Acetone	~~ND~~ J	5.0
Carbon Disulfide	ND	5.0
1,1-Dichloroethene	ND	2.0
1,1-Dichloroethane	0.7J	5.0
trans-1,2-Dichloroethene	ND	5.0
cis-1,2-Dichloroethene	ND	5.0
Chloroform	ND	5.0
1,2-Dichloroethane	ND	2.0
2-Butanone	~~ND~~ R	5.0
1,1,1-Trichloroethane	ND	5.0
Carbon Tetrachloride	ND	2.0
Bromodichloromethane	ND	1.0
1,2-Dichloropropane	ND	1.0
cis-1,3-Dichloropropene	ND	5.0
Trichloroethene	ND	1.0
Dibromochloromethane	ND	5.0
1,1,2-Trichloroethane	ND	3.0
Benzene	ND	1.0
trans-1,3-Dichloropropene	ND	5.0
Bromoform	ND	4.0
4-Methyl-2-Pentanone	ND	5.0
2-Hexanone	ND	5.0
Tetrachloroethene	ND	1.0
1,1,2,2-Tetrachloroethane	ND	1.0
Toluene	ND	5.0
Chlorobenzene	ND	5.0
Ethylbenzene	ND	4.0
Styrene	ND	5.0
Xylene (Total)	ND	5.0

A 8/11/98

ENVIROTECH RESEARCH, INC.

Client ID: **VP-S_95**
Site: Alsy Manufacturing

Lab Sample No: 68431
Lab Job No: F031

Date Sampled: 06/25/98
Date Received: 06/26/98
Date Analyzed: 07/02/98
GC Column: DB624
Instrument ID: VOAMS2.i
Lab File ID: b6841.d

Matrix: WATER
Level: LOW
Purge Volume: 5.0 ml
Dilution Factor: 1.0

VOLATILE ORGANICS - GC/MS
TENTATIVELY IDENTIFIED COMPOUNDS
METHOD 8260B

COMPOUND NAME	RT	EST. CONC. ug/l	Q
1. NO VOLATILE ORGANIC COMPOUNDS FOUND			
2.			
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TOTAL ESTIMATED CONCENTRATION 0.0

ENVIROTECH RESEARCH, INC.

Client ID: VP-S_60	Lab Sample No: 68432
Site: Alsy Manufacturing	Lab Job No: F031
Date Sampled: 06/25/98	Matrix: WATER
Date Received: 06/26/98	Level: LOW
Date Analyzed: 07/02/98	Purge Volume: 5.0 ml
GC Column: DB624	Dilution Factor: 1.0
Instrument ID: VOAMS2.i	
Lab File ID: b6842.d	

VOLATILE ORGANICS - GC/MS
METHOD 8260

Parameter	Analytical Result Units: ug/l	Quantitation Limit Units: ug/l
Chloromethane	ND	5.0
Bromomethane	ND	5.0
Vinyl Chloride	ND	5.0
Chloroethane	ND	5.0
Methylene Chloride	ND	3.0
Acetone	~~ND~~ J	5.0
Carbon Disulfide	ND	5.0
1,1-Dichloroethene	ND	2.0
1,1-Dichloroethane	ND	5.0
trans-1,2-Dichloroethene	ND	5.0
cis-1,2-Dichloroethene	ND	5.0
Chloroform	1.3J	5.0
1,2-Dichloroethane	ND	2.0
2-Butanone	~~ND~~ R	5.0
1,1,1-Trichloroethane	ND	5.0
Carbon Tetrachloride	ND	2.0
Bromodichloromethane	ND	1.0
1,2-Dichloropropane	ND	1.0
cis-1,3-Dichloropropene	ND	5.0
Trichloroethene	ND	1.0
Dibromochloromethane	ND	5.0
1,1,2-Trichloroethane	ND	3.0
Benzene	ND	1.0
trans-1,3-Dichloropropene	ND	5.0
Bromoform	ND	4.0
4-Methyl-2-Pentanone	ND	5.0
2-Hexanone	ND	5.0
Tetrachloroethene	ND	1.0
1,1,2,2-Tetrachloroethane	ND	1.0
Toluene	ND	5.0
Chlorobenzene	ND	5.0
Ethylbenzene	ND	4.0
Styrene	ND	5.0
Xylene (Total)	ND	5.0

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ENVIROTECH RESEARCH, INC.

Client ID: VP-S_60
Site: Alsy Manufacturing

Lab Sample No: 68432
Lab Job No: F031

Date Sampled: 06/25/98
Date Received: 06/26/98
Date Analyzed: 07/02/98
GC Column: DB624
Instrument ID: VOAMS2.i
Lab File ID: b6842.d

Matrix: WATER
Level: LOW
Purge Volume: 5.0 ml
Dilution Factor: 1.0

VOLATILE ORGANICS - GC/MS
TENTATIVELY IDENTIFIED COMPOUNDS
METHOD 8260B

COMPOUND NAME	RT	EST. CONC. ug/l	Q
1. NO VOLATILE ORGANIC COMPOUNDS FOUND			
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TOTAL ESTIMATED CONCENTRATION 0.0

ENVIROTECH RESEARCH, INC.

Client ID: LMS-4
Site: Alsy Manufacturing

Lab Sample No: 68780
Lab Job No: F077

Date Sampled: 06/26/98
Date Received: 06/27/98
Date Analyzed: 07/03/98
GC Column: DB624
Instrument ID: VOAMS2.i
Lab File ID: b6856.d

Matrix: WATER
Level: LOW
Purge Volume: 5.0 ml
Dilution Factor: 1.0

VOLATILE ORGANICS - GC/MS
METHOD 8260

Parameter	Analytical Result Units: ug/l	Quantitation Limit Units: ug/l
Chloromethane	ND	5.0
Bromomethane	ND	5.0
Vinyl Chloride	ND	5.0
Chloroethane	~~ND~~ J	5.0
Methylene Chloride	ND	3.0
Acetone	~~ND~~ J	5.0
Carbon Disulfide	ND	5.0
1,1-Dichloroethene	ND	2.0
1,1-Dichloroethane	ND	5.0
trans-1,2-Dichloroethene	ND	5.0
cis-1,2-Dichloroethene	ND	5.0
Chloroform	ND	5.0
1,2-Dichloroethane	ND	2.0
2-Butanone	~~ND~~ R	5.0
1,1,1-Trichloroethane	0.6J	5.0
Carbon Tetrachloride	ND	2.0
Bromodichloromethane	ND	1.0
1,2-Dichloropropane	ND	1.0
cis-1,3-Dichloropropene	ND	5.0
Trichloroethene	ND	1.0
Dibromochloromethane	ND	5.0
1,1,2-Trichloroethane	ND	3.0
Benzene	ND	1.0
trans-1,3-Dichloropropene	ND	5.0
Bromoform	ND	4.0
4-Methyl-2-Pentanone	ND	5.0
2-Hexanone	ND	5.0
Tetrachloroethene	ND	1.0
1,1,2,2-Tetrachloroethane	ND	1.0
Toluene	ND	5.0
Chlorobenzene	ND	5.0
Ethylbenzene	ND	4.0
Styrene	ND	5.0
Xylene (Total)	ND	5.0

8/11/98

Client ID: LMS-4
Site: Alsy Manufacturing

Lab Sample No: 68780
Lab Job No: F077

Date Sampled: 06/26/98
Date Received: 06/27/98
Date Analyzed: 07/03/98
GC Column: DB624
Instrument ID: VOAMS2.i
Lab File ID: b6856.d

Matrix: WATER
Level: LOW
Purge Volume: 5.0 ml
Dilution Factor: 1.0

VOLATILE ORGANICS - GC/MS
TENTATIVELY IDENTIFIED COMPOUNDS
METHOD 8260B

COMPOUND NAME	RT	EST. CONC. ug/l	Q
1. NO VOLATILE ORGANIC COMPOUNDS FOUND			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
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14.			
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16.			
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22.			
23.			
24.			
25.			
26.			
27.			
28.			
29.			
30.			

TOTAL ESTIMATED CONCENTRATION 0.0

ENVIROTECH RESEARCH, INC.

Client ID: VP-N_120
Site: Alsy Manufacturing

Lab Sample No: 68781
Lab Job No: F077

Date Sampled: 06/26/98
Date Received: 06/27/98
Date Analyzed: 07/03/98
GC Column: DB624
Instrument ID: VOAMS2.i
Lab File ID: b6857.d

Matrix: WATER
Level: LOW
Purge Volume: 5.0 ml
Dilution Factor: 1.0

VOLATILE ORGANICS - GC/MS
METHOD 8260

Parameter	Analytical Result Units: ug/l	Quantitation Limit Units: ug/l
Chloromethane	ND	5.0
Bromomethane	ND	5.0
Vinyl Chloride	ND	5.0
Chloroethane	~~ND~~ J	5.0
Methylene Chloride	ND	3.0
Acetone	~~ND~~ J	5.0
Carbon Disulfide	ND	5.0
1,1-Dichloroethene	ND	2.0
1,1-Dichloroethane	ND	5.0
trans-1,2-Dichloroethene	ND	5.0
cis-1,2-Dichloroethene	ND	5.0
Chloroform	ND	5.0
1,2-Dichloroethane	ND	2.0
2-Butanone	~~ND~~ R	5.0
1,1,1-Trichloroethane	ND	5.0
Carbon Tetrachloride	ND	2.0
Bromodichloromethane	ND	1.0
1,2-Dichloropropane	ND	1.0
cis-1,3-Dichloropropene	ND	5.0
Trichloroethene	ND	1.0
Dibromochloromethane	ND	5.0
1,1,2-Trichloroethane	ND	3.0
Benzene	ND	1.0
trans-1,3-Dichloropropene	ND	5.0
Bromoform	ND	4.0
4-Methyl-2-Pentanone	ND	5.0
2-Hexanone	ND	5.0
Tetrachloroethene	ND	1.0
1,1,2,2-Tetrachloroethane	ND	1.0
Toluene	ND	5.0
Chlorobenzene	ND	5.0
Ethylbenzene	ND	4.0
Styrene	ND	5.0
Xylene (Total)	ND	5.0

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ENVIROTECH RESEARCH, INC.

Client ID: VP-N_120
Site: Alsy Manufacturing

Lab Sample No: 68781
Lab Job No: F077

Date Sampled: 06/26/98
Date Received: 06/27/98
Date Analyzed: 07/03/98
GC Column: DB624
Instrument ID: VOAMS2.i
Lab File ID: b6857.d

Matrix: WATER
Level: LOW
Purge Volume: 5.0 ml
Dilution Factor: 1.0

VOLATILE ORGANICS - GC/MS
TENTATIVELY IDENTIFIED COMPOUNDS
METHOD 8260B

COMPOUND NAME	RT	EST. CONC. ug/l	Q
1. NO VOLATILE ORGANIC COMPOUNDS FOUND			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
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23.			
24.			
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26.			
27.			
28.			
29.			
30.			

TOTAL ESTIMATED CONCENTRATION 0.0

ENVIROTECH RESEARCH, INC.

Client ID: VP-N_95
Site: Alsy Manufacturing

Lab Sample No: 68782
Lab Job No: F077

Date Sampled: 06/26/98
Date Received: 06/27/98
Date Analyzed: 07/03/98
GC Column: DB624
Instrument ID: VOAMS2.i
Lab File ID: b6858.d

Matrix: WATER
Level: LOW
Purge Volume: 5.0 ml
Dilution Factor: 1.0

VOLATILE ORGANICS - GC/MS
METHOD 8260

Parameter	Analytical Result Units: ug/l	Quantitation Limit Units: ug/l
Chloromethane	ND	5.0
Bromomethane	ND	5.0
Vinyl Chloride	ND	5.0
Chloroethane	~~ND~~ J	5.0
Methylene Chloride	ND	3.0
Acetone	~~ND~~ J	5.0
Carbon Disulfide	ND	5.0
1,1-Dichloroethene	ND	2.0
1,1-Dichloroethane	ND	5.0
trans-1,2-Dichloroethene	ND	5.0
cis-1,2-Dichloroethene	ND	5.0
Chloroform	ND	5.0
1,2-Dichloroethane	ND	2.0
2-Butanone	~~ND~~ R	5.0
1,1,1-Trichloroethane	ND	5.0
Carbon Tetrachloride	ND	2.0
Bromodichloromethane	ND	1.0
1,2-Dichloropropane	ND	1.0
cis-1,3-Dichloropropene	ND	5.0
Trichloroethene	ND	1.0
Dibromochloromethane	ND	5.0
1,1,2-Trichloroethane	ND	3.0
Benzene	ND	1.0
trans-1,3-Dichloropropene	ND	5.0
Bromoform	ND	4.0
4-Methyl-2-Pentanone	ND	5.0
2-Hexanone	ND	5.0
Tetrachloroethene	ND	1.0
1,1,2,2-Tetrachloroethane	ND	1.0
Toluene	ND	5.0
Chlorobenzene	ND	5.0
Ethylbenzene	ND	4.0
Styrene	ND	5.0
Xylene (Total)	ND	5.0

ENVIROTECH RESEARCH, INC.

Client ID: VP-N_95
Site: Alsy Manufacturing

Lab Sample No: 68782
Lab Job No: F077

Date Sampled: 06/26/98
Date Received: 06/27/98
Date Analyzed: 07/03/98
GC Column: DB624
Instrument ID: VOAMS2.i
Lab File ID: b6858.d

Matrix: WATER
Level: LOW
Purge Volume: 5.0 ml
Dilution Factor: 1.0

VOLATILE ORGANICS - GC/MS
TENTATIVELY IDENTIFIED COMPOUNDS
METHOD 8260B

COMPOUND NAME	RT	EST. CONC. ug/l	Q
1. NO VOLATILE ORGANIC COMPOUNDS FOUND			
2.			
3.			
4.			
5.			
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29.			
30.			

TOTAL ESTIMATED CONCENTRATION 0.0

ENVIROTECH RESEARCH, INC.

Client ID: VP-N_60
Site: Alsy Manufacturing

Lab Sample No: 68783
Lab Job No: F077

Date Sampled: 06/26/98
Date Received: 06/27/98
Date Analyzed: 07/03/98
GC Column: DB624
Instrument ID: VOAMS2.i
Lab File ID: b6859.d

Matrix: WATER
Level: LOW
Purge Volume: 5.0 ml
Dilution Factor: 1.0

VOLATILE ORGANICS - GC/MS
METHOD 8260

Parameter	Analytical Result Units: ug/l	Quantitation Limit Units: ug/l
Chloromethane	ND	5.0
Bromomethane	ND	5.0
Vinyl Chloride	ND	5.0
Chloroethane	~~ND~~ J	5.0
Methylene Chloride	ND	3.0
Acetone	~~ND~~ J	5.0
Carbon Disulfide	ND	5.0
1,1-Dichloroethene	ND	2.0
1,1-Dichloroethane	ND	5.0
trans-1,2-Dichloroethene	ND	5.0
cis-1,2-Dichloroethene	ND	5.0
Chloroform	ND	5.0
1,2-Dichloroethane	ND	2.0
2-Butanone	~~ND~~ R	5.0
1,1,1-Trichloroethane	ND	5.0
Carbon Tetrachloride	ND	2.0
Bromodichloromethane	ND	1.0
1,2-Dichloropropane	ND	1.0
cis-1,3-Dichloropropene	ND	5.0
Trichloroethene	ND	1.0
Dibromochloromethane	ND	5.0
1,1,2-Trichloroethane	ND	3.0
Benzene	ND	1.0
trans-1,3-Dichloropropene	ND	5.0
Bromoform	ND	4.0
4-Methyl-2-Pentanone	ND	5.0
2-Hexanone	ND	5.0
Tetrachloroethene	ND	1.0
1,1,2,2-Tetrachloroethane	ND	1.0
Toluene	ND	5.0
Chlorobenzene	ND	5.0
Ethylbenzene	ND	4.0
Styrene	ND	5.0
Xylene (Total)	ND	5.0

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ENVIROTECH RESEARCH, INC.

Client ID: **VP-N_60**
Site: Alsy Manufacturing

Lab Sample No: **68783**
Lab Job No: F077

Date Sampled: 06/26/98
Date Received: 06/27/98
Date Analyzed: 07/03/98
GC Column: DB624
Instrument ID: VOAMS2.i
Lab File ID: b6859.d

Matrix: WATER
Level: LOW
Purge Volume: 5.0 ml
Dilution Factor: 1.0

VOLATILE ORGANICS - GC/MS
TENTATIVELY IDENTIFIED COMPOUNDS
METHOD 8260B

COMPOUND NAME	RT	EST. CONC. ug/l	Q
1. NO VOLATILE ORGANIC COMPOUNDS FOUND			
2.			
3.			
4.			
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28.			
29.			
30.			

TOTAL ESTIMATED CONCENTRATION 0.0

ENVIROTECH RESEARCH, INC.

Client ID: **Trip_Blank**
Site: Alsy Manufacturing

Lab Sample No: **68784**
Lab Job No: F077

Date Sampled: 06/26/98
Date Received: 06/27/98
Date Analyzed: 07/03/98
GC Column: DB624
Instrument ID: VOAMS2.i
Lab File ID: b6860.d

Matrix: WATER
Level: LOW
Purge Volume: 5.0 ml
Dilution Factor: 1.0

VOLATILE ORGANICS - GC/MS
METHOD 8260

Parameter	Analytical Result Units: ug/l	Quantitation Limit Units: ug/l
Chloromethane	ND	5.0
Bromomethane	ND	5.0
Vinyl Chloride	ND	5.0
Chloroethane	~~ND~~ J	5.0
Methylene Chloride	ND	3.0
Acetone	~~ND~~ J	5.0
Carbon Disulfide	ND	5.0
1,1-Dichloroethene	ND	2.0
1,1-Dichloroethane	ND	5.0
trans-1,2-Dichloroethene	ND	5.0
cis-1,2-Dichloroethene	ND	5.0
Chloroform	ND	5.0
1,2-Dichloroethane	ND	2.0
2-Butanone	~~ND~~ R	5.0
1,1,1-Trichloroethane	ND	5.0
Carbon Tetrachloride	ND	2.0
Bromodichloromethane	ND	1.0
1,2-Dichloropropane	ND	1.0
cis-1,3-Dichloropropene	ND	5.0
Trichloroethene	ND	1.0
Dibromochloromethane	ND	5.0
1,1,2-Trichloroethane	ND	3.0
Benzene	ND	1.0
trans-1,3-Dichloropropene	ND	5.0
Bromoform	ND	4.0
4-Methyl-2-Pentanone	ND	5.0
2-Hexanone	ND	5.0
Tetrachloroethene	ND	1.0
1,1,2,2-Tetrachloroethane	ND	1.0
Toluene	ND	5.0
Chlorobenzene	ND	5.0
Ethylbenzene	ND	4.0
Styrene	ND	5.0
Xylene (Total)	ND	5.0

ENVIROTECH RESEARCH, INC.

Client ID: **Trip_Blank**
Site: Alsy Manufacturing

Lab Sample No: 68784
Lab Job No: F077

Date Sampled: 06/26/98
Date Received: 06/27/98
Date Analyzed: 07/03/98
GC Column: DB624
Instrument ID: VOAMS2.i
Lab File ID: b6860.d

Matrix: WATER
Level: LOW
Purge Volume: 5.0 ml
Dilution Factor: 1.0

VOLATILE ORGANICS - GC/MS
TENTATIVELY IDENTIFIED COMPOUNDS
METHOD 8260B

COMPOUND NAME	RT	EST. CONC. ug/l	Q
1. NO VOLATILE ORGANIC COMPOUNDS FOUND			
2.			
3.			
4.			
5.			
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7.			
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23.			
24.			
25.			
26.			
27.			
28.			
29.			
30.			

TOTAL ESTIMATED CONCENTRATION 0.0

ENVIROTECH RESEARCH, INC.

Client ID: AMS-2
Site: Alsy Manufacturing

Lab Sample No: 68426
Lab Job No: F031

Date Sampled: 06/25/98
Date Received: 06/26/98

Matrix: WATER
Level: LOW

METALS ANALYSIS

Analyte	Analytical Result Units: ug/l	Instrument Detection Limit	Qual	M
Nickel	2310	2.1		P
Zinc	7.8 U	3.9	B	P

8/12/98

Qual Column - Data Reporting Qualifiers (See Sec 2 of Report)
M Column - Method Code (See Section 2 of Report)

Client ID: **FB625**
Site: **Alsy Manufacturing**

Lab Sample No: 68427
Lab Job No: F031

Date Sampled: 06/25/98
Date Received: 06/26/98

Matrix: WATER
Level: LOW

METALS ANALYSIS

Analyte	Analytical Result Units: ug/l	Instrument Detection Limit	Qual	M
Nickel	ND	2.1		P
Zinc	7.7	3.9	B	P

Qual Column - Data Reporting Qualifiers (See Sec 2 of Report)
M Column - Method Code (See Section 2 of Report)

ENVIROTECH RESEARCH, INC.

Client ID: VP-S 120
Site: **Alsy Manufacturing**

Lab Sample No: 68429
Lab Job No: F031

Date Sampled: 06/25/98
Date Received: 06/26/98

Matrix: WATER
Level: LOW

METALS ANALYSIS

Analyte	Analytical Result Units: ug/l	Instrument Detection Limit	Qual	M
Nickel	6.1	2.1	B	P
Zinc	20.8 U	3.9	B	P

8/12/98

Qual Column - Data Reporting Qualifiers (See Sec 2 of Report)
M Column - Method Code (See Section 2 of Report)

Client ID: **VP-S Dup**
Site: **Alsy Manufacturing**

Lab Sample No: 68430
Lab Job No: F031

Date Sampled: 06/25/98
Date Received: 06/26/98

Matrix: WATER
Level: LOW

METALS ANALYSIS

Analyte	Analytical Result Units: ug/l	Instrument Detection Limit	Qual	M
Nickel	6.3	2.1	B	P
Zinc	28.1 U	3.9	B	P

8/12/98

Qual Column - Data Reporting Qualifiers (See Sec 2 of Report)
M Column - Method Code (See Section 2 of Report)

Client ID: VP-S 95
Site: Alsy Manufacturing

Lab Sample No: 68431
Lab Job No: F031

Date Sampled: 06/25/98
Date Received: 06/26/98

Matrix: WATER
Level: LOW

METALS ANALYSIS

Analyte	Analytical Result Units: ug/l	Instrument Detection Limit	Qual	M
Nickel	4.0	2.1	B	P
Zinc	20.3 U	3.9	B	P

5/12/98

Qual Column - Data Reporting Qualifiers (See Sec 2 of Report)
M Column - Method Code (See Section 2 of Report)

ENVIROTECH RESEARCH, INC.

Client ID: **VP-S 60**
Site: **Alsy Manufacturing**

Lab Sample No: 68432
Lab Job No: F031

Date Sampled: 06/25/98
Date Received: 06/26/98

Matrix: WATER
Level: LOW

METALS ANALYSIS

Analyte	Analytical Result Units: ug/l	Instrument Detection Limit	Qual	M
Nickel	9.3	2.1	B	P
Zinc	22.9 U	3.9	B	P

8/12/98

Qual Column - Data Reporting Qualifiers (See Sec 2 of Report)
M Column - Method Code (See Section 2 of Report)

ENVIROTECH RESEARCH, INC.

Client ID: **LMS-4**
Site: **Alsy Manufacturing**

Lab Sample No: 68780
Lab Job No: F077

Date Sampled: 06/26/98
Date Received: 06/27/98

Matrix: WATER
Level: LOW

METALS ANALYSIS

Analyte	Analytical Result Units: ug/l	Instrument Detection Limit	Qual	M
Nickel	4620	2.1		P
Zinc	777	3.9		P

Qual Column - Data Reporting Qualifiers (See Sec 2 of Report)
M Column - Method Code (See Section 2 of Report)

ENVIROTECH RESEARCH, INC.

Client ID: VP-N 120
Site: Alsy Manufacturing

Lab Sample No: 68781
Lab Job No: F077

Date Sampled: 06/26/98
Date Received: 06/27/98

Matrix: WATER
Level: LOW

METALS ANALYSIS

Analyte	Analytical Result Units: ug/l	Instrument Detection Limit	Qual	M
Nickel	3.1	2.1	B	P
Zinc	10.2 U	3.9	B	P

8/12/98

Qual Column - Data Reporting Qualifiers (See Sec 2 of Report)
M Column - Method Code (See Section 2 of Report)

ENVIROTECH RESEARCH, INC.

Client ID: VP-N 95
Site: Alsy Manufacturing

Lab Sample No: 68782
Lab Job No: F077

Date Sampled: 06/26/98
Date Received: 06/27/98

Matrix: WATER
Level: LOW

METALS ANALYSIS

Analyte	Analytical Result Units: ug/l	Instrument Detection Limit	Qual	M
Nickel	9.4	2.1	B	P
Zinc	8.7 U	3.9	B	P

8/12/98

Qual Column - Data Reporting Qualifiers (See Sec 2 of Report)
M Column - Method Code (See Section 2 of Report)

ENVIROTECH RESEARCH, INC.

Client ID: VP-N 60
Site: Alsy Manufacturing

Lab Sample No: 68783
Lab Job No: F077

Date Sampled: 06/26/98
Date Received: 06/27/98

Matrix: WATER
Level: LOW

METALS ANALYSIS

Analyte	Analytical Result Units: ug/l	Instrument Detection Limit	Qual	M
Nickel	32.5	2.1	B	P
Zinc	53.5	3.9		P

Qual Column - Data Reporting Qualifiers (See Sec 2 of Report)
M Column - Method Code (See Section 2 of Report)

DATA USABILITY SUMMARY REPORT (DUSR)
FORMER ALSY MANUFACTURING FACILITY
FEASIBILITY STUDY ADDENDUM
HICKSVILLE, NEW YORK
SOIL SAMPLE ANALYSIS
ENVIRONMENTAL RESOURCES MANAGEMENT (ERM)
PROJECT NUMBER KA201/0001328
SEVERN TRENT LABORATORIES JOB NUMBER 7001-2226A

Deliverables:

The above referenced data summary package and sample data package for fifteen (15) soil samples, one (1) blind field duplicate sample, three (3) field blanks, one (1) trip blank and one (1) set of matrix spike/matrix spike duplicate (MS/MSD) samples contain all the required deliverables as stipulated under the 1995 New York State Department of Environmental Conservation (NYSDEC) Analytical Services Protocol (ASP) Category B deliverables. The sample specific analysis includes Target Compound List (TCL) Volatile Organic Compound (VOC) analysis by USEPA SW-846 Method 8260B, TCL Semivolatile Organic Compound (SVOC) analysis by USEPA SW-846 Method 8270C and RCRA Metals with Mercury analyzed by USEPA SW-846 Method 7470A and all other metals by USEPA SW-846 6010B. Specific samples were also analyzed for Nickel only by USEPA SW-846 6010B. The data have been evaluated according to the protocols and quality control (QC) requirements of the ASP, the National Functional Guidelines for Organic Data Review (October 1999), the National Functional Guidelines for Inorganic Data Review (February 1994), the USEPA Region II Data Review Standard Operating Procedure (SOP) Number HW-24, Revision 1, June 1999: Validating Volatile Organic Compounds by SW-846 Method 8260B, the USEPA Region II Data Review SOP Number HW-22, Revision 2, June 2001: Validating Semivolatile Organic Compounds by SW-846 Method 8270C, the USEPA Region II Data Review SOP Number HW-2, Revision 11, January 1992: Evaluation of Metals Data for the CLP Program and the reviewer's professional judgment.

The validation report pertains to the following samples:

Samples		QC Samples
ERM-2 (12.5-13′)	EB-6B (16-16.5)	DUP082801 (blind duplicate of ERM-2 (15.5-16.5′))
ERM-2 (15.5-16.5′)	EB-4 (21.5-22.5)	FB082801 (field blank)
ERM-2 (21-21.5′)	EB-4 (30-30.5)	FB083001 (field blank)
ERM-2 (30-30.5′)	EB-4 (40-40.5)	FB083101 (field blank)
ERM-2 (40-40.5′)	EB-4 (50-50.5)	TB082801 (trip blank)

ERM-2 (50-50.5′)	EB-1 (17.5-18.5)
EB-6A (4.5-5)	EB-1 (20.5-21)
EB-6A (10-10.5)	

Organics

The following items/criteria were reviewed:

- Case narrative and deliverables compliance
- Holding times and sample preservation (including pH and temperature)
- System Monitoring Compound (Surrogate) recoveries, summary and data
- Matrix Spike/Matrix Spike Duplicate (MS/MSD) results, recoveries, summary and data
- Lab check sample (LCS), recoveries, summary and data
- Method blank summary and data
- Gas Chromatography (GC)/Mass Spectroscopy (MS) tuning and performance
- Initial and continuing calibration summaries and data
- Internal standard areas, retention times, summary and data
- Field blank results
- Trip blank results
- Blind Field Duplicate sample results
- Organic analysis data sheets (Form I)
- GC/MS chromatograms, mass spectra and quantitation reports
- Quantitation/detection limits
- Qualitative and quantitative compound identification

The items listed above have been judged to be in compliance with the analytical methods and with the ASP criteria with the exceptions discussed in the text below. The data have evaluated according to the procedures outlined above and qualified accordingly.

Volatiles

- The percent recovery (%R) of acetone was slightly above QC limits for the LCS applicable to sample ERM-2 (15.5-16.5′) (265%; QC limit 0-249%). Results for acetone for sample ERM-2 (15.5-16.5′) may possibly be biased. A positive result for acetone in sample ERM-2 (15.5-16.5′) is considered estimated and flagged "J" while a non-detect is considered estimated and flagged "UJ".

- The following table lists blanks (method, field and trip blanks), blank contaminants with concentrations and the samples associated with the blanks. Detected sample concentrations of methylene chloride, acetone, toluene or 2-butanone (common laboratory contaminants) less than ten times (10x) the highest associated blank (after taking sample dilution levels into account) are negated and qualified with a "U". For all other compounds, an action level of five times (5x) the highest associated blank concentration is used.

Blank	Contaminant	Concentration (Action Level)	Associated Samples
VBLKOF	methylene chloride acetone 2-butanone	4J (40 μg/kg) 7J (70 μg/kg) 7J (35 μg/kg)	ERM-2 (15.5-16.5′), DUP082801
VBLKK4	acetone	2J (20 μg/kg)	ERM-2 (15.5-16.5) RE
FB082801	methylene chloride acetone	1J (10 μG/KG) 6JB (60 μg/kg)	All samples
TB082801	methylene chloride acetone	1J (10 μg/kg) 8JB (80 μg/kg)	All samples

- Sample ERM-2 (15.5-16.5′) was initially analyzed on 08/31/2001 and contained tetrachloroethene (PCE) at a concentration of 300 μg/kg. This was above the calibration range of the instrument and qualified with an "E" by the laboratory. The sample was reanalyzed ("RE" suffix on the sample ID) on 09/05/2001 and the concentration of PCE was much lower (43 μg/kg). The laboratory has reported both sets of data. It is the validation's professional opinion that results from the initial analysis of this sample should be utilized. It should be noted that the concentration of PCE detected in the associated blind field duplicate sample was 170 μg/kg. The result for PCE is considered estimated and flagged "J".

- The following table lists compounds that exceeded 30 percent relative standard deviation (%RSD) for relative response factors (RRF) in the initial calibration (ICAL) or 25 percent difference (%D) between the initial calibration average response factor and the continuing calibration verification (CCV) response factor. Associated field samples are also listed. Positive results for these compounds in associated samples are considered estimated and flagged "J". All non-detect results for the compound of interest in the appropriate samples are flagged "UJ". Calibrations applicable to QC samples only have not been listed.

Calibration	Compound	Deficiency	Associated Samples
ICAL 08/14/01 13:08-16:42	acetone vinyl acetate	%RSD=34.9 %RSD=35.5	ERM-2 (15.5-16.5′), DUP082801
ICAL 07/26/01 12:56-18:07	acetone 2-hexanone	%RSD=88.8 %RSD=60.0	ERM-2 (15.5-16.5′) RE
CCV 8/31/01 @ 09:56	acetone vinyl acetate	%D=45.6 %D=35.1	ERM-2 (15.5-16.5′), DUP082801
CCV 09/05/01 @ 11:16	acetone 2-hexanone 4-methyl-2-pentanone vinyl acetate	%D=67.5 %D=50.4 %D=27.0 %D=63.4	ERM-2 (15.5-16.5′) RE

Semivolatiles

- The percent recovery (%R) for 4-nitrophenol (18%; QC limits 37-164%) was below QC limits in the soil LCS. Results for 4-nitrophenol for sample ERM-2 (15.5-16.5′) and the associated blind field duplicate, DUP082801 may possibly be biased. A positive result for 4-nitrophenol in sample ERM-2 (15.5-16.5′) and the associated blind field duplicate, DUP082801 is considered estimated and flagged "J" while a non-detect is considered estimated and flagged "UJ". The aqueous LCS also contained deficient %R, however only the FB are affected.

- The following table lists blanks, blank contaminants with concentrations, and the associated samples. Common laboratory phthalate contaminants (bis(2-ethylhexyl)phthalate) are negated in a sample if the sample concentration is less than or equal to ten times (10x) the highest associated blank concentration. For all other compounds, an action level of five times the highest associated blank concentration is used. Blanks applicable only to quality control samples have not been listed in this table.

Blank	Contaminant	Concentration (Action Level)	Associated Samples
SBLKMP	benzoic acid di-n-butylphthalate bis(2-ethylhexyl)phthalate	12J (60 μg/kg) 9J (90 μg/kg) 38J (380 μg/kg)	ERM-2 (15.5-16.5′) DUP082801
FB082801	di-n-butylphthalate bis(2-ethylhexyl)phthalate	0.2JB (1.0 μg/kg) 0.6J (6.0 μg/kg)	All samples

- The following table lists samples which have one or more internal standard (IS) area responses outside of the established "lower" QC limits. Limits are established by taking twice and half of the CCC area response for each IS. The samples were reanalyzed and the laboratory has reported only the subsequent analysis. Similar results were obtained indicative of matrix effects. All target compounds quantitated against the appropriate IS are flagged as estimated "J", while non-detects are flagged "UJ".

Sample	Internal Standard	Area	QC Limits
ERM-2 (15.5-16.5')	chrysene-d12	469977	479200-1916802
DUP082801	chrysene-d12	432138	479200-1916802
	perylene-d12	332379	364670-1458680

- Sample ERM-2 (15.5-16.5') and the associated blind field duplicate, DUP082801 exhibited 55% and 63% moisture respectively. The laboratory has calculated the % moisture per sample container. The %M for each fraction therefore varies slightly. Because of the high moisture content of these samples, all results for the SVOC fraction are considered estimated and flagged "J" for positive results and "UJ" for non-detects.

- Due to the sample matrix, sample ERM-2 (15.5-16.5') was analyzed at a five-fold dilution with a reduced sample weight and a n elevated extract volume while the associated blind field duplicate, DUP082801 was analyzed at a five-fold dilution also with a reduced sample weight. No qualification is required, however the data user should be aware of the elevated reporting limits.

Inorganics

The following items/criteria were reviewed:

- Case narrative and deliverable requirements
- Holding times and sample preservation
- Detection limits
- Inorganic analysis data sheets (Form I)
- Initial and continuing calibration verifications
- Contract Required Detection Limit (CRDL) standard analysis
- Lab Blank data
- ICP Interference Check Sample (ICS) analysis
- Matrix Spike analysis
- Matrix Spike Duplicate analysis
- Laboratory Control Sample (LCS) results

- ICP Serial Dilution analysis
- Field Blank results
- Blind Field Duplicate results

The items listed above have been judged to be in compliance with the analytical methods and with the ASP criteria with the exceptions discussed in the text below. The data have evaluated according to the procedures outlined above and qualified accordingly.

General

- Nickel was present at low concentrations in field blanks applicable to samples contained in this data deliverable. Typically the action level for determining other sources of contamination is five times that present in an associated blank. There are samples contained in this data package applicable to these field blanks that have concentrations for nickel below the "blank" action level. It is the reviewer's professional opinion that the concentration of nickel in these samples collected in association with these field blanks are real and not attributable to another source, however taking a conservative approach the data are considered estimated and concentrations near the "blank" action level are flagged with a "J".

Metals/Nickel

- CRDL standard recoveries were above the 80% - 120% USEPA Region II QC limits for selenium. Recoveries greater than 120% may indicate potential high bias in positive sample results at concentrations near the CRDL. Positive concentrations for selenium in these samples should be considered estimated and flagged "J" at concentration less than or equal to two times that metal's CRDL. Non-detect results do not require qualification.

- The blind field duplicate pair exhibited RPDs greater than the specified 100% QC limit (USEPA Region II QC limit for soils) for lead, mercury, selenium and silver. Qualification of the sample and associated blind field duplicate data only is therefore required for these analytes, with the results flagged "J" for positive detects and "UJ" for non-detects.

Package Summary:

All data are valid and usable with qualifications as noted in this review.

Signed: ____________________ Dated: 11/12/2003

Andrew J. Coenen
Project Scientist

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT ID

ERM-2 (15.5-16.5

Lab Name: STL/CT Contract: ______

Lab Code: IEACT Case No.: 2226A SAS No.: ______ SDG No.: A2226

Matrix: (soil/water) SOIL Lab Sample ID: 012226A-03

Sample wt/vol: 5.11 (g/mL) G Lab File ID: >O5340

Level: (low/med) LOW Date Received: 08/29/01

% Moisture: not dec. 30 Date Analyzed: 08/31/01

GC Column: 007-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: ________ (uL) Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	14	U
74-83-9	Bromomethane	14	U
75-01-4	Vinyl Chloride	14	U
75-00-3	Chloroethane	14	U
75-09-2	Methylene Chloride	14 ~~7~~	~~B~~ U
67-64-1	Acetone	60	~~B~~ UJ
75-15-0	Carbon Disulfide	2	J
108-05-4	Vinyl Acetate	14	U J
75-35-4	1,1-Dichloroethene	7	U
75-34-3	1,1-Dichloroethane	4	J
156-59-2	cis-1,2-Dichloroethene	8	
156-60-5	trans-1,2-Dichloroethene	7	U
67-66-3	Chloroform	7	U
107-06-2	1,2-Dichloroethane	7	U
78-93-3	2-Butanone	19	~~B~~ U
71-55-6	1,1,1-Trichloroethane	11	
56-23-5	Carbon Tetrachloride	7	U
75-27-4	Bromodichloromethane	7	U
78-87-5	1,2-Dichloropropane	7	U
10061-01-5	cis-1,3-Dichloropropene	7	U
79-01-6	Trichloroethene	16	
124-48-1	Dibromochloromethane	7	U
79-00-5	1,1,2-Trichloroethane	7	U
71-43-2	Benzene	7	U
10061-02-6	trans-1,3-Dichloropropene	7	U
75-25-2	Bromoform	7	U
108-10-1	4-Methyl-2-Pentanone	14	U
591-78-6	2-Hexanone	14	U
127-18-4	Tetrachloroethene	300	~~E~~ J
108-88-3	Toluene	2	J
79-34-5	1,1,2,2-Tetrachloroethane	7	U
108-90-7	Chlorobenzene	7	U
100-41-4	Ethylbenzene	2	J
100-42-5	Styrene	7	U
1330-20-7	Xylene (total)	15	

Use These Results

FORM I VOA 8260

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT ID

ERM-2 (15.5-16.5 R

Lab Name: STL/CT

Contract: ______

Lab Code: IEACT

Case No.: 2226A

SAS No.: ______

SDG No.: A2226

Matrix: (soil/water) SOIL

Lab Sample ID: 012226A-03RE

Sample wt/vol: 5 (g/mL) G

Lab File ID: >K6568

Level: (low/med) LOW

Date Received: 08/29/01

% Moisture: not dec. 30

Date Analyzed: 09/05/01

GC Column: 007-624 ID: 0.53 (mm)

Dilution Factor: 1.0

Soil Extract Volume: ______ (uL)

Soil Aliquot Volume: ______ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	14	U
74-83-9	Bromomethane	14	U
75-01-4	Vinyl Chloride	14	U
75-00-3	Chloroethane	14	U
75-09-2	Methylene Chloride	14 ~~6~~	~~J~~ U
67-64-1	Acetone	35	~~B~~ UJ
75-15-0	Carbon Disulfide	7	U
108-05-4	Vinyl Acetate	14	U J
75-35-4	1,1-Dichloroethene	7	U
75-34-3	1,1-Dichloroethane	7	U
156-59-2	cis-1,2-Dichloroethene	7	U
156-60-5	trans-1,2-Dichloroethene	7	U
67-66-3	Chloroform	7	U
107-06-2	1,2-Dichloroethane	7	U
78-93-3	2-Butanone	14	U
71-55-6	1,1,1-Trichloroethane	7	U
56-23-5	Carbon Tetrachloride	7	U
75-27-4	Bromodichloromethane	7	U
78-87-5	1,2-Dichloropropane	7	U
10061-01-5	cis-1,3-Dichloropropene	7	U
79-01-6	Trichloroethene	2	J
124-48-1	Dibromochloromethane	7	U
79-00-5	1,1,2-Trichloroethane	7	U
71-43-2	Benzene	7	U
10061-02-6	trans-1,3-Dichloropropene	7	U
75-25-2	Bromoform	7	U
108-10-1	4-Methyl-2-Pentanone	14	U J
591-78-6	2-Hexanone	14	U J
127-18-4	Tetrachloroethene	43	
108-88-3	Toluene	7	U
79-34-5	1,1,2,2-Tetrachloroethane	7	U
108-90-7	Chlorobenzene	7	U
100-41-4	Ethylbenzene	7	U
100-42-5	Styrene	7	U
1330-20-7	Xylene (total)	7	U

Initial Analysis

Use ~~These~~ Results

FORM I VOA

8260

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT ID

DUP082801

Lab Name: STL/CT Contract: ________

Lab Code: IEACT Case No.: 2226A SAS No.: ______ SDG No.: A2226

Matrix: (soil/water) SOIL Lab Sample ID: 012226A-08

Sample wt/vol: 5.1 (g/mL) G Lab File ID: >05341

Level: (low/med) LOW Date Received: 08/29/01

% Moisture: not dec. 24 Date Analyzed: 08/31/01

GC Column: 007-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: ________ (uL) Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	13	U
74-83-9	Bromomethane	13	U
75-01-4	Vinyl Chloride	13	U
75-00-3	Chloroethane	13	U
75-09-2	Methylene Chloride	13 ~~6~~	~~B~~ U
67-64-1	Acetone	63	~~B~~ UJ
75-15-0	Carbon Disulfide	2	J
108-05-4	Vinyl Acetate	13	U J
75-35-4	1,1-Dichloroethene	6	U
75-34-3	1,1-Dichloroethane	2	J
156-59-2	cis-1,2-Dichloroethene	4	J
156-60-5	trans-1,2-Dichloroethene	6	U
67-66-3	Chloroform	6	U
107-06-2	1,2-Dichloroethane	6	U
78-93-3	2-Butanone	18	~~B~~ U
71-55-6	1,1,1-Trichloroethane	8	
56-23-5	Carbon Tetrachloride	6	U
75-27-4	Bromodichloromethane	6	U
78-87-5	1,2-Dichloropropane	6	U
10061-01-5	cis-1,3-Dichloropropene	6	U
79-01-6	Trichloroethene	9	
124-48-1	Dibromochloromethane	6	U
79-00-5	1,1,2-Trichloroethane	6	U
71-43-2	Benzene	6	U
10061-02-6	trans-1,3-Dichloropropene	6	U
75-25-2	Bromoform	6	U
108-10-1	4-Methyl-2-Pentanone	13	U
591-78-6	2-Hexanone	13	U
127-18-4	Tetrachloroethene	170	
108-88-3	Toluene	2	J
79-34-5	1,1,2,2-Tetrachloroethane	6	U
108-90-7	Chlorobenzene	6	U
100-41-4	Ethylbenzene	1	J
100-42-5	Styrene	6	U
1330-20-7	Xylene (total)	16	

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT ID

FB082801

Lab Name: STL/CT   Contract: ______

Lab Code: IEACT   Case No.: 2226A   SAS No.: ______   SDG No.: A2226

Matrix: (soil/water) WATER   Lab Sample ID: 012226A-01

Sample wt/vol: 5 (g/mL) ML   Lab File ID: >N0158

Level: (low/med) LOW   Date Received: 08/29/01

% Moisture: not dec. ______   Date Analyzed: 09/04/01

GC Column: 007-624   ID: 0.53 (mm)   Dilution Factor: 1.0

Soil Extract Volume: ______ (uL)   Soil Aliquot Volume: ______ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	1	J
67-64-1	Acetone	6	J~~B~~
75-15-0	Carbon Disulfide	5	U
108-05-4	Vinyl Acetate	10	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
156-59-2	cis-1,2-Dichloroethene	5	U
156-60-5	trans-1,2-Dichloroethene	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	5	U
108-88-3	Toluene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylene (total)	5	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT ID

TB082801

Lab Name: STL/CT Contract: ______

Lab Code: IEACT Case No.: 2226A SAS No.: ______ SDG No.: A2226

Matrix: (soil/water) WATER Lab Sample ID: 012226A-09

Sample wt/vol: 5 (g/mL) ML Lab File ID: >N0159

Level: (low/med) LOW Date Received: 08/29/01

% Moisture: not dec. ______ Date Analyzed: 09/04/01

GC Column: 007-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: ______ (uL) Soil Aliquot Volume: ____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	1	J
67-64-1	Acetone	8	JB
75-15-0	Carbon Disulfide	5	U
108-05-4	Vinyl Acetate	10	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
156-59-2	cis-1,2-Dichloroethene	5	U
156-60-5	trans-1,2-Dichloroethene	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	5	U
108-88-3	Toluene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylene (total)	5	U

1B

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

ERM-2 (15.5-16.5'

Lab Name: STL/CT Contract: ______

Lab Code: IEACT Case No.: 2226A SAS No.: ______ SDG No.: A2226

Matrix: (soil/water) SOIL Lab Sample ID: 012226A-03

Sample wt/vol: 15 (g/mL) G Lab File ID: >P3126

Level: (low/med) LOW Date Received: 08/29/01

% Moisture: 55 decanted: (Y/N) N Date Extracted: 09/04/01

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 09/06/01

Injection Volume: 2.0 (uL) Dilution Factor: 5.0

GPC Cleanup: (Y/N) N pH: ____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	580	J
111-44-4	bis(2-Chloroethyl)ether	7300	U J
95-57-8	2-Chlorophenol	7300	U
541-73-1	1,3-Dichlorobenzene	7300	U
106-46-7	1,4-Dichlorobenzene	7300	U
100-51-6	Benzyl alcohol	7300	U
95-50-1	1,2-Dichlorobenzene	7300	U
95-48-7	2-Methylphenol	7300	U
108-60-1	2,2'-oxybis(1-Chloropropane)	7300	U ↓
106-44-5	4-Methylphenol	240	J
621-64-7	N-Nitroso-di-n-propylamine	7300	U J
67-72-1	Hexachloroethane	7300	U
98-95-3	Nitrobenzene	7300	U
78-59-1	Isophorone	7300	U
88-75-5	2-Nitrophenol	7300	U
105-67-9	2,4-Dimethylphenol	7300	U ↓
65-85-0	Benzoic acid	7300 ~~380~~	~~JB~~ UJ
111-91-1	bis(2-Chloroethoxy)methane	7300	U J
120-83-2	2,4-Dichlorophenol	310	J
120-82-1	1,2,4-Trichlorobenzene	7300	U J
91-20-3	Naphthalene	250	J
106-47-8	4-Chloroaniline	7300	U J
87-68-3	Hexachlorobutadiene	7300	U
59-50-7	4-Chloro-3-methylphenol	7300	U ↓
91-57-6	2-Methylnaphthalene	230	J
77-47-4	Hexachlorocyclopentadiene	7300	U J
88-06-2	2,4,6-Trichlorophenol	600	J
95-95-4	2,4,5-Trichlorophenol	36000	U J
91-58-7	2-Chloronaphthalene	7300	U
88-74-4	2-Nitroaniline	36000	U ↓
131-11-3	Dimethylphthalate	210	J
208-96-8	Acenaphthylene	7300	U J
606-20-2	2,6-Dinitrotoluene	7300	U ↓

FORM I SV-1

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ERM-2 (15.5-16.5

Lab Name: STL/CT Contract: ______

Lab Code: IEACT Case No.: 2226A SAS No.: ______ SDG No.: A2226

Matrix: (soil/water) SOIL Lab Sample ID: 012226A-03

Sample wt/vol: 15 (g/mL) G Lab File ID: >P3126

Level: (low/med) LOW Date Received: 08/29/01

% Moisture: 55 decanted: (Y/N) N Date Extracted: 09/04/01

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 09/06/01

Injection Volume: 2.0 (uL) Dilution Factor: 5.0

GPC Cleanup: (Y/N) N pH: _____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
99-09-2	3-Nitroaniline	36000	U J
83-32-9	Acenaphthene	1100	J
51-28-5	2,4-Dinitrophenol	36000	UJ
100-02-7	4-Nitrophenol	36000	UJ
132-64-9	Dibenzofuran	520	J
121-14-2	2,4-Dinitrotoluene	7300	U J
84-66-2	Diethylphthalate	7300	U
7005-72-3	4-Chlorophenyl-phenylether	7300	U ↓
86-73-7	Fluorene	900	J
100-01-6	4-Nitroaniline	36000	UJ
534-52-1	4,6-Dinitro-2-methylphenol	36000	U
86-30-6	N-Nitrosodiphenylamine (1)	7300	U
101-55-3	4-Bromophenyl-phenylether	7300	U
118-74-1	Hexachlorobenzene	7300	U
87-86-5	Pentachlorophenol	36000	U
85-01-8	Phenanthrene	7300	↓
120-12-7	Anthracene	1700	J
86-74-8	Carbazole	1000	J
84-74-2	Di-n-butylphthalate	7300 ~~1700~~	~~JB~~ UJ
206-44-0	Fluoranthene	5900	J
129-00-0	Pyrene	7500	J
85-68-7	Butylbenzylphthalate	3900	J
91-94-1	3,3'-Dichlorobenzidine	15000	UJ
56-55-3	Benzo(a)anthracene	3100	J
218-01-9	Chrysene	4700	J
117-81-7	bis(2-Ethylhexyl)phthalate	44000	~~B~~ J
117-84-0	Di-n-octylphthalate	1200	J
205-99-2	Benzo(b)fluoranthene	3200	J
207-08-9	Benzo(k)fluoranthene	2800	J
50-32-8	Benzo(a)pyrene	3300	J
193-39-5	Indeno(1,2,3-cd)pyrene	2100	J
53-70-3	Dibenzo(a,h)anthracene	890	J
191-24-2	Benzo(g,h,i)perylene	2100	J

(1) - Cannot be separated from Diphenylamine

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
DUP082801

Lab Name: STL/CT Contract: ______

Lab Code: IEACT Case No.: 2226A SAS No.: ______ SDG No.: A2226

Matrix: (soil/water) SOIL Lab Sample ID: 012226A-08

Sample wt/vol: 15 (g/mL) G Lab File ID: >P3127

Level: (low/med) LOW Date Received: 08/29/01

% Moisture: 63 decanted: (Y/N) N Date Extracted: 09/04/01

Concentrated Extract Volume: 500 (uL) Date Analyzed: 09/06/01

Injection Volume: 2.0 (uL) Dilution Factor: 5.0

GPC Cleanup: (Y/N) N pH: _____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	11000	J
111-44-4	bis(2-Chloroethyl)ether	4400	U
95-57-8	2-Chlorophenol	4400	U
541-73-1	1,3-Dichlorobenzene	4400	U
106-46-7	1,4-Dichlorobenzene	4400	U
100-51-6	Benzyl alcohol	4400	U
95-50-1	1,2-Dichlorobenzene	4400	U
95-48-7	2-Methylphenol	4400	U
108-60-1	2,2'-oxybis(1-Chloropropane)	4400	U
106-44-5	4-Methylphenol	4400	U
621-64-7	N-Nitroso-di-n-propylamine	4400	U
67-72-1	Hexachloroethane	4400	U
98-95-3	Nitrobenzene	4400	U
78-59-1	Isophorone	4400	U
88-75-5	2-Nitrophenol	4400	U
105-67-9	2,4-Dimethylphenol	4400	U
65-85-0	Benzoic acid	22000	U
111-91-1	bis(2-Chloroethoxy)methane	4400	U
120-83-2	2,4-Dichlorophenol	4400	U
120-82-1	1,2,4-Trichlorobenzene	4400	U
91-20-3	Naphthalene	82	J
106-47-8	4-Chloroaniline	4400	UJ
87-68-3	Hexachlorobutadiene	4400	U
59-50-7	4-Chloro-3-methylphenol	4400	U
91-57-6	2-Methylnaphthalene	4400	U
77-47-4	Hexachlorocyclopentadiene	4400	U
88-06-2	2,4,6-Trichlorophenol	4400	U
95-95-4	2,4,5-Trichlorophenol	22000	U
91-58-7	2-Chloronaphthalene	4400	U
88-74-4	2-Nitroaniline	22000	U
131-11-3	Dimethylphthalate	130	J
208-96-8	Acenaphthylene	4400	UJ
606-20-2	2,6-Dinitrotoluene	4400	U

1C
EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

DUP082801

Lab Name: STL/CT Contract: ______

Lab Code: IEACT Case No.: 2226A SAS No.: ______ SDG No.: A2226

Matrix: (soil/water) SOIL Lab Sample ID: 012226A-08

Sample wt/vol: 15 (g/mL) G Lab File ID: >P3127

Level: (low/med) LOW Date Received: 08/29/01

% Moisture: 63 decanted: (Y/N) N Date Extracted: 09/04/01

Concentrated Extract Volume: 500 (uL) Date Analyzed: 09/06/01

Injection Volume: 2.0 (uL) Dilution Factor: 5.0

GPC Cleanup: (Y/N) N pH: _____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
99-09-2	3-Nitroaniline	22000	U J
83-32-9	Acenaphthene	88	J
51-28-5	2,4-Dinitrophenol	22000	U J
100-02-7	4-Nitrophenol	22000	U J
132-64-9	Dibenzofuran	80	J
121-14-2	2,4-Dinitrotoluene	4400	U J
84-66-2	Diethylphthalate	4400	U
7005-72-3	4-Chlorophenyl-phenylether	4400	U ↓
86-73-7	Fluorene	83	J
100-01-6	4-Nitroaniline	22000	U J
534-52-1	4,6-Dinitro-2-methylphenol	22000	U
86-30-6	N-Nitrosodiphenylamine (1)	4400	U
101-55-3	4-Bromophenyl-phenylether	4400	U
118-74-1	Hexachlorobenzene	4400	U
87-86-5	Pentachlorophenol	22000	U ↓
85-01-8	Phenanthrene	790	J
120-12-7	Anthracene	140	J
86-74-8	Carbazole	150	J
84-74-2	Di-n-butylphthalate	4400 ~~340~~	~~JB~~ U
206-44-0	Fluoranthene	690	J
129-00-0	Pyrene	820	J
85-68-7	Butylbenzylphthalate	1100	J
91-94-1	3,3'-Dichlorobenzidine	8900	U J
56-55-3	Benzo(a)anthracene	250	J
218-01-9	Chrysene	490	J
117-81-7	bis(2-Ethylhexyl)phthalate	28000	~~B~~ J
117-84-0	Di-n-octylphthalate	950	J
205-99-2	Benzo(b)fluoranthene	300	J
207-08-9	Benzo(k)fluoranthene	300	J
50-32-8	Benzo(a)pyrene	280	J
193-39-5	Indeno(1,2,3-cd)pyrene	190	J
53-70-3	Dibenzo(a,h)anthracene	4400	U J
191-24-2	Benzo(g,h,i)perylene	210	J

(1) - Cannot be separated from Diphenylamine

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FB082801

Lab Name: STL/CT Contract: ______

Lab Code: IEACT Case No.: 2226A SAS No.: ______ SDG No.: A2226

Matrix: (soil/water) WATER Lab Sample ID: 012226A-01

Sample wt/vol: 1000 (g/mL) ML Lab File ID: >P3113

Level: (low/med) LOW Date Received: 08/29/01

% Moisture: ______ decanted: (Y/N) ____ Date Extracted: 08/31/01

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 09/05/01

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
100-51-6	Benzyl alcohol	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	2,2'-oxybis(1-Chloropropane)	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-di-n-propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
65-85-0	Benzoic acid	50	U
111-91-1	bis(2-Chloroethoxy)methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	50	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	50	U
131-11-3	Dimethylphthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U

1C

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

FB082801

Lab Name: STL/CT Contract: ______

Lab Code: IEACT Case No.: 2226A SAS No.: _____ SDG No.: A2226

Matrix: (soil/water) WATER Lab Sample ID: 012226A-01

Sample wt/vol: 1000 (g/mL) ML Lab File ID: >P3113

Level: (low/med) LOW Date Received: 08/29/01

% Moisture: ______ decanted: (Y/N) ___ Date Extracted: 08/31/01

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 09/05/01

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
99-09-2	3-Nitroaniline	50	U
83-32-9	Acenaphthene	10	U
51-28-5	2,4-Dinitrophenol	50	U
100-02-7	4-Nitrophenol	50	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	20	U
534-52-1	4,6-Dinitro-2-methylphenol	50	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	50	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
86-74-8	Carbazole	10	U
84-74-2	Di-n-butylphthalate	.2	J~~B~~
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	20	U
56-55-3	Benzo(a)anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)phthalate	.6	J~~B~~
117-84-0	Di-n-octylphthalate	10	U
205-99-2	Benzo(b)fluoranthene	10	U
207-08-9	Benzo(k)fluoranthene	10	U
50-32-8	Benzo(a)pyrene	10	U
193-39-5	Indeno(1,2,3-cd)pyrene	10	U
53-70-3	Dibenzo(a,h)anthracene	10	U
191-24-2	Benzo(g,h,i)perylene	10	U

(1) - Cannot be separated from Diphenylamine

FORM I SV-2

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

ERM-2 (15.5-16.5'

Lab Name: STL Contract: ______

Lab Code: STL Case No.: 2226A SAS No.: ______ SDG No.: A2226

Matrix (soil/water): SOIL Lab Sample ID: 012226A-03

Level (low/med): LOW Date Received: 08/29/01

% Solids: 44.7

Concentration Units (ug/L or mg/kg dry weight): Mg/Kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic	73.5			P
7440-39-3	Barium	48.7	~~B~~		P
7440-41-7	Beryllium				NR
7440-43-9	Cadmium	2.2			P
7440-70-2	Calcium				NR
7440-47-3	Chromium	83.8			P
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead	1400	J		P
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.51	J		CV
7440-02-0	Nickel	24700			P
7440-09-7	Potassium				NR
7782-49-2	Selenium	63.0	J		P
7440-22-4	Silver	0.52	~~B~~ J		P
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: BROWN Clarity Before: OPAQUE Texture: ______

Color After: YELLOW Clarity After: CLEAR Artifacts: ______

Comments:

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

DUP082801

Lab Name: STL

Contract:

Lab Code: STL

Case No.: 2226A

SAS No.:

SDG No.: A2226

Matrix (soil/water): SOIL

Lab Sample ID: 012226A-08

Level (low/med): LOW

Date Received: 08/29/01

% Solids: 48.6

Concentration Units (ug/L or mg/kg dry weight): Mg/Kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic	75.0			P
7440-39-3	Barium	51.0	~~B~~		P
7440-41-7	Beryllium				NR
7440-43-9	Cadmium	1.5	~~B~~		P
7440-70-2	Calcium				NR
7440-47-3	Chromium	50.0			P
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead	134.	J		P
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.16	J		CV
7440-02-0	Nickel	22900			P
7440-09-7	Potassium				NR
7782-49-2	Selenium	5.8	J		P
7440-22-4	Silver	0.35	U J		P
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: BROWN

Clarity Before: OPAQUE

Texture:

Color After: YELLOW

Clarity After: CLEAR

Artifacts:

Comments:

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

FB082801

Lab Name: STL
Contract:
Lab Code: STL
Case No.: 2226A
SAS No.:
SDG No.: A2226
Matrix (soil/water): WATER
Lab Sample ID: 012226A-01
Level (low/med): LOW
Date Received: 08/29/01
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic	4.4	U		P
7440-39-3	Barium	4.7	~~B~~		P
7440-41-7	Beryllium				NR
7440-43-9	Cadmium	0.80	U		P
7440-70-2	Calcium				NR
7440-47-3	Chromium	1.6	~~B~~		P
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead	2.0	U		P
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	1.4	U		P
7440-09-7	Potassium				NR
7782-49-2	Selenium	4.8	U		P
7440-22-4	Silver	1.0	U		P
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: COLORLESS
Clarity Before: CLEAR
Texture:
Color After: COLORLESS
Clarity After: CLEAR
Artifacts:
Comments:

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

EB-1 (17.5-18.5)

Lab Name: STL

Contract:

Lab Code: STL

Case No.: 2226A

SAS No.:

SDG No.: A2226

Matrix (soil/water): SOIL

Lab Sample ID: 012226A-19

Level (low/med): LOW

Date Received: 08/31/01

% Solids: 87.2

Concentration Units (ug/L or mg/kg dry weight): Mg/Kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel	136.			P
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: BROWN

Clarity Before: OPAQUE

Texture:

Color After: YELLOW

Clarity After: CLEAR

Artifacts:

Comments:

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

EB-1 (20.5-21)

Lab Name: STL Contract: ______

Lab Code: STL Case No.: 2226A SAS No.: ______ SDG No.: A2226

Matrix (soil/water): SOIL Lab Sample ID: 012226A-20

Level (low/med): LOW Date Received: 08/31/01

% Solids: 96.7

Concentration Units (ug/L or mg/kg dry weight): Mg/Kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel	5.3	~~B~~	J	P
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: BROWN Clarity Before: OPAQUE Texture: ______

Color After: COLORLESS Clarity After: CLEAR Artifacts: ______

Comments:

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1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

EB-4 (21.5-22.5)

Lab Name: STL
Contract:

Lab Code: STL
Case No.: 2226A
SAS No.:
SDG No.: A2226

Matrix (soil/water): SOIL
Lab Sample ID: 012226A-14

Level (low/med): LOW
Date Received: 08/31/01

% Solids: 95.3

Concentration Units (ug/L or mg/kg dry weight): Mg/Kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel	5.9	~~B~~	J	P
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: BROWN
Clarity Before: OPAQUE
Texture:

Color After: COLORLESS
Clarity After: CLEAR
Artifacts:

Comments:

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1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

EB-4 (30-30.5)

Lab Name: STL Contract:

Lab Code: STL Case No.: 2226A SAS No.: SDG No.: A2226

Matrix (soil/water): SOIL Lab Sample ID: 012226A-15

Level (low/med): LOW Date Received: 08/31/01

% Solids: 96.6

Concentration Units (ug/L or mg/kg dry weight): Mg/Kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel	1.4	~~B~~	J	P
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: BROWN Clarity Before: OPAQUE Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

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1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

EB-4 (40-40.5)

Lab Name: STL
Contract:

Lab Code: STL
Case No.: 2226A
SAS No.:
SDG No.: A2226

Matrix (soil/water): SOIL
Lab Sample ID: 012226A-16

Level (low/med): LOW
Date Received: 08/31/01

% Solids: 96.8

Concentration Units (ug/L or mg/kg dry weight): Mg/Kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel	1.7	~~B~~	J	P
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: BROWN
Clarity Before: OPAQUE
Texture:

Color After: COLORLESS
Clarity After: CLEAR
Artifacts:

Comments:

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

EB-4 (50-50.5)

Lab Name: STL Contract: ______

Lab Code: STL Case No.: 2226A SAS No.: ______ SDG No.: A2226

Matrix (soil/water): SOIL Lab Sample ID: 012226A-17

Level (low/med): LOW Date Received: 08/31/01

% Solids: 95.7

Concentration Units (ug/L or mg/kg dry weight): Mg/Kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel	2.6	~~B~~	J	P
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: BROWN Clarity Before: OPAQUE Texture: ______

Color After: COLORLESS Clarity After: CLEAR Artifacts: ______

Comments:

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

EB-6A (4.5-5)

Lab Name: STL Contract:

Lab Code: STL Case No.: 2226A SAS No.: SDG No.: A2226

Matrix (soil/water): SOIL Lab Sample ID: 012226A-11

Level (low/med): LOW Date Received: 08/31/01

% Solids: 81.8

Concentration Units (ug/L or mg/kg dry weight): Mg/Kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel	19.0			P
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: BROWN Clarity Before: OPAQUE Texture:

Color After: YELLOW Clarity After: CLEAR Artifacts:

Comments:

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

EB-6A (10-10.5)

Lab Name: STL Contract:

Lab Code: STL Case No.: 2226A SAS No.: SDG No.: A2226

Matrix (soil/water): SOIL Lab Sample ID: 012226A-12

Level (low/med): LOW Date Received: 08/31/01

% Solids: 89.6

Concentration Units (ug/L or mg/kg dry weight): Mg/Kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel	74.2			P
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: BROWN Clarity Before: OPAQUE Texture:

Color After: YELLOW Clarity After: CLEAR Artifacts:

Comments:

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

EB-6B (16-16.5)

Lab Name: STL Contract: ______

Lab Code: STL Case No.: 2226A SAS No.: ______ SDG No.: A2226

Matrix (soil/water): SOIL Lab Sample ID: 012226A-13

Level (low/med): LOW Date Received: 08/31/01

% Solids: 95.1

Concentration Units (ug/L or mg/kg dry weight): Mg/Kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel	8.8	J		P
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: BROWN Clarity Before: OPAQUE Texture: ______

Color After: COLORLESS Clarity After: CLEAR Artifacts: ______

Comments:

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

ERM-2 (12.5-13')

Lab Name: STL

Contract:

Lab Code: STL

Case No.: 2226A

SAS No.:

SDG No.: A2226

Matrix (soil/water): SOIL

Lab Sample ID: 012226A-02

Level (low/med): LOW

Date Received: 08/29/01

% Solids: 20.2

Concentration Units (ug/L or mg/kg dry weight): Mg/Kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel	106000			P
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: BROWN

Clarity Before: OPAQUE

Texture:

Color After: YELLOW

Clarity After: CLOUDY

Artifacts:

Comments:

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

ERM-2 (21-21.5')

Lab Name: STL

Contract:

Lab Code: STL

Case No.: 2226A

SAS No.:

SDG No.: A2226

Matrix (soil/water): SOIL

Lab Sample ID: 012226A-04

Level (low/med): LOW

Date Received: 08/29/01

% Solids: 95.7

Concentration Units (ug/L or mg/kg dry weight): Mg/Kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel	134.			P
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: BROWN

Clarity Before: OPAQUE

Texture:

Color After: COLORLESS

Clarity After: CLEAR

Artifacts:

Comments:

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

ERM-2 (30-30.5')

Lab Name: STL

Contract:

Lab Code: STL

Case No.: 2226A

SAS No.:

SDG No.: A2226

Matrix (soil/water): SOIL

Lab Sample ID: 012226A-05

Level (low/med): LOW

Date Received: 08/29/01

% Solids: 92.7

Concentration Units (ug/L or mg/kg dry weight): Mg/Kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel	62.5			P
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: BROWN

Clarity Before: OPAQUE

Texture:

Color After: COLORLESS

Clarity After: CLEAR

Artifacts:

Comments:

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

ERM-2 (40-40.5')

Lab Name: STL

Contract:

Lab Code: STL

Case No.: 2226A

SAS No.:

SDG No.: A2226

Matrix (soil/water): SOIL

Lab Sample ID: 012226A-06

Level (low/med): LOW

Date Received: 08/29/01

% Solids: 92.8

Concentration Units (ug/L or mg/kg dry weight): Mg/Kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel	85.9			P
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: BROWN

Clarity Before: OPAQUE

Texture:

Color After: COLORLESS

Clarity After: CLEAR

Artifacts:

Comments:

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

ERM-2 (50-50.5')

Lab Name: STL

Contract:

Lab Code: STL

Case No.: 2226A

SAS No.:

SDG No.: A2226

Matrix (soil/water): SOIL

Lab Sample ID: 012226A-07

Level (low/med): LOW

Date Received: 08/29/01

% Solids: 92

Concentration Units (ug/L or mg/kg dry weight): Mg/Kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel	412.			P
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: BROWN

Clarity Before: OPAQUE

Texture:

Color After: COLORLESS

Clarity After: CLEAR

Artifacts:

Comments:

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

FB082801

Lab Name: STL Contract:

Lab Code: STL Case No.: 2226A SAS No.: SDG No.: A2226

Matrix (soil/water): WATER Lab Sample ID: 012226A-01

Level (low/med): LOW Date Received: 08/29/01

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel	1.4	U		P
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

FB083001

Lab Name: STL Contract:

Lab Code: STL Case No.: 2226A SAS No.: SDG No.: A2226

Matrix (soil/water): WATER Lab Sample ID: 012226A-10

Level (low/med): LOW Date Received: 08/31/01

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel	13.5	~~B~~		P
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.
FB083001

Lab Name: STL Contract:

Lab Code: STL Case No.: 2226A SAS No.: SDG No.: A2226

Matrix (soil/water): WATER Lab Sample ID: 012226A-10

Level (low/med): LOW Date Received: 08/31/01

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel	2.5	~~B~~		P
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

FB083101

Lab Name: STL
Contract:

Lab Code: STL
Case No.: 2226A
SAS No.:
SDG No.: A2226

Matrix (soil/water): WATER
Lab Sample ID: 012226A-18

Level (low/med): LOW
Date Received: 08/31/01

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel	7.9	~~B~~		P
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: COLORLESS
Clarity Before: CLEAR
Texture:

Color After: COLORLESS
Clarity After: CLEAR
Artifacts:

Comments:

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

FB083101

Lab Name: STL Contract:

Lab Code: STL Case No.: 2226A SAS No.: SDG No.: A2226

Matrix (soil/water): WATER Lab Sample ID: 012226A-18

Level (low/med): LOW Date Received: 08/31/01

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel	1.7	~~B~~		P
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

DATA USABILITY SUMMARY REPORT (DUSR)
FORMER ALSY MANUFACTURING FACILITY
FEASIBILITY STUDY ADDENDUM
HICKSVILLE, NEW YORK
SOIL SAMPLE ANALYSIS
ENVIRONMENTAL RESOURCES MANAGEMENT (ERM)
PROJECT NUMBER KA201/0001328
SEVERN TRENT LABORATORIES JOB NUMBER 7001-2226B

Deliverables:

The above referenced data summary package and sample data package for twelve (12) soil samples, one (1) blind field duplicate sample, two (2) field blanks and one (1) set of matrix spike/matrix spike duplicate (MS/MSD) samples contain all the required deliverables as stipulated under the 1995 New York State Department of Environmental Conservation (NYSDEC) Analytical Services Protocol (ASP) Category B deliverables. The sample specific analysis includes Nickel analysis performed in accordance with United States Environmental Protection Agency (USEPA) SW-846 Method 6010B and Synthetic Precipitation Leaching Procedure (SPLP) Nickel prepared in accordance with USEPA Method 1312 and analyzed by USEPA Method 6010B. The SW-846 methods follow *"Test Methods for Evaluation Solid Waste, USEPA SW-846, Third Edition, September 1986, with revisions."* The data have been evaluated according to the protocols and quality control (QC) requirements of the ASP, the National Functional Guidelines for Inorganic Data Review (February 1994), the USEPA Region II Data Review Standard Operating Procedure (SOP) Number HW-2, Revision 11, January 1992: Evaluation of Metals Data for the CLP Program and the reviewer's professional judgment.

The validation report pertains to the following samples:

Samples

EB-1 (32.32.5)
EB-1 (40.5-41')
EB-1 (50.5-51')
EB-2 (3.5-4')
EB-2 (10.5-11')
EB-3 (11-11.5')
EB-3 (19-20')
ERM-1 (10.5-11')
ERM-1 (20-21')
ERM-1 (30-31')
ERM-1 (41-41.5')
ERM-1 (51-51.5')

QC Samples

DUP090401 (blind duplicate sample of ERM-1 (20-21'))
EB-3 (19-20') MS/MSD
FB090401 (field blank)
FB090501 (field blank)

Inorganics

The following items/criteria were reviewed:

- Case narrative and deliverable requirements
- Holding times and sample preservation
- Detection limits
- Inorganic analysis data sheets (Form I)
- Initial and continuing calibration verifications
- Contract Required Detection Limit (CRDL) standard analysis
- Lab Blank data
- ICP Interference Check Sample (ICS) analysis
- Matrix Spike analysis
- Matrix Spike Duplicate analysis
- Laboratory Control Sample (LCS) results
- ICP Serial Dilution analysis
- Field Blank results
- Blind Field Duplicate results

The items listed above have been judged to be in compliance with the analytical methods and with the ASP criteria with the exceptions discussed in the text below. The data have evaluated according to the procedures outlined above and qualified accordingly.

General

- The temperature of the cooler at the time of sample receipt at the laboratory on 09/06/2001 was 11°C. Generally samples are to be preserved at 4°C±2°C. It is the reviewer's professional opinion that metals results do not require qualification for this deviation.

- Nickel was present at low concentrations in field blanks applicable to samples contained in this data deliverable. Typically the action level for determining other sources of contamination is five times that present in an associated blank. There are samples contained in this data package applicable to these field blanks that have concentrations for nickel below the "blank" action level. It is the reviewer's professional opinion that the concentration of nickel in these samples collected in association with these field blanks are real and not attributable to another source, however taking a conservative approach the data are considered estimated and concentrations near the "blank" action level are flagged with a "J".

Nickel

- No additional qualification of the sample data is required other than that listed above.

SPLP Nickel

- The blind field duplicate pair exhibited RPDs greater than the specified 50% QC limit (USEPA Region II QC limit for non-soils) for nickel. Qualification of the sample and associated blind field duplicate data only is therefore required for these analytes, with the results flagged "J".

Package Summary:

All data are valid and usable with qualifications as noted in this review.

Signed: ______________________ Dated: 11/12/2003
Andrew J. Coenen
Project Scientist

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

ERM-1 (10.5-11')

Lab Name: STL Contract:

Lab Code: STL Case No.: 2226B SAS No.: SDG No.: B2226

Matrix (soil/water): SOIL Lab Sample ID: 012226B-06

Level (low/med): LOW Date Received: 09/05/01

% Solids: 97.7

Concentration Units (ug/L or mg/kg dry weight): Mg/Kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel	2.3	~~B~~	J	P
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: BROWN Clarity Before: OPAQUE Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

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1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

ERM-1 (20-21')

Lab Name: STL Contract:

Lab Code: STL Case No.: 2226B SAS No.: SDG No.: B2226

Matrix (soil/water): SOIL Lab Sample ID: 012226B-07

Level (low/med): LOW Date Received: 09/05/01

% Solids: 97.4

Concentration Units (ug/L or mg/kg dry weight): Mg/Kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel	3.3	~~B~~	J	P
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: BROWN Clarity Before: OPAQUE Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

DUP090401

Lab Name: STL   Contract:

Lab Code: STL   Case No.: 2226B   SAS No.:   SDG No.: B2226

Matrix (soil/water): SOIL   Lab Sample ID: 012226B-08

Level (low/med): LOW   Date Received: 09/05/01

% Solids: 96.2

Concentration Units (ug/L or mg/kg dry weight): Mg/Kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel	5.4	~~B~~	J	P
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: BROWN   Clarity Before: OPAQUE   Texture:

Color After: COLORLESS   Clarity After: CLEAR   Artifacts:

Comments:

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1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

ERM-1 (30-31')

Lab Name: STL　Contract: ______

Lab Code: STL　Case No.: 2226B　SAS No.: ______　SDG No.: B2226

Matrix (soil/water): SOIL　Lab Sample ID: 012226B-09

Level (low/med): LOW　Date Received: 09/05/01

% Solids: 95.3

Concentration Units (ug/L or mg/kg dry weight): Mg/Kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel	4.2	~~B~~	J	P
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: BROWN　Clarity Before: OPAQUE　Texture: ______

Color After: COLORLESS　Clarity After: CLEAR　Artifacts: ______

Comments:

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1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

ERM-1 (41-41.5')

Lab Name: STL

Contract:

Lab Code: STL

Case No.: 2226B

SAS No.:

SDG No.: B2226

Matrix (soil/water): SOIL

Lab Sample ID: 012226B-10

Level (low/med): LOW

Date Received: 09/05/01

% Solids: 97

Concentration Units (ug/L or mg/kg dry weight): Mg/Kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel	2.4	~~B~~	J	P
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: BROWN

Clarity Before: OPAQUE

Texture:

Color After: COLORLESS

Clarity After: CLEAR

Artifacts:

Comments:

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1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

ERM-1 (51-51.5')

Lab Name: STL Contract:

Lab Code: STL Case No.: 2226B SAS No.: SDG No.: B2226

Matrix (soil/water): SOIL Lab Sample ID: 012226B-11

Level (low/med): LOW Date Received: 09/05/01

% Solids: 94.8

Concentration Units (ug/L or mg/kg dry weight): Mg/Kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel	1.4	~~B~~	J	P
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: BROWN Clarity Before: OPAQUE Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

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1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

EB-1 (32-32.5)

Lab Name: STL   Contract: ______

Lab Code: STL   Case No.: 2226B   SAS No.: ______   SDG No.: B2226

Matrix (soil/water): SOIL   Lab Sample ID: 012226B-01

Level (low/med): LOW   Date Received: 08/31/01

% Solids: 95.4

Concentration Units (ug/L or mg/kg dry weight): Mg/Kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel	3.9	~~B~~	J	P
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: BROWN   Clarity Before: OPAQUE   Texture: ______

Color After: COLORLESS   Clarity After: CLEAR   Artifacts: ______

Comments:

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1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

EB-1 (40.5-41')

Lab Name: STL

Contract:

Lab Code: STL

Case No.: 2226B

SAS No.:

SDG No.: B2226

Matrix (soil/water): SOIL

Lab Sample ID: 012226B-02

Level (low/med): LOW

Date Received: 08/31/01

% Solids: 95.5

Concentration Units (ug/L or mg/kg dry weight): Mg/Kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel	1.4	~~B~~ J		P
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: BROWN

Clarity Before: OPAQUE

Texture:

Color After: COLORLESS

Clarity After: CLEAR

Artifacts:

Comments:

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

EB-1 (50.5-51)

Lab Name: STL
Contract:

Lab Code: STL
Case No.: 2226B
SAS No.:
SDG No.: B2226

Matrix (soil/water): SOIL
Lab Sample ID: 012226B-03

Level (low/med): LOW
Date Received: 08/31/01

% Solids: 96.4

Concentration Units (ug/L or mg/kg dry weight): Mg/Kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel	1.5	~~B~~	J	P
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: BROWN
Clarity Before: OPAQUE
Texture:

Color After: COLORLESS
Clarity After: CLEAR
Artifacts:

Comments:

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1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

EB-2 (3.5-4')

Lab Name: STL Contract:

Lab Code: STL Case No.: 2226B SAS No.: SDG No.: B2226

Matrix (soil/water): SOIL Lab Sample ID: 012226B-04

Level (low/med): LOW Date Received: 08/31/01

% Solids: 85

Concentration Units (ug/L or mg/kg dry weight): Mg/Kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel	20.9			P
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: BROWN Clarity Before: OPAQUE Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

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1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

EB-2 (10.5-11')

Lab Name: STL

Contract:

Lab Code: STL

Case No.: 2226B

SAS No.:

SDG No.: B2226

Matrix (soil/water): SOIL

Lab Sample ID: 012226B-05

Level (low/med): LOW

Date Received: 08/31/01

% Solids: 91.9

Concentration Units (ug/L or mg/kg dry weight): Mg/Kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel	14.5			P
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: BROWN

Clarity Before: OPAQUE

Texture:

Color After: YELLOW

Clarity After: CLEAR

Artifacts:

Comments:

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

EB-3 (11-11.5')

Lab Name: STL Contract:

Lab Code: STL Case No.: 2226B SAS No.: SDG No.: B2226

Matrix (soil/water): SOIL Lab Sample ID: 012226B-14

Level (low/med): LOW Date Received: 09/06/01

% Solids: 92.4

Concentration Units (ug/L or mg/kg dry weight): Mg/Kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel	70.9			P
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: BROWN Clarity Before: OPAQUE Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

EB-3 (19-20')

Lab Name: STL Contract: ____

Lab Code: STL Case No.: 2226B SAS No.: ____ SDG No.: B2226

Matrix (soil/water): SOIL Lab Sample ID: 012226B-15

Level (low/med): LOW Date Received: 09/06/01

% Solids: 96.2

Concentration Units (ug/L or mg/kg dry weight): Mg/Kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel	7.9		J	P
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: BROWN Clarity Before: OPAQUE Texture: ____

Color After: COLORLESS Clarity After: CLEAR Artifacts: ____

Comments:

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

FB090401

Lab Name: STL Contract:

Lab Code: STL Case No.: 2226B SAS No.: SDG No.: B2226

Matrix (soil/water): WATER Lab Sample ID: 012226B-12

Level (low/med): LOW Date Received: 09/05/01

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel	1.9	~~B~~		P
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

FB090501

Lab Name: STL

Contract:

Lab Code: STL

Case No.: 2226B

SAS No.:

SDG No.: B2226

Matrix (soil/water): WATER

Lab Sample ID: 012226B-13

Level (low/med): LOW

Date Received: 09/06/01

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel	1.4	U		P
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: COLORLESS

Clarity Before: CLEAR

Texture:

Color After: COLORLESS

Clarity After: CLEAR

Artifacts:

Comments:

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

ERM-1 (20-21')

Lab Name: STL Contract:

Lab Code: STL Case No.: 2226B SAS No.: SDG No.: B2226

Matrix (soil/water): WATER Lab Sample ID: 012226B-07

Level (low/med): LOW Date Received: 09/05/01

% Solids: 0.0

SPLP

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel	16.5	~~B~~	J	P
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: BROWN Clarity Before: OPAQUE Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

DUP090401

Lab Name: STL Contract:

Lab Code: STL Case No.: 2226B SAS No.:   SDG No.: B2226

Matrix (soil/water): WATER Lab Sample ID: 012226B-08

Level (low/med): LOW Date Received: 09/05/01

% Solids: 0.0

SPLP

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel	39.7	~~B~~	J	P
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: BROWN Clarity Before: OPAQUE Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

ERM-1 (30-31')

Lab Name: STL Contract:

Lab Code: STL Case No.: 2226B SAS No.: SDG No.: B2226

Matrix (soil/water): WATER Lab Sample ID: 012226B-09

Level (low/med): LOW Date Received: 09/05/01

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel	46.6			P
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: BROWN Clarity Before: OPAQUE Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

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1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

EB-3 (19-20')

Lab Name: STL Contract:

Lab Code: STL Case No.: 2226B SAS No.: SDG No.: B2226

Matrix (soil/water): WATER Lab Sample ID: 012226B-15

Level (low/med): LOW Date Received: 09/06/01

% Solids: 0.0

SRP

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel	248.			P
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: BROWN Clarity Before: OPAQUE Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

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1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

FB090401

Lab Name: STL Contract:

Lab Code: STL Case No.: 2226B SAS No.: SDG No.: B2226

Matrix (soil/water): WATER Lab Sample ID: 012226B-12

Level (low/med): LOW Date Received: 09/05/01

% Solids: 0.0

SRP

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel	1.6	~~B~~		P
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

FB090501

Lab Name: STL Contract:

Lab Code: STL Case No.: 2226B SAS No.: SDG No.: B2226

Matrix (soil/water): WATER Lab Sample ID: 012226B-13

Level (low/med): LOW Date Received: 09/06/01

% Solids: 0.0

STLP

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel	1.4	U		P
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

DATA USABILITY SUMMARY REPORT (DUSR)
FORMER ALSY MANUFACTURING FACILITY
FEASIBILITY STUDY ADDENDUM
HICKSVILLE, NEW YORK
SOIL SAMPLE ANALYSIS
ENVIRONMENTAL RESOURCES MANAGEMENT (ERM)
PROJECT NUMBER KA201/0001328
SEVERN TRENT LABORATORIES JOB NUMBER 7001-2514A

Deliverables:

The above referenced data summary package and sample data package for seven (7) soil samples and one (1) blind duplicate sample contain all the required deliverables as stipulated under the 1995 New York State Department of Environmental Conservation (NYSDEC) Analytical Services Protocol (ASP) Category B deliverables. The sample specific analysis includes Synthetic Precipitation Leaching Procedure (SPLP) Nickel analysis prepared in accordance with United States Environmental Protection Agency (USEPA) Method 1312 and analyzed by USEPA Method 6010B. The SW-846 methods follow *"Test Methods for Evaluation Solid Waste, USEPA SW-846, Third Edition, September 1986, with revisions."* The data have been evaluated according to the protocols and quality control (QC) requirements of the ASP, the National Functional Guidelines for Inorganic Data Review (February 1994), the USEPA Region II Data Review Standard Operating Procedure (SOP) Number HW-2, Revision 11, January 1992: Evaluation of Metals Data for the CLP Program and the reviewer's professional judgment.

The validation report pertains to the following samples:

Samples		*QC Samples*
ERM-2 (12.5-13')	ERM-2 (40-40.5)	DUP082801 (blind field duplicate of ERM-2 (15.5-16'))
ERM-2 (15.5-16')	ERM-2 (50-50.5')	
ERM-2 (21-21.5')	EB-6A (10-10.5')	
ERM-2 (30-30.5')		

Note: Quality control samples (i.e. Field Blanks, Matrix Spike/Matrix Spike Duplicate (MS/MSD) samples and Blind Field Duplicates) may be contained in different Job Numbers and still apply to samples contained in this Job Number.

Inorganics

The following items/criteria were reviewed:

- Case narrative and deliverable requirements
- Holding times and sample preservation
- Detection limits
- Inorganic analysis data sheets (Form I)
- Initial and continuing calibration verifications
- Contract Required Detection Limit (CRDL) standard analysis
- Lab Blank data
- ICP Interference Check Sample (ICS) analysis
- Matrix Spike analysis
- Matrix Spike Duplicate analysis
- Laboratory Control Sample (LCS) results
- ICP Serial Dilution analysis
- Field Blank results
- Blind Field Duplicate results

The items listed above have been judged to be in compliance with the analytical methods and with the ASP criteria with the exceptions discussed in the text below. The data have evaluated according to the procedures outlined above and qualified accordingly.

SPLP Nickel

- The temperature of the cooler at the time of sample receipt at the laboratory on 08/31/2001 was 8°C. Generally samples are to be preserved at 4°C±2°C. It is the reviewer's professional opinion that metals results do not require qualification for this deviation.

- Nickel was present at low concentrations in field blanks applicable to samples contained in this data deliverable. Typically the action level for determining other sources of contamination is five times that present in an associated blank. There are samples contained in this data package applicable to these field blanks that have concentrations for nickel below the "blank" action level. It is the reviewer's professional opinion that the concentration of nickel in these samples collected in association with these field blanks are real and not attributable to another source, however taking a conservative approach the data are considered estimated and concentrations near the "blank" action level are flagged with a "J".

Package Summary:

All data are valid and usable with qualifications as noted in this review.

Signed: Dated: 11/12/2003

Andrew J. Coenen
Project Scientist

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

ERM-2 (12.5-13')

Lab Name: STL

Contract:

Lab Code: STL

Case No.: 2514A

SAS No.:

SDG No.: A2514

Matrix (soil/water): WATER

Lab Sample ID: 012514A-01

Level (low/med): LOW

Date Received: 08/29/01

% Solids: 0.0

SPLP

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel	6220			P
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: COLORLESS

Clarity Before: CLEAR

Texture:

Color After: COLORLESS

Clarity After: CLEAR

Artifacts:

Comments:

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

ERM-2 (15.5-16')

Lab Name: STL

Contract:

Lab Code: STL

Case No.: 2514A

SAS No.:

SDG No.: A2514

Matrix (soil/water): WATER

Lab Sample ID: 012514A-02

Level (low/med): LOW

Date Received: 08/29/01

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel	2990			P
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: YELLOW

Clarity Before: CLEAR

Texture:

Color After: COLORLESS

Clarity After: CLEAR

Artifacts:

Comments:

0018 Rev

CAC 10-12-01

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1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

DUP082801

Lab Name: STL Contract: ______

Lab Code: STL Case No.: 2514A SAS No.: ______ SDG No.: A2514

Matrix (soil/water): WATER Lab Sample ID: 012514A-07

Level (low/med): LOW Date Received: 08/29/01

% Solids: 0.0

SPLP

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel	4750			P
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture: ______

Color After: COLORLESS Clarity After: CLEAR Artifacts: ______

Comments:

FORM I - IN ILM04.0

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1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

ERM-2 (21-21.5')

Lab Name: STL

Contract:

Lab Code: STL

Case No.: 2514A

SAS No.:

SDG No.: A2514

Matrix (soil/water): WATER

Lab Sample ID: 012514A-03

Level (low/med): LOW

Date Received: 08/29/01

% Solids: 0.0

SPLP

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel	4170			P
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: YELLOW

Clarity Before: CLEAR

Texture:

Color After: COLORLESS

Clarity After: CLEAR

Artifacts:

Comments:

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1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

ERM-2 (30-30.5')

Lab Name: STL Contract:

Lab Code: STL Case No.: 2514A SAS No.: SDG No.: A2514

Matrix (soil/water): WATER Lab Sample ID: 012514A-04

Level (low/med): LOW Date Received: 08/29/01

% Solids: 0.0

SPLP

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel	13.5	~~B~~	J	P
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

ERM-2 (40-40.5')

Lab Name: STL
Contract:

Lab Code: STL
Case No.: 2514A
SAS No.:
SDG No.: A2514

Matrix (soil/water): WATER
Lab Sample ID: 012514A-05

Level (low/med): LOW
Date Received: 08/29/01

% Solids: 0.0

SPLP

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel	1700			P
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: YELLOW
Clarity Before: CLEAR
Texture:

Color After: COLORLESS
Clarity After: CLEAR
Artifacts:

Comments:

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

ERM-2 (50-50.5')

Lab Name: STL Contract:

Lab Code: STL Case No.: 2514A SAS No.: SDG No.: A2514

Matrix (soil/water): WATER Lab Sample ID: 012514A-06

Level (low/med): LOW Date Received: 08/29/01

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel	3520			P
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: YELLOW Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

EB-6A (10-10.5')

Lab Name: STL
Contract:

Lab Code: STL
Case No.: 2514A
SAS No.:
SDG No.: A2514

Matrix (soil/water): WATER
Lab Sample ID: 012514A-08

Level (low/med): LOW
Date Received: 08/31/01

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel	596.			P
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: YELLOW
Clarity Before: CLEAR
Texture:

Color After: COLORLESS
Clarity After: CLEAR
Artifacts:

Comments:

DATA USABILITY SUMMARY REPORT (DUSR)
FORMER ALSY MANUFACTURING FACILITY
FEASIBILITY STUDY ADDENDUM
HICKSVILLE, NEW YORK
SOIL SAMPLE ANALYSIS
ENVIRONMENTAL RESOURCES MANAGEMENT (ERM)
PROJECT NUMBER KA201/0001328
SEVERN TRENT LABORATORIES JOB NUMBER 7001-2606A

Deliverables:

The above referenced data summary package and sample data package for four (4) soil samples contain all the required deliverables as stipulated under the 1995 New York State Department of Environmental Conservation (NYSDEC) Analytical Services Protocol (ASP) Category B deliverables. The sample specific analysis includes Synthetic Precipitation Leaching Procedure (SPLP) Nickel analysis prepared in accordance with United States Environmental Protection Agency (USEPA) Method 1312 and analyzed by USEPA Method 6010B. The SW-846 methods follow *"Test Methods for Evaluation Solid Waste, USEPA SW-846, Third Edition, September 1986, with revisions."* The data have been evaluated according to the protocols and quality control (QC) requirements of the ASP, the National Functional Guidelines for Inorganic Data Review (February 1994), the USEPA Region II Data Review Standard Operating Procedure (SOP) Number HW-2, Revision 11, January 1992: Evaluation of Metals Data for the CLP Program and the reviewer's professional judgment.

The validation report pertains to the following samples:

Samples	*QC Samples*
EB-1 (17.5-18.5′)	none
EB-2 (3.5-4′)	
EB-3 (11-11.5′)	
EB-4 (21.5-22.5′)	

Note: Quality control samples (i.e. Field Blanks, Matrix Spike/Matrix Spike Duplicate (MS/MSD) samples and Blind Field Duplicates) may be contained in different Job Numbers and still apply to samples contained in this Job Number.

Inorganics

The following items/criteria were reviewed:

- Case narrative and deliverable requirements
- Holding times and sample preservation
- Detection limits
- Inorganic analysis data sheets (Form I)
- Initial and continuing calibration verifications
- Contract Required Detection Limit (CRDL) standard analysis
- Lab Blank data
- ICP Interference Check Sample (ICS) analysis
- Matrix Spike analysis
- Matrix Spike Duplicate analysis
- Laboratory Control Sample (LCS) results
- ICP Serial Dilution analysis
- Field Blank results
- Blind Field Duplicate results

The items listed above have been judged to be in compliance with the analytical methods and with the ASP criteria with the exceptions discussed in the text below. The data have evaluated according to the procedures outlined above and qualified accordingly.

SPLP Nickel

- No qualification of the sample data is required.

Package Summary:

All data are valid and usable with qualifications as noted in this review.

Signed: ________________ Dated: 11/12/2003
Andrew J. Coenen
Project Scientist

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

EB-1 (17.5-18.5''

Lab Name: STL Contract:

Lab Code: STL Case No.: 2606A SAS No.: SDG No.: A2606

Matrix (soil/water): WATER Lab Sample ID: 012606A-01

Level (low/med): LOW Date Received: 08/31/01

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel	43.5			P
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: YELLOW Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

EB-2 (3.5-4')

ab Name: STL Contract:

Lab Code: STL Case No.: 2606A SAS No.: SDG No.: A2606

atrix (soil/water): WATER Lab Sample ID: 012606A-02

Level (low/med): LOW Date Received: 08/31/01

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel	117.			P
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

EB-3 (11-11.5')

Lab Name: STL Contract:

Lab Code: STL Case No.: 2606A SAS No.: SDG No.: A2606

Matrix (soil/water): WATER Lab Sample ID: 012606A-03

Level (low/med): LOW Date Received: 09/06/01

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel	958.			P
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

EB-4 (21.5-22.5')

Lab Name: STL Contract:

Lab Code: STL Case No.: 2606A SAS No.: SDG No.: A2606

Matrix (soil/water): WATER Lab Sample ID: 012606A-04

Level (low/med): LOW Date Received: 08/31/01

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel	79.1			P
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

DATA USABILITY SUMMARY REPORT (DUSR)
FORMER ALSY MANUFACTURING FACILITY
FEASIBILITY STUDY ADDENDUM
HICKSVILLE, NEW YORK
GROUND WATER SAMPLE ANALYSIS
ENVIRONMENTAL RESOURCES MANAGEMENT (ERM)
PROJECT NUMBER KA201/0001328
SEVERN TRENT LABORATORIES
JOB NUMBERS 200644, 200669 and 200675

Deliverables:

The above referenced data summary package and sample data package for six (6) ground water samples, one (1) blind field duplicate sample, four (4) field blanks and one (1) set of matrix spike/matrix spike duplicate (MS/MSD) samples contain all the required deliverables as stipulated under the 1995 New York State Department of Environmental Conservation (NYSDEC) Analytical Services Protocol (ASP) Category B deliverables. The sample specific analysis includes Nickel analysis performed in accordance with United States Environmental Protection Agency (USEPA) SW-846 Method 6010B and Synthetic Precipitation Leaching Procedure (SPLP) Nickel prepared in accordance with USEPA Method 1312 and analyzed by USEPA Method 6010B. The SW-846 methods follow *"Test Methods for Evaluation Solid Waste, USEPA SW-846, Third Edition, September 1986, with revisions."* The data have been evaluated according to the protocols and quality control (QC) requirements of the ASP, the National Functional Guidelines for Inorganic Data Review (February 1994), the USEPA Region II Data Review Standard Operating Procedure (SOP) Number HW-2, Revision 11, January 1992: Evaluation of Metals Data for the CLP Program and the reviewer's professional judgment.

The validation report pertains to the following samples:

Samples	*QC Samples*
VPE 95	DUP030702 (blind duplicate sample of VPNC 75)
VPE 75	VPE 95 MS/MSD
VPNC 95	FB030502 (field blank)
VPNC 75	FB030602 (field blank)
VPW 95	FB030702 (field blank)
VPW 75	FB030802 (field blank)

Inorganics

The following items/criteria were reviewed:

- Case narrative and deliverable requirements
- Holding times and sample preservation
- Detection limits
- Inorganic analysis data sheets (Form I)
- Initial and continuing calibration verifications
- Contract Required Detection Limit (CRDL) standard analysis
- Lab Blank data
- ICP Interference Check Sample (ICS) analysis
- Matrix Spike analysis
- Matrix Spike Duplicate analysis
- Laboratory Control Sample (LCS) results
- ICP Serial Dilution analysis
- Field Blank results
- Blind Field Duplicate results

The items listed above have been judged to be in compliance with the analytical methods and with the ASP criteria with the exceptions discussed in the text below. The data have evaluated according to the procedures outlined above and qualified accordingly.

Nickel

- The temperature of the cooler at the time of sample receipt at the laboratory on 03//2002 was 10.2°C. Generally samples are to be preserved at 4°C±2°C. It is the reviewer's professional opinion that metals results do not require qualification for this deviation.

- Nickel was positively identified in the field blank collected in association with samples VPE 75 and VPE 95. FB030502 contained 19.5 μg/l Nickel. Typically the action level for determining other sources of contamination is five times that present in an associated blank. The concentration for Nickel for samples VPE 75 and VPE 95 is below that detected in the field blank. It is the reviewer's professional opinion that the concentration of nickel in these samples collected in association with FB030502 are real and not attributable to another source, however taking a conservative approach the data are considered estimated and concentrations near the "blank" action level are flagged with a "J".

Package Summary:

All data are valid and usable with qualifications as noted in this review.

Signed: ____________________ Dated: 11/12/2003

Andrew J. Coenen
Project Scientist

L A B O R A T O R Y   T E S T   R E S U L T S

Job Number: 200644

Date:03/19/2002

CUSTOMER: ERM

PROJECT: ALSY-HICKSVILLE,NY

ATTN: Cathy Weber

Customer Sample ID: VPE 75
Date Sampled......: 03/05/2002
Time Sampled......: 15:01
Sample Matrix.....: Groundwater

Laboratory Sample ID: 200644-2
Date Received.......: 03/06/2002
Time Received.......: 09:30

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
6010B	Metals Analysis (ICAP Trace)											
	Nickel	7.7 J	~~B~~	~~U~~	1.9	10.0	1	ug/L	3804		03/13/02 1628	nnp

* In Description = Dry Wgt.

LABORATORY TEST RESULTS

Job Number: 200644

Date:03/19/2002

CUSTOMER: ERM

PROJECT: ALSY-HICKSVILLE,NY

ATTN: Cathy Weber

Customer Sample ID: VPE 95
Date Sampled......: 03/05/2002
Time Sampled......: 13:36
Sample Matrix.....: Groundwater

Laboratory Sample ID: 200644-1
Date Received.......: 03/06/2002
Time Received.......: 09:30

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
6010B	Metals Analysis (ICAP Trace) Nickel	2.2 J	~~B~~	~~U~~	1.9	10.0	1	ug/L	3804		03/13/02 1558	nnp

* In Description = Dry Wgt.

LABORATORY TEST RESULTS

Job Number: 200669

Date:03/20/2002

CUSTOMER: ERM

PROJECT: ALSY-HICKSVILLE,NY

ATTN: Cathy Weber

Customer Sample ID: VPNC75
Date Sampled......: 03/07/2002
Time Sampled......: 09:45
Sample Matrix.....: Groundwater

Laboratory Sample ID: 200669-4
Date Received.......: 03/08/2002
Time Received.......: 09:25

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
6010B	Metals Analysis (ICAP Trace)											
	Nickel	3150			1.9	10.0	1	ug/L	3896		03/14/02 1337	nnp

* In Description = Dry Wgt.

LABORATORY TEST RESULTS

Job Number: 200669

Date:03/20/2002

CUSTOMER: ERM PROJECT: ALSY-HICKSVILLE,NY ATTN: Cathy Weber

Customer Sample ID: DUP030702
Date Sampled......: 03/07/2002
Time Sampled......: 08:00
Sample Matrix.....: Groundwater

Laboratory Sample ID: 200669-3
Date Received.......: 03/08/2002
Time Received.......: 09:25

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
6010B	Metals Analysis (ICAP Trace) Nickel	3260			1.9	10.0	1	ug/L	3896		03/14/02 1331	nnp

* In Description = Dry Wgt.

LABORATORY TEST RESULTS

Job Number: 200669

Date:03/20/2002

CUSTOMER: ERM

PROJECT: ALSY-HICKSVILLE,NY

ATTN: Cathy Weber

Customer Sample ID: VPNC95
Date Sampled......: 03/06/2002
Time Sampled......: 15:29
Sample Matrix.....: Groundwater

Laboratory Sample ID: 200669-1
Date Received.......: 03/07/2002
Time Received.......: 09:40

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
6010B	Metals Analysis (ICAP Trace)											
	Nickel	228			1.9	10.0	1	ug/L	3896		03/14/02 1319	nnp

* In Description = Dry Wgt.

L A B O R A T O R Y   T E S T   R E S U L T S

Job Number: 200675

Date:03/21/2002

CUSTOMER: ERM

PROJECT: ALSY-HICKSVILLE,NY

ATTN: Cathy Weber

Customer Sample ID: VPW75
Date Sampled......: 03/08/2002
Time Sampled......: 09:56
Sample Matrix.....: Groundwater

Laboratory Sample ID: 200675-2
Date Received.......: 03/08/2002
Time Received.......: 17:25

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
6010B	Metals Analysis (ICAP Trace) Nickel	3.4	~~B~~		1.9	10.0	1	ug/L	3896		03/14/02 1449	nnp

* In Description = Dry Wgt.

LABORATORY TEST RESULTS

Job Number: 200675

Date:03/21/2002

CUSTOMER: ERM

PROJECT: ALSY-HICKSVILLE,NY

ATTN: Cathy Weber

Customer Sample ID: VPW95
Date Sampled......: 03/08/2002
Time Sampled......: 09:02
Sample Matrix.....: Groundwater

Laboratory Sample ID: 200675-1
Date Received.......: 03/08/2002
Time Received.......: 17:25

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
6010B	Metals Analysis (ICAP Trace)											
	Nickel	2.5	~~B~~		1.9	10.0	1	ug/L	3896		03/14/02 1431	nnp

* In Description = Dry Wgt.

LABORATORY TEST RESULTS

Job Number: 200644

Date:03/19/2002

CUSTOMER: ERM

PROJECT: ALSY-HICKSVILLE,NY

ATTN: Cathy Weber

Customer Sample ID: FB030502
Date Sampled......: 03/05/2002
Time Sampled......: 15:30
Sample Matrix.....: Groundwater

Laboratory Sample ID: 200644-3
Date Received.......: 03/06/2002
Time Received.......: 09:30

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
6010B	Metals Analysis (ICAP Trace) Nickel	19.5			1.9	10.0	1	ug/L	3804		03/13/02 1634	nnp

* In Description = Dry Wgt.

LABORATORY TEST RESULTS

Job Number: 200669

Date:03/20/2002

CUSTOMER: ERM PROJECT: ALSY-HICKSVILLE,NY ATTN: Cathy Weber

Customer Sample ID: FB030602
Date Sampled......: 03/06/2002
Time Sampled......: 15:53
Sample Matrix.....: Groundwater

Laboratory Sample ID: 200669-2
Date Received.......: 03/07/2002
Time Received.......: 09:40

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
6010B	Metals Analysis (ICAP Trace)											
	Nickel	ND	U		1.9	10.0	1	ug/L	3896		03/14/02 1325	nnp

* In Description = Dry Wgt.

LABORATORY TEST RESULTS

Job Number: 200669

Date:03/20/2002

CUSTOMER: ERM

PROJECT: ALSY-HICKSVILLE,NY

ATTN: Cathy Weber

Customer Sample ID: FB030702
Date Sampled......: 03/07/2002
Time Sampled......: 10:40
Sample Matrix.....: Groundwater

Laboratory Sample ID: 200669-5
Date Received.......: 03/08/2002
Time Received.......: 09:25

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
6010B	Metals Analysis (ICAP Trace)											
	Nickel	ND	U		1.9	10.0	1	ug/L	3896		03/14/02 1407	nnp

* In Description = Dry Wgt.

L A B O R A T O R Y   T E S T   R E S U L T S

Job Number: 200675

Date:03/21/2002

CUSTOMER: ERM

PROJECT: ALSY-HICKSVILLE,NY

ATTN: Cathy Weber

Customer Sample ID: FB030802
Date Sampled......: 03/08/2002
Time Sampled......: 10:36
Sample Matrix.....: Groundwater

Laboratory Sample ID: 200675-3
Date Received.......: 03/08/2002
Time Received.......: 17:25

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
6010B	Metals Analysis (ICAP Trace)											
	Nickel	ND	U		1.9	10.0	1	ug/L	3896		03/14/02 1437	nnp

* In Description = Dry Wgt.

DATA USABILITY SUMMARY REPORT (DUSR)
FORMER ALSY MANUFACTURING FACILITY
FEASIBILITY STUDY ADDENDUM
HICKSVILLE, NEW YORK
GROUND WATER SAMPLE ANALYSIS
ENVIRONMENTAL RESOURCES MANAGEMENT (ERM)
PROJECT NUMBER KA201/0001328
ACCUTEST JOB NUMBER N31701

Deliverables:

The above referenced data summary package and sample data package for nine (9) ground water samples, two (2) blind field duplicate sample, three (3) field blanks, one (1) trip blank and one (1) set of matrix spike/matrix spike duplicate (MS/MSD) samples contain all the required deliverables as stipulated under the 1995 New York State Department of Environmental Conservation (NYSDEC) Analytical Services Protocol (ASP) Category B deliverables. The sample specific analysis includes Target Compound List (TCL) Volatile Organic Compound (VOC) analysis by USEPA SW-846 Method 8260B, TCL Semivolatile Organic Compound (SVOC) analysis by USEPA SW-846 Method 8270C and Metals analyzed by USEPA SW-846 Method 6010B. Specific samples were also analyzed for Nickel only by USEPA SW-846 6010B. The data have been evaluated according to the protocols and quality control (QC) requirements of the ASP, the National Functional Guidelines for Organic Data Review (October 1999), the National Functional Guidelines for Inorganic Data Review (February 1994), the USEPA Region II Data Review Standard Operating Procedure (SOP) Number HW-24, Revision 1, June 1999: Validating Volatile Organic Compounds by SW-846 Method 8260B, the USEPA Region II Data Review SOP Number HW-22, Revision 2, June 2001: Validating Semivolatile Organic Compounds by SW-846 Method 8270C, the USEPA Region II Data Review SOP Number HW-2, Revision 11, January 1992: Evaluation of Metals Data for the CLP Program and the reviewer's professional judgment.

The validation report pertains to the following samples:

Samples

AMS-1
AMS-2
ERM-1
ERM-2
ERM-2 Filtered
ERM-3
LMS-4
LMS-4 Filtered
MW-3

QC Samples

DUP012803 (blind duplicate of ERM-2) SVOC and Metals only
DUP012903 (blind duplicate of ERM-3) VOC only
ERM-3 MS/MSD
FB012803 (field blank)
FB012903 (field blank)
TB012903 (trip blank)

Organics

The following items/criteria were reviewed:

- Case narrative and deliverables compliance
- Holding times and sample preservation (including pH and temperature)
- System Monitoring Compound (Surrogate) recoveries, summary and data
- Matrix Spike/Matrix Spike Duplicate (MS/MSD) results, recoveries, summary and data
- Lab check sample (LCS), recoveries, summary and data
- Method blank summary and data
- Gas Chromatography (GC)/Mass Spectroscopy (MS) tuning and performance
- Initial and continuing calibration summaries and data
- Internal standard areas, retention times, summary and data
- Field blank results
- Trip blank results
- Blind Field Duplicate sample results
- Organic analysis data sheets (Form I)
- GC/MS chromatograms, mass spectra and quantitation reports
- Quantitation/detection limits
- Qualitative and quantitative compound identification

The items listed above have been judged to be in compliance with the analytical methods and with the ASP criteria with the exceptions discussed in the text below. The data have evaluated according to the procedures outlined above and qualified accordingly.

Volatiles

- No qualification of the sample data is required.

Semivolatiles

- An Aldol condensation product was present as a TICs in the method blank. They are rejected and flagged "R" in all samples since they are common laboratory artifacts.

Inorganics

The following items/criteria were reviewed:

- Case narrative and deliverable requirements
- Holding times and sample preservation
- Detection limits
- Inorganic analysis data sheets (Form I)
- Initial and continuing calibration verifications
- Contract Required Detection Limit (CRDL) standard analysis
- Lab Blank data
- ICP Interference Check Sample (ICS) analysis
- Matrix Spike analysis
- Matrix Spike Duplicate analysis
- Laboratory Control Sample (LCS) results
- ICP Serial Dilution analysis
- Field Blank results
- Blind Field Duplicate results

The items listed above have been judged to be in compliance with the analytical methods and with the ASP criteria with the exceptions discussed in the text below. The data have evaluated according to the procedures outlined above and qualified accordingly.

Metals/Nickel

- No qualification of the sample data is required.

Package Summary:

All data are valid and usable with qualifications as noted in this review.

Signed: Dated: 11/12/2003

Andrew J. Coenen
Project Scientist

Report of Analysis

Client Sample ID: ERM-1
Lab Sample ID: N31701-1
Date Sampled: 01/28/03
Matrix: AQ - Ground Water
Date Received: 01/30/03
Method: SW846 8260B
Percent Solids: n/a
Project: ALSY Manufacturing, Duffy Avenue, Hicksville, NY

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U30841.D	1	02/06/03	YXF	n/a	n/a	VU987
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	4.6	ug/l	
71-43-2	Benzene	ND	1.0	0.37	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.14	ug/l	
75-25-2	Bromoform	ND	4.0	0.52	ug/l	
74-83-9	Bromomethane	ND	5.0	0.39	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	1.4	ug/l	
75-15-0	Carbon disulfide	ND	5.0	0.38	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.53	ug/l	
108-90-7	Chlorobenzene	ND	2.0	0.74	ug/l	
75-00-3	Chloroethane	ND	5.0	0.65	ug/l	
67-66-3	Chloroform	ND	5.0	0.18	ug/l	
74-87-3	Chloromethane	ND	5.0	0.20	ug/l	
124-48-1	Dibromochloromethane	ND	5.0	0.17	ug/l	
75-34-3	1,1-Dichloroethane	ND	5.0	0.089	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	0.57	ug/l	
75-35-4	1,1-Dichloroethene	ND	2.0	0.49	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	5.0	0.18	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	5.0	0.18	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.50	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.56	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.15	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.44	ug/l	
591-78-6	2-Hexanone	ND	5.0	0.35	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	0.50	ug/l	
75-09-2	Methylene chloride	ND	2.0	0.53	ug/l	
100-42-5	Styrene	ND	5.0	0.069	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.0	0.11	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.39	ug/l	
108-88-3	Toluene	ND	1.0	0.41	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	5.0	0.094	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	3.0	0.15	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.16	ug/l	

ND = Not detected
MDL - Method Detection Limit
J = Indicates an estimated value
RL = Reporting Limit
B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	ERM-1		
Lab Sample ID:	N31701-1	**Date Sampled:**	01/28/03
Matrix:	AQ - Ground Water	**Date Received:**	01/30/03
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	ALSY Manufacturing, Duffy Avenue, Hicksville, NY		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	1.0	0.77	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.34	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	103%		83-118%
17060-07-0	1,2-Dichloroethane-D4	104%		69-127%
2037-26-5	Toluene-D8	102%		82-119%
460-00-4	4-Bromofluorobenzene	110%		81-121%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	ERM-3		
Lab Sample ID:	N31701-6	**Date Sampled:**	01/29/03
Matrix:	AQ - Ground Water	**Date Received:**	01/30/03
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	ALSY Manufacturing, Duffy Avenue, Hicksville, NY		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U30843.D	1	02/06/03	YXF	n/a	n/a	VU987
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	4.6	ug/l	
71-43-2	Benzene	ND	1.0	0.37	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.14	ug/l	
75-25-2	Bromoform	ND	4.0	0.52	ug/l	
74-83-9	Bromomethane	ND	5.0	0.39	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	1.4	ug/l	
75-15-0	Carbon disulfide	ND	5.0	0.38	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.53	ug/l	
108-90-7	Chlorobenzene	ND	2.0	0.74	ug/l	
75-00-3	Chloroethane	ND	5.0	0.65	ug/l	
67-66-3	Chloroform	ND	5.0	0.18	ug/l	
74-87-3	Chloromethane	ND	5.0	0.20	ug/l	
124-48-1	Dibromochloromethane	ND	5.0	0.17	ug/l	
75-34-3	1,1-Dichloroethane	ND	5.0	0.089	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	0.57	ug/l	
75-35-4	1,1-Dichloroethene	ND	2.0	0.49	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	5.0	0.18	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	5.0	0.18	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.50	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.56	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.15	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.44	ug/l	
591-78-6	2-Hexanone	ND	5.0	0.35	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	0.50	ug/l	
75-09-2	Methylene chloride	ND	2.0	0.53	ug/l	
100-42-5	Styrene	ND	5.0	0.069	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.0	0.11	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.39	ug/l	
108-88-3	Toluene	ND	1.0	0.41	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	5.0	0.094	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	3.0	0.15	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.16	ug/l	

ND = Not detected   MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	ERM-3		
Lab Sample ID:	N31701-6	**Date Sampled:**	01/29/03
Matrix:	AQ - Ground Water	**Date Received:**	01/30/03
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	ALSY Manufacturing, Duffy Avenue, Hicksville, NY		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	1.0	0.77	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.34	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	105%		83-118%
17060-07-0	1,2-Dichloroethane-D4	108%		69-127%
2037-26-5	Toluene-D8	104%		82-119%
460-00-4	4-Bromofluorobenzene	114%		81-121%

ND = Not detected MDL - Method Detection Limit J = Indicates an estimated value

RL = Reporting Limit B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: DUP012903
Lab Sample ID: N31701-7 **Date Sampled:** 01/29/03
Matrix: AQ - Ground Water **Date Received:** 01/30/03
Method: SW846 8260B **Percent Solids:** n/a
Project: ALSY Manufacturing, Duffy Avenue, Hicksville, NY

	File ID	**DF**	**Analyzed**	**By**	**Prep Date**	**Prep Batch**	**Analytical Batch**
Run #1	U30844.D	1	02/06/03	YXF	n/a	n/a	VU987
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	**Compound**	**Result**	**RL**	**MDL**	**Units**	**Q**
67-64-1	Acetone	ND	10	4.6	ug/l	
71-43-2	Benzene	ND	1.0	0.37	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.14	ug/l	
75-25-2	Bromoform	ND	4.0	0.52	ug/l	
74-83-9	Bromomethane	ND	5.0	0.39	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	1.4	ug/l	
75-15-0	Carbon disulfide	ND	5.0	0.38	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.53	ug/l	
108-90-7	Chlorobenzene	ND	2.0	0.74	ug/l	
75-00-3	Chloroethane	ND	5.0	0.65	ug/l	
67-66-3	Chloroform	ND	5.0	0.18	ug/l	
74-87-3	Chloromethane	ND	5.0	0.20	ug/l	
124-48-1	Dibromochloromethane	ND	5.0	0.17	ug/l	
75-34-3	1,1-Dichloroethane	ND	5.0	0.089	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	0.57	ug/l	
75-35-4	1,1-Dichloroethene	ND	2.0	0.49	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	5.0	0.18	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	5.0	0.18	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.50	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.56	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.15	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.44	ug/l	
591-78-6	2-Hexanone	ND	5.0	0.35	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	0.50	ug/l	
75-09-2	Methylene chloride	ND	2.0	0.53	ug/l	
100-42-5	Styrene	ND	5.0	0.069	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.0	0.11	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.39	ug/l	
108-88-3	Toluene	ND	1.0	0.41	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	5.0	0.094	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	3.0	0.15	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.16	ug/l	

ND = Not detected MDL - Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	DUP012903		
Lab Sample ID:	N31701-7	**Date Sampled:**	01/29/03
Matrix:	AQ - Ground Water	**Date Received:**	01/30/03
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	ALSY Manufacturing, Duffy Avenue, Hicksville, NY		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	1.0	0.77	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.34	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	107%		83-118%
17060-07-0	1,2-Dichloroethane-D4	110%		69-127%
2037-26-5	Toluene-D8	103%		82-119%
460-00-4	4-Bromofluorobenzene	113%		81-121%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: FB012803
Lab Sample ID: N31701-5 **Date Sampled:** 01/28/03
Matrix: AQ - Field Blank Water **Date Received:** 01/30/03
Method: SW846 8260B **Percent Solids:** n/a
Project: ALSY Manufacturing, Duffy Avenue, Hicksville, NY

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U30842.D	1	02/06/03	YXF	n/a	n/a	VU987
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	4.6	ug/l	
71-43-2	Benzene	ND	1.0	0.37	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.14	ug/l	
75-25-2	Bromoform	ND	4.0	0.52	ug/l	
74-83-9	Bromomethane	ND	5.0	0.39	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	1.4	ug/l	
75-15-0	Carbon disulfide	ND	5.0	0.38	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.53	ug/l	
108-90-7	Chlorobenzene	ND	2.0	0.74	ug/l	
75-00-3	Chloroethane	ND	5.0	0.65	ug/l	
67-66-3	Chloroform	ND	5.0	0.18	ug/l	
74-87-3	Chloromethane	ND	5.0	0.20	ug/l	
124-48-1	Dibromochloromethane	ND	5.0	0.17	ug/l	
75-34-3	1,1-Dichloroethane	ND	5.0	0.089	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	0.57	ug/l	
75-35-4	1,1-Dichloroethene	ND	2.0	0.49	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	5.0	0.18	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	5.0	0.18	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.50	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.56	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.15	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.44	ug/l	
591-78-6	2-Hexanone	ND	5.0	0.35	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	0.50	ug/l	
75-09-2	Methylene chloride	ND	2.0	0.53	ug/l	
100-42-5	Styrene	ND	5.0	0.069	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.0	0.11	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.39	ug/l	
108-88-3	Toluene	ND	1.0	0.41	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	5.0	0.094	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	3.0	0.15	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.16	ug/l	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FB012803		
Lab Sample ID:	N31701-5	**Date Sampled:**	01/28/03
Matrix:	AQ - Field Blank Water	**Date Received:**	01/30/03
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	ALSY Manufacturing, Duffy Avenue, Hicksville, NY		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	1.0	0.77	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.34	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	105%		83-118%
17060-07-0	1,2-Dichloroethane-D4	106%		69-127%
2037-26-5	Toluene-D8	104%		82-119%
460-00-4	4-Bromofluorobenzene	113%		81-121%

31

ND = Not detected MDL - Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: FB012903
Lab Sample ID: N31701-11 **Date Sampled:** 01/29/03
Matrix: AQ - Field Blank Water **Date Received:** 01/30/03
Method: SW846 8260B **Percent Solids:** n/a
Project: ALSY Manufacturing, Duffy Avenue, Hicksville, NY

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U30845.D	1	02/06/03	YXF	n/a	n/a	VU987
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	4.6	ug/l	
71-43-2	Benzene	ND	1.0	0.37	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.14	ug/l	
75-25-2	Bromoform	ND	4.0	0.52	ug/l	
74-83-9	Bromomethane	ND	5.0	0.39	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	1.4	ug/l	
75-15-0	Carbon disulfide	ND	5.0	0.38	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.53	ug/l	
108-90-7	Chlorobenzene	ND	2.0	0.74	ug/l	
75-00-3	Chloroethane	ND	5.0	0.65	ug/l	
67-66-3	Chloroform	ND	5.0	0.18	ug/l	
74-87-3	Chloromethane	ND	5.0	0.20	ug/l	
124-48-1	Dibromochloromethane	ND	5.0	0.17	ug/l	
75-34-3	1,1-Dichloroethane	ND	5.0	0.089	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	0.57	ug/l	
75-35-4	1,1-Dichloroethene	ND	2.0	0.49	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	5.0	0.18	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	5.0	0.18	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.50	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.56	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.15	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.44	ug/l	
591-78-6	2-Hexanone	ND	5.0	0.35	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	0.50	ug/l	
75-09-2	Methylene chloride	ND	2.0	0.53	ug/l	
100-42-5	Styrene	ND	5.0	0.069	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.0	0.11	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.39	ug/l	
108-88-3	Toluene	ND	1.0	0.41	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	5.0	0.094	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	3.0	0.15	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.16	ug/l	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FB012903		
Lab Sample ID:	N31701-11	**Date Sampled:**	01/29/03
Matrix:	AQ - Field Blank Water	**Date Received:**	01/30/03
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	ALSY Manufacturing, Duffy Avenue, Hicksville, NY		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	1.0	0.77	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.34	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	106%		83-118%
17060-07-0	1,2-Dichloroethane-D4	111%		69-127%
2037-26-5	Toluene-D8	105%		82-119%
460-00-4	4-Bromofluorobenzene	115%		81-121%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TRIP BLANK		
Lab Sample ID:	N31701-12	**Date Sampled:**	01/29/03
Matrix:	AQ - Trip Blank Water	**Date Received:**	01/30/03
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	ALSY Manufacturing, Duffy Avenue, Hicksville, NY		

	File ID	**DF**	**Analyzed**	**By**	**Prep Date**	**Prep Batch**	**Analytical Batch**
Run #1	U30846.D	1	02/06/03	YXF	n/a	n/a	VU987
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	**Compound**	**Result**	**RL**	**MDL**	**Units**	**Q**
67-64-1	Acetone	ND	10	4.6	ug/l	
71-43-2	Benzene	ND	1.0	0.37	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.14	ug/l	
75-25-2	Bromoform	ND	4.0	0.52	ug/l	
74-83-9	Bromomethane	ND	5.0	0.39	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	1.4	ug/l	
75-15-0	Carbon disulfide	ND	5.0	0.38	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.53	ug/l	
108-90-7	Chlorobenzene	ND	2.0	0.74	ug/l	
75-00-3	Chloroethane	ND	5.0	0.65	ug/l	
67-66-3	Chloroform	ND	5.0	0.18	ug/l	
74-87-3	Chloromethane	ND	5.0	0.20	ug/l	
124-48-1	Dibromochloromethane	ND	5.0	0.17	ug/l	
75-34-3	1,1-Dichloroethane	ND	5.0	0.089	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	0.57	ug/l	
75-35-4	1,1-Dichloroethene	ND	2.0	0.49	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	5.0	0.18	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	5.0	0.18	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.50	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.56	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.15	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.44	ug/l	
591-78-6	2-Hexanone	ND	5.0	0.35	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	0.50	ug/l	
75-09-2	Methylene chloride	ND	2.0	0.53	ug/l	
100-42-5	Styrene	ND	5.0	0.069	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.0	0.11	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.39	ug/l	
108-88-3	Toluene	ND	1.0	0.41	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	5.0	0.094	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	3.0	0.15	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.16	ug/l	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TRIP BLANK		
Lab Sample ID:	N31701-12	**Date Sampled:**	01/29/03
Matrix:	AQ - Trip Blank Water	**Date Received:**	01/30/03
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	ALSY Manufacturing, Duffy Avenue, Hicksville, NY		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	1.0	0.77	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.34	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	107%		83-118%
17060-07-0	1,2-Dichloroethane-D4	113%		69-127%
2037-26-5	Toluene-D8	104%		82-119%
460-00-4	4-Bromofluorobenzene	116%		81-121%

ND = Not detected   MDL - Method Detection Limit   J = Indicates an estimated value
RL = Reporting Limit   B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range   N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	ERM-2		
Lab Sample ID:	N31701-3	**Date Sampled:**	01/28/03
Matrix:	AQ - Ground Water	**Date Received:**	01/30/03
Method:	SW846 8270C SW846 3510C	**Percent Solids:**	n/a
Project:	ALSY Manufacturing, Duffy Avenue, Hicksville, NY		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	B53991.D	1	02/11/03	HS	01/31/03	OP13060	EB1335
Run #2							

	Initial Volume	Final Volume
Run #1	900 ml	1.0 ml
Run #2		

ABN TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	5.6	0.40	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	5.6	0.39	ug/l	
120-83-2	2,4-Dichlorophenol	ND	5.6	1.2	ug/l	
105-67-9	2,4-Dimethylphenol	ND	5.6	1.0	ug/l	
51-28-5	2,4-Dinitrophenol	ND	22	11	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	22	1.3	ug/l	
95-48-7	2-Methylphenol	ND	5.6	0.35	ug/l	
	3&4-Methylphenol	ND	5.6	0.84	ug/l	
88-75-5	2-Nitrophenol	ND	5.6	0.51	ug/l	
100-02-7	4-Nitrophenol	ND	22	11	ug/l	
87-86-5	Pentachlorophenol	ND	22	1.2	ug/l	
108-95-2	Phenol	ND	5.6	0.21	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	5.6	0.51	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	5.6	0.44	ug/l	
83-32-9	Acenaphthene	ND	2.2	0.33	ug/l	
208-96-8	Acenaphthylene	ND	2.2	0.25	ug/l	
120-12-7	Anthracene	ND	2.2	0.28	ug/l	
56-55-3	Benzo(a)anthracene	ND	2.2	0.23	ug/l	
50-32-8	Benzo(a)pyrene	ND	2.2	0.27	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	2.2	0.47	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	2.2	0.38	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	2.2	0.63	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	2.2	2.2	ug/l	
85-68-7	Butyl benzyl phthalate	ND	2.2	0.28	ug/l	
91-58-7	2-Chloronaphthalene	ND	5.6	0.29	ug/l	
106-47-8	4-Chloroaniline	ND	5.6	0.61	ug/l	
86-74-8	Carbazole	ND	2.2	0.31	ug/l	
218-01-9	Chrysene	ND	2.2	0.31	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	2.2	0.57	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	2.2	0.40	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	2.2	2.2	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	2.2	0.34	ug/l	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	ERM-2		
Lab Sample ID:	N31701-3	**Date Sampled:**	01/28/03
Matrix:	AQ - Ground Water	**Date Received:**	01/30/03
Method:	SW846 8270C SW846 3510C	**Percent Solids:**	n/a
Project:	ALSY Manufacturing, Duffy Avenue, Hicksville, NY		

ABN TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
95-50-1	1,2-Dichlorobenzene	ND	2.2	0.41	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	2.2	0.38	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	2.2	0.33	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	2.2	0.50	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	2.2	2.2	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	5.6	0.63	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	2.2	0.37	ug/l	
132-64-9	Dibenzofuran	ND	5.6	0.33	ug/l	
84-74-2	Di-n-butyl phthalate	ND	2.2	0.27	ug/l	
117-84-0	Di-n-octyl phthalate	ND	2.2	0.30	ug/l	
84-66-2	Diethyl phthalate	ND	2.2	0.37	ug/l	
131-11-3	Dimethyl phthalate	ND	2.2	0.34	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	3.6	2.2	0.41	ug/l	
206-44-0	Fluoranthene	ND	2.2	0.29	ug/l	
86-73-7	Fluorene	ND	2.2	0.33	ug/l	
118-74-1	Hexachlorobenzene	ND	2.2	2.2	ug/l	
87-68-3	Hexachlorobutadiene	ND	2.2	2.2	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	22	2.3	ug/l	
67-72-1	Hexachloroethane	ND	5.6	2.2	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	2.2	0.30	ug/l	
78-59-1	Isophorone	ND	2.2	0.55	ug/l	
91-57-6	2-Methylnaphthalene	ND	2.2	0.37	ug/l	
88-74-4	2-Nitroaniline	ND	5.6	2.2	ug/l	
99-09-2	3-Nitroaniline	ND	5.6	0.58	ug/l	
100-01-6	4-Nitroaniline	ND	5.6	0.66	ug/l	
91-20-3	Naphthalene	ND	2.2	0.30	ug/l	
98-95-3	Nitrobenzene	ND	2.2	2.2	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	2.2	0.44	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.6	0.27	ug/l	
85-01-8	Phenanthrene	ND	2.2	0.30	ug/l	
129-00-0	Pyrene	ND	2.2	0.33	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	2.2	0.34	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	52%		12-96%
4165-62-2	Phenol-d5	36%		10-73%
118-79-6	2,4,6-Tribromophenol	105%		37-149%
4165-60-0	Nitrobenzene-d5	98%		40-124%
321-60-8	2-Fluorobiphenyl	95%		40-121%

ND = Not detected   MDL - Method Detection Limit   J = Indicates an estimated value
RL = Reporting Limit   B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range   N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: DUP012803
Lab Sample ID: N31701-4 **Date Sampled:** 01/28/03
Matrix: AQ - Ground Water **Date Received:** 01/30/03
Method: SW846 8270C SW846 3510C **Percent Solids:** n/a
Project: ALSY Manufacturing, Duffy Avenue, Hicksville, NY

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	B53992.D	1	02/11/03	HS	01/31/03	OP13060	EB1335
Run #2							

	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2		

ABN TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	5.0	0.36	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	5.0	0.35	ug/l	
120-83-2	2,4-Dichlorophenol	ND	5.0	1.0	ug/l	
105-67-9	2,4-Dimethylphenol	ND	5.0	0.90	ug/l	
51-28-5	2,4-Dinitrophenol	ND	20	10	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	20	1.1	ug/l	
95-48-7	2-Methylphenol	ND	5.0	0.32	ug/l	
	3&4-Methylphenol	ND	5.0	0.75	ug/l	
88-75-5	2-Nitrophenol	ND	5.0	0.46	ug/l	
100-02-7	4-Nitrophenol	ND	20	10	ug/l	
87-86-5	Pentachlorophenol	ND	20	1.1	ug/l	
108-95-2	Phenol	ND	5.0	0.19	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	5.0	0.46	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	5.0	0.39	ug/l	
83-32-9	Acenaphthene	ND	2.0	0.30	ug/l	
208-96-8	Acenaphthylene	ND	2.0	0.22	ug/l	
120-12-7	Anthracene	ND	2.0	0.25	ug/l	
56-55-3	Benzo(a)anthracene	ND	2.0	0.20	ug/l	
50-32-8	Benzo(a)pyrene	ND	2.0	0.25	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	2.0	0.42	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	2.0	0.35	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	2.0	0.57	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	2.0	2.0	ug/l	
85-68-7	Butyl benzyl phthalate	ND	2.0	0.25	ug/l	
91-58-7	2-Chloronaphthalene	ND	5.0	0.26	ug/l	
106-47-8	4-Chloroaniline	ND	5.0	0.55	ug/l	
86-74-8	Carbazole	ND	2.0	0.28	ug/l	
218-01-9	Chrysene	ND	2.0	0.28	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	2.0	0.52	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	2.0	0.36	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	2.0	2.0	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	2.0	0.31	ug/l	

ND = Not detected MDL - Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	DUP012803		
Lab Sample ID:	N31701-4	**Date Sampled:**	01/28/03
Matrix:	AQ - Ground Water	**Date Received:**	01/30/03
Method:	SW846 8270C SW846 3510C	**Percent Solids:**	n/a
Project:	ALSY Manufacturing, Duffy Avenue, Hicksville, NY		

ABN TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
95-50-1	1,2-Dichlorobenzene	ND	2.0	0.37	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	2.0	0.34	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	2.0	0.30	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	2.0	0.45	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	2.0	2.0	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	5.0	0.57	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	2.0	0.34	ug/l	
132-64-9	Dibenzofuran	ND	5.0	0.30	ug/l	
84-74-2	Di-n-butyl phthalate	ND	2.0	0.24	ug/l	
117-84-0	Di-n-octyl phthalate	ND	2.0	0.27	ug/l	
84-66-2	Diethyl phthalate	ND	2.0	0.33	ug/l	
131-11-3	Dimethyl phthalate	ND	2.0	0.31	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	2.3	2.0	0.37	ug/l	
206-44-0	Fluoranthene	ND	2.0	0.26	ug/l	
86-73-7	Fluorene	ND	2.0	0.30	ug/l	
118-74-1	Hexachlorobenzene	ND	2.0	2.0	ug/l	
87-68-3	Hexachlorobutadiene	ND	2.0	2.0	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	20	2.1	ug/l	
67-72-1	Hexachloroethane	ND	5.0	2.0	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	2.0	0.27	ug/l	
78-59-1	Isophorone	ND	2.0	0.50	ug/l	
91-57-6	2-Methylnaphthalene	ND	2.0	0.33	ug/l	
88-74-4	2-Nitroaniline	ND	5.0	2.0	ug/l	
99-09-2	3-Nitroaniline	ND	5.0	0.52	ug/l	
100-01-6	4-Nitroaniline	ND	5.0	0.59	ug/l	
91-20-3	Naphthalene	ND	2.0	0.27	ug/l	
98-95-3	Nitrobenzene	ND	2.0	2.0	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	2.0	0.39	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.0	0.24	ug/l	
85-01-8	Phenanthrene	ND	2.0	0.27	ug/l	
129-00-0	Pyrene	ND	2.0	0.29	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	2.0	0.31	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	47%		12-96%
4165-62-2	Phenol-d5	31%		10-73%
118-79-6	2,4,6-Tribromophenol	108%		37-149%
4165-60-0	Nitrobenzene-d5	103%		40-124%
321-60-8	2-Fluorobiphenyl	92%		40-121%

26

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FB012803		
Lab Sample ID:	N31701-5	**Date Sampled:**	01/28/03
Matrix:	AQ - Field Blank Water	**Date Received:**	01/30/03
Method:	SW846 8270C SW846 3510C	**Percent Solids:**	n/a
Project:	ALSY Manufacturing, Duffy Avenue, Hicksville, NY		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	B53989.D	1	02/11/03	HS	01/31/03	OP13060	EB1335
Run #2							

	Initial Volume	Final Volume
Run #1	980 ml	1.0 ml
Run #2		

ABN TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	5.1	0.37	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	5.1	0.36	ug/l	
120-83-2	2,4-Dichlorophenol	ND	5.1	1.1	ug/l	
105-67-9	2,4-Dimethylphenol	ND	5.1	0.92	ug/l	
51-28-5	2,4-Dinitrophenol	ND	20	10	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	20	1.2	ug/l	
95-48-7	2-Methylphenol	ND	5.1	0.33	ug/l	
	3&4-Methylphenol	ND	5.1	0.77	ug/l	
88-75-5	2-Nitrophenol	ND	5.1	0.47	ug/l	
100-02-7	4-Nitrophenol	ND	20	10	ug/l	
87-86-5	Pentachlorophenol	ND	20	1.1	ug/l	
108-95-2	Phenol	ND	5.1	0.19	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	5.1	0.47	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	5.1	0.40	ug/l	
83-32-9	Acenaphthene	ND	2.0	0.30	ug/l	
208-96-8	Acenaphthylene	ND	2.0	0.23	ug/l	
120-12-7	Anthracene	ND	2.0	0.26	ug/l	
56-55-3	Benzo(a)anthracene	ND	2.0	0.21	ug/l	
50-32-8	Benzo(a)pyrene	ND	2.0	0.25	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	2.0	0.43	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	2.0	0.35	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	2.0	0.58	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	2.0	2.0	ug/l	
85-68-7	Butyl benzyl phthalate	ND	2.0	0.26	ug/l	
91-58-7	2-Chloronaphthalene	ND	5.1	0.27	ug/l	
106-47-8	4-Chloroaniline	ND	5.1	0.56	ug/l	
86-74-8	Carbazole	ND	2.0	0.28	ug/l	
218-01-9	Chrysene	ND	2.0	0.28	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	2.0	0.53	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	2.0	0.37	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	2.0	2.0	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	2.0	0.31	ug/l	

ND = Not detected   MDL - Method Detection Limit   J = Indicates an estimated value
RL = Reporting Limit   B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range   N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: FB012803
Lab Sample ID: N31701-5 **Date Sampled:** 01/28/03
Matrix: AQ - Field Blank Water **Date Received:** 01/30/03
Method: SW846 8270C SW846 3510C **Percent Solids:** n/a
Project: ALSY Manufacturing, Duffy Avenue, Hicksville, NY

ABN TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
95-50-1	1,2-Dichlorobenzene	ND	2.0	0.38	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	2.0	0.35	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	2.0	0.31	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	2.0	0.46	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	2.0	2.0	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	5.1	0.58	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	2.0	0.34	ug/l	
132-64-9	Dibenzofuran	ND	5.1	0.30	ug/l	
84-74-2	Di-n-butyl phthalate	ND	2.0	0.24	ug/l	
117-84-0	Di-n-octyl phthalate	ND	2.0	0.27	ug/l	
84-66-2	Diethyl phthalate	ND	2.0	0.34	ug/l	
131-11-3	Dimethyl phthalate	ND	2.0	0.31	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.0	0.38	ug/l	
206-44-0	Fluoranthene	ND	2.0	0.27	ug/l	
86-73-7	Fluorene	ND	2.0	0.30	ug/l	
118-74-1	Hexachlorobenzene	ND	2.0	2.0	ug/l	
87-68-3	Hexachlorobutadiene	ND	2.0	2.0	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	20	2.1	ug/l	
67-72-1	Hexachloroethane	ND	5.1	2.0	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	2.0	0.28	ug/l	
78-59-1	Isophorone	ND	2.0	0.51	ug/l	
91-57-6	2-Methylnaphthalene	ND	2.0	0.34	ug/l	
88-74-4	2-Nitroaniline	ND	5.1	2.0	ug/l	
99-09-2	3-Nitroaniline	ND	5.1	0.53	ug/l	
100-01-6	4-Nitroaniline	ND	5.1	0.60	ug/l	
91-20-3	Naphthalene	ND	2.0	0.28	ug/l	
98-95-3	Nitrobenzene	ND	2.0	2.0	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	2.0	0.40	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.1	0.25	ug/l	
85-01-8	Phenanthrene	ND	2.0	0.28	ug/l	
129-00-0	Pyrene	ND	2.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	2.0	0.31	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	55%		12-96%
4165-62-2	Phenol-d5	35%		10-73%
118-79-6	2,4,6-Tribromophenol	104%		37-149%
4165-60-0	Nitrobenzene-d5	114%		40-124%
321-60-8	2-Fluorobiphenyl	101%		40-121%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: AMS-1
Lab Sample ID: N31701-9
Matrix: AQ - Ground Water
Date Sampled: 01/29/03
Date Received: 01/30/03
Percent Solids: n/a
Project: ALSY Manufacturing, Duffy Avenue, Hicksville, NY

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Nickel	<40	40	ug/l	1	02/05/03	02/07/03	ND	SW846 6010B	SW846 3010A

42

RL = Reporting Limit

Report of Analysis

Client Sample ID: AMS-2
Lab Sample ID: N31701-8
Matrix: AQ - Ground Water
Date Sampled: 01/29/03
Date Received: 01/30/03
Percent Solids: n/a
Project: ALSY Manufacturing, Duffy Avenue, Hicksville, NY

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Nickel	2840	40	ug/l	1	02/05/03	02/07/03 ND	SW846 6010B	SW846 3010A

RL = Reporting Limit

Report of Analysis

Client Sample ID: ERM-1
Lab Sample ID: N31701-1
Matrix: AQ - Ground Water
Date Sampled: 01/28/03
Date Received: 01/30/03
Percent Solids: n/a
Project: ALSY Manufacturing, Duffy Avenue, Hicksville, NY

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By		Method	Prep Method
Nickel	<40	40	ug/l	1	02/05/03	02/07/03	ND	SW846 6010B	SW846 3010A

17

RL = Reporting Limit

Report of Analysis

Client Sample ID: ERM-2
Lab Sample ID: N31701-3 **Date Sampled:** 01/28/03
Matrix: AQ - Ground Water **Date Received:** 01/30/03
Percent Solids: n/a
Project: ALSY Manufacturing, Duffy Avenue, Hicksville, NY

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	22.9	5.0	ug/l	1	02/05/03	02/07/03	ND	SW846 6010B	SW846 3010A
Chromium	53.9	10	ug/l	1	02/05/03	02/07/03	ND	SW846 6010B	SW846 3010A
Lead	34.3	3.0	ug/l	1	02/05/03	02/07/03	ND	SW846 6010B	SW846 3010A
Nickel	1310	40	ug/l	1	02/05/03	02/07/03	ND	SW846 6010B	SW846 3010A
Selenium	<5.0	5.0	ug/l	1	02/05/03	02/07/03	ND	SW846 6010B	SW846 3010A

RL = Reporting Limit

Report of Analysis

Client Sample ID: ERM-2
Lab Sample ID: N31701-3A
Matrix: AQ - Groundwater Filtered
Date Sampled: 01/28/03
Date Received: 01/30/03
Percent Solids: n/a
Project: ALSY Manufacturing, Duffy Avenue, Hicksville, NY

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	<5.0	5.0	ug/l	1	02/05/03	02/07/03	ND	SW846 6010B	SW846 3010A
Chromium	<10	10	ug/l	1	02/05/03	02/07/03	ND	SW846 6010B	SW846 3010A
Lead	<3.0	3.0	ug/l	1	02/05/03	02/07/03	ND	SW846 6010B	SW846 3010A
Nickel	855	40	ug/l	1	02/05/03	02/07/03	ND	SW846 6010B	SW846 3010A
Selenium	<5.0	5.0	ug/l	1	02/05/03	02/07/03	ND	SW846 6010B	SW846 3010A

RL = Reporting Limit

Report of Analysis

Client Sample ID:	DUP012803		
Lab Sample ID:	N31701-4	**Date Sampled:**	01/28/03
Matrix:	AQ - Ground Water	**Date Received:**	01/30/03
		Percent Solids:	n/a
Project:	ALSY Manufacturing, Duffy Avenue, Hicksville, NY		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	18.5	5.0	ug/l	1	02/05/03	02/07/03	ND	SW846 6010B	SW846 3010A
Chromium	46.8	10	ug/l	1	02/05/03	02/07/03	ND	SW846 6010B	SW846 3010A
Lead	28.4	3.0	ug/l	1	02/05/03	02/07/03	ND	SW846 6010B	SW846 3010A
Nickel	1220	40	ug/l	1	02/05/03	02/07/03	ND	SW846 6010B	SW846 3010A
Selenium	<5.0	5.0	ug/l	1	02/05/03	02/07/03	ND	SW846 6010B	SW846 3010A

RL = Reporting Limit

Report of Analysis

Client Sample ID: DUP012803
Lab Sample ID: N31701-4A
Matrix: AQ - Groundwater Filtered
Date Sampled: 01/28/03
Date Received: 01/30/03
Percent Solids: n/a
Project: ALSY Manufacturing, Duffy Avenue, Hicksville, NY

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	<5.0	5.0	ug/l	1	02/05/03	02/07/03	ND	SW846 6010B	SW846 3010A
Chromium	<10	10	ug/l	1	02/05/03	02/07/03	ND	SW846 6010B	SW846 3010A
Lead	<3.0	3.0	ug/l	1	02/05/03	02/07/03	ND	SW846 6010B	SW846 3010A
Nickel	850	40	ug/l	1	02/05/03	02/07/03	ND	SW846 6010B	SW846 3010A
Selenium	<5.0	5.0	ug/l	1	02/05/03	02/07/03	ND	SW846 6010B	SW846 3010A

RL = Reporting Limit

Report of Analysis

Client Sample ID: ERM-3
Lab Sample ID: N31701-6 **Date Sampled:** 01/29/03
Matrix: AQ - Ground Water **Date Received:** 01/30/03
Percent Solids: n/a
Project: ALSY Manufacturing, Duffy Avenue, Hicksville, NY

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Nickel	3580	40	ug/l	1	02/05/03	02/07/03	ND	SW846 6010B	SW846 3010A

RL = Reporting Limit

Report of Analysis

Client Sample ID:	LMS-4		
Lab Sample ID:	N31701-2	**Date Sampled:**	01/28/03
Matrix:	AQ - Ground Water	**Date Received:**	01/30/03
		Percent Solids:	n/a
Project:	ALSY Manufacturing, Duffy Avenue, Hicksville, NY		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Nickel	884	40	ug/l	1	02/05/03	02/07/03	ND	SW846 6010B	SW846 3010A

RL = Reporting Limit

Report of Analysis

Client Sample ID:	LMS-4		
Lab Sample ID:	N31701-2A	**Date Sampled:**	01/28/03
Matrix:	AQ - Groundwater Filtered	**Date Received:**	01/30/03
		Percent Solids:	n/a
Project:	ALSY Manufacturing, Duffy Avenue, Hicksville, NY		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Nickel	887	40	ug/l	1	02/05/03	02/07/03	ND	SW846 6010B	SW846 3010A

RL = Reporting Limit

Report of Analysis

Client Sample ID:	MW-3		
Lab Sample ID:	N31701-10	**Date Sampled:**	01/29/03
Matrix:	AQ - Ground Water	**Date Received:**	01/30/03
		Percent Solids:	n/a
Project:	ALSY Manufacturing, Duffy Avenue, Hicksville, NY		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Nickel	<40	40	ug/l	1	02/05/03	02/07/03	ND	SW846 6010B	SW846 3010A

RL = Reporting Limit

Report of Analysis

Client Sample ID: FB012803
Lab Sample ID: N31701-5
Matrix: AQ - Field Blank Water
Date Sampled: 01/28/03
Date Received: 01/30/03
Percent Solids: n/a
Project: ALSY Manufacturing, Duffy Avenue, Hicksville, NY

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	<5.0	5.0	ug/l	1	02/05/03	02/07/03	ND	SW846 6010B	SW846 3010A
Chromium	<10	10	ug/l	1	02/05/03	02/07/03	ND	SW846 6010B	SW846 3010A
Lead	<3.0	3.0	ug/l	1	02/05/03	02/07/03	ND	SW846 6010B	SW846 3010A
Nickel	<40	40	ug/l	1	02/05/03	02/07/03	ND	SW846 6010B	SW846 3010A
Selenium	<5.0	5.0	ug/l	1	02/05/03	02/07/03	ND	SW846 6010B	SW846 3010A

RL = Reporting Limit

Report of Analysis

Client Sample ID: FB012903
Lab Sample ID: N31701-11
Matrix: AQ - Field Blank Water
Date Sampled: 01/29/03
Date Received: 01/30/03
Percent Solids: n/a
Project: ALSY Manufacturing, Duffy Avenue, Hicksville, NY

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Nickel	<40	40	ug/l	1	02/05/03	02/07/03	ND	SW846 6010B	SW846 3010A

RL = Reporting Limit

APPENDIX H
Geophysical Survey Report

Northeast Geophysical Services
4 Union Street, Suite 3, Bangor, ME 04401
Phone: 207-942-2700 Fax: 207-942-8798

METAL DETECTION AND GROUND PENETRATING RADAR SURVEYS AT THE ALSY MANUFACTURING SITE, HICKSVILLE, NEW YORK

For:

ERM

August, 2001

Northeast Geophysical Services
4 Union Street, Suite 3, Bangor, ME 04401

August, 2001

METAL DETECTION AND GROUND PENETRATING RADAR SURVEYS AT THE ALSY MANUFACTURING SITE, HICKSVILLE, NEW YORK

INTRODUCTION

At the request of Ray Fitzpatrick of ERM, metal detection (EM-61) and ground penetrating radar (GPR) surveys were conducted at the ALSY Manufacturing site in Hicksville, New York. The objective of the surveys was to locate possible buried industrial leach pools, tanks, pipes, and other buried structures at the site. The surveys were conducted on August 4, 2001 by Mike Scully of Northeast Geophysical Services (NGS) with the assistance of Cathy Weber of ERM. This report summarizes site conditions, methods used, and the results of the geophysical surveys.

SUMMARY OF RESULTS

Figure 1 shows the results of the geophysical surveys at this site. The metal detection survey located five significant anomalies - all within the southern 1/4 of the survey area. These anomalies are outlined and labeled on Figure 1 and are discussed in more detail below. Several exposed features also caused metallic response. These include 4 catch basins and 3 sewer cleanouts - all with exposed metal lids. Several small metallic anomalies at ten-foot spacings along grid lines 60 North and 0 East probably indicate the location of a former metal fence. Other small metal occurrences shown on Figure 1 are of unknown origin, but could be caused by small pieces of scrap metal.

The results of the GPR survey are also shown on Figure 1. Numerous "hyperbolic" reflectors are indicated on the figure. Most of these are likely caused by buried objects such as rocks, wood, pieces of concrete and other types of debris often found in fill at old industrial sites. Several of these hyperbolic reflectors, however, appear to be caused by buried non-metallic pipes as indicated on the figure. A possibly more significant result of the GPR survey was the detection of two areas of attenuated GPR signal as shown on Figure 1. This type of attenuated signal is usually caused by areas of higher electrical conductivity in the soil or groundwater. The larger area of attenuation at approximately 90 North also has steeply dipping GPR reflectors around its perimeter, indicating that it may be the site of a former excavation.

SITE LOCATION AND CONDITIONS

The ALSY Manufacturing site is located at 270 Duffy Avenue, Hicksville, New York. The site is a small industrial facility formerly used by a metal plating business. The geophysical surveys were conducted in an open paved area at the rear of the building - between the building and the Long Island Railroad line to the north. At the time of the survey the area was completely free of any surface obstructions. The pavement was patched in several spots, primarily in the southern third of the survey area. Two of these patches coincide with metal Anomalies 3 and 5 shown on Figure 1. Another linear patch appears to reflect the location of a new sewer line.

METHODS AND INSTRUMENTATION

EM-61 Metal Detector

A Geonics EM-61 metal detector was used for the metal detection surveys. The EM-61 is a portable time-domain instrument with a coincident transmitter/receiver coil and second parallel receiver coil for depth to target estimation and rejection of surface metal response. The instrument measures the secondary electromagnetic field response in milli-volts (mV). The EM-61 is designed specifically to locate medium to large buried metal objects such as drums and tanks while being relatively insensitive to above-surface metallic objects such as fences, buildings and power lines. The technique is sensitive to conductive metal up to a depth of approximately 12 feet. The size and burial depth of the metal determine the strength of the response. The EM-61 transmitter/receiver coils can either be carried by the operator using a harness, or pulled on wheels. EM data is digitally recorded on an Omnidata PC-604 Polycorder. Readings can be recorded manually or, if the wheel mode is used, readings can be recorded at regular intervals controlled by the rotation of the wheels. The wheel mode was used for the surveys at this site and readings were recorded every 0.63 feet along the traverses.

Ground Penetrating Radar (GPR)

Ground penetrating radar utilizes high frequency radio waves to probe the subsurface. Radar waves are transmitted into the ground from an antenna that is pulled across the ground surface. In the subsurface, radar waves are reflected at interfaces of materials with contrasting dielectric properties. The returning signal is intercepted by a receiver and converted to a graphic image. The horizontal axis of the image is distance along the traverse. The vertical axis is two-way travel time of the radar pulses, in nanoseconds (ns).

The GPR graphic images are examined and features noted on the images are then transferred to a map. Tanks, pipelines and other objects with rounded tops (boulders, tree roots, or segments of old foundations, for example) may show up on the profiles as hyperbola-shaped reflections. Tanks and pipelines usually appear on more than one survey line as hyperbolic reflectors on lines perpendicular to the tank or pipe axis and as horizontal reflectors on lines along the axis. The GPR instrument used was a GSSI, SIR System-3. A 500-MHz antenna was used with a time range set for 60 nanoseconds. At this setting the depth surveyed is approximately 10 feet. The GPR surveys were conducted at a slow walking pace along lines spaced 10 feet apart.

Field Survey Procedures

The field survey area was marked with 10-ft. by 10-ft. orthogonal grid using tape measures and paint. The grid coordinate system was arbitrarily assigned and the grid was referenced to prominent existing features in order to facilitate plotting and interpretation of GPR and EM results. EM-61 readings were recorded using the wheel mode at 0.63-foot intervals along lines spaced five feet apart in two grid directions. GPR profiles were produced along lines spaced 10 feet apart in two grid directions. Following the survey a sketch map was made of the survey grid area, which served as a base map for Figure 1.

SURVEY RESULTS

Figure 1 shows the results of the metal detection and GPR surveys at his site. The figure indicates the distribution of metal within approximately 12 feet of the ground surface. The strength of the metal response shown is directly proportional to the total surface area of metal under the instrument and inversely proportional to the depth of the metal. Zero or very low metal responses are indicated by gray plus marks. Increasing metallic responses are indicated by colored blocks progressing from yellow to gold to red to black as shown in the explanation of Figure 1. Hyperbolic GPR reflectors are indicated by small hyperbolic symbols on the figure. Areas of attenuated GPR response are shown as shaded areas.

Several areas of high metal response indicated on Figure 1 can be explained by obvious metal-bearing features including: catch basins, sewer cleanouts, a monitoring well cover, a truck trailer, a reinforced concrete retaining wall, the walls of the building and the concrete slab that it rests on. Other areas of metallic response are considered anomalous and are discussed in more detail below.

Anomaly 1 is a moderate to strong metal anomaly that is approximately 10 feet wide by 15 feet long and centered at 30 North, 27 East on the survey grid. The anomaly is approximately at the end of a possible buried pipe located by the GPR survey. GPR profiles over the anomaly confirm a shallow feature there at less than 1.5 feet deep.

Anomaly 2 is a relatively small area (5 feet by 5 feet) of moderate to very strong metal response. The center of the anomaly is approximately 5 feet north of the wall of the building on grid line 40 East. The GPR profiles over this location are not particularly distinctive, however the anomaly appears to be shallow (less than 2 feet deep). This anomaly is approximately at the location of a former leach pool.

Anomaly 3 is an area (12 feet by 14 feet) of strong to very strong metal response that is centered at approximately 33 North, 50 East on the survey grid. The anomaly is coincident with a large patch in the pavement. GPR profiles over this location confirm a shallow structure (less than 1 foot deep) that is approximately 10 to 12 feet wide.

Anomaly 4 is a small area (7 feet by 7 feet) of strong to very strong metal response that is centered at approximately 37 North, 60 East on the survey grid. The anomaly is immediately adjacent to Anomaly 3 and may be caused by part of the same structure. The GPR profile along line 60 East over this location shows an anomaly at approximately 2.5 feet deep.

Anomaly 5 is a moderate to very strong metal anomaly that is approximately 10 feet wide by 10 feet long and centered at 37 North, 84 East on the survey grid. The anomaly is coincident with a sand-filled depression in the pavement and is approximately at the location of a former leach pool. GPR profiles 80 East and 40 North indicate that this structure is also shallow (less than 1.5 feet deep).

The two areas of attenuated GPR signals shown on Figure 1 indicate areas where the soil or soil moisture conductivity may be elevated relative to that of the surrounding areas. This may be caused by higher clay content of the soil or by metallic ions in the soil moisture such as sodium from salting of the area in winter. As mentioned above, the larger area of attenuation at approximately 90 North also has steeply dipping GPR reflectors around its perimeter, indicating that it may be the site of a former excavation.

LIMITATIONS OF THE SURVEYS

The EM-61 metal detection survey provides an indication of where buried metal exists at the sites surveyed. The Ground Penetrating Radar surveys produce reflectors at interfaces of materials with contrasting dielectric properties. Both of these instruments provide indirect measurements of subsurface conditions. The actual cause of the features depicted on Figure 1 can only be conclusively determined by direct observation.

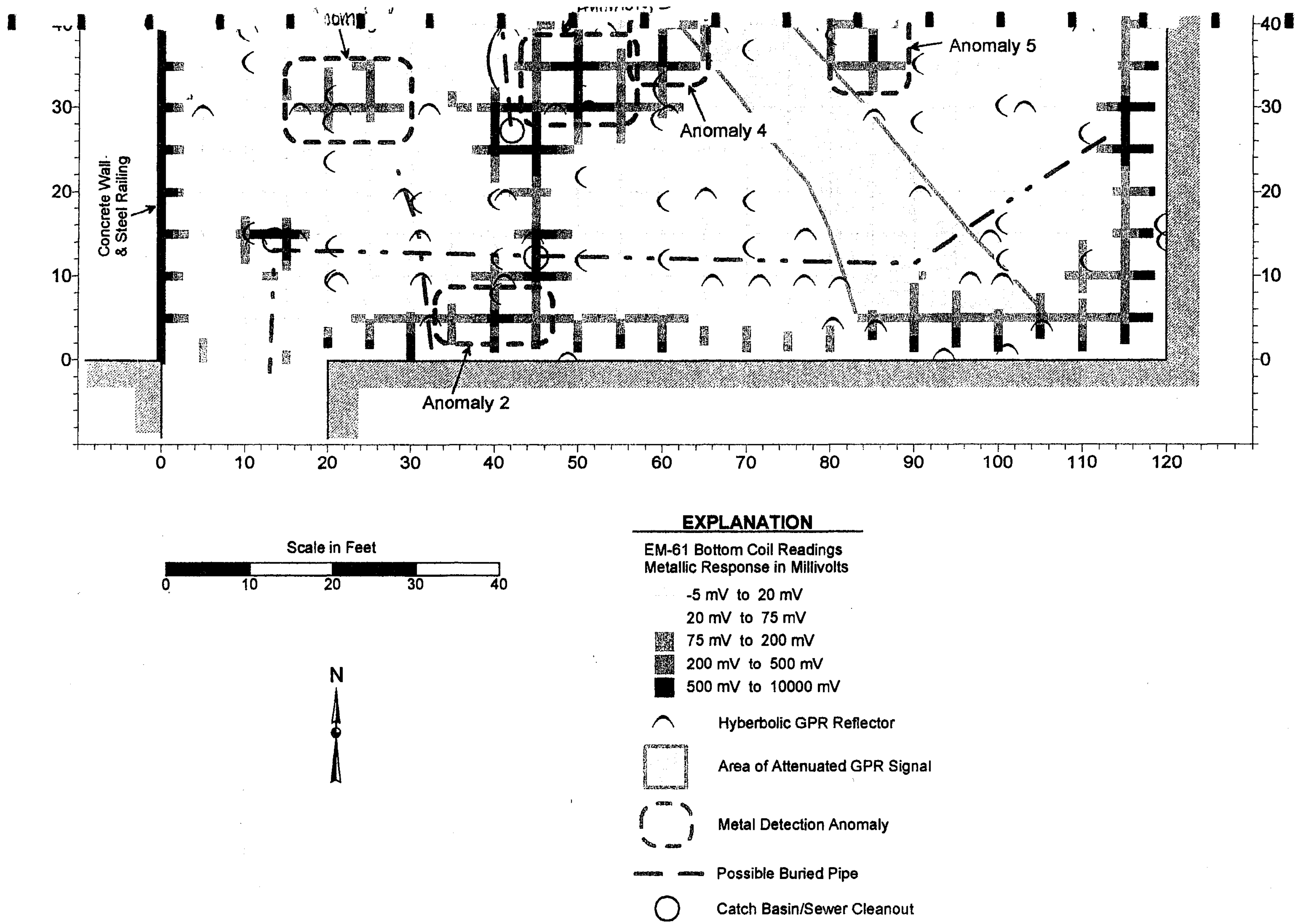
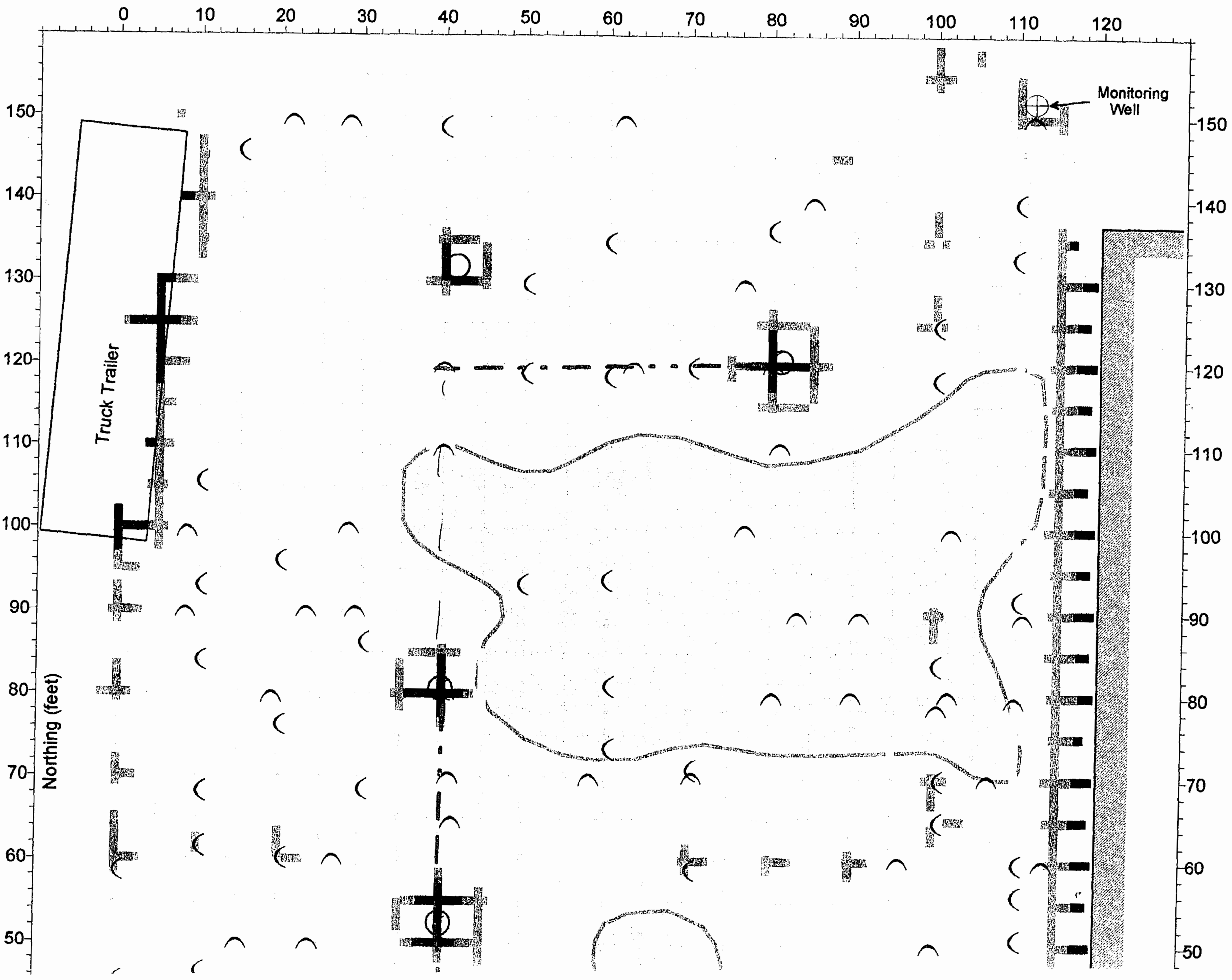


Figure 1. Results of Geophysical Surveys
ALSY Site, Hicksville, NY

Surveyed 8/4/01 by:
Northeast Geophysical Services


0
10
20
30
40
50
60
70
80
90
100
110
120
150
140
130
120
110
100
90
80
70
60
50
Northing (feet)
Truck Trailer
Monitoring Well

APPENDIX I

Soil Boring Logs and Well Construction Summaries

ERM

ERM Inc.

475 Park Avenue South, New York, NY 10016

BORING LOG

Boring Number
ERM-1

Project: ALSY, Hicksville, NY	Project Number: AA401.13.01		Date & Time Started: 09/04/01 , 0823	Date & Time Completed: 09/04/01 , 1020
Drilling Company: Delta Well and Pump, Inc.	Foreman: Conrad Streble		Bit Size: $3^1/_4$-inch and $6\ ^1/_4$-inch HSA	Core Barrel: NA
Drilling Equipment Failing F-10	Method: Hollow Stem Auger		Elevation & Datum N.A.	Completion Depth 70-feet Rock Depth Not Encountered
Sampler(s) 2-inch Outer Diameter Split Spoon	Hammer 140 lb	Drop 30-inches	Geologist(s) Cathy Weber	

DEPTH (ft below grade)	SAMPLES				SOIL DESCRIPTION	REMARKS
	Sample Number	Recovery (feet)	PID Reading (ppm)	Blow Counts		
0	LOCATION: Downgradient of former LP-4				SURFACE DESCRIPTION: Asphalt Pavement	
1					Cuttings are fill material: Brown m-c SAND, some f-c rounded to sub-rounded gravel	Start: 0823
2						
3					Drill to 10-feet	
4						
5						
6						
7						
8						
9						
10						Drill to 10-feet
11	26	0.9	NA	12 22 31 37	Tan f-m SAND, trace f-m sub-rounded to sub-angular gravel, trace crushed stone, trace silt, no staining (dry)	SAMPLE: 10.5 - 11' Time: 0836 Analysis: Ni
12						
13						
14						
15						
16						
17						
18						
19						
20						

Page 1 of 3 Signature: Date:

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ERM Inc.

475 Park Avenue South, New York, NY 10016

BORING LOG

Boring Number
ERM-1

Project:	Project Number:	Date:
ALSY, Hicksville, NY	AA401.13.01	09/04/01

DEPTH (ft below grade)	SAMPLES Sample Number	Recovery (feet)	PID Reading (ppm)	Blow Counts	SOIL DESCRIPTION	REMARKS
21	27, 28	1.0	NA	6 16 19 24	Tan f-m SAND, trace f-m sub-rounded to sub-angular gravel, trace crushed stone, trace silt, no odor, no stain (dry)	Drill to 20-feet SAMPLE: 20 - 21' Time: 0856 Analysis: Ni, SPLP Ni Note: Duplicate (28)
22						
23						
24						
25						
26						
27						
28						
29						
30						Drill to 30-feet
31	29, 30	1.2	NA	10 11 10 18	Tan f-m SAND, trace fine gravel, trace silt, no odor, no staining (moist) Orange-tan colored from 4 to 8-inches	SAMPLE: 30 - 31' Time: 0929 Analysis: Ni, SPLP Ni Note: MS/MSD sample (30)
32						
33						
34						
35						
36						
37						
38						
39						
40						Drill to 40-feet
41	31	1.5	NA	11 16 19 26	Brown f-m SAND, trace fine sub-rounded gravel, trace silt, no odor (moist) Brownish-gray at 41-41.5'	SAMPLE: 41 - 41.5' Time: 0939 Analysis: Ni
42						
43						
44						
45						

Page 2 of 3 Signature: Date:

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475 Park Avenue South, New York, NY 10016

BORING LOG

Boring Number
ERM-1

Project: ALSY, Hicksville, NY	Project Number: AA401.13.01	Date: 09/04/01

DEPTH (ft below grade)	SAMPLES				SOIL DESCRIPTION	REMARKS
	Sample Number	Recovery (feet)	PID Reading (ppm)	Blow Counts		
46						
47						
48						
49						
50						Drill to 50-feet
51	32	1.7'	NA	13 15 21	Orangish-brown f-m SAND, trace f-m sub-rounded to sub-angular gravel, no odor, reddish-brown iron staining at 50.5' (moist)	SAMPLE: 51 - 51.5' Time: 0952 Analysis: Ni
52				26		
53						
54						
55						
56						
57						
58						
59						
60						Drill to 60-feet
▽ 61	--	1.5	NA	6 8 14	Light-brown f-m SAND, trace fine sub-rounded to rounded gravel, no odor, slight iron staining at 61' (moist, wet at 61')	
62				22		
63						
64						
65						
66						
67						
68						Drill to 68-feet
69	--	2.0	NA	20 10 9	1' Light-brown gravelly f-c SAND, gravel is sub-rounded to sub-angular 1' Light-brown f-m SAND, trace silt, trace iron staining	Complete boring at 1020 to 70' bgs Pull $3^{1}/_{4}$-inch augers and drill out hole with 6 1/4-inch augers to install 4-inch PVC monitoring well.
70				19	(wet)	

Page 3 of 3 Signature: Date:

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475 Park Avenue South, New York, NY 10016

BORING LOG

Boring Number
ERM-2

Project: ALSY, Hicksville, NY	Project Number: AA401.13.01		Date & Time Started: 08/28/01 , 0850	Date & Time Completed: 08/28/01 , 1410
Drilling Company: Delta Well and Pump, Inc.	Foreman: Mike Pellegreno		Bit Size: $3^1/_4$-inch and $6\ ^1/_4$-inch HSA	Core Barrel: NA
Drilling Equipment Failing F-10	Method: Hollow Stem Auger		Elevation & Datum N.A.	Completion Depth 70-feet Rock Depth Not Encountered
Sampler(s) 2-inch Outer Diameter Split Spoon	Hammer 140 lb	Drop 30-inches	Geologist(s) Cathy Weber	

DEPTH (ft below grade)	SAMPLES				SOIL DESCRIPTION	REMARKS
	Sample Number	Recovery (feet)	PID Reading (ppm)	Blow Counts		
0	LOCATION: Through former drywell				SURFACE DESCRIPTION: Asphalt pavement	
1						Start: 0850
2			0		Cuttings: Brown f-c SAND, some f-c gravel no staining (dry)	Slight volatile odor Note: PID readings from a 10.6 eV Microtip PID
3						
4						
5						Drill to 5-feet
				1	0.25' Brown f-c SAND, trace f-m gravel	
6		0.6	0	1	0.3' Light-brown f-c SAND, trace f-m gravel	slight odor
				1	(dry)	
7				2		Drill to 7-feet
				12	Light-brown f-c SAND, trace f-m gravel	
8		0.4	0	5	(dry)	slight odor
				2	no staining	
9				2		Drill to 9-feet
				1/24"	No recovery	
10		NR	0			
11						Drill to 11-feet
				WOR/	0.3' Greenish-brown SILT (sludge-like)	sludge-like material, very soft
12	2	1.6	0	24"	0.6' Black with brown and green striations SILT	SAMPLE: 12.5 - 13'
					0.7' Bright green SILT (sludge-like)	Time: 1115
13					(moist)	Analysis: Ni, SPLP Ni
				1	Brown-gray SILT, trace clay	Drill to 13-feet
14		1.2	0	1	(wet)	slight odor
				2	trace fibers, slight green staining at bottom 0.3'	
15				2		Drill to 15-feet
				2	1.4' Brown-gray SILT, trace clay	Green staining and white striations
16	3,	1.7	0	3	0.3' Light-brown m-c SAND, trace fine gravel	at 16-feet SAMPLE: 15 - 16.5'
	8			4	(moist-wet)	slight odor Time: 1145
17				3		Drill to 17' Analysis: VOC, SVOC
				3	1' Grayish-brown SILT, trace clay, slight green staining	slight odor RCRA Metal
18		1.4	0	3	0.4' Light-brown coarse SAND, trace fine gravel	Ni, SPLP Ni
				4	(moist)	
19				5		Drill to 19-feet
				5	0.35' Grayish-brown SILT, trace clay, trace green staining	slight odor
20		0.7	0	5	(possible fall through material) (moist-wet)	
				7	0.35' Light-brown coarse SAND, trace f-m gravel, no	
21				8	staining (moist)	

Page 1 of 3 Signature: Date:

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475 Park Avenue South, New York, NY 10016

BORING LOG

Boring Number
ERM-2

Project: **ALSY, Hicksville, NY**	Project Number: **AA401.13.01**	Date: 8/28/01

DEPTH ft below grade)	SAMPLES				SOIL DESCRIPTION	REMARKS
	Sample Number	Recovery (feet)	PID Reading (ppm)	Blow Counts		
				6	slough on top	Drill to 21-feet
22	4	1.5	0	8	0.8' Light-brown coarse SAND, trace f-m gravel, no	SAMPLE: 21 - 21.5'
				11	staining	Time: 1215
23				11	(moist)	Analysis: Ni, SPLP Ni
24						
25						
26						
27						
28						
29						
30						Drill to 30-feet
				6	Light-brown m-c SAND, trace gravel, no staining	no odor
31	5	0.9	0	8	(moist-dry)	SAMPLE: 30 - 30.5'
				11		Time: 1315
32				11		Analysis: Ni, SPLP Ni
33						
34						
35						
36						
37						
38						
39						
40						Drill to 40-feet
				16	Light-brown m-c SAND, trace fine gravel, no staining	slight odor
41	6	0.9	0	56	(moist-dry)	SAMPLE: 40 40.5'
				42		Time: 1330
42				28		Analysis: Ni, SPLP Ni
43						
44						
45						

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475 Park Avenue South, New York, NY 10016

BORING LOG

Boring Number
ERM-2

Project: ALSY, Hicksville, NY	Project Number: AA401.13.01	Date: 8/28/01

DEPTH	SAMPLES				SOIL DESCRIPTION	REMARKS
ft below grade)	Sample Number	Recovery (feet)	PID Reading (ppm)	Blow Counts		
46						
47						
48						
49						
50						Drill to 50-feet At 50-feet the driller noted an odor over the top of the hole. The PID read 0 ppm (10.6 eV PID does not detect chlorinated volatile organic compounds) SAMPLE: 50 - 50.5' Time: 1340 Analysis: Ni, SPLP Ni
51	7	0.5	0	15 32 41 53	Light-brown m-c SAND, trace f-m gravel, no staining (moist-dry)	
52						
53						
54						
55						
56						
57						
58						
59						
60						Drill to 60-feet no odor
▽ 61	--	1.9	0	6 7 7 8	Light-brown medium SAND, trace coarse sand (top moist, bottom 1.5' wet)	
62						
63						
64						
65						
66						EOB: 1410
67						Complete boring at 1410 to 70' bgs Pull $3^{1}/_{4}$-inch augers and drill out hole with 6 $^{1}/_{4}$-inch augers to install 4-inch PVC monitoring well. Drilled out hole with 6 $^{1}/_{4}$-inch augers on 08/29/01.
68						
69						
70						

Page 3 of 3 Signature: Date:

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475 Park Avenue South, New York, NY 10016

BORING LOG

Boring Number
EB-1

Project: **ALSY, Hicksville, NY**	Project Number: **AA401.13.01**		Date & Time Started: 08/31/01 , 0820	Date & Time Completed: 08/31/01 , 1030
Drilling Company: Delta Well and Pump, Inc.	Foreman: Conrad Streble		Bit Size: 3 $^1/_4$-inch HSA	Core Barrel: NA
Drilling Equipment Failing F-10	Method: Hollow Stem Auger		Elevation & Datum N.A.	Completion Depth 52-feet bgs
				Rock Depth Not Encountered
Sampler(s) 2-inch Outer Diameter Split Spoon	Hammer 140 lb	Drop 30-inches	Geologist(s) Cathy Weber	

DEPTH	SAMPLES				SOIL DESCRIPTION	REMARKS
(ft below grade)	Sample Number	Recovery (feet)	PID Reading (ppm)	Blow Counts		
0	LOCATION: Catch basin in NE of courtyard				SURFACE DESCRIPTION: Surface grate	
1						Start: 0820
2					Open hole catch basin with 8-feet diameter ring down to 15-feet bgs	
3						
4						
5						
6						
7						
8						
∇ 9						
10						
11						
12						
13						
14						
15						
16	--	0.6	0	6 6 9 12	Grayish-brown f-c SAND, trace fine gravel, trace silt no odor, no staining (moist)	
17					0.2' Dark gray silty f-m SAND, trace fine gravel (moist)	Drill to 17-feet
18	15	0.4	0	7 3 14 12	0.1' Dark-gray silty f-m SAND, trace fine gravel 0.3' Brown gravelly f-c SAND, trace silt (moist)	SAMPLE: 17.5 - 18.5' Time: 0840 Analysis: Ni
19						
20						

Page 1 of 3 Signature: Date:

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ERM Inc.

475 Park Avenue South, New York, NY 10016

BORING LOG

Boring Number
EB-1

Project: ALSY, Hicksville, NY
Project Number: AA401.13.01
Date: 08/31/01

DEPTH	SAMPLES				SOIL DESCRIPTION	REMARKS
(ft below grade)	Sample Number	Recovery (feet)	PID Reading (ppm)	Blow Counts		
21	16	0.8	0	5 8	Brown m-c SAND, some f-m gravel (moist)	Drill to 20-feet SAMPLE: 20.5 - 21'
22				13 18	some darkened gray coloring at 20.5'	Time: 0853 Analysis: Ni
23						
24						
25						
26						
27						
28						
29						
30						Drill to 30-feet
31	--	0.3	NA	13 21	0.1' Crushed pinkish-white stone 0.2' Light-brown m-c SAND, some f-m sub-rounded to rounded gravel, no odor, no staining	
32				24 28	(dry)	drive split spoon from 32 to 34-feet to obtain enough sample for lab analysis
33	17	1.1	NA	NA	Light-brown m-c SAND, trace subrounded to rounded f-m gravel, no odor	
34					iron staining at 32.5' (dry)	SAMPLE: 32 - 32.5' Time: 0936 Analysis: Ni
35						
36						Note: The PID Photovac rented from Pine Environmental is not charged fully. It is charging to a wall plug inside.
37						
38						
39						
40						Drill to 40-feet
41	18	1.4	NA	9 9	Light-brown m-c SAND, trace fine subrounded to sub-angular gravel, no odor, no staining	SAMPLE: 40 - 40.5' Time: 0948
42				14 24	(slightly moist)	Analysis: Ni
43						
44						
45						

Page 2 of 3 Signature: Date:

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ERM Inc.

475 Park Avenue South, New York, NY 10016

BORING LOG

Boring Number
EB-1

ERM

Project: **ALSY, Hicksville, NY**	Project Number: **AA401.13.01**	Date: 08/31/01

DEPTH (ft below grade)	SAMPLES Sample Number	Recovery (feet)	PID Reading (ppm)	Blow Counts	SOIL DESCRIPTION	REMARKS
46						
47						
48						
49						
50						Drill to 50-feet
				16	0.9' Brown m-c SAND, trace fine subrounded gravel	SAMPLE: 50.5 - 51'
51	19	1.5	fault	20	0.2' Reddish-brown gravelly coarse SAND	Time: 1015
				23	0.4' White-brown gravelly f-c SAND	Analysis: Ni
52				28	(slightly moist)	
						EOB: 1030 at 52' bgs
53						
54						
55						
56						
57						
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66						
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Page 3 of 3 Signature: Date:

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ERM Inc.

475 Park Avenue South, New York, NY 10016

BORING LOG

Boring Number
EB-2

Project: ALSY, Hicksville, NY	Project Number: AA401.13.01		Date & Time Started: 8/31/2001 , 1101	Date & Time Completed: 08/31/2001 , 1200
Drilling Company: Delta Well and Pump, Inc.	Foreman: Conrad Streble		Bit Size: 3 $^1/_4$-inch HSA	Core Barrel: NA
Drilling Equipment Failing F-10	Method: Hollow Stem Auger		Elevation & Datum N.A.	Completion Depth 12-feet Rock Depth Not Encountered
Sampler(s) 2-inch Outer Diameter Split Spoon	Hammer 140 Ib	Drop 30-inches	Geologist(s) Cathy Weber	

DEPTH (ft below grade)	SAMPLES Sample Number	Recovery (feet)	PID Reading (ppm)	Blow Counts	SOIL DESCRIPTION	REMARKS
0	LOCATION: Area of previous excavation.				SURFACE DESCRIPTION: Ashphalt pavement	
1 2	--	1.6	NA	6 13 9 23	Dark-brown f-m SAND, trace silt: FILL, fibers, natural material ie. Top soil loam (moist)	Start: 1101 slight organic odor
3 4	20	1.7	NA	6 4 5 15	1.4' Dark-brown f-m SAND, trace silt: FILL, fibers, organic material ie. Top soil loam 0.3' Tan clayey-SILT, trace fine sand (moist) iron staining, no odor	SAMPLE: 3.5 - 4' Time: 1140 Analysis: Ni
5 6	--	0.5	NA	10 10 21 30	0.3' Light-brownish tan me-c SAND, some fine sub-rounded to sub-angular gravel (dry-moist) 0.2' Tan-white crushed stone (dry)	
7 8	--	0.5	NA	9 12 12 20	Light-brownish-tan f-m SAND, trace f-m gravel white-pink quartz broke into pieces in hand, trace silt (dry)	
9 10	--	1.3	NA	10 20 22 29	1.1' Light-brownish-tan f-m SAND, trace f-c gravel sub-rounded to rounded, trace silt 0.2' Crushed tan-white stone (dry)	
11 12	21	0.7	NA	8 12 28 30	Light-brownish-tan f-m SAND, trace f-c gravel sub-rounded to rounded, trace silt (dry)	SAMPLE: 10.5 - 11' Time: 1158 Analysis: Ni
13 14 15 16 17 18 19 20						EOB: 1200 at 12' bgs

Page 1 of 1 Signature: Date:

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475 Park Avenue South, New York, NY 10016

BORING LOG

Boring Number
EB-3

Project: **ALSY, Hicksville, NY**	Project Number: **AA401.13.01**	Date & Time Started: 09/05/01 , 1130	Date & Time Completed: 09/05/01 , 1352
Drilling Company: Delta Well and Pump, Inc.	Foreman: Conrad Streble	Bit Size: 3 1/4-inch	Core Barrel: NA
Drilling Equipment Failing F-10	Method: Hollow Stem Auger	Elevation & Datum N.A.	Completion Depth 27-feet Rock Depth Not Encountered
Sampler(s) 2-inch Outer Diameter Split Spoon	Hammer 140 lb Drop 30-inches	Geologist(s) Cathy Weber	

DEPTH (ft below grade)	SAMPLES				SOIL DESCRIPTION	REMARKS
	Sample Number	Recovery (feet)	PID Reading (ppm)	Blow Counts		
	LOCATION:				SURFACE DESCRIPTION:	
0	Immediately west of fomer LP-				2-inches ASPHALT Pavement	
						Start: 1130
1						
2						
3						
4						
5						Drill to 5-feet
				3	0.3' Dark-brown f-m SAND, trace silt, trace fine gravel	no odor, no staining
6	--	1.1	1	3	0.6' Brown m-c SAND, trace f-m gravel, trace silt	
				4	0.2' Brown clayey SILT, trace f-m sand, trace gravel	
7				2	(moist)	Drill to 7-feet
				4	Brown medium SAND, trace fine and coarse sand,	no odor, no staining
8	--	0.5	1	5	trace f-m gravel, trace silt	
				3	(moist)	
9				7		Drill to 9-feet
				8	Brown m-c SAND, trace f-c gravel, trace silt	no odor, no staining
10	--	0.6	1	7	(moist)	
				5	two 1-inch pieces of gravel	
11				9		Drill to 11-feet
				5	Brown m-c SAND, trace fine gravel, trace silt	no odor, no staining
12	34	0.7	0.5	6	(moist)	SAMPLE: 11 - 11.5'
				3		Time: 1257
13				7		Analysis: Ni
				4	Brown m-c SAND, trace fine gravel, trace silt	Drill to 13-feet
14	--	0.6	1	5	(moist)	no odor, no staining
				7		
15				15		Drill to 15'
				10	Brown m-c SAND, trace f-c gravel, some crushed white	no odor, no staining
16	--	1.3	1	13	quartz gravel, trace silt	
				16	iron staining at 16'	
17				16	(moist)	Drill to 17'
				2	Tannish-brown m-c SAND, trace f-m gravel, trace silt	no odor, no staining
18	--	1.1	1	4	(dry-moist)	
				5		
19				15		Drill to 19'
				4	Grayish-tan m-c SAND, trace f-m gravel	slight septic odor
20	35, 36	1.2	1	7	(slightly moist)	no staining
				8		
21				15		

Page 1 of 2 Signature: Date:

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475 Park Avenue South, New York, NY 10016

BORING LOG

Boring Number
EB-3

Project: ALSY, Hicksville, NY

Project Number: AA401.13.01

Date: 09/05/01

DEPTH (ft below grade)	SAMPLES				SOIL DESCRIPTION	REMARKS
	Sample Number	Recovery (feet)	PID Reading (ppm)	Blow Counts		
22	37, 38		1	8 6	Tan m-c SAND, trace f-m gravel, trace fine sand and silt (slightly moist)	Drill to 21-feet slight septic odor
23				5 10		Drill to 23-feet
24	--		1	5 7	Tan m-c SAND, trace f-c gravel, trace fine sand and silt iron staining at 24'	slight septic odor no staining
25				8 14	(slightly moist)	Drill to 25-feet
26	--		1	6 7	Tan m-c SAND, trace f-c gravel, trace fine sand and silt visible iron staining throughout	slight septic odor no staining
27				9 12	(slightly moist)	
28						EOB: 1352 at 27' bgs
29						SAMPLE: 19 19.5'
30						Time: 1332 Analysis: Ni
31						Note: MS/MSD sample
32						Took extra sample from 21-22' at 1340 if not enough volume at 19-19.5' sample to do MS/MSD
33						
34						
35						
36						
37						
38						
39						
40						
41						
42						
43						
44						
45						

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ERM Inc.

475 Park Avenue South, New York, NY 10016

BORING LOG

Boring Number
EB-4

Project: **ALSY, Hicksville, NY**	Project Number: **AA401.13.01**	Date & Time Started: 09/04/01 , 0823	Date & Time Completed: 09/04/01 , 1020
Drilling Company: Delta Well and Pump, Inc.	Foreman: Conrad Streble	Bit Size: 3 $^{1}/_{4}$-inch HSA	Core Barrel: NA
Drilling Equipment Failing F-10	Method: Hollow Stem Auger	Elevation & Datum N.A.	Completion Depth 52-feet Rock Depth Not Encountered
Sampler(s) 2-inch Outer Diameter Split Spoon	Hammer 140 lb Drop 30-inches	Geologist(s) Cathy Weber	

DEPTH (ft below grade)	SAMPLES				SOIL DESCRIPTION	REMARKS
	Sample Number	Recovery (feet)	PID Reading (ppm)	Blow Counts		
0	LOCATION: Through former LP-4				SURFACE DESCRIPTION: Brown f-m SAND, trace silt, trace fine gravel	
-- -- -- -- -- 20					At 0.8-feet bgs, a concrete cover was found. 0 to 20 feet is backfilled with Dark-brown SAND, trace silt, metal debris and asphalt debris	Drill through former sanitary leach pool. LP-4 was backfilled and closed in December 2000. Start sampling at bottom at 20-feet bgs.
21 22	22	0.2	NA	7 8 9 21	Brownish-gray f-m SAND, trace silt (moist) Black petrified rocks 1-inch diameter and 1/2-inch	Drill to 20-feet Little recovery sewage odor Drill to 22-feet
23 24	--	0.3	NA	NA	Brownish-gray f-m SAND, trace silt, trace coarse sand sewage odor (moist)	SAMPLE: 21.5 - 22.5' Time: 1535 Analysis: Ni
25 26	---	1.4	NA	NA	0.6' Brownish-gray f-m SAND, trace silt, trace coarse sand 0.7' Light-brown f-m SAND, trace silt, trace coarse sand 0.1' Brownish-gray f-m SAND, trace silt, trace coarse sand (moist)	
27 28 29 30						Drill to 30-feet
31 32	23	1.3		10 15 17 19	Light-brown tan m-c SAND, trace to some rounded f-m white quartz gravel, trace fine sand (dry)	SAMPLE: 30 - 30.5' Time: 1550 Analysis: Ni
33 34						

Page 1 of 2 Signature: Date:

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ERM Inc.

475 Park Avenue South, New York, NY 10016

BORING LOG

Boring Number
EB-4

Project: **ALSY, Hicksville, NY**	Project Number: **AA401.13.01**	Date: 08/30/01

DEPTH (ft below grade)	SAMPLES Sample Number	Recovery (feet)	PID Reading (ppm)	Blow Counts	SOIL DESCRIPTION	REMARKS
35						
36						
37						
38						
39						
40						Drill to 40-feet
				6	Tan medium SAND, trace fine and coarse sand, grading	SAMPLE: 40 - 40.5'
41	24	1.6	NA	10	to f-m SAND, trace fine gravel, well sorted, some reddish	Time: 1600
				16	iron staining	Analysis: Ni
42				27	(slightly moist)	
43						
44						
45						
46						
47						
48						
49						
50						Drill to 50-feet
				11	0.2' Grayish-brown f-m SAND, trace silt	SAMPLE: 50 - 50.5'
51	25	1.6	NA	19	0.9' Yellowish-orange brown f-m SAND, trace silt	Time: 1610
				22	0.2' Orangish-brown f-c SAND, trace fine gravel	Analysis: Ni
52				28	0.3' Tan f-c SAND, trace fine gravel (slightly moist)	
						EOB: 1610 at 52' bgs
53						
54						
55						
56						
57						
58						
59						

Page 2 of 2 Signature: Date:

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475 Park Avenue South, New York, NY 10016

BORING LOG

Boring Number
EB-5

Project: ALSY, Hicksville, NY	Project Number: AA401.13.01	Date & Time Started: 08/30/01 , 1100	Date & Time Completed: 08/30/01 , 1105
Drilling Company: Delta Well and Pump, Inc.	Foreman: Conrad Strble	Bit Size: 3 $^{1}/_{4}$-inch	Core Barrel: NA
Drilling Equipment Failing F-10	Method: Hollow Stem Auger	Elevation & Datum N.A.	Completion Depth 8-inches Rock Depth Not Encountered
Sampler(s) None	Hammer -- Drop --	Geologist(s) Cathy Weber	

DEPTH (ft below grade)	SAMPLES				SOIL DESCRIPTION	REMARKS
	Sample Number	Recovery (feet)	PID Reading (ppm)	Blow Counts		
	LOCATION:				SURFACE DESCRIPTION:	
0	Metal anamoly				8-inches ASPHALT patch	
1						Start: 1100
2						Hit refusal at 8-inches bgs where a sewer cover for a former monitoring well was located. The well was previously designated GW-2 and OW-2 in Soil Mechanics' and Roux Associates' reports.
3						
4						
5						End: 1105
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						

Page 1 of 1 Signature: Date:

NA = Not recorded/available

ERM

ERM Inc.

475 Park Avenue South, New York, NY 10016

BORING LOG

Boring Number
EB-6A

Project: **ALSY, Hicksville, NY**	Project Number: **AA401.13.01**	Date & Time Started: 08/30/2001 , 1100	Date & Time Completed: 08/30/2001 , 1230	
Drilling Company: Delta Well and Pump, Inc.	Foreman: Conrad Streble	Bit Size: 3 1/4-inch	Core Barrel: NA	
Drilling Equipment Failing F-10	Method: Hollow Stem Auger	Elevation & Datum N.A.	Completion Depth 14-feet	Rock Depth Not Encountered
Sampler(s) 2-inch Outer Diameter Split Spoon	Hammer 140 lb Drop 30-inches	Geologist(s) Cathy Weber		

DEPTH (ft below grade)	SAMPLES				SOIL DESCRIPTION	REMARKS
	Sample Number	Recovery (feet)	PID Reading (ppm)	Blow Counts		
0	LOCATION:				SURFACE DESCRIPTION: 2-inches ASPHALT pavement	Moved over from EB-6 (hit refusal at 1-foot bgs)
1 2	--	0.8	NA	10 10 13 12	Brown m-c SAND, trace fine gravel, trace silt, trace glass piece 2-mm, no staining, no odor (dry) 0.2' Brown SILT, trace clay, trace fine sand (moist)	Drill to 2-feet
3 4	--	0.8	NA	2 5 4 8	Light-brown silty CLAY, some fine sand, trace fine gravel no odor, no staining (moist)	no odor, no staining Drill to 4-feet no odor, no staining At 2 to 3' bgs the auguer shifted
5 6	10	0.7	NA	4 4 6 7	0.3' Brown silty f-m SAND, trace clay 0.2' Orangish-brown f-m SAND, trace fine gravel, trace silt 0.2' Light-brown clayey SILT, trace fine sand (moist)	north, hit a cobble or obstruction to the south. SAMPLE: 4.5-5' Time: 1122
7 8	--	1.4	NA	3 19 38 33	0.8' Light-brown clayey to some clay SILT, trace fine sand iron staining 0.1' Light brown m-c SAND, trace fine gravel (moist) 0.5' Crush white quartz rock (dry)	Analysis: Ni Drill to 6-feet no odor, no staining
9 10	--	1.0	NA	6 22 30 28	0.1' Light brown SILT, some clay, trace fine sand (moist) 0.3' Light-brown m-c SAND, trace f-m Gravel (dry) 0.3' Crushed white quartz rock (dry) 0.3' Light-brown medium SAND, tr. silt, tr. f. gravel (dry)	Drill to 8-feet no odor, no staining Drill to 10-feet
11 12	11	1.2	NA	3 19 19 24	1' Brown f-c SAND, trace f-m gravel, trace silt (moist) 0.2' Crushed white tan quartz rock (dry)	no odor, no staining SAMPLE: 10-10.5' Time: 1159 Analysis: Ni
13 14	--	0.5	NA	8 16 21 27	0.3' Crushed white tan quartz rock (dry) 0.2' Brown f-c SAND, trace fine gravel, trace silt (moist)	Drill to 12' no odor, no staining Note: PID not functioning
15 16 17 18 19 20						Moved to EB-6B to drill from 12 to 20' bgs.

Page 1 of 1 Signature: Date:

NA = Not recorded/available

ERM

ERM Inc.

475 Park Avenue South, New York, NY 10016

BORING LOG

Boring Number
EB-6B

Project: **ALSY, Hicksville, NY**	Project Number: **AA401.13.01**	Date & Time Started: 08/30/2001 , 1300	Date & Time Completed: 08/30/2001 , 1400
Drilling Company: Delta Well and Pump, Inc.	Foreman: Conrad Streble	Bit Size: 3 $^{1}/_{4}$-inch	Core Barrel: NA
Drilling Equipment Failing F-10	Method: Hollow Stem Auger	Elevation & Datum N.A.	Completion Depth 20-feet
			Rock Depth Not Encountered
Sampler(s) 2-inch Outer Diameter Split Spoon	Hammer 140 lb	Drop 30-inches	Geologist(s) Cathy Weber

DEPTH	SAMPLES				SOIL DESCRIPTION	REMARKS
(ft below grade)	Sample Number	Recovery (feet)	PID Reading (ppm)	Blow Counts		
0	LOCATION: Metal anomaly				SURFACE DESCRIPTION: 2-inches ASPHALT Pavement	Moved over from EB-6A
1						
2						
3					Cuttings are Brown f-c SAND, some f-c gravel (dry-moist)	
4						
5						
6						
7						
8						
9						
10						
11						
12						
13	--	0.8	NA	8 16	0.1' Brown f-c SAND, trace silt 0.7' Light-brownish-white crushed rock	Note: PID not functioning
14				21 27	(dry)	
15						
16						Drill to 16-feet
17	12	0.9	NA	12 10	Brown f-c SAND, trace some f-m white quartz gravel, rounded	SAMPLE: 16 - 16.5' Time: 1330 Analysis: Ni
18				15 16	brownish-green colored stain at 16.2' bgs	
19	--	1.4	NA	8 8	Brown f-c SAND, trace to some f-m white quartz gravel, rounded	
20				13 16	(dry-moist)	EOB: 1400 at 20' bgs

Page 1 of 1 Signature: Date:

NA = Not recorded/available

ERM, INC.

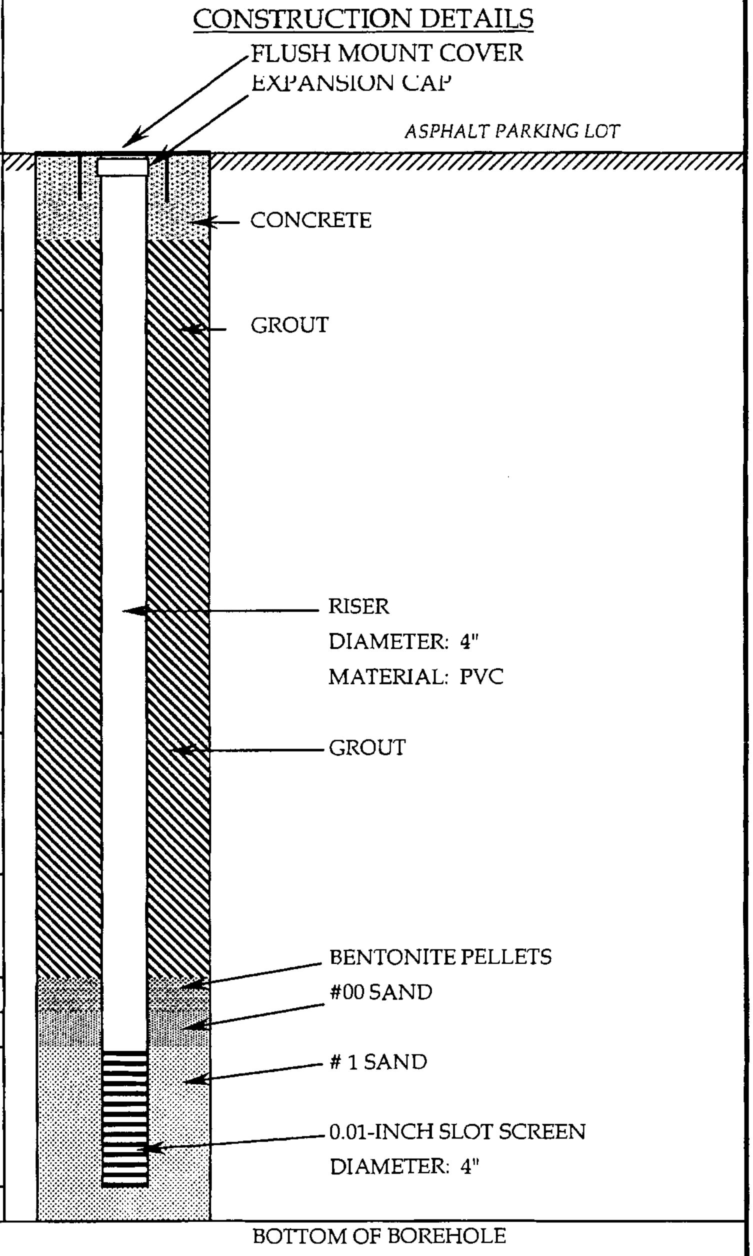
WELL : ERM-1

855 Springdale Drive, Exton, PA 19341

MONITORING WELL CONSTRUCTION

Project Name & Location **FORMER ALSY SITE**	*Project No.* **AA401.13**	*Water Level(s)* *(ft below top of PVC casing)*			*Site Elevation Datum* --
Drilling Company Delta Well and Pump, Inc.	*Foreman* Conrad Streble	Date	Time	Level (feet)	*Ground Elevation* 132.24
Surveyor GEOD Corporation, Newfoundland, NJ		9/5/01	11:00	61.6'	*Top of Protective Steel Cap Elevation* Flush
Date and Time of Completion 9/5/01	*Geologist* C. Weber				*Top of Riser Pipe Elevation* 131.77

Generalized Soil Description	*Elevation	**Depth
	0.0	0.0
Asphalt at surface		
		10.0
		20.0
Brownish-tan f-m SAND, trace f-m sub-rounded to sub-angular gravel, trace silt		30.0
		40.0
		50.0
		56.0
		58.0
		59.3
Light-brown gravelly f-c SAND		69.3
		70.0



REMARKS DTW RECORDED FROM TOP OF PVC RISER

* Elevation (feet) above mean sea level unless noted ** Depth in feet below grade

ERM, INC.

WELL : ERM-2

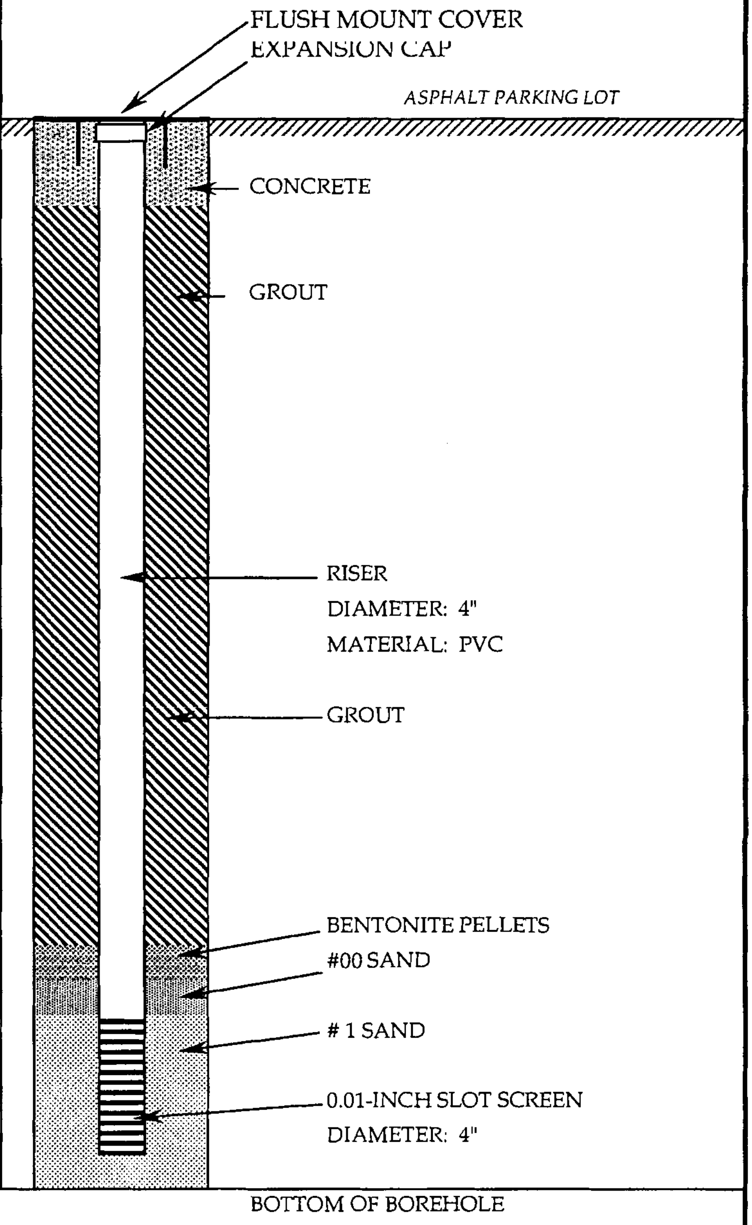
855 Springdale Drive, Exton, PA 19341

MONITORING WELL CONSTRUCTION

Project Name & Location **FORMER ALSY SITE**	*Project No.* **AA401.13**	*Water Level(s)* *(ft below top of PVC casing)*			*Site Elevation Datum* --
Drilling Company Delta Well and Pump, Inc.	*Foreman* Mike Pellegreno	Date	Time	Level (feet)	*Ground Elevation* 132.34
Surveyor GEOD Corporation, Newfoundland, NJ		8/29/01	1515	61.50	*Top of Protective Steel Cap Elevation* Flush
Date and Time of Completion 8/29/01 1330	*Geologist* C. Weber				*Top of Riser Pipe Elevation* 131.83

Generalized Soil Description	*Elevation	**Depth
	0.0	0.0
Asphalt at surface Light-brown f-c SAND, trace f-m gravel		10.0
Greenish-brown SILT (sludge-like)		20.0
Light-brown f-c SAND, trace f-m gravel		30.0 40.0 50.0 54.0 57.0 59.0
Light-brown gravelly f-c SAND		69.0 70.0

CONSTRUCTION DETAILS



REMARKS DTW RECORDED FROM TOP OF PVC RISER

* Elevation (feet) above mean sea level unless noted ** Depth in feet below grade

ERM, INC.

WELL : ERM-3

855 Springdale Drive, Exton, PA 19341

MONITORING WELL CONSTRUCTION

Project Name & Location FORMER ALSY SITE

Project No. 1328

Drilling Company Delta Well and Pump, Inc.

Foreman Mike Pellegreno

Surveyor GEOD Corporation, Newfoundland, NJ

Date and Time of Completion 1/3/03 1000

Geologist C. Weber

Water Level(s) *(ft below top of PVC casing)*

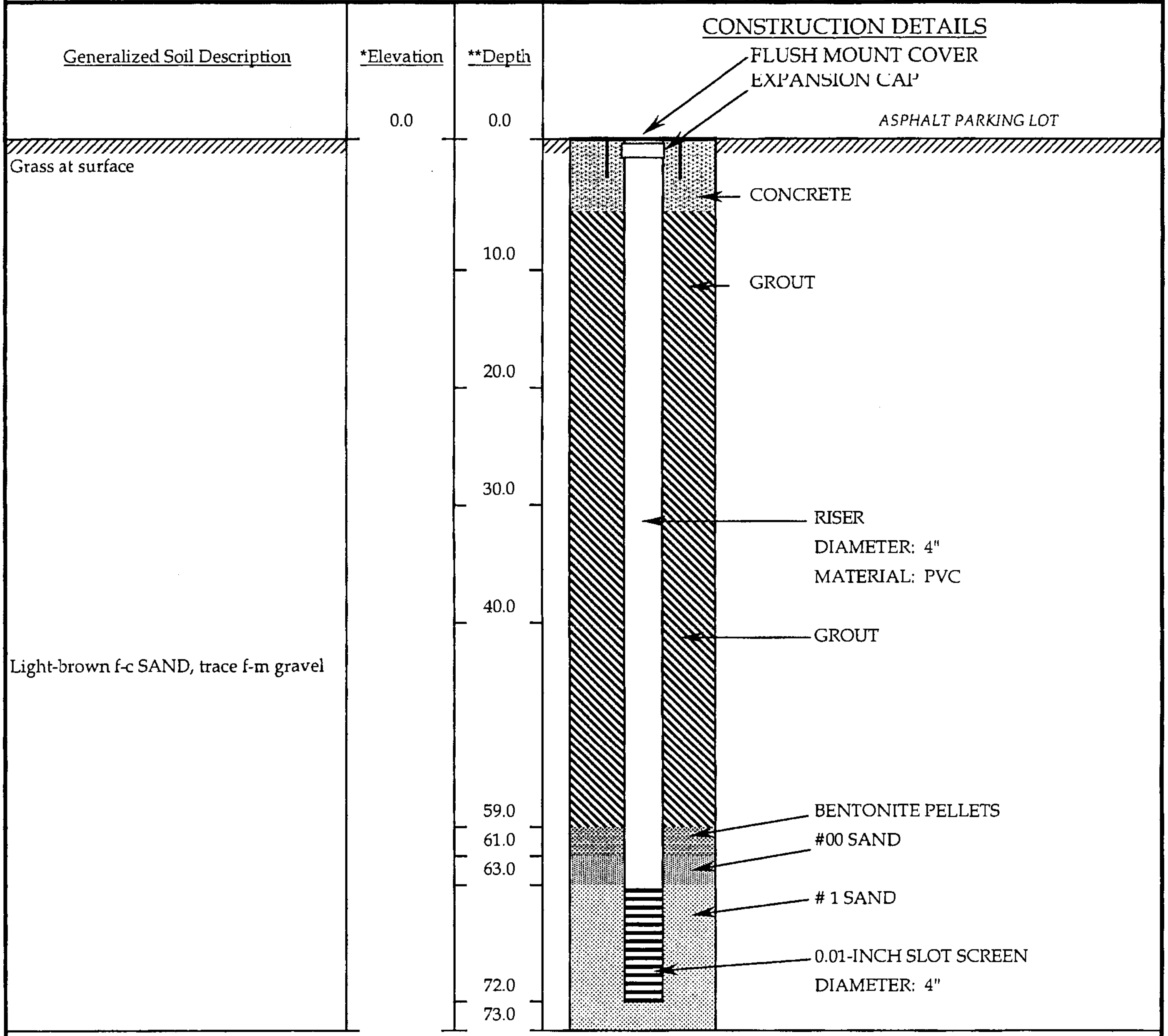
Date	Time	Level (feet)
1/6/03	0905	65.22

Site Elevation Datum --

Ground Elevation 131.74

Top of Protective Steel Cap Elevation Flush

Top of Riser Pipe Elevation 131.45



REMARKS DTW RECORDED FROM TOP OF PVC RISER

Split spoon samples were not collected, lithology information based upon cutting observations.

* Elevation (feet) above mean sea level unless noted ** Depth in feet below grade

C:\SFORMS\ERM-1 and ERM-2 Well Log.xls
rev. 9/96

APPENDIX J
Photographs of DW-4 Soil

Interval from 11-13 feet below ground surface

Interval from 11-13 feet below ground surface

Interval from 17-19 feet below ground surface

APPENDIX K
NYSDEC Composite DW-4 Soil Sample Results

NYS DEPARTMENT OF ENVIRONMENTAL CONSERVATION

DIVISION OF ENVIRONMENTAL REMEDIATION

LABORATORY ANALYTICAL REPORT

INORGANIC ANALYSIS DATA SHEET

Site Name: ALSY MFG
Site Code: 130027
Lab Sample ID: 101-247-01
Matrix: SOIL
% Solids: 26

FIELD SAMPLE ID:

ABAND DW

SDG: 247-01
Date Received: 9/4/01
Sample Size: 0.66 grams

CONCENTRATION : mg/kg

CAS NO.	ANALYTE		C	Q	M	NYSDEC RSCO (mg/kg)
7429-90-5	Aluminum	57000			PM	SB
7440-36-0	Antimony	11	U		PM	SB
7440-38-2	Arsenic	150			PM	7.5 or SB
7440-39-3	Barium	67			PM	300 or SB
7440-41-7	Beryllium	1.5	U		PM	0.16 or SB
7440-43-9	Cadmium	1.5	U		PM	10(1)
7440-70-2	Calcium	6400			PM	SB
7440-47-3	Chromium	120			PM	50(1)
7440-48-4	Cobalt	52			PM	30 or SB
7440-50-8	Copper	36000			PM	25 or SB
7439-89-6	Iron	30000			PM	2,000 or S
7439-92-1	Lead	310			PM	200 - 500(1)
7439-95-4	Magnesium	1700			PM	SB
7439-96-5	Manganese	340			PM	SB
7439-97-6	Mercury	0.10	U		CV	0.1
7440-02-0	Nickel	50000			PM	13 or SB
7440-09-7	Potassium	1500	U		PM	SB
7482-49-2	Selenium	63			PM	2 or SB
7440-22-4	Silver	1.2	U		PM	SB
7440-23-5	Sodium	650	B		PM	SB
7440-28-0	Thallium	2.9	U		PM	SB
7440-62-2	Vanadium	8.9	B		PM	150 or SB
7440-66-6	Zinc	8900			PM	20 or SB

Comments:

U = Indicates the compound was analyzed for but not detected
B = Analyte found in method blank as well as the sample
SB = Soil background
(1) Interim RSCOs currently being used by the NYSDEC.

APPENDIX L

EcoTest Laboratories Sanitary Leach Pool Endpoint Sample Nickel Results

ECOTEST LABORATORIES, INC. **ENVIRONMENTAL TESTING**

377 SHEFFIELD AVE. • N. BABYLON, N.Y. 11703 • (631) 422-5777 • FAX (631) 422-5770

Email: ecotestlab@aol.com Website: www.ecotestlabs.com

LAB NO.205516.00 04/09/01

E&B Industrial Cleaners
1 Watkins Terrace
North Amityville, NY 11701
ATTN: Ernie Busch

SOURCE OF SAMPLE: 270 Duffy Avenue, Hicksville
COLLECTED BY: Client DATE COL'D:11/28/00 RECEIVED:11/29/00

SAMPLE: Soil sample, 2:30 pm

ANALYTICAL PARAMETERS | ANALYTICAL PARAMETERS

Arsenic as As	mg/Kg	0.93
Barium as Ba	mg/Kg	9.0
Cadmium as Cd	mg/Kg	<0.5
Chromium as Cr	mg/Kg	3.3
Lead as Pb	mg/Kg	15
Mercury as Hg	mg/Kg	0.10
Selenium as Se	mg/Kg	0.40
Silver as Ag	mg/Kg	5.8
Nickel as Ni	mg/Kg	28

cc:

REMARKS: Amended Report.

DIRECTOR:

rn= 33857 NYSDOH ID# 10320

ECOTEST LABORATORIES, INC. **ENVIRONMENTAL TESTING**
377 SHEFFIELD AVE. • N. BABYLON, N.Y. 11703 • (631) 422-5777 • FAX (631) 422-5770
Email: ecotestlab@aol.com Website: www.ecotestlabs.com

LAB NO.210257.00 04/09/01

E&B Industrial Cleaners
1 Watkins Terrace
North Amityville, NY 11701
ATTN: Ernie Busch

SOURCE OF SAMPLE: 270 Duffy Avenue, Hicksville
COLLECTED BY: Client DATE COL'D:01/18/01 RECEIVED:01/18/01

SAMPLE: Soil sample, cesspool

ANALYTICAL PARAMETERS ANALYTICAL PARAMETERS

Arsenic as As	mg/Kg	0.57
Barium as Ba	mg/Kg	0.91
Cadmium as Cd	mg/Kg	<0.5
Chromium as Cr	mg/Kg	0.88
Lead as Pb	mg/Kg	6.4
Mercury as Hg	mg/Kg	0.16
Selenium as Se	mg/Kg	<0.4
Silver as Ag	mg/Kg	0.44
Nickel as Ni	mg/Kg	6.4

cc:

REMARKS: Amended Report.

DIRECTOR

rn= 1318 NYSDOH ID# 10320

APPENDIX M
2002 and 2003 Ground Water Sampling Records

GROUND WATER SAMPLING RECORD

Low Flow Sampling Technique

SITE: Former Alsy Manufacturing Facility
DATE 1/28/03

SAMPLE ID : ERM-1
WELL ID : ERM-1
Time Onsite:
Time Offsite:

SAMPLERS : Nicole Gorelick 0800
Cathy Weber 0730

Depth of well (from top of casing) .... 69.10 Time: ____ (hrs)
Static water level (from top of casing) .... 64.80 Time: 0840 (hrs)
Static water level (after pump installation) .... 64.80 Time: 1145 (hrs)
Water level after purging (from top of casing) .... 64.80 Time: 1145 (hrs)
Water level before sampling (from top of casing)........ ____ Time: ____ (hrs)
Depth of screened interval (from top of casing)........ ____

Purging Method:

____ Peristaltic ____ Centrifugal
____ Bailer ____ Pos. Displ.
X Submersible ____ Ded. Pump

Well Volume Calculation:

		1 volume		3 volumes
2 in. well: ____	ft. of water x 0.16 =	____ gal.	x 3 =	____ gal.
4 in. well: 4.30	ft. of water x 0.65 =	2.79 gal.	x 3 =	8.38 gal.

Depth of Pump: 68.0 (ft)
Purge Start Time: 1030 (hrs)
Purge End Time: 1145 (hrs)
Purge Duration: 1 hr 20 min
Purge Flow Rate: .4 (lpm)

Volume of water removed:
7.0 gal
>3 volumes: yes ____ no x
purged dry? yes ____ no x

Field Tests:

	Time/Duration		pH	Cond.	Turbidity	D.O.	Temp.	ORP	DTW	Drawdown	Flow Rate
Units	(hrs)	(min)		(mS/cm)	(ntu)	(mg/L)	(deg C)	(mV)	(ft. toc)	(feet)	(lpm)
Range			*0.1*	*0.03*	*0.1*	*0.1*	*- - -*	*0.1*	*- - -*	*0.3*	*0.2 - 0.5*
	10	31	5.35	.137	223	4.27	13.27	169			.4
	10	46	5.68	.128	154	3.25	16.69	151	64.80	0	.4
	10	56	5.71	.123	107	3.32	19.31	151	64.80	0	.4
	11	07	5.73	.120	72.9	3.25	20.30	154	64.80	0	.4
	11	18	5.70	.117	54.2	3.22	21.00	159	64.80	0	.4
	11	30	5.65	.115	39.70	3.17	21.10	167	64.80	0	.4
	11	35	5.63	.112	33.3	3.14	21.15	171	64.80	0	.4
	11	40	5.62	.112	25.6	3.11	21.39	175	64.80	0	.4
	11	45	5.63	.111	23.6	3.10	21.80	176	64.80	0	.4
After Sample	11	51	5.61	.108	29.80	4.20	21.38	180	64.85	.05	.4

Sampling:

Time readings stabilized: 1145 (hrs)
Sample Start Time: 1148 (hrs)
Sample End Time: 1151 (hrs)
Chain of Custody sample time: 1148 (hrs)
Sample Flow Rate: .4 (lpm)
Duration of sample time: 3 (min)

Collection Method:

____ Stainless steel bailer
____ Teflon bailer
X Other: Submersible Pump

Analyses:

x VOCs -
x Metals
____ Other

Analytical Method:

8260
6010A-Nickel

Observations:

Weather/Temperature: Cloudy, cold, 25 degrees

Sample Description: Turbidity: (circle one) [✓ HIGH] MODERATE LOW

Free Product? yes ____ no x describe ____
Sheen? yes ____ no x describe ____
Odor? yes ____ no x describe ____

Comments:

GROUND WATER SAMPLING RECORD

Low Flow Sampling Technique

SITE: Former Alsy Manufacturing Facility DATE 1/28/03

SAMPLE ID : ERM-2
WELL ID : ERM-2 Time Onsite: Time Offsite:
SAMPLERS : Nicole Gorelick 8:00
Cathy Weber 2:30

Depth of well (from top of casing) .... Time: (hrs)
Static water level (from top of casing) .... Time: (hrs)
Static water level (after pump installation) .... 64.91 Time: 10:13 (hrs)
Water level after purging (from top of casing) .... Time: (hrs)
Water level before sampling (from top of casing)............ Time: (hrs)
Depth of screened interval (from top of casing)............

Purging Method:

Peristaltic
Bailer
X Submersible
Centrifugal
Pos. Displ.
Ded. Pump

Well Volume Calculation: 1 volume 3 volumes
2 in. well: ft. of water x 0.16 = gal. x 3 = gal.
4 in. well: ft. of water x 0.65 = gal. x 3 = gal.

Depth of Pump: (ft)
Purge Start Time: 12:31 (hrs) Purge Duration: (hrs)
Purge End Time: (hrs) Purge Flow Rate: (lpm)

Volume of water removed:
ltr. >3 volumes: yes no x purged dry? yes no x

Field Tests:

	Time/Duration		pH	Cond.	Turbidity	D.O.	Temp.	ORP	DTW	Drawdown	Flow Rate
Units	(hrs)	(min)		(mS/cm)	(ntu)	(mg/L)	(deg C)	(mV)	(ft. toc)	(feet)	(lpm)
Range			*0.1*	*0.03*	*0.1*	*0.1*	---	*0.1*	---	*0.3*	*0.2 - 0.5*
	12	31	5.55	.150	432	8.09	13.35	156			
	12	46	5.55	.124	632	3.71	15.53	170	67.72		.4
After Sample											

Sampling:
Time readings stabilized: (hrs) Chain of Custody sample time: 1451 (hrs)
Sample Start Time: (hrs) Sample Flow Rate: (lpm)
Sample End Time: (hrs) Duration of sample time: (hrs)

Collection Method:
Stainless steel bailer
Teflon bailer
X Other: Submersible Pump

Analyses:
VOCs -
X Metals
Other

Analytical Method:
6010A- Nickel

Observations:
Weather/Temperature: 15 F, cloudy
Sample Description: Turbidity: (circle one) [✓ HIGH] MODERATE LOW
Free Product? yes no x describe
Sheen? yes no x describe
Odor? yes no x describe

Comments:
Ground water was freezing in tubing prior to reaching the surface. Well was purged and sampled using a bailer in lieu of low-flow sample with NYSDEC approval. Filtered and unfiltered samples were collected.

GROUND WATER SAMPLING RECORD

Low Flow Sampling Technique

SITE: Former Alsy ManufacturingFacility DATE 1/29/03

SAMPLE ID : ERM-3

WELL ID : ERM-3 Time Onsite: Time Offsite:

SAMPLERS : Nicole Gorelick & Cathy Weber 0730

Depth of well (from top of casing) .... 80.00 Time: 0803 (hrs)

Static water level (from top of casing) .... 65.01 Time: 0803 (hrs)

Static water level (after pump installation) .... 65.03 Time: 0804 (hrs)

Water level after purging (from top of casing) .... Time: (hrs)

Water level before sampling (from top of casing).................. Time: (hrs)

Depth of screened interval (from top of casing)....................

Purging Method:

___ Peristaltic ___ Centrifugal

___ Bailer ___ Pos. Displ.

X Submersible ___ Ded. Pump

Depth of Pump: 79.0 (ft)

Purge Start Time: 0825 (hrs)

Purge End Time: ___ (hrs)

Volume of water removed: ___ ltr.

Well Volume Calculation:

			1 volume		3 volumes
2 in. well:	___	ft. of water x 0.16 =	___ gal.	x 3 =	___ gal.
4 in. well:	15.00	ft. of water x 0.65 =	9.75 gal.	x 3 =	29.25 gal.

Purge Duration: 1 hr 48 min

Purge Flow Rate: ~0.4 (lpm)

>3 volumes: yes ___ no x purged dry? yes ___ no ___

Field Tests:

	Time/Duration		pH	Cond.	Turbidity	D.O.	Temp.	ORP	DTW	Drawdown	Flow Rate
Units	(hrs)	(min)		(mS/cm)	(ntu)	(mg/L)	(deg C)	(mV)	(ft. toc)	(feet)	(lpm)
Range			0.1	0.03	0.1	0.1	---	0.1	---	0.3	0.2 - 0.5
	08	25	5.80	.322	> 1000	1.86	14.15	237	65.01		.35
	08	41	5.74	.300	794	3.03	17.63	191	65.03	0.00	.4
	08	52	5.70	.295	694	3.28	18.53	189	65.04	0.00	.45
	09	02	5.66	.294	403	3.30	19.24	193	65.04	0.00	.4
	09	16	5.64	.297	191	3.36	19.72	191	65.00	0.00	.4
	09	42	5.64	.301	150	3.00	20.47	180	25.00	0.00	.4
	09	47	5.64	.303	73.3	3.04	20.39	177	65.00	0.00	.4
	09	52	5.62	.303	67.8	2.99	20.52	177	65.00	0.00	.4
	09	58	5.64	.307	50.0	2.94	20.63	172	65.00	0.00	.4
After Sample	10	13	5.57	.308		3.37	20.42	174			.4

Sampling:

Time readings stabilized: 0958 (hrs)

Sample Start Time: 1000 (hrs)

Sample End Time: 1012 (hrs)

Chain of Custody sample time: 1000 (hrs)

Sample Flow Rate: 0.4 (lpm)

Duration of sample time: 12 (min)

Collection Method:

___ Stainless steel bailer

___ Teflon bailer

X Other: Submersible Pump

Analyses:

s VOCs -

X Metals

___ Other

Analytical Method: MET-6010A- Nickel

Observations:

Weather/Temperature: Overcast, little snow, 25 degrees

Sample Description: Turbidity: (circle one) HIGH MODERATE LOW

Free Product? yes ___ no ___ describe ___

Sheen? yes ___ no ___ describe ___

Odor? yes ___ no ___ describe ___

Comments:

DUP012903 collected here at 0800 for VOCs only

MS/MSD collected here for VOC's only and metals

GROUND WATER SAMPLING RECORD

Low Flow Sampling Technique

SITE: Former Alsy Manufacturing Facility

DATE 1/29/03

SAMPLE ID : AMS-1

WELL ID : AMS-1

Time Onsite:

Time Offsite:

SAMPLERS : Nicole Gorelick & Cathy Weber

Depth of well (from top of casing) .... 71.80 Time: (hrs)

Static water level (from top of casing) .... 64.40 Time: 1330 (hrs)

Static water level (after pump installation) .... Time: (hrs)

Water level after purging (from top of casing) .... Time: (hrs)

Water level before sampling (from top of casing)........ Time: (hrs)

Depth of screened interval (from top of casing)........

Purging Method:

___ Peristaltic ___ Centrifugal

___ Bailer ___ Pos. Displ.

X Submersible ___ Ded. Pump

Well Volume Calculation:

		1 volume		3 volumes
2 in. well:	___ ft. of water x 0.16 =	___ gal.	x 3 =	___ gal.
4 in. well:	7.40 ft. of water x 0.65 =	4.81 gal.	x 3 =	14.43 gal.

Depth of Pump: 71.0 (ft)

Purge Start Time: 1359 (hrs)

Purge End Time: ___ (hrs)

Purge Duration: 1 hr 13 min (hrs)

Purge Flow Rate: .4 (lpm)

Volume of water removed: ___ ltr.

>3 volumes: yes ___ no ___

purged dry? yes ___ no x

Field Tests:

	Time/Duration		pH	Cond.	Turbidity	D.O.	Temp.	ORP	DTW	Drawdown	Flow Rate
Units	(hrs)	(min)		(mS/cm)	(ntu)	(mg/L)	(deg C)	(mV)	(ft. toc)	(feet)	(lpm)
Range			*0.1*	*0.03*	*0.1*	*0.1*	---	*0.1*	---	*0.3*	*0.2 - 0.5*
	13	59	5.51	.082	> 1000	6.41	14.97	2.82		0.00	
	14	15	5.53	.081	444.6	5.12	15.07	2.89	64.42	0.00	.4
	14	29	5.58	.078	328.2	6.06	17.72	2.81	64.39	0.00	.4
	14	42	5.66	0.75	167.0	6.05	14.05	274	64.39	0.00	.4
	14	52	5.67	.071	127.0	6.07	19.79	272	64.38	0.00	.4
	15	02	5.56	0.68	33.0	5.95	19.95	273	64.38	0.00	.4
	15	07	5.56	.067	29.6	6.10	20.10	284	64.38	0.00	.4
	15	12	5.57	.067	28.1	6.12	20.26	276	64.37	0.00	
After Sample											

Sampling:

Time readings stabilized: 1512 (hrs)

Sample Start Time: 1512 (hrs)

Sample End Time: 1515 (hrs)

Chain of Custody sample time: 1515 (hrs)

Sample Flow Rate: 0.4 (lpm)

Duration of sample time: 3 (min)

Collection Method:

___ Stainless steel bailer

___ Teflon bailer

X Other: Submersible Pump

Analyses:

___ VOCs -

X Metals

___ Other

Analytical Method:

MET-6010- Nickel

Observations:

Weather/Temperature:

Sample Description: Turbidity: (circle one) HIGH MODERATE [✓ LOW]

Free Product? yes ___ no x describe

Sheen? yes ___ no x describe

Odor? yes ___ no x describe

Comments:

Water is orange

FB012903 @ .1422

GROUND WATER SAMPLING RECORD

Low Flow Sampling Technique

SITE: Former Alsy Manufacturing Facility DATE 1/29/03

SAMPLE ID : AMS-2

WELL ID : AMS-2 Time Onsite: Time Offsite:

SAMPLERS : Nicole Gorelick & Cathy Weber 0730

Depth of well (from top of casing) .... 71.70 Time: (hrs)

Static water level (from top of casing) .... 64.84 Time: 1119 (hrs)

Static water level (after pump installation) .... Time: (hrs)

Water level after purging (from top of casing) .... Time: (hrs)

Water level before sampling (from top of casing) .... Time: (hrs)

Depth of screened interval (from top of casing) ....

Purging Method:

___ Peristaltic ___ Centrifugal

___ Bailer ___ Pos. Displ.

X Submersible ___ Ded. Pump

Well Volume Calculation:

1 volume 3 volumes

2 in. well: ___ ft. of water x 0.16 = ___ gal. x 3 = ___ gal.

4 in. well: ___ ft. of water x 0.65 = ___ gal. x 3 = ___ gal.

Depth of Pump: 71.0 (ft)

Purge Start Time: 1132 (hrs) Purge Duration: 1 hr 6 min

Purge End Time: 1238 (hrs) Purge Flow Rate: ___ (lpm)

Volume of water removed:

___ ltr. >3 volumes: yes ___ no ___ purged dry? yes ___ no ___

Field Tests:

	Time/Duration		pH	Cond.	Turbidity	D.O.	Temp.	ORP	DTW	Drawdown	Flow Rate
Units	(hrs)	(min)		(mS/cm)	(ntu)	(mg/L)	(deg C)	(mV)	(ft. toc)	(feet)	(lpm)
Range			0.1	0.03	0.1	0.1	---	0.1	---	0.3	0.2 - 0.5
	11	32	4.53	.293	33.5	4.53	13.98	327			.4
	11	54	4.55	.303	15.8	2.0	20.63	315	64.90		.4
	12	15	4.52	.307	8.34	1.55	22.00	311	64.84		.4
	12	22	4.47	.307	9.00	1.47	21.80	311	64.85		.4
	12	27	4.47	.307	9.76	1.46	21.89	311	64.85		
	12	32	4.47	.307	10.0	1.45	21.90	311	64.85		
After Sample	12	38	4.39	.313	15.6	1.43	20.89	313	64.85		.4

Sampling:

Time readings stabilized: 1232 (hrs) Chain of Custody sample time: 1235 (hrs)

Sample Start Time: 1232 (hrs) Sample Flow Rate: ___ (lpm)

Sample End Time: 1238 (hrs) Duration of sample time: 3 (min)

Collection Method:

___ Stainless steel bailer

___ Teflon bailer

X Other: Submersible Pump

Analyses:

___ VOCs -

X Metals

___ Other

Analytical Method:

MET-6010A- Nickel

Observations:

Weather/Temperature:

Sample Description: Turbidity: (circle one) HIGH MODERATE LOW

Free Product? yes ___ no ___ describe

Sheen? yes ___ no ___ describe

Odor? yes ___ no ___ describe

Comments:

GROUND WATER SAMPLING RECORD

Low Flow Sampling Technique

SITE: Former Alsy Manufacturing Facility DATE 1/29/03

SAMPLE ID : MW-3

WELL ID : MW-3 Time Onsite: Time Offsite:

SAMPLERS : Nicole Gorelick & Cathy Weber 0130

Depth of well (from top of casing) .... 71.40 Time: (hrs)

Static water level (from top of casing) .... 65.20 Time: (hrs)

Static water level (after pump installation) .... 65.18 Time: (hrs)

Water level after purging (from top of casing) .... Time: (hrs)

Water level before sampling (from top of casing)................ Time: (hrs)

Depth of screened interval (from top of casing)..................

Purging Method:

___ Peristaltic ___ Centrifugal

___ Bailer ___ Pos. Displ.

X Submersible ___ Ded. Pump

Well Volume Calculation:

1 volume 3 volumes

2 in. well: ___ ft. of water x 0.16 = ___ gal. x 3 = ___ gal.

4 in. well: ___ ft. of water x 0.65 = ___ gal. x 3 = ___ gal.

Depth of Pump: 70.40 (ft)

Purge Start Time: 1150 (hrs) Purge Duration: 40 (min)

Purge End Time: ___ (hrs) Purge Flow Rate: 0.15 (lpm)

Volume of water removed:

2.0 ltr. >3 volumes: yes ___ no x purged dry? yes ___ no x

Field Tests:

	Time/Duration		pH	Cond.	Turbidity	D.O.	Temp.	ORP	DTW	Drawdown	Flow Rate
Units	(hrs)	(min)		(mS/cm)	(ntu)	(mg/L)	(deg C)	(mV)	(ft. toc)	(feet)	(lpm)
Range			0.1	0.03	0.1	0.1	---	0.1	---	0.3	0.2 - 0.5
	1152		4.87	0.098	155	9.68	11.5	153	65.21		0.200
	1157		4.94	0.085	53.7	9.16	11.1	152	65.21		0.300
	1202		4.93	0.085	49.1	9.04	13.9	153	65.21		0.150
	1210		4.93	0.084	44.1	8.99	14.6	153	65.23		0.150
	1216		4.93	0.084	44.7	9.03	13.9	152	65.25		0.150
	1220		4.94	0.084	41.7	8.99	13.9	152	65.25		0.150
After Sample											

Sampling:

Time readings stabilized: 1220 (hrs) Chain of Custody sample time: 1232 (hrs)

Sample Start Time: 1225 (hrs) Sample Flow Rate: 0.150 (lpm)

Sample End Time: 1232 (hrs) Duration of sample time: 7 (min)

Collection Method:

___ Stainless steel bailer

___ Teflon bailer

X Other: Submersible Pump

Analyses:

___ VOCs -

X Metals

___ Other

Analytical Method:

MET-6010A- Nickel

Observations:

Weather/Temperature: 28 degrees F, light snow

Sample Description: Turbidity: (circle one) HIGH MODERATE [✓ LOW]

Free Product? yes ___ no x describe

Sheen? yes ___ no x describe

Odor? yes ___ no x describe

Comments:

Sample at 1232

GROUND WATER SAMPLING RECORD

Low Flow Sampling Technique

SITE: Former Alsy Manufacturing Facility DATE 1/28/03

SAMPLE ID : LMS-4

WELL ID : LMS-4 Time Onsite: Time Offsite:

SAMPLERS : Nicole Gorelick 0800

Cathy Weber 0730

Depth of well (from top of casing) .... 73.30 Time: (hrs)

Static water level (from top of casing) .... 66.45 Time: (hrs)

Static water level (after pump installation) .... Time: (hrs)

Water level after purging (from top of casing) .... Time: (hrs)

Water level before sampling (from top of casing).......... Time: (hrs)

Depth of screened interval (from top of casing)..........

Purging Method:

___ Peristaltic ___ Centrifugal

___ Bailer ___ Pos. Displ.

X Submersible ___ Ded. Pump

Well Volume Calculation:

1 volume 3 volumes

2 in. well: ___ ft. of water x 0.16 = ___ gal. x 3 = ___ gal.

4 in. well: ___ ft. of water x 0.65 = ___ gal. x 3 = ___ gal.

Depth of Pump: 72.0 (ft)

Purge Start Time: 1342 (hrs) Purge Duration: NA (hrs)

Purge End Time: ___ (hrs) Purge Flow Rate: NA (lpm)

Volume of water removed:

___ ltr. >3 volumes: yes ___ no ___ purged dry? yes ___ no ___

Field Tests:

	Time/Duration		pH	Cond.	Turbidity	D.O.	Temp.	ORP	DTW	Drawdown	Flow Rate
Units	(hrs)	(min)		(mS/cm)	(ntu)	(mg/L)	(deg C)	(mV)	(ft. toc)	(feet)	(lpm)
Range			*0.1*	*0.03*	*0.1*	*0.1*	*- - -*	*0.1*	*- - -*	*0.3*	*0.2 - 0.5*
	13	42	3.41	0.093	> 1000	6.52	12.4	228			1000
			3.87	0.087	> 1000	2.21	11.6	206	69.65		
After Sample											

Sampling:

Time readings stabilized: NA (hrs) Chain of Custody sample time: 1427 (hrs)

Sample Start Time: NA (hrs) Sample Flow Rate: bailer (lpm)

Sample End Time: NA (hrs) Duration of sample time: NA (hrs)

Collection Method:

___ Stainless steel bailer

___ Teflon bailer

X Other: Submersible Pump

Analyses:

___ VOCs -

X Metals

___ Other

Analytical Method:

MET-6010A-Nickel

Observations:

Weather/Temperature: 15 degrees F

Sample Description: Turbidity: (circle one) [✓ HIGH] MODERATE LOW

Free Product? yes ___ no ___ describe

Sheen? yes ___ no ___ describe

Odor? yes ___ no ___ describe

Comments:

FB012803@1430

Ground water was freezing in tubing prior to reaching the surface. Well was purged and sampled using a bailer in lieu of low-flow sample with NYSDEC approval. Filtered and unfiltered samples were collected.

GROUND WATER SAMPLING RECORD

Low Flow Sampling Technique

SITE: Former Alsy Manufacturing - Combes Ave
DATE 3/7/02

SAMPLE ID : VP-NC75 & DUP030702@0800
WELL ID : VP-NC
Time Onsite: 0700
Time Offsite:
SAMPLERS : Mike Mendes

Depth of well (from top of casing)	75.00	Time: 0900	(hrs)
Static water level (from top of casing)	65.17	Time: 0900	(hrs)
Static water level (after pump installation)	65.21	Time: 0905	(hrs)
Water level after purging (from top of casing)	65.20	Time: 0944	(hrs)
Water level before sampling (from top of casing)	65.20	Time: 0944	(hrs)
Depth of screened interval (from top of casing)	70		

Purging Method:

___ Peristaltic
___ Bailer
X Submersible
___ Centrifugal
___ Pos. Displ.
___ Ded. Pump

Well Volume Calculation:

			1 volume		3 volumes
2 in. well:	9.83	ft. of water x 0.16 =	1.60 gal.	x 3 =	8.00 gal.
4 in. well:		ft. of water x 0.65 =	gal.	x 3 =	gal.

Depth of Pump: 74 (ft)
Purge Start Time: 0908 (hrs)
Purge End Time: 0944 (hrs)
Purge Duration: 30 min (hrs)
Purge Flow Rate: 1 (gpm)

Volume of water removed: 45.0 gal
>3 volumes: yes x no ___
purged dry? yes ___ no x

Field Tests:

	Time/Duration		pH	Cond.	Turbidity	D.O.	Temp.	ORP	DTW	Drawdown	Flow Rate
Units	(hrs)	(min)		(mS/cm)	(ntu)	(mg/L)	(deg C)	(mV)	(ft. toc)	(feet)	(lpm)
Range			0.1	0.03	0.1	0.1	---	0.1	---	0.3	0.2 - 0.5
	0908		5.99	.387	> 1000	2.57	15.4	18	65.55	.38	1 gpm
	0913		5.72	.431	172.0	2.21	15.6	65	65.56	.01	1 gpm
	0916		5.69	4.32	65.5	2.32	15.7	80	65.56	.00	1 gpm
	0920		5.69	.434	9.57	2.30	15.7	88	65.56	.00	1 gpm
	0924		5.68	.437	7.48	2.22	15.7	95	65.36	+.20	1 gpm
	0928		5.69	.440	4.02	2.13	16.2	99	65.22	+.16	.1 lpm
	0932		5.68	.443	4.90	2.23	16.3	99	65.20	.00	.1 lpm
	0935		5.69	.448	9.44	2.20	16.8	94	65.20	.00	.1 lpm
	0938		5.69	.431	8.61	2.15	17.8	92	65.20	.00	.1 lpm
	0941		5.69	.431	8.11	2.16	18.6	93	65.20	.00	.1 lpm
	0944		5.69	.432	7.25	2.06	16.1	94	65.20	.00	.1 lpm
After Sample	0951		5.69	.443	4.19	1.97	16.1	105	65.20	.00	.1 lpm

Sampling:

Time readings stabilized: 0944 (hrs)
Sample Start Time: 0945 (hrs)
Sample End Time: 0951 (hrs)
Chain of Custody sample time: 0945 (hrs)
Sample Flow Rate: .1 (lpm)
Duration of sample time: 6 mins (hrs)

Collection Method:

___ Stainless steel bailer
___ Teflon bailer
X Other: Submersible Pump

Analyses:

___ VOCs -
X Metals
___ Other

Analytical Method:

MET-6010A- Nickel

Observations:

Weather/Temperature:

Sample Description: Turbidity: (circle one) HIGH MODERATE [✓ LOW]

Free Product? yes ___ no x describe
Sheen? yes ___ no x describe
Odor? yes ___ no x describe

Comments:

Calibrated HACV to NTU Standards. Calibrated the Horiba U22 to Cal standards.
DUP030702@0800 collected at this sampling location.

GROUND WATER SAMPLING RECORD

Low Flow Sampling Technique

SITE: Former Alsy Manufacturing - Combes Ave
DATE 3/6/02

SAMPLE ID : VP-NC95
WELL ID : VP-NC
Time Onsite: 0700
Time Offsite: 1700
SAMPLERS : Mike Mendes

Depth of well (from top of casing)	95.00	Time: 1423	(hrs)
Static water level (from top of casing)	65.15	Time: 1423	(hrs)
Static water level (after pump installation)	65.10	Time:	(hrs)
Water level after purging (from top of casing)	65.17	Time: 1537	(hrs)
Water level before sampling (from top of casing)	65.33	Time:	(hrs)
Depth of screened interval (from top of casing)	90 ft		

Purging Method:

Peristaltic
Bailer
X Submersible
Centrifugal
Pos. Displ.
Ded. Pump

Well Volume Calculation:

			1 volume		3 volumes
2 in. well:	29.85	ft. of water x 0.16 =	4.80 gal.	x 3 =	24.00 gal.
4 in. well:		ft. of water x 0.65 =	gal.	x 3 =	gal.

Depth of Pump: 90 (ft)
Purge Start Time: 1425 (hrs)
Purge End Time: 1529 (hrs)
Purge Duration: 1 hr, 4 min (hrs)
Purge Flow Rate: 1 (gpm)
Please note 105 gallons added during drilling will purge 105 + 24 gallons
Volume of water removed:
170.0 gal
>3 volumes: yes x no
purged dry? yes no x

Field Tests:

	Time/Duration		pH	Cond.	Turbidity	D.O.	Temp.	ORP	DTW	Drawdown	Flow Rate
Units	(hrs)	(min)		(mS/cm)	(ntu)	(mg/L)	(deg C)	(mV)	(ft. toc)	(feet)	(gpm)
Range			*0.1*	*0.03*	*0.1*	*0.1*	*- - -*	*0.1*	*- - -*	*0.3*	*0.2 - 0.5*
	1456		6.34	.751	18.5	2.79	16.1	-42	65.51	0.0	1.5
	1459		6.36	.744	7.56	0.71	15.7	-54	65.51	0.0	1.5
	1502		6.35	.742	6.79	0.61	15.8	-57	65.38	+ 0.13	1.0
	1507		6.35	.743	8.70	0.51	15.9	-60	65.38	0.0	1.0
	1512		6.35	.743	8.22	0.52	16.0	-62	65.33	0.05	1.0
	1517		6.35	.740	10.1	0.53	16.2	-63	65.33	0.00	1.0
	1520		6.35	.740	9.62	0.53	16.2	-64	65.33	+ 0.00	1.0
	1523		6.35	.740	10.4	0.52	16.2	-66	65.33	0.00	1.0
	1526		6.35	.739	10.3	0.51	16.2	-66	65.33	0.00	1.0
	1529		6.35	.739	9.79	0.51	16.2	-66	65.33	0.00	1.0
After Sample	1534		6.35	.744	7.86	0.51	16.3	-67	65.33	0.00	1.0

Sampling:

Time readings stabilized: 1529 (hrs)
Sample Start Time: 1529 (hrs)
Sample End Time: 1534 (hrs)
Chain of Custody sample time: 1529 (hrs)
Sample Flow Rate: .1 (lpm)
Duration of sample time: 5 mins (hrs)

Collection Method:

Stainless steel bailer
Teflon bailer
X Other: Submersible Pump

Analyses:

VOCs -
X Metals
Other

Analytical Method:

MET-6010A- Nickel

Observations:

Weather/Temperature:
Sample Description: Turbidity: (circle one) HIGH MODERATE [✓ LOW]
Free Product? yes no x describe
Sheen? yes no x describe
Odor? yes no x describe

Comments:

Calibrated the Horiba U-22 unit to all in Cal Solution (Cal OK)
Calibrated Hack to Calibration standards (Cal OK)

GROUND WATER SAMPLING RECORD

Low Flow Sampling Technique

SITE: Former Alsy Manufacturing - McCalester Ave DATE 3/5/02

SAMPLE ID : VP-E75

WELL ID : VP-E Time Onsite: Time Offsite:

SAMPLERS : Mike Mendes 0700 1600

Depth of well (from top of casing)	75 feet	Time: 1351	(hrs)
Static water level (from top of casing)	64.56	Time: 1350	(hrs)
Static water level (after pump installation)	64.49	Time: 1359	(hrs)
Water level after purging (from top of casing)		Time: 1500	(hrs)
Water level before sampling (from top of casing)		Time: 1500	(hrs)
Depth of screened interval (from top of casing)	70		

Purging Method:

___ Peristaltic ___ Centrifugal

___ Bailer ___ Pos. Displ.

X Submersible ___ Ded. Pump

Well Volume Calculation:

		1 volume		5 volumes
2 in. well: 10.44	ft. of water x 0.16 =	1.70 gal.	x 5 =	8.50 gal.
4 in. well: ___	ft. of water x 0.65 =	___ gal.	x 3 =	___ gal.

Depth of Pump: 70 (ft)

Purge Start Time: 1427 (hrs) Purge Duration: 33 (hrs)

Purge End Time: 1500 (hrs) Purge Flow Rate: ___ (lpm)

Volume of water removed:

40.0 gal >3 volumes: yes x no ___ purged dry? yes ___ no x

Field Tests:

	Time/Duration		pH	Cond.	Turbidity	D.O.	Temp.	ORP	DTW	Drawdown	Flow Rate
Units	(hrs)	(min)		(mS/cm)	(ntu)	(mg/L)	(deg C)	(mV)	(ft. toc)	(feet)	(gpm)
Range			0.1	0.03	0.1	0.1	- - -	0.1	- - -	0.3	0.2 - 0.5
	1427		6.44	.202	> 1000	11.11	13.5	106	64.70	.14	1
	1432		5.84	.251	> 1000	11.44	14.9	123	64.75	.05	1
	1435		5.76	.267	138.0	10.77	14.9	147	64.75	0.0	1
	1440		5.73	.269	11.3	9.97	14.9	173	64.75	0.0	1
	1446		5.74	.269	7.23	9.12	15.0	178	64.63	+ 0.12	1
	1450		5.74	.270	9.25	8.96	14.7	178	64.75	-0.12	1
	1454		5.73	.269	9.41	8.43	15.4	172	64.75	0.0	1
	1457		5.73	.269	9.41	8.39	15.6	171	64.75	0.0	1
	1500		5.73	.269	7.61	8.27	15.6	172	64.75	0.0	1
After Sample	1505		5.75	.172	7.56	8.10	14.7	171	64.52		

Sampling:

Time readings stabilized:	1500 (hrs)	Chain of Custody sample time:	1501 (hrs)
Sample Start Time:	1501 (hrs)	Sample Flow Rate:	.1 (lpm)
Sample End Time:	1505 (hrs)	Duration of sample time:	5 (hrs)

Collection Method:

___ Stainless steel bailer

___ Teflon bailer

X Other: Submersible Pump

Analyses:

___ VOCs -

X Metals

___ Other

Analytical Method:

MET-6010A- Nickel

Observations:

Weather/Temperature:

Sample Description: Turbidity: (circle one) HIGH MODERATE [✓ LOW]

Free Product? yes ___ no x describe

Sheen? yes ___ no x describe

Odor? yes ___ no x describe

Comments:

GROUND WATER SAMPLING RECORD

Low Flow Sampling Technique

SITE: Former Alsy Manufacturing - McCalester   DATE 3/5/02

SAMPLE ID : VP-E95
WELL ID : VP-E   Time Onsite: Time Offsite:
SAMPLERS : Mike Mendes   0700   1600

Depth of well (from top of casing)	95.00	Time: 1146	(hrs)
Static water level (from top of casing)	64.72	Time: 1145	(hrs)
Static water level (after pump installation)	64.85	Time: 1151	(hrs)
Water level after purging (from top of casing)	65.02	Time: 1335	(hrs)
Water level before sampling (from top of casing)	65.02	Time: 1335	(hrs)
Depth of screened interval (from top of casing)	90 - 95 ft.		

Purging Method:

___ Peristaltic   ___ Centrifugal
___ Bailer   ___ Pos. Displ.
X Submersible   ___ Ded. Pump

Well Volume Calculation: 1 volume   5 volumes

2 in. well: 30.28 ft. of water x 0.16 = 4.90 gal.   x 5 = 25* gal.
4 in. well: ___ ft. of water x 0.65 = ___ gal.   x 3 = ___ gal.
* additional 110 gallons purged that was added during drilling

Depth of Pump: 94.5 (ft)
Purge Start Time: 1155 (hrs)   Purge Duration: 1:40 (hrs)
Purge End Time: 1335 (hrs)   Purge Flow Rate: + 1 (gpm)

Volume of water removed:
150.0 gal   >3 volumes: yes x no ___   purged dry? yes ___ no x

Field Tests:

	Time/Duration		pH	Cond.	Turbidity	D.O.	Temp.	ORP	DTW	Drawdown	Flow Rate
Units	(hrs)	(min)		(mS/cm)	(ntu)	(mg/L)	(deg C)	(mV)	(ft. toc)	(feet)	(gpm)
Range	*1247*		*0.1*	*0.03*	*0.1*	*0.1*	---	*0.1*	---	*0.3*	*0.2 - 0.5*
	1247		5.86	.317	161	5.11	14.6	191	65.20	-	1
	1253		5.84	.311	8.30	4.68	14.5	191	65.20	-	1
	1256		5.82	.310	3.32	4.74	14.9	187	65.03	+.17	1
	1300		5.82	.309	2.72	4.67	14.9	185	65.02	+.01	1
	1305		5.82	.308	2.48	4.54	14.8	184	65.02	0.0	1
	1310		5.81	.308	1.84	4.50	14.9	183	65.02	0.0	1
	1315		5.80	.308	2.02	4.38	14.9	184	65.02	0.0	1
	1326		5.80	.308	7.14	4.33	15.0	183	65.02	0.0	1
	1330		5.81	.308	2.98	4.29	14.9	184	65.02	0.0	1
	1335		5.81	.308	1.58	4.29	14.9	185	65.02	0.0	.1 lpm
After Sample	1341		5.82	.312		4.36	13.5	187	65.02	0.0	.1 lpm

Sampling:

Time readings stabilized: 1335 (hrs)   Chain of Custody sample time: 1336 (hrs)
Sample Start Time: 1336 (hrs)   Sample Flow Rate: .1 (lpm)
Sample End Time: 1340 (hrs)   Duration of sample time: 5 min (hrs)

Collection Method:

___ Stainless steel bailer
___ Teflon bailer
X Other: Submersible Pump

Analyses:

___ VOCs -
X Metals
___ Other

Analytical Method:

MET-6010A- Nickel

Observations:

Weather/Temperature: ___

Sample Description: Turbidity: (circle one) HIGH MODERATE [✓ LOW]

Free Product? yes ___ no x describe ___
Sheen? yes ___ no x describe ___
Odor? yes ___ no x describe ___

Comments:

Calibrated Horiba -- U-22 to Cal standard -- OK.
Calibrated Tuxb to Cal standards, all within range

GROUND WATER SAMPLING RECORD

Low Flow Sampling Technique

SITE: Former Alsy Manufacturing - Benjamin Ave DATE 3 / 8 /2002

SAMPLE ID : VP-W65

WELL ID : VP-W Time Onsite: Time Offsite:

SAMPLERS : Mike Mendes 0700

Depth of well (from top of casing)	75'	Time:	0923 (hrs)
Static water level (from top of casing)	65.29	Time:	0925 (hrs)
Static water level (after pump installation)	65.24	Time:	0927 (hrs)
Water level after purging (from top of casing)	65.94	Time:	0956 (hrs)
Water level before sampling (from top of casing)	65.94	Time:	0956 (hrs)
Depth of screened interval (from top of casing)	70.00		

Purging Method:

___ Peristaltic ___ Centrifugal

___ Bailer ___ Pos. Displ.

X Submersible ___ Ded. Pump

Depth of Pump: 69.0 (ft)

Purge Start Time: 0930 (hrs)

Purge End Time: 0956 (hrs)

Purge Duration: 0:00 (hrs)

Purge Flow Rate: 1.000 (gpm)

Volume of water removed: 25.0 gal

>3 volumes: yes x no ___

purged dry? yes ___ no x

Well Volume Calculation:

			1 volume		3 volumes
2 in. well:	9.10	ft. of water x 0.16 =	1.50 gal.	x 3 =	7.30 gal.
4 in. well:		ft. of water x 0.65 =	gal.	x 3 =	gal.

Field Tests:

	Time/Duration		pH	Cond.	Turbidity	D.O.	Temp.	ORP	DTW	Drawdown	Flow Rate
Units	(hrs)	(min)		(mS/cm)	(ntu)	(mg/L)	(deg C)	(mV)	(ft. toc)	(feet)	(gpm)
Range			*0.1*	*0.03*	*0.1*	*0.1*	*- - -*	*0.1*	*- - -*	*0.3*	*0.2 - 0.5*
	0930		5.8	0.38	> 1000	5.61	14.8	41	65.95		1
	0936		5.71	0.322	233	3.94	15.6	111	65.91	+ .04	1
	0940		5.7	0.325	35	3.77	15.6	122	65.81	+ .1	1
	0944		5.71	0.332	10.2	3.59	15.6	128	65.94	- .13	1
	0948		5.7	0.338	7.6	3.5	15.6	131	65.94	+.00	1
	0951		5.7	0.34	6.28	3.46	15.6	134	65.93	+ .01	1
	0953		5.7	0.344	4.68	3.42	15.6	136	65.94	- .01	1
	0956		5.69	0.345	4.33	3.42	15.6	137	65.94	.00	1
After Sample	1000		5.69	0.346	4.41	3.42	15.6	137			

Sampling:

Time readings stabilized: 0956 (hrs)

Sample Start Time: 0956 (hrs)

Sample End Time: 1000 (hrs)

Chain of Custody sample time: 0956 (hrs)

Sample Flow Rate: 0.140 (lpm)

Duration of sample time: 4 (min)

Collection Method:

___ Stainless steel bailer

___ Teflon bailer

X Other: Submersible Pump

Analyses:

___ VOCs -

X Metals

___ Other

Analytical Method:

MET-6010A- Nickel

Observations:

Weather/Temperature:

Sample Description: Turbidity: (circle one) HIGH MODERATE [✓ LOW]

Free Product? yes ___ no x describe

Sheen? yes ___ no x describe

Odor? yes ___ no x describe

Comments:

GROUND WATER SAMPLING RECORD

Low Flow Sampling Technique

SITE: Former Alsy Manufacturing - Benjamin Ave DATE 3/8/02

SAMPLE ID : VP-W90

WELL ID : VP-W Time Onsite: Time Offsite:

SAMPLERS : Mike Mendes 0700

Depth of well (from top of casing) .... 95 Time: (hrs)

Static water level (from top of casing) .... 65.46 Time: 0740 (hrs)

Static water level (after pump installation) .... 65.42 Time: 0743 (hrs)

Water level after purging (from top of casing) .... 65.99 Time: 0902 (hrs)

Water level before sampling (from top of casing).. 65.99 Time: 0902 (hrs)

Depth of screened interval (from top of casing).. 90

Purging Method:

___ Peristaltic ___ Centrifugal

___ Bailer ___ Pos. Displ.

X Submersible ___ Ded. Pump

Well Volume Calculation:

		1 volume		3 volumes
2 in. well:	29.54 ft. of water x 0.16 =	4.80 gal.	x 3 =	24.00 gal.
4 in. well:	ft. of water x 0.65 =	gal.	x 3 =	gal.

Depth of Pump: 89.0 (ft)

Purge Start Time: 0745 (hrs) Purge Duration: 1:35 (hrs)

Purge End Time: 0902 (hrs) Purge Flow Rate: 1.000 (gpm)

Volume of water removed:

145.0 gal >3 volumes: yes x no ___ purged dry? yes ___ no x

Field Tests:

	Time/Duration		pH	Cond.	Turbidity	D.O.	Temp.	ORP	DTW	Drawdown	Flow Rate
Units	(hrs)	(min)		(mS/cm)	(ntu)	(mg/L)	(deg C)	(mV)	(ft. toc)	(feet)	(gpm)
Range			0.1	0.03	0.1	0.1	- - -	0.1	- - -	0.3	0.2 - 0.5
	0825		5.82	.585	3.00	.65	15.4	107	6.63	0	1
	0830		5.82	.586	2.80	.52	15.3	96	5.99	+ .64	1
	0834		5.81	.584	8.36	.51	15.7	88	5.99	.00	1
	0839		5.81	.584	3.49	.49	15.8	81	5.99	-	1
	0844		5.81	.585	2.08	.49	15.8	77	5.99	-	1
	0850		5.80	.585	1.89	.47	15.8	74	5.99	-	1
	0854		5.80	.585	1.48	.46	15.8	72	5.99	-	1
	0859		5.80	.585	1.46	.46	15.7	70	5.99	-	1
	0902		5.80	.585	1.50	.46	15.8	69	5.99	-	1
After Sample	0906		5.80	.585	1.50	.40	15.8	69	26.00		

Sampling:

Time readings stabilized: 0902 (hrs) Chain of Custody sample time: 0902 (hrs)

Sample Start Time: 0902 (hrs) Sample Flow Rate: .1 (lpm)

Sample End Time: 0906 (hrs) Duration of sample time: 4 mins (hrs)

Collection Method:

___ Stainless steel bailer

___ Teflon bailer

X Other: Submersible Pump

Analyses:

___ VOCs -

X Metals

___ Other

Analytical Method:

MET-6010A- Nickel

Observations:

Weather/Temperature:

Sample Description: Turbidity: (circle one) HIGH MODERATE [✓ LOW]

Free Product? yes ___ no x describe

Sheen? yes ___ no x describe

Odor? yes x no ___ describe slight unknown odor

Comments:

APPENDIX N

NYSDEC 23 April 1999 Conditional Approval Letter

New York State Department of Environmental Conservation
Building 40 - SUNY, Stony Brook, New York 11790-2356
Division of Environmental Remediation
Telephone: (516) 444-0240
Facsimile: (516) 444-0248

John P. Cahill
Commissioner

23 April, 1999

Ms. Carla Weinpahl
Project Manager
Environmental Resources Management
475 Park Avenue South
29th Floor
New York, NY 10016

Re: August 31, 1998 Feasibility Study Report
Alsy Manufacturing Site #1-30-027

Dear Ms. Weinpahl:

This Department, in conjunction with the New York State Department of Health, has reviewed the August 31, 1998 Feasibility Study Report and your December 18, 1998 Response to NYSDEC's comments on the FS Report for the Alsy Manufacturing Site #1-30-027. The NYSDEC and NYSDOH hereby approve these documents but reserve the right to amend the chosen remedial alternative at any time. Please note that your December 18, 1998 response to NYSDEC's comments is considered an attachment to the FS Report.

This Department will now prepare a Proposed Remedial Action Plan (PRAP), which, upon completion, will be presented at a public informational meeting.

If you have any questions or comments, please contact me at (516) 444-0242.

Sincerely,
Christoph L

Christopher LaFemina
Environmental Engineer I

cc: B. Becherer
R. Rusinko, Esq.
Dr. G. A. Carlson, NYSDOH

APPENDIX O
Ground Water Sample Details

O.1 TEMPORARY WELL GROUND WATER SAMPLING

During the vertical profiling, the first ground water sample was collected at the deepest depth within the Upper Glacial Aquifer (i.e., approximately 120 feet bgs during the 1998 sampling and approximately 95 feet bgs during the 2002 sampling). This ground water sample was collected by assembling the well casing and drive point within the auger. The well screen and drive point were then driven slightly ahead of (deeper than) the lead auger and the auger was pulled up in the borehole allowing the formation to collapse back against the well screen and casing.

Temporary wells were all purged of five casing volumes prior to sampling at a rate of approximately 1 gpm to recover fluids introduced during drilling and to ensure collection of a representative sample. The first ground water sample was then collected from the screened interval using a submersible pump and dedicated lengths of new polyethylene tubing. Upon completion of purging, a ground water sample was collected at a low flow rate to minimize turbidity. The submersible pump was decontaminated between each well location and each sampling interval utilizing an Alconox wash and potable water rinse followed by a deionized water rinse. Following collection of the first ground water sample, the temporary well was progressively pulled up to the interval(s) and another ground water sample was collected. Finally, the temporary well was then pulled up to the water table (i.e., approximately 60 feet bgs) and the final ground water sample was collected at this horizon.

Once the temporary well sampling was completed, the remaining steel casing and screen was withdrawn from the borehole. The borehole was allowed to collapse and was backfilled with cuttings to the water table and tremie grouted from the water table to grade. Soil cuttings were transferred to open areas a the rear of the Site and ground water was contained in 55-gallon, NYSDOT-approved steel drums to await waste characterization sampling and off-Site disposal (see Section 1.3.4 of the FS Report for waste disposal). Boreholes were then repaired with topsoil and grass seed.

A small submersible pump was then used to purge the wells at a flow rate not greater than 1 gallon per minute (gpm). Three well volumes were evacuated at this pumping rate. For sample collection, the flow rate was reduced to 1 liter per minute (lpm). Each well was pumped at this rate for at least five minutes, and the sample was then collected directly from the pump discharge into the laboratory-supplied sample containers without filtration. Dedicated polyethylene discharge tubing was used for each sample. The pump and bailer was decontaminated between samples by circulating a solution of Alconox detergent and tap water through the pump, followed by a tap water rinse. Quality Assurance and Quality Control (QA/QC) samples consisted of the collection of one trip VOC blank per sampling day (total of two), one field (rinseate) blank, one blind duplicate sample, one matrix spike and one matrix spike duplicate sample.

During well purging, several water chemistry parameters were analyzed in the field, including: turbidity, pH, conductivity and dissolved oxygen (DO). All field instruments were calibrated daily according to the manufacturers instructions. These water chemistry parameters were monitored to confirm that the ground water samples were representative of the ambient aquifer conditions.

O.2 2002/2003 GROUND WATER SAMPLING

The 2002 and 2003 ground water sampling was conducted using low-flow sampling techniques consistent with the EPA Region II Low Flow Ground Water Sampling Protocol, dated March 16, 1998. Use of this protocol minimizes the amount of suspended matter to ensure a representative sample of dissolved nickel. Well purge water generated during this task was collected and transported to the Site for staging. This method uses low flow purging (i.e., less than 1 liter per minute) while measuring water chemistry parameters until measurements stabilize. Following the purge cycle, the sample was collected at a further reduced rate (approximately 0.1 liter per minute) after pH, temperature, specific conductance and turbidity have stabilized to within 10% on three consecutive readings taken at 3 to 5 minute intervals. Then, the sample was collected through the discharge tubing. However, due to low air temperatures (i.e., less than 15°F) when ERM-2 and LMS-4 were sampled, these wells did not yield enough water during pumping since water was freezing in the tubing prior to reaching ground surface. As a result, ground water samples from these two locations were submitted to the laboratory unfiltered and filtered, as approved by NYSDEC.

APPENDIX P

Well Construction Logs for Public Supply Wells N7561, N8526, and N9212

W.S.A. 2019

County [illegible]

ORIGINAL—TO COMMISSION

State of New York
Department of Conservation
Division of Water Power and Control

COMPLETION REPORT—LONG ISLAND WELLS

Well No. N-3552 (as preliminary report

Owner Hicksville Water District

Address 85 Bethpage Rd Hicksville L.I., N.Y.

Location of well Newbridge Rd & Dutch Lane, Hicksville

Depth below surface 169'-2" feet

Depth to water: Ground water 50' ft.; Finished well 50' ft.

CASINGS:

Diameter	20" in.	12" in.	in.	in.
Length	114'-2" ft.	114'-8" ft.	ft.	ft.

Sealing

Casings removed

SCREENS: Make Johnson Everdur Openings #60 slot

Diameter	12" in.	in.	in.	in.
Length	52'-2" ft.	ft.	ft.	ft.

Depth to top from top of casing 114'-8" ft.

PUMPING TEST: Date 11/27/50 Test or permanent pump? Test

Duration of Test – days 8 hours

Maximum Discharge 1515 gallons per minute

Static Level Prior to Test 48 ft. in. below top of casing

Level during Max. Pumping 78 ft. in. below top of casing

Maximum Drawdown 30 ft.

Approx. time of return to normal level after cessation of pumping – hours – minutes

PUMP INSTALLED:

Type DWT Make Pomona Model No. 12" HC

Motive power El. Motor Make U.S. El. H.P. 125

Capacity 1200 g.p.m. against } 185 ft. of discharge head

No. bowls or stages 16 } 266 ft. of total head

	DROP LINE:	SUCTION LINE:
Diameter	8" in.	8" in.
Length	100 ft.	20 ft.

Use of water Public Water Supply

Work started 5/31/50 Completed 3/22/51

Date 4/4/51 Driller C.W. Lauman & Co., Inc.

License No. 13

NOTE: Show log of well—materials encountered, with depth below ground surface, water-bearing beds and water levels in each, casings, screens, pump, additional pumping tests and other matters of interest. Describe repair job.

See Instructions as to Well Drillers' Licenses and Reports—pp. 5-7.

STATE OF NEW YORK
WATER POWER AND
CONTROL COMMISSION
RECEIVED
APR 25 1951

LOG

Ground Surf., El. ft. above s 0

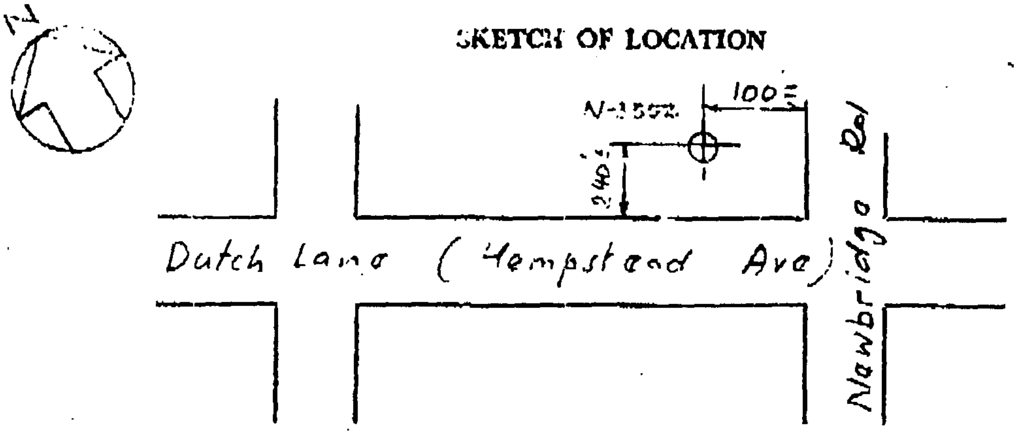
1'-9" ft.

Top of Well 1'-9"

Top Soil & Cl.
6'
cse Sand & Gr
91'
med. fine multi colored Clay
101'
med. cse red Sand & some Gravel
137'
fine red Sand & Mica
148'
brown sndy clay
150'
fine brown Sand
157'
multi colored Sndy Clay
160'
fine brn Sand & Mica
170'
fine brn Sand
175'
brn sndy Clay
185'
[illegible] sndy Cl
192'
fine brn sndy Cl.

N-3552

SKETCH OF LOCATION



Locate well with respect to at least two streets or roads, showing distance from corner and front of lot.

Show North Point

ORIGINAL—TO COMMISSION

County Nassau

State of New York
Department of Conservation
Division of Water Power and Control

COMPLETION REPORT—LONG ISLAND WELL

Well No. N-5336 T
(on preliminary report)

LOG

Ground Surf., El. 115 ft. above sea

ft.

Top of Well

See Attached Sheet

Owner Hicksville W.D.

Address 85 Bethpage Rd., Hicksville Rd.

Location of well Newbridge Rd. & ~~Miles Ave.~~ Tile La., Hicksville, N.Y.

Depth of well below surface 670 feet

Depth to ground water from surface 181 feet

CASINGS:

Diameter 7 x 6 in. in. in. in.

Length ft. ft. ft. ft.

Sealing

Casings removed All

SCREENS: Make Openings

Diameter in. in. in. in.

Length ft. ft. ft. ft.

Depth to top from top of casing ft.

PUMPING TEST: Date Test or permanent pump?

Duration of Test days hours

Maximum Discharge gallons per minute

Static level prior to test ft. in. below top of casing

Level during Max. Pumping ft. in. below top of casing

Maximum Drawdown ft.

Approx. time of return to normal level after cessation of pumping hours minutes

PUMP INSTALLED:

Type Make Model No.

Motive power Elec Make U.S. H.P. 125

Capacity g.p.m. against ft. of discharge head

No. bowls or stages ft. of total head

DROP LINE: **SUCTION LINE:**

Diameter in. in.

Length ft. ft.

Use of water

Work started 4-27-55 Completed 5-2-55

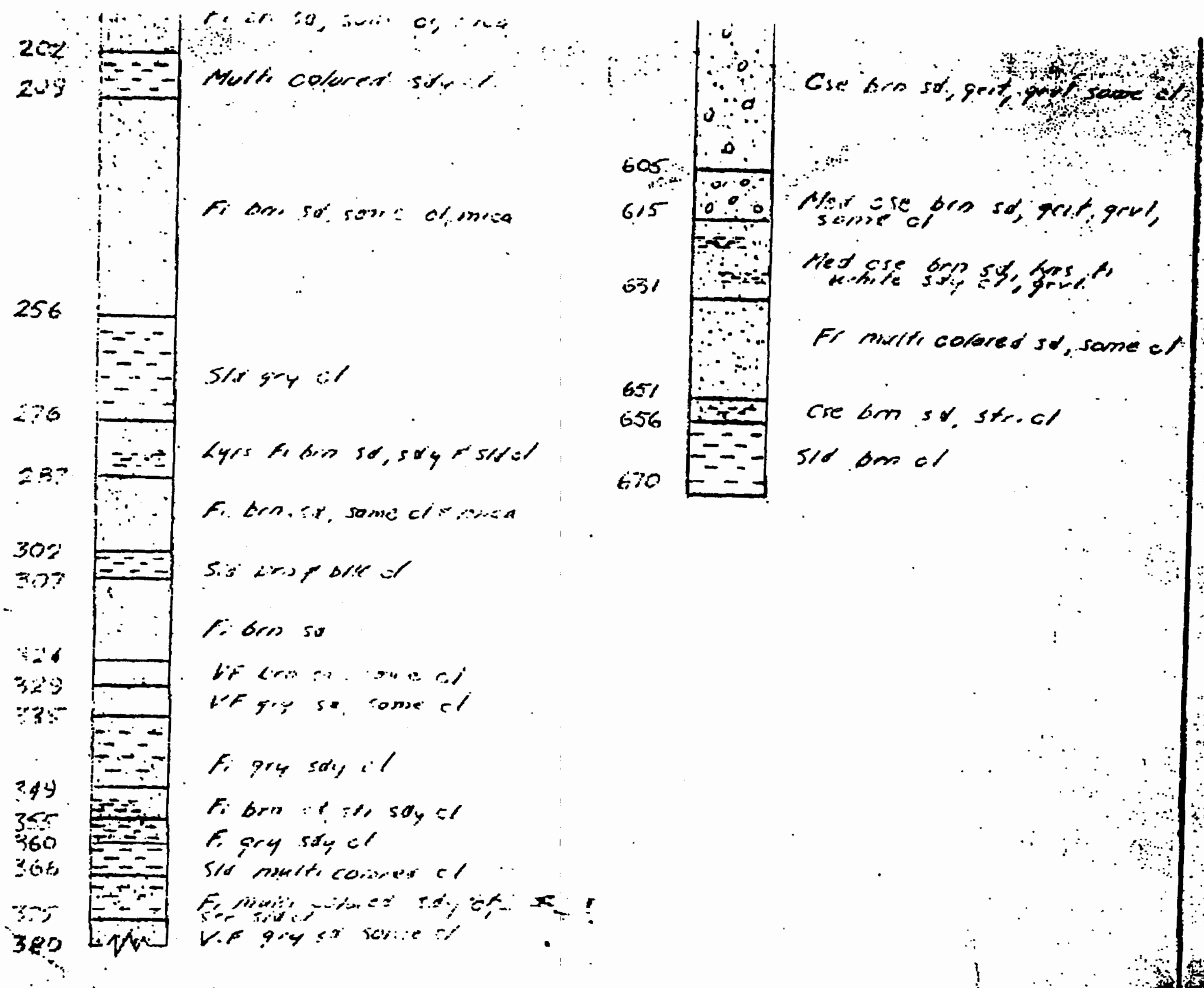
Date May 2, 1955 Driller C.W. Lauman & Co, Inc.

License No. 13

NOTE: Show log of well—materials encountered, with depth below ground surface, water bearing beds and water levels in each, casings, screens, pump, additional pumping tests and other matters of interest. Describe repair job.

See Instructions as to Well Drillers' Licenses and Reports—pp. 5-7.

STATE OF NEW YORK
WATER POWER AND
MAY 4 - 1955 ✓
CONTROL COMMISSION



202	Fi brn sd, some cl, mica
209	Multi colored sdy cl
256	Fi brn sd, some cl, mica
276	Sld gry cl
287	Lyrs fi brn sd, sdy & sld cl
302	F. brn sd, some cl & mica
307	Sld brn & blk cl
324	Fi brn sd
329	VF brn sd, some cl
335	VF gry sd, some cl
349	Fi gry sdy cl
355	Fi brn cl & sli sdy cl
360	F. gry sdy cl
366	Sld multi colored cl
375	Fi multi colored sdy cl & sld cl
380	V.F gry sd some cl
605	Cse brn sd, grit, grvl, some cl
615	Med cse brn sd, grit, grvl, some cl
631	Med cse brn sd, lyrs fi white sdy cl, grvl
651	Fi multi colored sd, some cl
656	Cse brn sd, str. cl
670	Sld brn cl

N-5336

LOG OF TEST WELL N-5336T

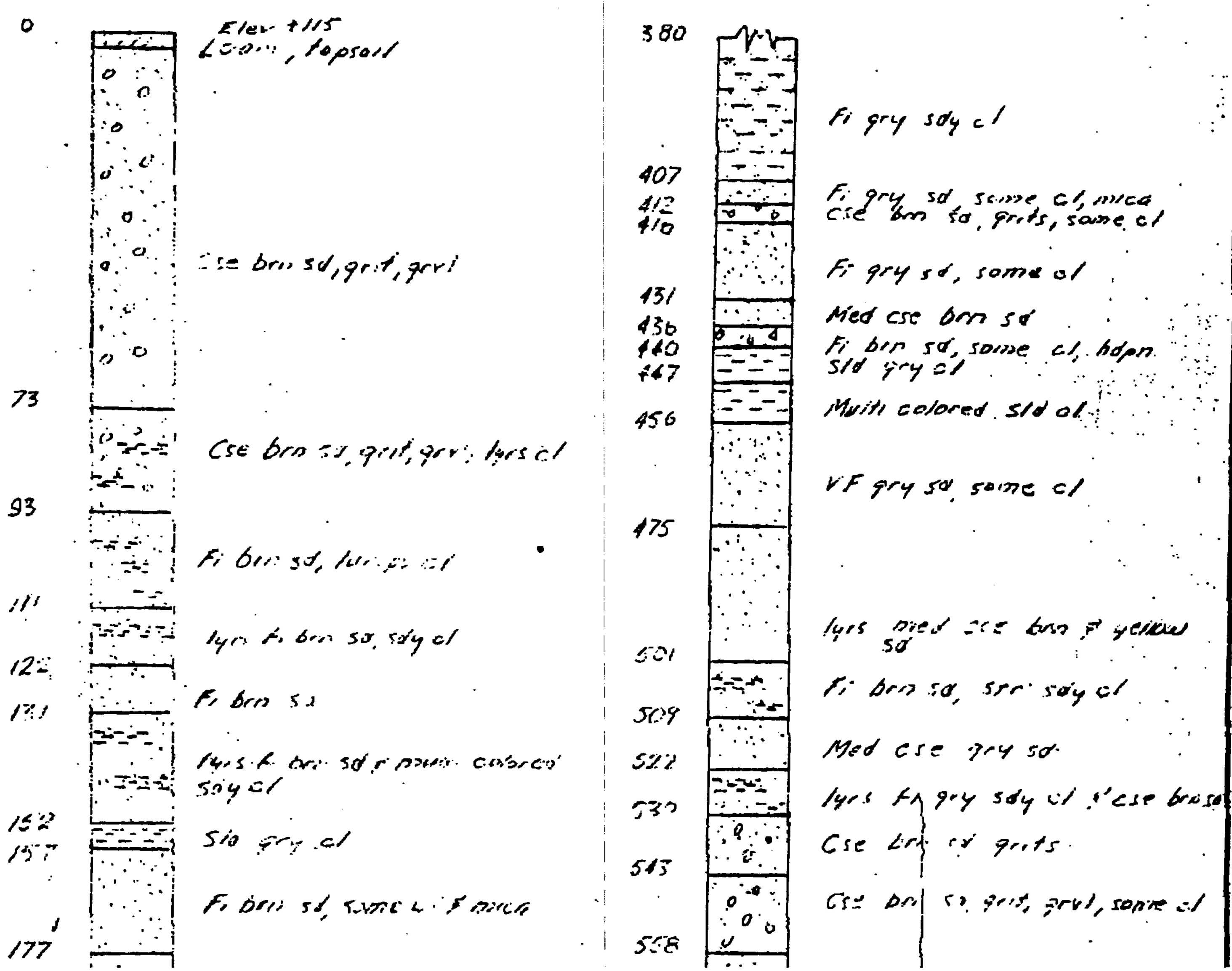
HICKSVILLE W.D.

SCALE: 1" = 30' DR. ak CH. DATE 4-28-55

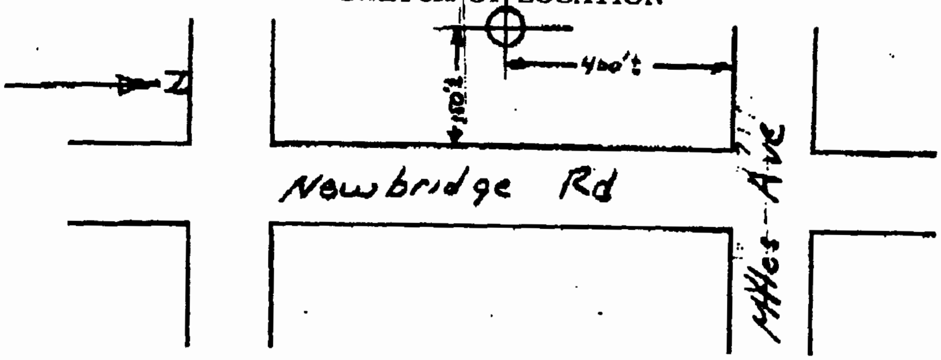
C. W. LAUMAN & CO., INC.
50 CHURCH ST.
NEW YORK 7, N. Y.
BETHPAGE
LONG ISLAND, N. Y.

DWG. NO. 4-P-A

U-5336


0
Elev +115
Loam, topsoil
Cse brn sd, grit, grvl
73
Cse brn sd, grit, grvl; lyrs cl
93
Fi brn sd, lumps cl
111
lyrs fi brn sd, sdy cl
122
Fi brn sd
131
lyrs fi brn sd & multi colored sdy cl
152
Sld gry cl
157
Fi brn sd, some cl & mica
177
380
Fi gry sdy cl
407
Fi gry sd, some cl, mica
412
Cse brn sd, grits, some cl
416
Fi gry sd, some cl
431
Med cse brn sd
436
Fi brn sd, some cl, hdpn
440
Sld gry cl
447
Multi colored sld cl
456
VF gry sd, some cl
475
lyrs med cse brn & yellow sd
501
Fi brn sd, str sdy cl
509
Med cse gry sd
522
lyrs fi gry sdy cl & cse brn sd
530
Cse brn sd grits
545
Cse brn sd, grit, grvl, some cl
558

SKETCH OF LOCATION



Locate well with respect to at least two streets or roads, showing distance from corner and front of lot.

Show North Point

N-5374

County Nassau

U. 5A 4610

ORIGINAL—TO COMMISSION

State of New York
Department of Conservation
Division of Water Power and Control
COMPLETION REPORT—LONG ISLAND WELL

Well No. N-7561
(on preliminary report)

LOG

Ground Surf., El.........ft. above sea

............ft.

Top of Well

Owner Hicksville Water District Well #5-2

Address Dean Street, Hicksville, L.I., New York

Location of well Stewart Avenue

Depth of well below surface 550' 10" feet

Depth to ground water from surface 43.5 feet

Casings:

Diameter 20 in. 12 in. ....in. ....in.

Length 458 ft. 106'3" ft. ....ft. ....ft.

Sealing ....

Casings removed None

Screens: Make E.E.J. Everdur Openings 50 Slot

Diameter 12 in. ....in. ....in. ....in.

Length 70 ft. ....ft. ....ft. ....ft.

Depth to top from top of casing 463 ft.

Pumping Test: Date June 25, 1964 Test or permanent pump? Test

Duration of Test ....days 6 hrs.15min. hours

Maximum Discharge 1438 gallons per minute

Static level prior to test 43.5 ft. ....in. below top of casing

Level during Max. Pumping 78.51 ft. ....in. below top of casing

Maximum Drawdown 34.65 ft.

Approx. time of return to normal level after cessation of pumping ....hours 5 minutes

STATE OF NEW YORK
WATER RESOURCES
MAY 28 1965
COMMISSION
RECEIVED

Pump Installed:

Type D.W.T. Make Johnston Model No. 12ES

Motive power Electric Make U.S. H.P. 50

Capacity 1400 g.p.m. against 70 ft. of discharge head

No. bowls or stages 2 108 ft. of total head

Drop Line:

Diameter 10 in.

Length 99'-9-1/4" ft.

Suction Line:

Diameter 10 in.

Length 10 ft.

Usexxxxxr Public Supply

Work started 4/30/64 Completed 6/25/64

Date May 27, 1965 Driller C.W. Lauman & Co., Inc.

License No. 13

Note: Show log of well—materials encountered, with depth below ground surface, water bearing beds and water levels in each, casings, screens, pump, additional pumping tests and other matters of interest. Describe repair job.

See Instructions as to Well Drillers' Licenses and Reports—pp. 5-7.

ORIGINAL—TO COMMISSION

County Nassau

WSA-5626
N-3552

State of New York
Department of Conservation
Division of Water Resources

Well No. N 8526
(on preliminary report)

LOG

Ground Surf., El..........ft. above sea

..........ft.

Top of Well

COMPLETION REPORT—LONG ISLAND WELL

Owner Hicksville Water District

Address Hicksville, New York

Location of well # 4-2 NEWBRIDGE ROAD

Dept of well below surface 601'-2" feet

Depth to ground water from surface 54 feet

CASINGS:

Diameter 20 in. .... in. .... in. .... in.

Length 511 ft. .... ft. .... ft. .... ft.

Sealing

Casings removed

SCREENS: Make E.E. Johnson Openings 50 Slot

Diameter SEE REVERSE SIDE in. .... in. .... in.

Length .... ft. .... ft. .... ft. .... ft.

Depth to top from top of casing 397'-7" ft.

PUMPING TEST: Date 3/20/69 Test or permanent pump? T

Duration of Test .... days 8 hours

Maximum Discharge 1421 gallons per minute

Static level prior to test 54 ft. .... in. below top of casing

Level during Max. Pumping 87 ft. 5 in. below top of casing

Maximum Drawdown 5 33'-5" ft.

Approx. time of return to normal level after cessation of pumping .... hours 20 minutes

PUMP INSTALLED:

Type DWT Make Johnston Model No. 12DC

Motive power Electric Make US H.P. 125

Capacity 1400 g.p.m. against 187 ft. of discharge head

No. bowls or stages 6 287 ft. of total head

DROP LINE: **SUCTION LINE:**

Diameter 10 in. 10 in.

Length 110 ft. 10 ft.

Use of water Public Supply

Work started 1/12/69 Completed 3/28/69

Date 4/11/69 Driller The Layman Company, Inc.

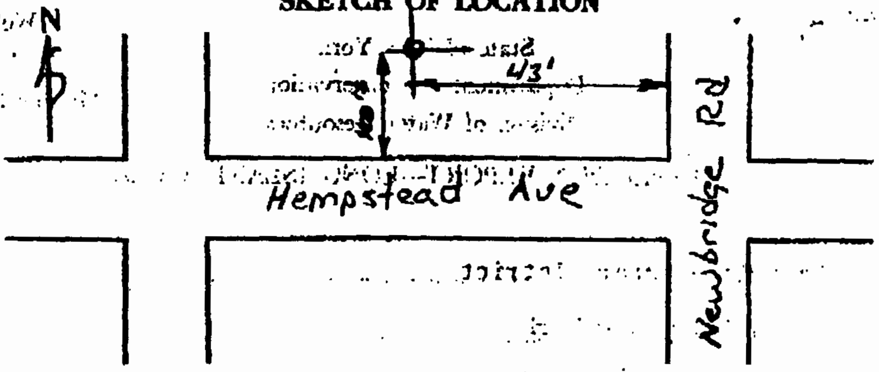
License No. 13

STATE OF NEW YORK
WATER RESOURCES
APR 15 1969 ✓
COMMISSION
RECEIVED

NOTE: Show log of well—materials encountered, with depth below ground surface, water bearing beds and water levels in each, casings, screens, pump, additional pumping tests and other matters of interest. Describe repair job.

See Instructions as to Well Drillers' Licenses and Reports—pp. 5-7.

SKETCH OF LOCATION



Locate well with respect to at least two streets or roads, showing distance from corner and front of lot.

Show North Point

397-7" to 500'-2"	12" Riser
500-2" to 520'	TW Blank
520'- 555'-7"	12" Screen
555'-7"to 575'-7"	T.W. Blank
575'-7" to 601'-2"	12" Screen

Well N-8526

Screened in Basal Magothy Formation

T.D. - 642 ft below lsd

Elev. - +120 ft ± above msl

Yield - 1,420 gpm; dd: 34 ft

Sp. Cap. - 42 gpm/ft of dd

Correlation (from GW-18 and U.S.G.S. records)

U.P. 0 to 93 ft below lsd

Magothy 93 to 529 ft below lsd

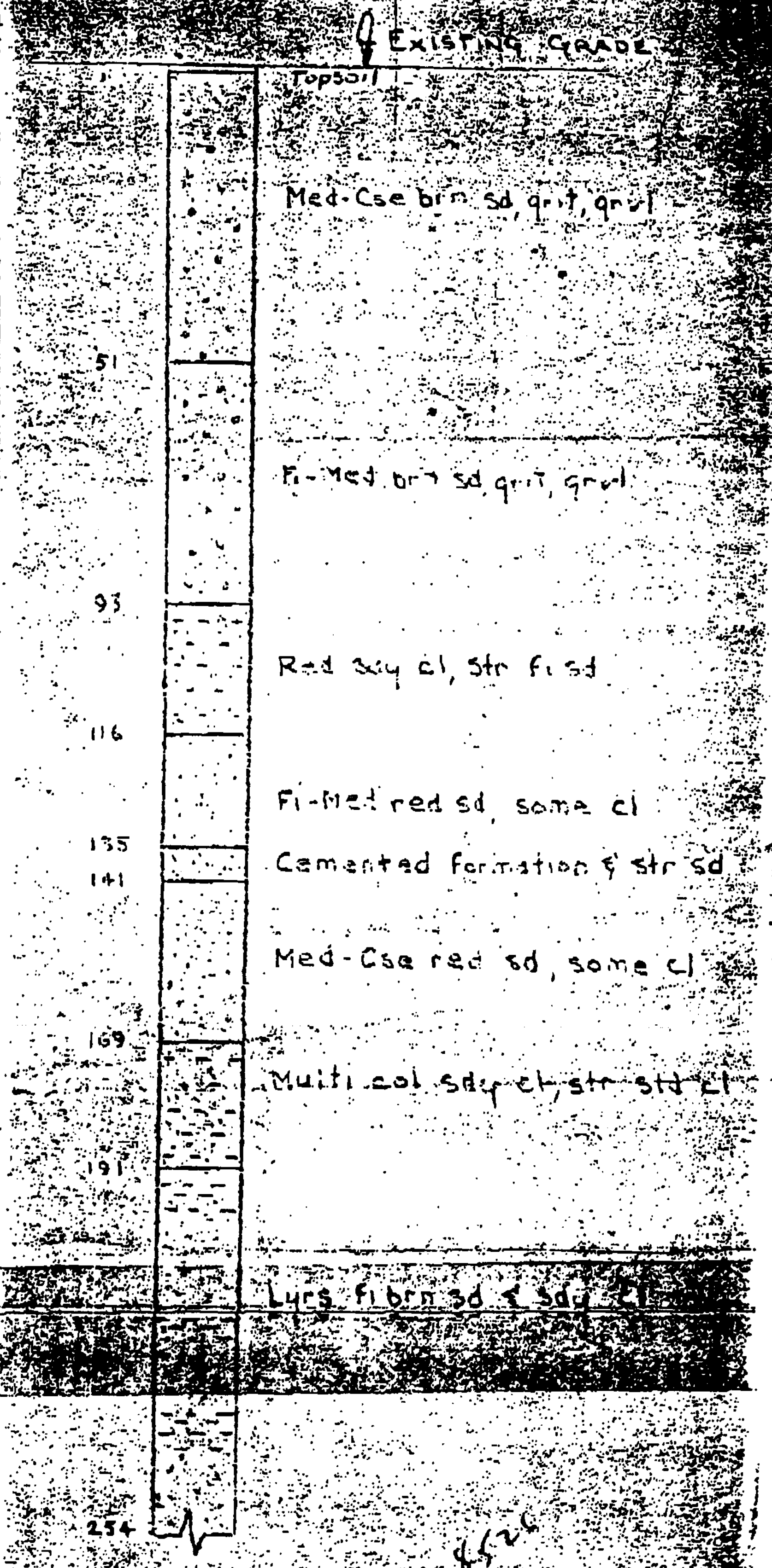
Basal Magothy 529 to 642 ft below lsd

(Raritan clay should be at about 670 ft ± below lsd)

(Correlation good)

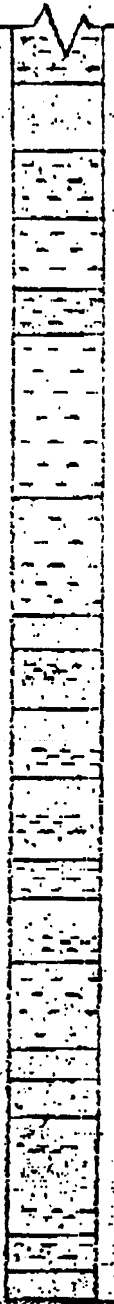
4/29/69 USGS Hans Jensen

4-[illegible] HICKSVILLE 341



N' 8526

2



254	Multi col sdy cl
263	Fi brn sd
274	Lyrs gry sdy & sld cl
285	Gry cl
295	Lyrs multi col sdy & sld cl
303	Gry cl
329	Lyrs gry sdy & sld cl
348	Fi-Med brn sd
354	Lyrs fi gry sd, sdy & sld cl
363	Fi brn sd, str sdy cl
374	Fi gry sd some cl, str sdy cl
387	Fi multi col sdy cl
394	Fi gry sd, str sdy cl
404	Multi col sdy cl
418	Fi multi col sd
423	Fi-Med brn sd
429	Med-cse brn sd, str cl
448	Lyrs multi col sdy & sld cl
454	Fi-Med brn sd
456	

N-8526

[illegible]

Fi gry sdy cl

492

Fi gry sd

498

Multi col sdy cl

514

Fi multi col sd, str sdy cl

519

Fi-med brn sd

523

Fi gry sd & cl, str pyrite

529

Med-cse gry sd some cl

553

Med-cse brn sd

558

Multi col sdy cl

574

Med-cse brn sd

578

Fi-Med gry sd some cl

582

Med-cse brn sd some grit

593

Med-cse red sd, grit, grvl

598

Med brn sd some grit

609

Cse brn sd, sld cl, grit, grvl

613

Fi brn sd

619

Fi-Med brn sd some grit

624

Fi brn sd

628

Brn cl, cse sd, grit, grvl

633

Med brn sd

638

Silty brn cl

642

165

STRATA WELL CORP.

2 Beech St.
ISLIP, N. Y. 11751
Phone 516 581-7100

WELL LOG

N-9212

JOB NAME [illegible]

LOCATION [illegible] Street/Ave.

W.R.C. WELL NO. [illegible]

REFERENCE PT. [illegible]

S. W. L. 42'

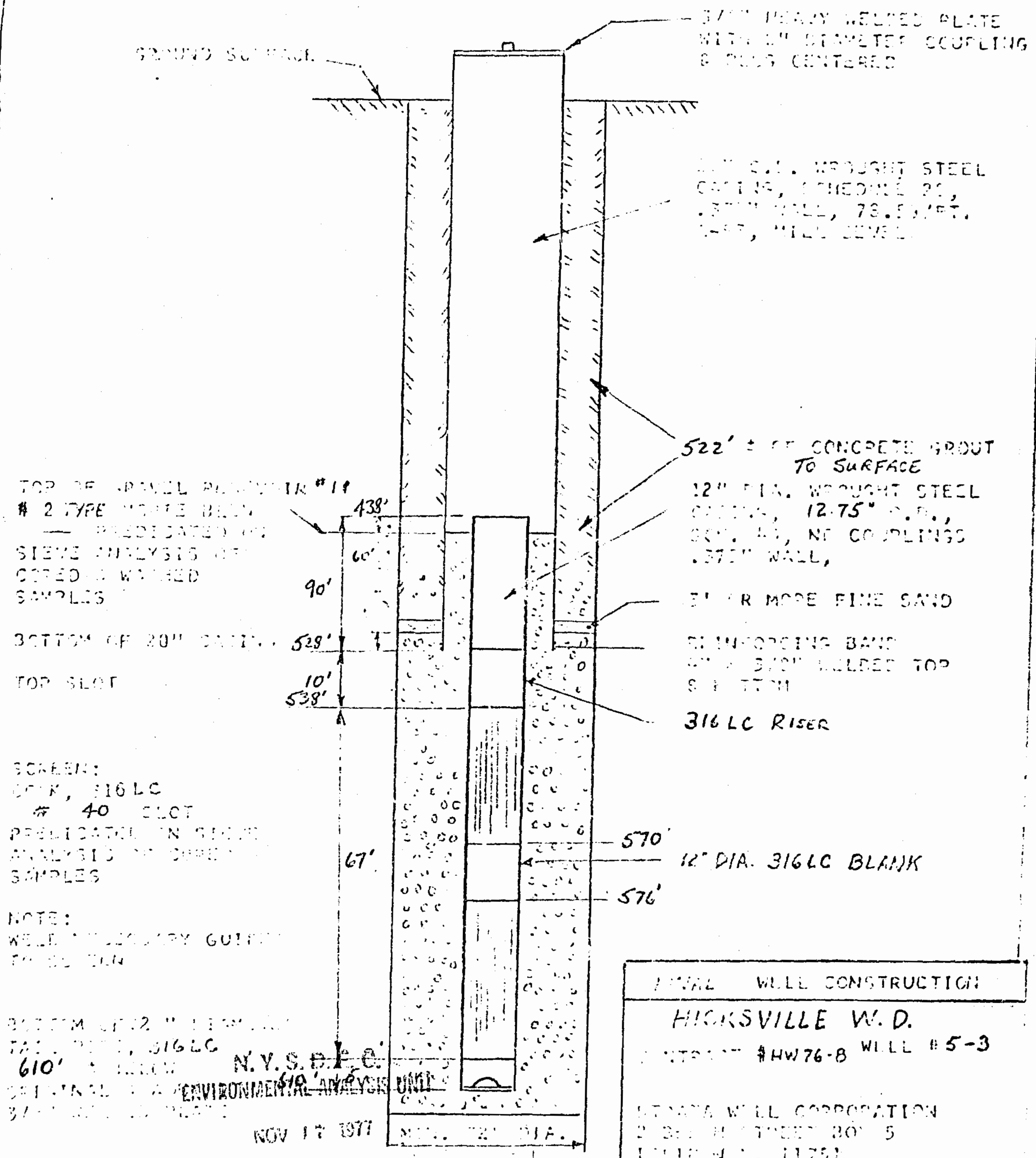
DATE STARTED [illegible]/2/77 COMPLETED [illegible]/77 DRILLER Bender, Butler

N.Y.S. D.E.C.
ENVIRONMENTAL ANALYSIS UNIT
NOV 17 1977
RECEIVED

SAMPLE								
C or	No.	Actual Depth	Lgth	Blows	Formation	Thickness	Depth	Remarks
					[illegible] Sand & Gravel [illegible]	48'	48'	
					[illegible] Sand, Small Gravel	20	68	
					[illegible] Clay/[illegible]	2	70	
					[illegible] Gray Sand	5	75	
					[illegible] Gray [illegible]	27	102	
					[illegible] Sand/[illegible] Clay	45	147	
					[illegible] Sand [illegible]	12	159	
					[illegible] Clay	3	162	
					[illegible] STKS of Clay + Case Gra	13	175	
					[illegible] Clay (STKS of [illegible] Sand))	4	179	
					[illegible] STKS of Clay	20	199	
					[illegible]	9	208	
					[illegible] Sand	32	240	
					[illegible] Gravel	5	245	
					[illegible] Clay [illegible]	3	248	
					[illegible] Clay	20	268	V. HARD
					[illegible]	33	301	
					[illegible] Clay	6	307	
					[illegible]	18	325	
					[illegible]	2	327	
					[illegible]	28	355	
					[illegible] Clay	5	360	
					[illegible]	25	385	
					[illegible] Clay	13	398	
					[illegible]	14	412	
					[illegible] Clay	6	418	
					[illegible] Clay	27	445	
					[illegible] Clay	5	450	

2918

"AS-BUILT" WELL #8-3



FINAL WELL CONSTRUCTION

HICKSVILLE W. D.

CONTRACT #HW76-8 WELL #5-3

STRATA WELL CORPORATION
2 ... STREET BOX 5
ISLIP, N.Y. 11751

By: FG 6/3/77

APPENDIX Q
2001 and 2002 Waste Analytical Results and Waste Manifests

TABLE 1
WASTE CLASSIFICATION ANALYTICAL RESULTS
ADDITIONAL INVESTIGATION AUGUST 2001 THROUHG JANUARY 2003
FORMER ALSY MANUFACTURING SITE
HICKSVILLE, NY

SAMPLE*	**WC-01(ERM-2)**	**WC-02**	**WC-03**	**Universal Treatment Standard**	**TCLP Limit**
DATE COLLECTED	**3/8/02**	**3/8/02**	**3/8/02**		
MATRIX	**Soil**	**Groundwater**	**Soil**		
APPPLICABLE DRUMS	**1 through 5**	**13 through 32**	**6 through 12**		
TCLP Metal (ug/L)					
Arsenic	34.8 U	NA	34.8 U		5,000
Chromium	7.6 U	NA	7.6 U	860	5,000
Lead	**20.1 B**	NA	17.0 U	370	5,000
Nickel	**1,680**	NA	NA	5,000	
Selenium	34.6 U	NA	34.6 U		1,000
Plating Characteristics					
Cyanide, Total, Solid (ug/kg)	**60,900**	3.0 U	104 U	590,000	
Cyanide, Amenable to Chloride, Solid (ug/kg)	**60,300**	3.0 U	104 U	30,000	
Ignitablitliy (solids)	**Negative**	NA	NA		
Reactivity					
Cyanide, Solid (ug/kg)	ND	NA	NA		
Sulfide, Solid (mg/kg)	9 U	NA	NA		
Corrosivity (pH, Solid)	**No**	NA	NA		
Target Analyte List (TAL) Metals (ug/L)					
Aluminum	NA	**799**	NA		
Antimony	NA	5.9 U	NA		
Arsenic	NA	7.0 U	NA		
Barium	NA	**65.3**	NA		
Beryllium	NA	1.0 U	NA		
Cadmium	NA	1.3 U	NA	69	
Calcium	NA	**21,100**	NA		
Chromium	NA	**6.7 B**	NA	2,770	
Cobalt	NA	**6.0 B**	NA		
Copper	NA	**18.8**	NA		
Iron	NA	**45,100**	NA		
Lead	NA	3.4 U	NA	690	
Magnesium	NA	**3050**	NA		
Manganese	NA	**917**	NA		
Mercury	NA	0.18 U	NA		
Nickel	NA	**56.3**	NA	3,980	
Potassium	NA	**7,850**	NA		
Selenium	NA	6.9 U	NA		
Silver	NA	1.4 U	NA		
Sodium	NA	**13,600**	NA		
Thallium	NA	16.1 U	NA		
Vanadium	NA	**1.7 B**	NA		
Zinc	NA	**124**	NA		

ND: Not Detected	U: Not detected at the concentration listed
NA : Not Analyzed	B: Result is less than the reporting limit but greater than the detection limit.

TCLP Limit is United States Enivironmental Protection Agency limit for designation as hazardous waste

F-Waste standard is for classification as a F-listed waste for plating wastes.

* Samples are composite samples. WC-01 is from drums from abandoned dry well, WC-03 is a composite of all other soil drums.

Bolded value indicates the analyte was detected at the indicated concentration. Shaded value is above the minimal treatment standa

DEPARTMEN OF NVIRONMENTAL CONSERVATION
DIVISION OF HAZARDOUS SUBSTANCES REGULATI

HAZARDOUS WASTE MANIFE

P.O. Box 12820, Albany, New York 12212

Please print or type. Do not Staple.

Form Approved. OMB No. 2050-0039. Expires 9-30-96

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA No. NYD052783488 Manifest Document No. 07333

2. Page 1 of 1

Information in the shaded areas is not required by Federal Law.

3. Generator's Name and Mailing Address
Surrey
270 Duffy Ave.
Hicksville NY 11801

4. Generator's Phone (631 979-3000

A. State Manifest Document No. NY B751721 4

B. Generator's ID SAME

5. Transporter 1 (Company Name) TRI-S

6. US EPA ID Number CTD011642410

C. State Transporter's ID 36078A CT

D. Transporter's Phone 860 875-2110

7. Transporter 2 (Company Name)

8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone ( )

9. Designated Facility Name and Site Address
CWM Chemical Services, LLC
1550 Balmer Road
Model City NY 14107

10. US EPA ID Number NYD049836679

G. State Facility's ID

H. Facility's Phone (716) 754-8231

11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. Hazardous waste, solid, n.o.s. 9, NA3077, PG III (Lead)	0105	DM	04000	P	EPA F006 STATE
b. DOT Non-Regulated Material (Nickel Water)	018	DM	00990	G	EPA STATE
c. DOT Non-Regulated Material (Nickel Cuttings)	007	DM	05600	P	EPA STATE
d.					EPA STATE

J. Additional Descriptions for Materials Listed Above
a (App.#. CW7797) ERG# 171
c (App. #. CW7799)
b (App. #. CW7798)
d

K. Handling Codes for Wastes Listed Above
a ☐ c ☐
b ☐ d ☐

15. Special Handling Instructions and Additional Information
Emergency Contact Online Env.
24 Hour Tel. #888-571-4927

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations and state laws and regulations.

If I am a large quantity generator, I certify that I have program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR if I am a small generator, I have made a good faith effort to minimize my waste and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name | Signature | Mo. Day Year

17. Transporter 1 (Acknowledgement of Receipt of Materials)
Printed/Typed Name Mark Thompson | Signature | Mo. Day Year 10 16 03

18. Transporter 2 (Acknowledgement or Receipt of Materials)
Printed/Typed Name | Signature | Mo. Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name | Signature | Mo. Day Year

EPA Form 8700-22 (Rev. 9-88) Previous editions are obsolete.

In case of emergency or spill immediately call the

COPY 8—Generator—retained by generator