SURREY COMPANY AND SURREY CORPORATION

ALSY MANUFACTURING
Oyster Bay, Nassau County

Site No. 130027

REMEDIAL INVESTIGATION REPORT

December 1997

LMSE-97/0501&698/002

LAWLER, MATUSKY & SKELLY ENGINEERS LLP
Environmental Science & Engineering Consultants
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TABLE OF CONTENTS

TABLE OF CONTENTS
(Continued)

TABLE OF CONTENTS
(Continued)

LIST OF FIGURES

LIST OF TABLES

LIST OF TABLES
(Continued)

CHAPTER 1

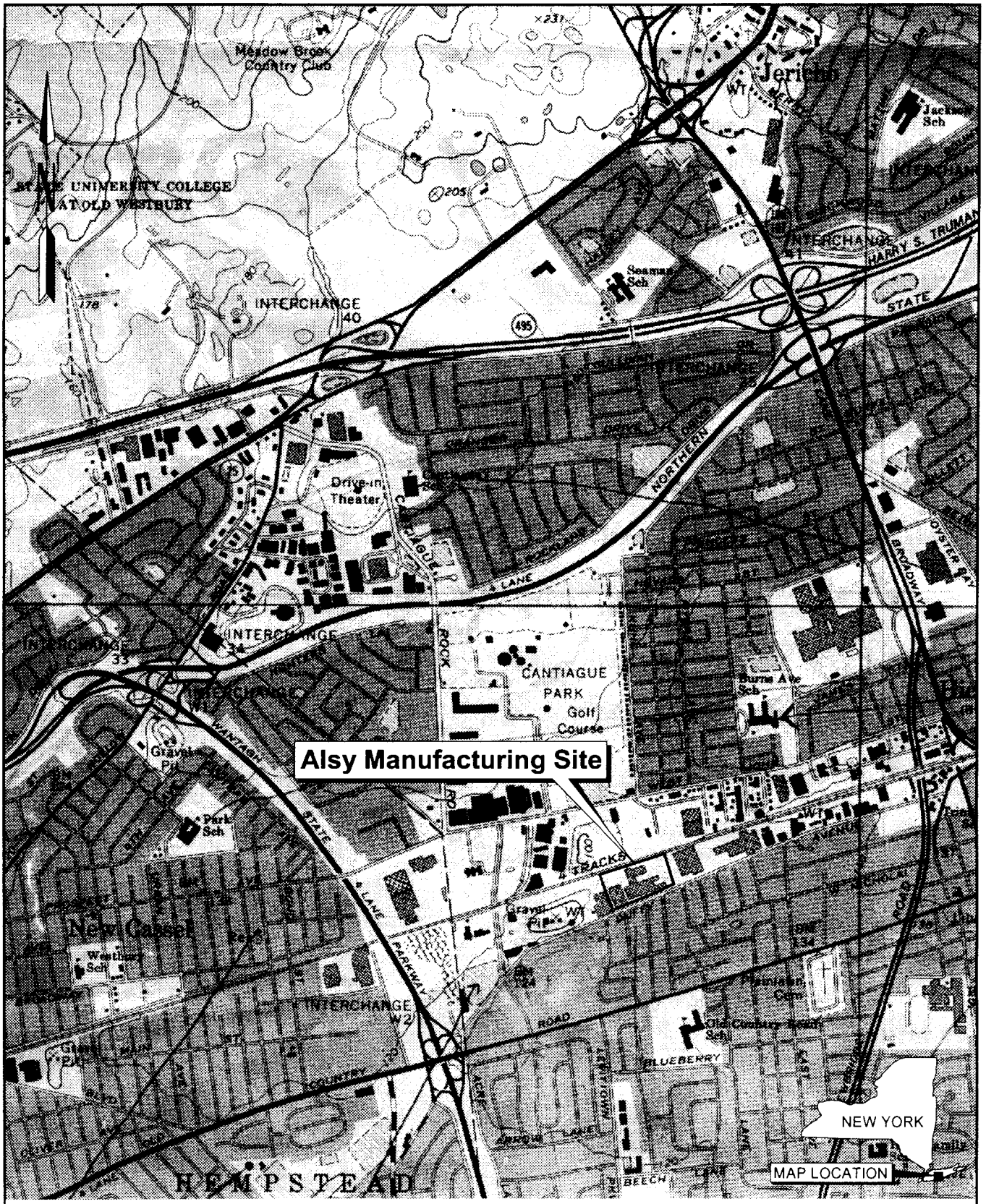
EXECUTIVE SUMMARY

The Alsy Manufacturing Site (Site) is located at 270 and 280 Duffy Avenue in the Town of Hicksville, Nassau County, New York (Figure 1-1). The Site, owned by Surrey Company, consists of 2 one-story brick and stucco buildings, one smaller one-story building, and paved parking areas (Figure 1-2). The buildings are currently occupied by several commercial operations.

Alsy Manufacturing operated at the Site from 1975 to 1991; prior to Alsy's occupancy, a laboratory furniture manufacturer conducted operations at the Site. Alsy produced electric lamps and lampshades; brass plating and antiquing were included in the manufacturing processes. Wastewater treatment sludge, paint strippers and thinners, and degreasers were listed as wastes generated and stored at the Site during Alsy's occupancy. In 1977, a State Pollutant Discharge Elimination System (SPDES) permit was issued and authorized discharge of sanitary and industrial wastes from two on-site discharge points.

Investigations were conducted at the Site by the Nassau County Department of Health (NCDOH) and the New York State Department of Environmental Conservation (NYSDEC) between 1977 and 1983 in response to alleged SPDES permit violations. Samples collected during these investigations revealed exceedances of allowable concentrations of permitted metals and volatile organic compounds (VOCs). An investigation in February 1984 conducted by NYSDEC and NCDOH revealed previously unidentified industrial leach pools and trenches, as well as four unpermitted industrial wastewater discharge points. As a result, additional investigations were conducted through April 1988 by the NYSDEC, NCDOH, the U.S. Environmental Protection Agency (EPA) and consultants hired by Site occupants. Several leach pools and catch basins were discovered during these investigations, and sampling of these discharge points revealed high concentrations of metals and VOCs.

Alsy entered into an administrative order on consent with NYSDEC in 1986 in settlement of alleged SPDES permit violations. In 1987 EA Science and Technology was commissioned by NYSDEC to conduct a Phase I Site Assessment. The Phase I report was issued in June 1987 and prompted NYSDEC to designate the Site as Class 2a on the Registry of Inactive Hazardous Waste Disposal Sites. A Class 2a designation signifies that hazardous waste disposal is believed to have taken place, but further investigation is required to determine whether the site poses a threat to public health or the environment.



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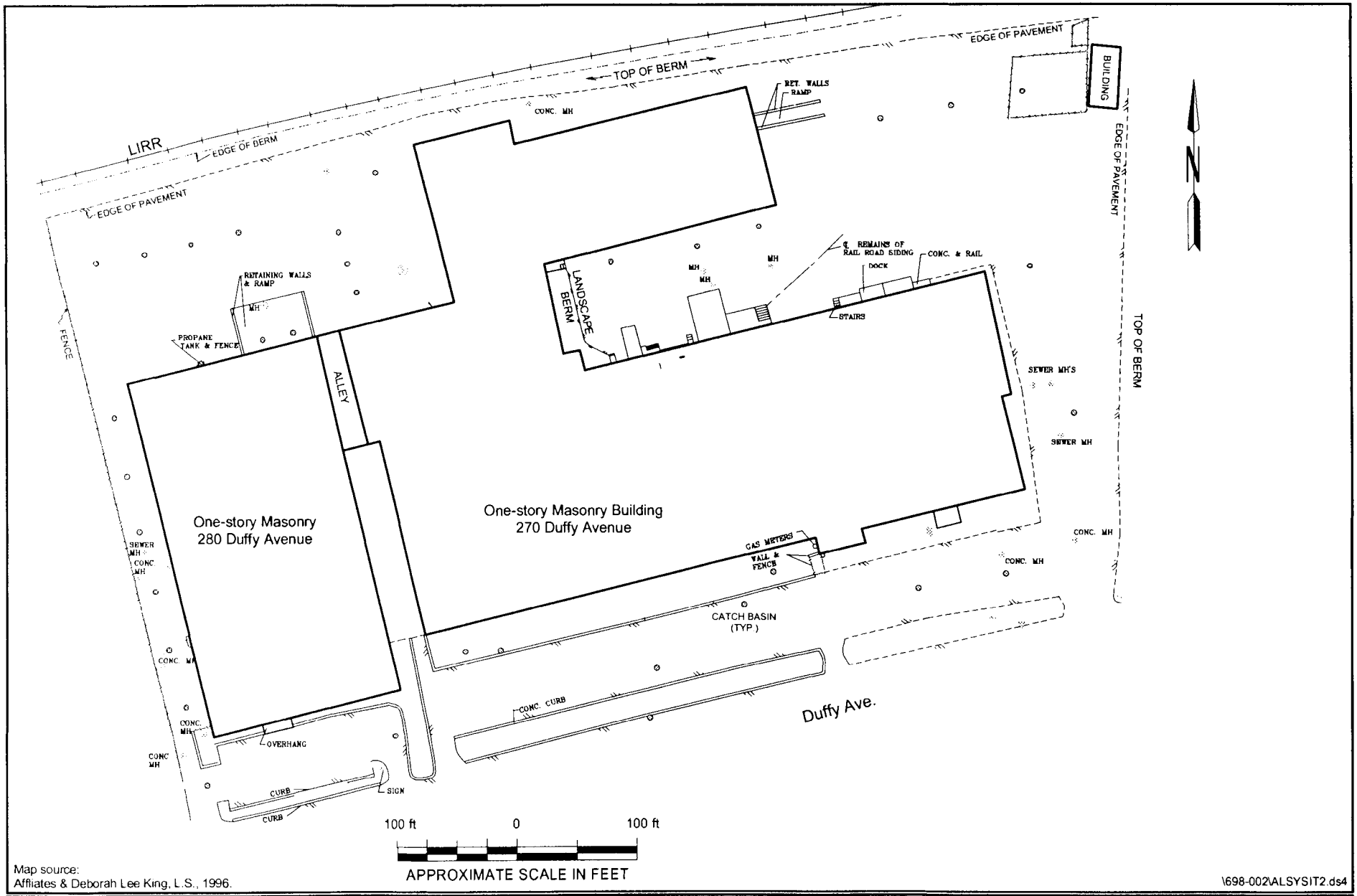
0 2000 ft

SCALE IN FEET

Map source: USGS 7.5-minute series quadrangle, Hicksville, NY, 1967, photorevised 1979.

LMS Lawler, Matusky & Skelly Engineers LLP One Blue Hill Plaza • Pearl River, New York 10965 ENVIRONMENTAL SCIENCE & ENGINEERING CONSULTANTS	**Site Location** **Alsy Manufacturing - Oyster Bay, New York**	**Figure 1-1**



Map source:
Affiliates & Deborah Lee King, L.S., 1996.

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LMS Lawler, Matusky & Skelly Engineers LLP One Blue Hill Plaza • Pearl River, New York 10965 ENVIRONMENTAL SCIENCE & ENGINEERING CONSULTANTS	**Site Sketch** **Alsy Manufacturing - Oyster Bay, New York**	**Figure 1-2**

Surrey Corporation entered into an administrative order on consent with NYSDEC in 1989, which required that a Phase II investigation be conducted at the Site. Before the Phase II investigation could be implemented, NYSDEC reevaluated the Site and reclassified it as Class 2. A Class 2 designation indicates that the site poses a significant threat to public health or the environment. Based on this reclassification, a remedial investigation/feasibility study (RI/FS) was conducted at the Site instead of a Phase II investigation.

On 28 March 1995 Surrey Company entered into a new administrative order on consent with NYSDEC and retained Lawler, Matusky & Skelly Engineers LLP (LMS) to perform the RI/FS. The workscope for the RI/FS includes defining the nature and extent of contamination, evaluating potential remedial alternatives for cleanup of the site, development of remedial action alternatives, and preparation of a conceptual design of the preferred remedy. The RI workplan outlining the specific investigation procedures was approved by NYSDEC and notice to proceed was given on 22 May 1996. This report presents the findings of the RI conducted at the Site.

A ground-penetrating radar (GPR) survey was conducted prior to the start of RI field activities. The GPR survey was intended to identify subsurface discharge locations and aid in the placement of sampling locations. Any suspect areas were outlined on the ground surface with white paint dots, and sampling points were subsequently located within suspect areas. A surveyed Site base map was prepared by a licensed land surveyor. The base map was prepared prior to site sampling activities to allow for correct and relative placement of sampling points and provide elevations of the overall Site and individual monitoring wells.

The intrusive field investigation activities of the RI were conducted in two phases. The first phase consisted of the installation and sampling of soil, soil gas, and groundwater probes; the second phase involved the installation and sampling of monitoring wells, sampling of the existing soil berm along the northern border of the Site, and one-time indoor air monitoring in the vicinity of the former vapor degreasers.

A total of 45 probes were installed throughout the Site to evaluate Site background levels of contamination and concentrations at the reported disposal areas. Soil, soil gas, and groundwater samples were collected from select probes in order to characterize and delineate relative areas of on-site contamination.

Ten perimeter probes were installed along the edges of the property to identify, with relation to sampling depth, the vertical extent of contaminants moving onto or leaving the Site. Both soil gas and groundwater samples were collected from discrete intervals at each point. Soil gas samples were submitted for VOC analysis. Groundwater samples were submitted for VOCs,

filtered and unfiltered metals screening, as well as confirmatory analyses of target compound list (TCL) VOCs and filtered and unfiltered target analyte list (TAL) metals.

Five angled probes were installed throughout the Site to collect samples from beneath areas suspected of leaching contaminants. The locations of the former vapor degreasers, paint shops, plating tanks, and solvent storage areas were sampled. Soil gas samples were collected from two discrete intervals above the water table and submitted for VOC analysis.

A total of 27 soil and shallow groundwater probes were installed around potential source or discharge locations, including catch basins. Soils/sediments from seven catch basins were sampled directly, and six probes were installed immediately adjacent to (downgradient of) the catch basins. Soil samples were collected from the catch basins, and soil and groundwater samples were collected from discrete intervals at each probe installed outside the catch basins. The remaining probes were installed in areas of concern identified during the GPR survey and areas where historical information indicated that discharges may have occurred; soil and groundwater samples were collected from discrete intervals at each point. An additional three deep probes were installed throughout the Site, to further characterize the extent of on-site contamination. Soil samples were collected from discrete intervals at each point. Groundwater samples were collected in 10-ft intervals up to 40 ft below the surface of the water table. All soil samples were submitted for VOC and metals screening. All groundwater samples were submitted for VOC and filtered and unfiltered metals screening. Select soil samples were submitted for TCL VOCs, and TAL and toxicity characteristic leaching procedure (TCLP) metals analyses, select groundwater samples were submitted for TCL VOCs and filtered and unfiltered TAL metals analyses.

A total of five new monitoring wells were installed throughout the Site. These wells plus the three existing wells remaining from previous investigations were sampled as part of the RI. Groundwater samples collected from the monitoring wells were submitted for TCL VOCs and filtered and unfiltered TAL metals analyses.

A total of five composite soil samples were collected from the berm along the northern border of the Site. The sample locations were selected by LMS and approved by the NYSDEC representative. Soil samples were submitted for VOC and metals screening. Select samples were submitted for TCL VOCs and TCLP metals analyses.

A real-time indoor air monitoring event was conducted in the building where the vapor degreasers were believed to have been located. Compound-specific, colorimetric gas detector tubes for 1,1,1 trichloroethane and trichloroethylene were used during the air monitoring event.

Air samples were collected in several background locations within the building, as well as in a storeroom where the vapor degreasers were reportedly filled in. No detectable concentrations of suspect compounds were detected in the air samples collected within the building.

CHAPTER 2

INTRODUCTION AND BACKGROUND

2.1 SITE LOCATION AND DESCRIPTION

The Site is designated as Class 2 (No. 1-30-027) on the New York State Registry of Inactive Hazardous Waste Disposal Sites. It consists of approximately 4 acres of land, with two one-story buildings faced with stucco and brick (Figure 1-1). The Site is 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 other active and vacant industrial or commercial operations (Figure 1-2). On-site vegetation is limited to the berms along the Long Island Railroad and the eastern property line, a narrow landscaped strip behind 270 Duffy Avenue, a landscaped strip in front of the buildings at 270 and 280 Duffy Avenue, and a narrow strip of grass and mature trees along Duffy Avenue. The remaining portion of the Site is paved. The building at 270 Duffy Avenue is currently occupied by several commercial operations, and the building at 280 Duffy Avenue is occupied by a wholesale shoe store.

2.2 SITE BACKGROUND

2.2.1 Site History

Alsy Manufacturing, Inc. ("Alsy"), operated at the Site from 1975 until 31 March 1991 producing and selling electric lamps and lamp shades (NYSDEC Order on Consent, Site No. 1-30-027, Index No. WI-0579-92-01). Alsy's manufacturing processes included antiquing and brass plating (NYSDEC Order on Consent WI-0579-92-01). Metalab, a laboratory furniture manufacturer, occupied the Site before Alsy (EA Science and Technology, Phase I Investigation, Alsy Manufacturing, 1987). The Site was owned by Balatem Corporation until 1985 when the Site was purchased by Surrey Corporation. Surrey Corporation assumed Balatem Corporation's lease with Alsy, the sole tenant. The Surrey Company still retains ownership of the property.

A review of Alsy's records indicates that the wastes generated and stored at the Site during manufacturing operations included paint strippers and thinners generated in the cleaning of painting equipment; 1,1,1-trichloroethane from vapor degreasers; and wastewater treatment sludge containing cyanide, copper, and zinc (EA Phase I Investigation). A licensed industrial waste scavenger collected these wastes for off-site disposal (Fred C. Hart Associates, Inc., Phase II Work Plan, 1990). A SPDES permit issued to Alsy in 1977 authorized discharge on-

site at two locations. Sanitary wastes were permitted to be discharged at one point, and industrial waste waters containing copper, nickel, zinc, total nitrogen, cyanide, and chlorine within specified concentrations were to be discharged from the other point (Hart Phase II).

NYSDEC and NCDOH conducted investigations at the Site between 1977 and 1983 in response to alleged permit violations (Hart Phase II). Samples gathered during these inspections indicated concentrations of metals in excess of permitted levels and the presence of methylene chloride, chloroform, trichloroethane, toluene, xylene, and trichloroethylene (Hart Phase II). In addition, the results of self-monitoring conducted by Alsy in 1977-78 and 1980-81 showed concentrations of copper, cyanide, nickel, total nitrogen, and zinc in excess of permit levels (Hart Phase II). Samples collected by NCDOH were taken from a discharge trough, collection trench, effluent pipe, and various settling tanks within the building adjacent to the plating area (Hart Phase II). Industrial discharge exceedances recorded by NCDOH are summarized in Table 2-1, and exceedances based on Alsy's monitoring data are summarized in Table 2-2 (Tables from Hart Phase II).

A joint inspection by NCDOH and NYSDEC in February 1984 identified four apparently unpermitted industrial waste water discharge points, as well as three industrial leach pools and two trenches, behind the buildings (Figure 2-1)(Hart Phase II). Between August 1984 and April 1988 soil and groundwater samples were collected by NYSDEC, NCDOH, EPA, and consultants employed by either Balatem Corporation or Alsy, including Soil Mechanics Drilling Corporation, H2M Corporation, and Roux Associates, Inc. (Hart Phase II). The investigations conducted by Soil Mechanics Drilling Corporation and H2M Corporation confirmed the existence of five additional leach pools and three drywell catch basins (Hart Phase II). Sampling in these areas indicated considerable metal and VOC contamination consistent with previous investigations. (A more complete description of previous investigations can be found in Chapter II, section c, of the Citizen Participation Plan prepared by LMS, March 1996.)

In 1986, Alsy entered into an administrative order on consent with NYSDEC in settlement of alleged SPDES permit violations. NYSDEC commissioned EA Science and Technology to conduct a Phase I site assessment, and in June 1987 a Phase I report was issued. Based on the Phase I report, NYSDEC classified the Site as a Class 2a Site on the Registry of Inactive Hazardous Waste Disposal Sites, an intermediate classification signifying that hazardous waste disposal is believed to have taken place, but further investigation is required to confirm whether conditions present a significant threat to public health or the environment.

In 1989 Surrey Corporation entered into an administrative order on consent with NYSDEC pursuant to which it was to conduct a Phase II investigation of the Site. Surrey Corporation

TABLE 2-1 *

INDUSTRIAL DISCHARGE LIMIT VIOLATIONS
NCDOH SAMPLES

Parameter	Permit Limit (mg/L) [1]	Reported Discharge (mg/L)	Date/Period of Violation	Location
pH	6.0-8.5	4.3	10/12/77	Discharge Trough
Copper	0.4	1.42	10/12/77	Discharge Trough
Zinc	0.6	5.5	10/12/77	Discharge Trough
pH	6.0-8.5	4.6	1/11/78	Effluent Pipe
Copper	0.4	14.7	1/11/78	Effluent Pipe
Nickel	2.0	12.7	1/11/78	Effluent Pipe
Zinc	0.6	2.2	1/11/78	Effluent Pipe
Trichloroethylene [2,3]	0.050 [4]	0.42	4/26/78	Discharge Trough
Copper	0.4	5.5	6/29/78	Settling Tank #3
Nickel	2.0	5.8	6/29/78	Settling Tank #3
Zinc	0.6	1.3	6/29/78	Settling Tank #3
Copper	0.4	0.8	8/8/78	Settling Tank #1
Nickel	2.0	3.55	8/8/78	Settling Tank #1
Copper	0.4	18	12/4/79	Discharge Trough
Nickel	2.0	2.4	12/4/79	Discharge Trough
Zinc	0.6	4	12/4/79	Discharge Trough
Trichloroethylene [2,3]	0.050 [4]	0.145	8/19/80	Discharge Trough
Chloroform [2]		0.107	3/24/81	Discharge Trough
Trichloroethylene [2,3]	0.050 [4]	0.179	3/24/81	Discharge Trough
pH	6.0-8.5	4.3	11/17/83	Collection Trench
Copper	0.4	3.05	11/17/83	Collection Trench
Chloroform [2]		0.009	11/17/83	Collection Trench
Methylene Chloride [2]		0.063	11/17/83	Collection Trench
1,1,1-Trichloroethane [2]		0.03	11/17/83	Collection Trench
Total Xylenes [2]		0.01	11/17/83	Collection Trench

* - From Fred C. Hart Associates, Inc., Site Investigation Work Plan, Alsy Manufacturing Site No. 130027, January 25, 1990 (Table 2--1).
[1] - pH in pH units.
[2] - Not allowed at any levels by permit.
[3] - Sample collected by NYSDEC.
[4] - State Health Department Guidelines.

TABLE 2-2 *

INDUSTRIAL DISCHARGE LIMIT VIOLATIONS
ALSY MANUFACTURING

Parameter	Permit Limit (mg/L) [1]	Reported Discharge (mg/L)	Date/Period of Violation
Copper	0.4	7.2	8/01/77-8/31/77
Nickel	2.0	4.973	8/01/77-8/31/77
Nitrogen (total)	10.0	50.2	8/01/77-8/31/77
Zinc	0.6	2.66	8/01/77-8/31/77
pH	6.0-8.5	9.56	9/01/77-9/30/77
Copper	0.4	7.02	9/01/77-9/30/77
Cyanide	0.4	0.54	9/01/77-9/30/77
Zinc	0.6	4.82	9/01/77-9/30/77
pH	6.0-8.5	10.18	10/01/77-10/31/77
Copper	0.4	3.62	10/01/77-10/31/77
Zinc	0.6	0.968	10/01/77-10/31/77
pH	6.0-8.5	11.44	11/01/77-11/30/77
Copper	0.4	2.242	11/01/77-11/30/77
Zinc	0.6	1.532	11/01/77-11/30/77
Copper	0.4	3.523	12/01/77-12/31/77
Zinc	0.6	1.587, 5.092	12/01/77-12/31/77
Copper	0.4	1.158	3/13/78
Cyanide	0.4	0.77	3/13/78
Zinc	0.6	0.827	3/13/78
pH	6.0-8.5	4.02	6/13/78
Nitrogen (total)	10.0	10.7	6/13/78
Copper	0.4	1.111	7/18/78
Nitrogen (total)	10.0	11.9	7/18/78

* - From Fred C. Hart Associates, Inc., Site Investigation Work Plan, Alsy Manufacturing Site No. 130027, January 25, 1990 (Table 2--1).
[1] - pH in pH units.

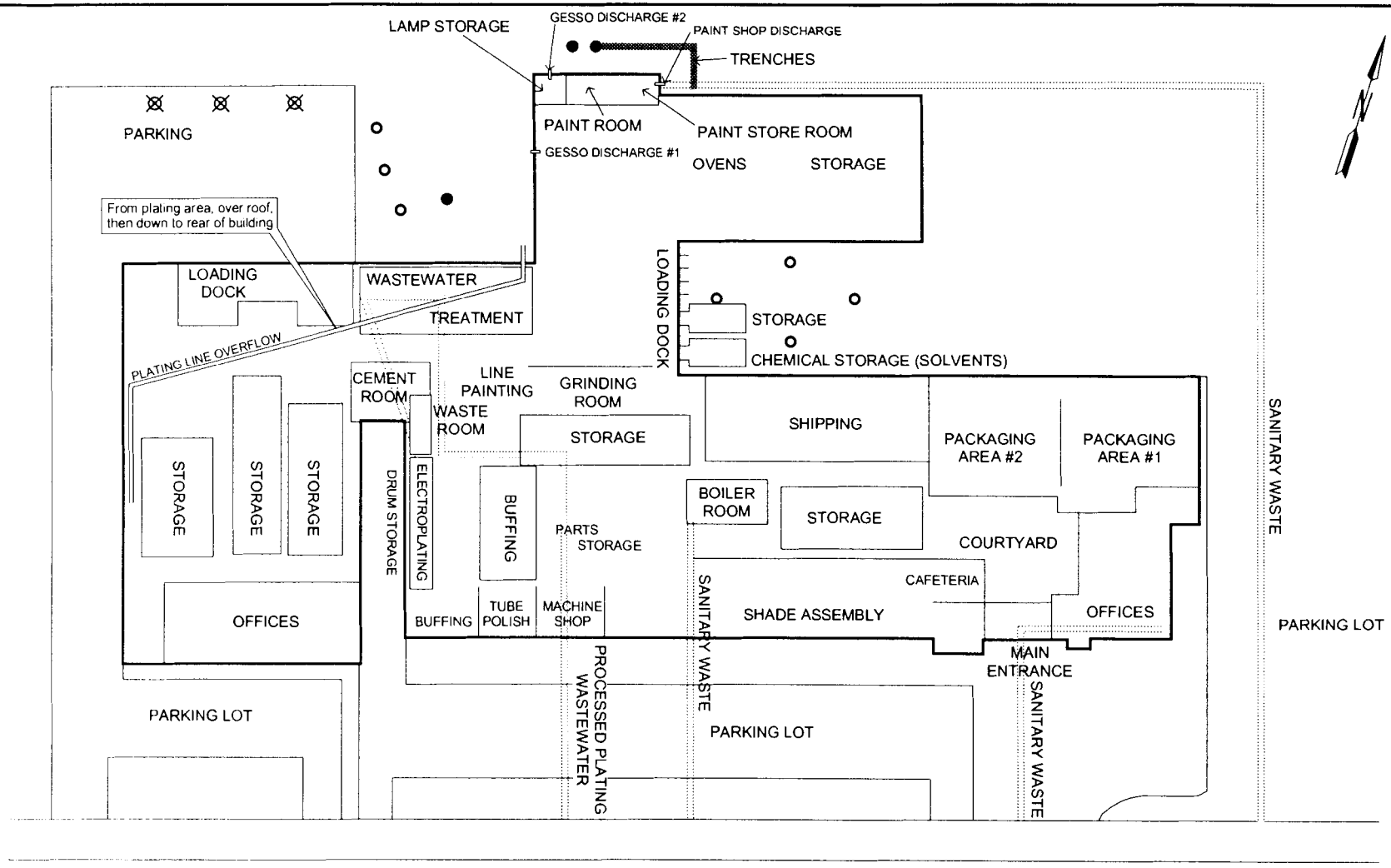
TABLE 2-2 *

INDUSTRIAL DISCHARGE LIMIT VIOLATIONS
ALSY MANUFACTURING

(CONTINUED)

Parameter	Permit Limit (mg/L) [1]	Reported Discharge (mg/L)	Date/Period of Violation
pH	6.0-8.5	9.38	11/04/80
Copper	0.4	4.159	11/04/80
Zinc	0.6	0.689	11/04/80
Copper	0.4	0.611	11/11/80
Cyanide	0.4	12.5	11/18/80
Nitrogen (total)	10.0	83.49	11/18/80
Nickel	2.0	6.596	11/18/80
Zinc	0.6	1.208	11/18/80
pH	6.0-8.5	12.75	11/25/80
Cyanide	0.4	1.2	11/25/80
Nitrogen (total)	10.0	12.47	11/25/80
pH	6.0-8.5	8.92	12/05/80
Nitrogen (total)	10.0	13.15	12/05/80
pH	6.0-8.5	9.42	12/09/80
Nitrogen (total)	10.0	35.12	12/09/80
pH	6.0-8.5	9.85	1/06/81
Copper	0.4	0.484	1/13/81
Nitrogen (total)	10.0	17.43	1/13/81
Copper	0.4	1.108	1/20/81
Nickel	2.0	2.391	1/20/81
Nitrogen (total)	10.0	14.19	1/20/81
Copper	0.4	7.387	1/27/81
Nickel	2.0	6.891	1/27/81
Nitrogen (total)	10.0	52.15	1/27/81
Zinc	0.6	1.552	1/27/81

* - From Fred C. Hart Associates, Inc., Site Investigation Work Plan, Alsy Manufacturing Site No. 130027, January 25, 1990 (Table 2--1).
[1] - pH in pH units.



Map source: Surrey Company and Surrey Corporation Plaintiff's Exhibit

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Result of Regulatory Agencies Inspections and Sampling

Alsy Manufacturing - Oyster Bay, New York

Figure 2-1

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retained Fred C. Hart Associates, Inc. (Hart) to conduct the Phase II; in 1990 Hart prepared a work plan for the investigation and it was submitted to NYSDEC for approval. Before the implementation of the Phase II investigation, NYSDEC reevaluated the data assembled for the Site and redesignated the Site as Class 2, a classification that signifies that a site does pose a threat to human health and environment. This reclassification meant that, rather than a Phase II, it would be necessary to conduct an RI/FS of the Site.

Surrey Corporation (the current owner) and Surrey Company (the former owner) entered into a new administrative order on consent with NYSDEC on 28 March 1995 and retained LMS to perform the RI/FS.

Since the 1987 Phase I site assessment, the buildings on-site have been renovated and refaced and the Site has been graded and paved. Several commercial enterprises currently occupy office space in the building at 270 Duffy Avenue, and a wholesale shoe business occupies the building at 280 Duffy Avenue.

2.2.2 Summary of Information and Relevant Reports

LMS has in its possession the following information, which it has reviewed and made use of in the conceptualization and performance of the RI:

- Sampling notes and logs from Environmental Management Limited, Parrat Wolff, Inc., Soil Mechanics Drilling Corp., Richard D. Galli, P.E., P.C., and Roux Associates, Inc.

- Boring and well logs, permits, and field notes indicating depths to groundwater over various periods of time

- Selections from certain depositions conducted during litigation relating to the Site in which possible discharge locations are discussed, and Site maps indicating discharge locations and arrangement of cesspools

- Photocopies of black and white photographs of the rear area of the Site prior to paving, hazardous waste disposal information, records from the files of NCDOH, Material Safety Data Sheets for Alsy's facility, and several NYSDEC letters relating to Alsy's facility

LMS has also reviewed the following relevant reports:

EA Science and Technology, June 1987, Engineering Investigations at Inactive Hazardous Waste Sites, Phase I Investigation, Alsy Manufacturing Site No. 130027. Performed for New York State Department of Environmental Conservation.

Roux Associates, Inc., February 1989, Soil and Groundwater Investigation, Alsy Corporation. Performed for Alsy Manufacturing, Inc.

Roux Associates, Inc., September 1989, Groundwater Monitoring Data Summary Report, Alsy Corporation, Hicksville, New York.

Richard. Galli, P.E., P.C., January 1990, Phase II Investigation, Magnusonic Devices, Inc., NYSDEC Site 130031. Performed for International Clinical Laboratories, Inc.

Fred C. Hart Associates, Inc., January 1990, Site Investigation Work Plan, Alsy Manufacturing Site No. 130027. Performed for Surrey Corporation.

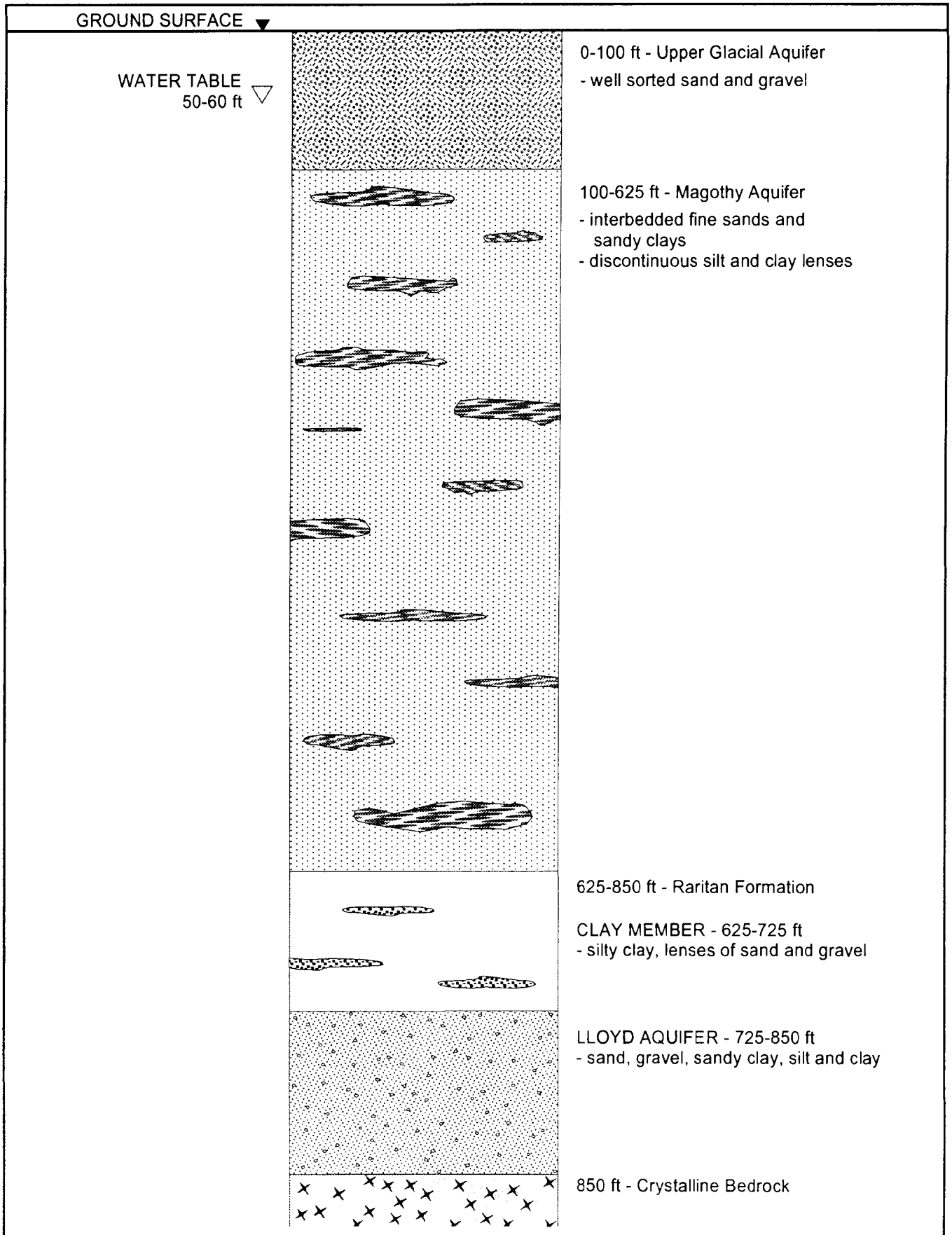
Environmental Management, LTD., April 1992, Chronology of Closure Activities by Alsy Manufacturing, Hicksville, New York, June 1990 to January 1991.

2.2.3 **Site Geology/Hydrogeology**

Long Island is composed of thick deposits of unconsolidated sediments of Pleistocene and Cretaceous ages overlying crystalline bedrock of the Precambrian Age. These sediments represent recurring intervals of deposition and erosion. The Cretaceous deposits are composed of continentally derived sediments and underlie Pleistocene glacial deposits. These unconsolidated deposits form the three major aquifers that constitute the principal water resources on Long Island: the Upper Glacial, Magothy, and Lloyd aquifers (Richard D. Galli Phase II Investigation 1990).

The Upper Glacial Aquifer (UGA) is Pleistocene in age and is composed of tills, outwash sand and gravels, and clays. The till deposits are associated with terminal moraines that exist north of the Site area. The outwash deposits are composed of fine to very coarse quartzose sand and pebble- to boulder-sized gravel and are associated with periods of glacial stagnation, when meltwater streams carried and deposited sands and gravels 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 Site is directly underlain by the UGA, which is approximately 100 ft in thickness in the Site vicinity (Figure 2-2) (EA Phase I Investigation). The UGA exhibits high horizontal hydraulic conductivity rates of 270 ft/day, with specific yields in wells averaging as much as 1500 gal/min (Richard D. Galli Phase II Investigation). All on-site soil probes and borings were advanced into the UGA. The composition of soils recovered during sampling activities



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Typical Cross Section in the Site Vicinity

Alsy Manufacturing - Oyster Bay, New York

Figure 2-2

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was consistent with published descriptions of the UGA. Boring logs can be found in Appendices A and B.

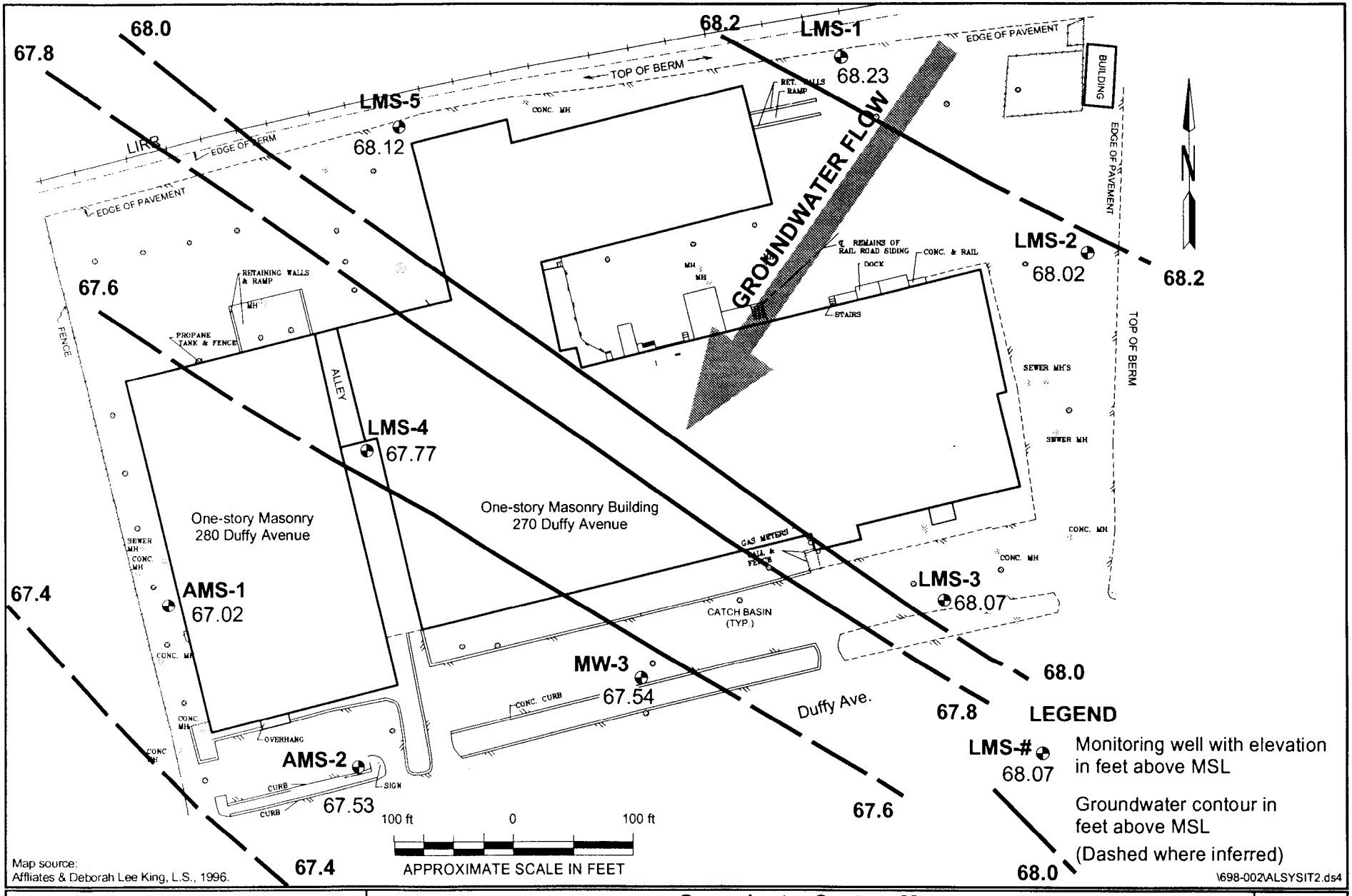
Groundwater elevations measured in all on-site wells during this investigation ranged from 61.10 to 63.50 ft below grade (67.82 to 68.02 ft above mean sea level [MSL]). The groundwater elevation data revealed that on-site groundwater flows north to south across the Site with a slight east-west flow component (Figure 2-3).

The Magothy Aquifer is Cretaceous in age and underlies the UGA. It 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, a basal zone of coarse sand and gravel approximately 100-200 ft thick is present. 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 average horizontal hydraulic conductivity of the Magothy is 50 ft/day.

The Raritan Formation is composed of a Clay member and the Lloyd sand member, both Cretaceous in age. The Clay member of the Raritan Formation is approximately 150 ft in thickness and is composed of clay, silty clay, and lenses of sand and gravel with common lignite and pyrite. The Clay member has a low vertical hydraulic conductivity of 10^{-3} ft/day and serves as the confining unit for the Lloyd Aquifer. The Lloyd sand member of the Raritan Formation comprises the Lloyd Aquifer; it is approximately 250 ft thick and is composed of discontinuous layers of sand, gravel, sandy clay, silt, and clay (EA Phase I Investigation). The Lloyd Aquifer lies unconformably on top of the bedrock surface and has an overall moderate horizontal hydraulic conductivity of approximately 40 ft/day (Richard D. Galli Phase II Investigation).

Bedrock is composed of relatively impermeable crystalline bedrock of Precambrian age and lies approximately 850 ft below the surface in the Site vicinity. The bedrock surface is considered to be the bottom hydrologic boundary of the Long Island Aquifer System (Richard D. Galli Phase II Investigation).

All three aquifers are hydraulically interconnected, with bedrock forming the lowermost boundary. The confining layers normally present between the UGA and the Magothy 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 (Richard D. Galli Phase II Investigation).



Map source:
Affiliates & Deborah Lee King, L.S., 1996.

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Groundwater Contour Map
September 1996
Alsy Manufacturing - Oyster Bay, New York

Figure 2-3

CHAPTER 3

FIELD INVESTIGATION PROCEDURES AND RESULTS

3.1 OBJECTIVES OF THE SAMPLING EFFORT

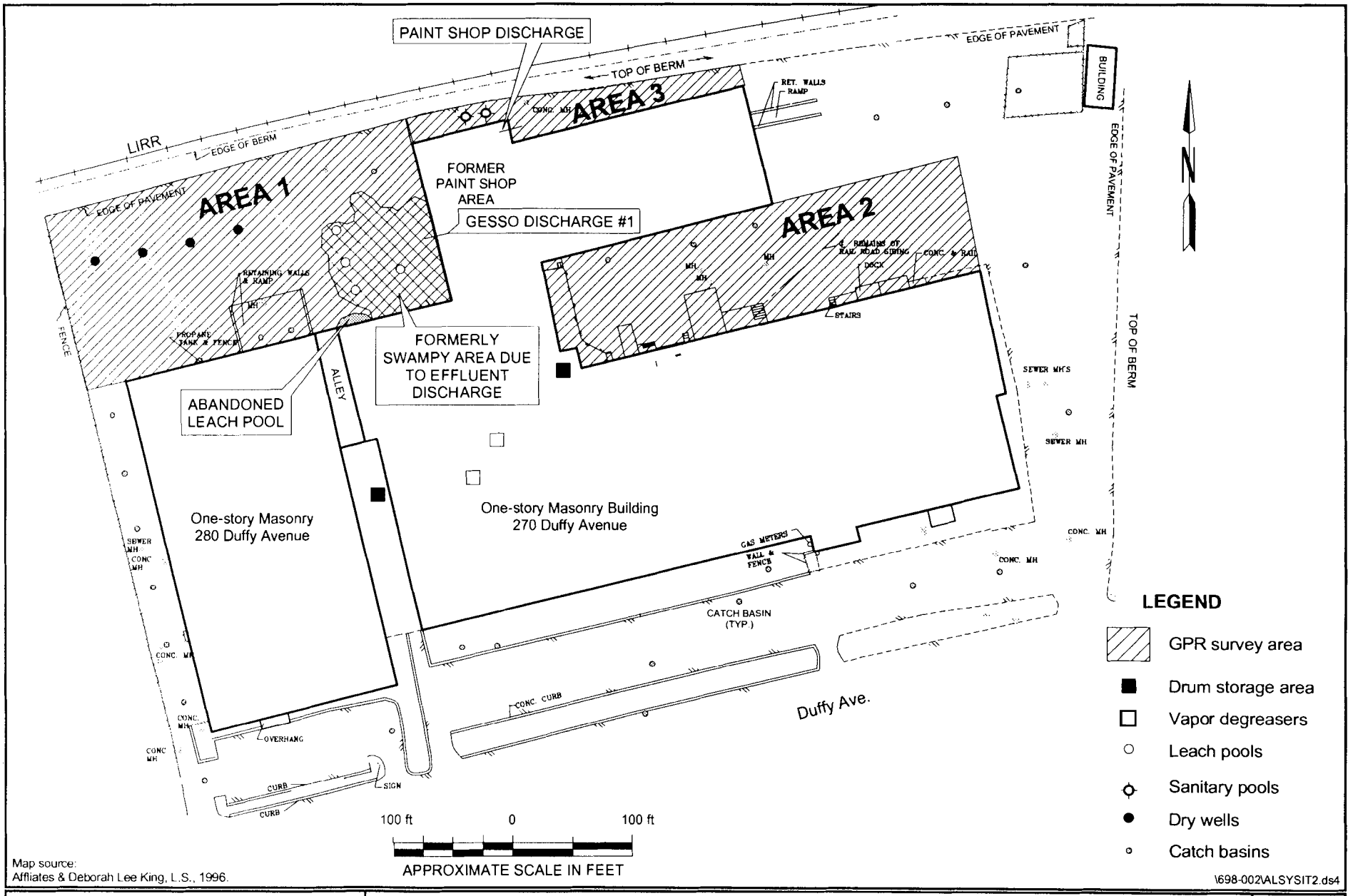
This chapter presents the field investigation procedures used and results obtained during the RI at the Site. All field procedures were conducted in accordance with the field activities plan (FAP) prepared by LMS and accepted by NYSDEC and the site-specific health and safety plan (HASP). The objectives of the RI conducted at the Alsy Site were to identify and catalog any existing areas of contamination; characterize conditions within the Site and at its borders with regard to subsurface geological conditions that affect contaminant plume migration; and locate areas on-site where contaminated soils still have the potential for contaminating groundwater. Field investigation procedures conducted at the Site consisted of the following:

- Ground-penetrating radar (GPR) survey
- Elevation survey
- Probe soil, soil gas, and groundwater sampling
- Monitoring well installation and sampling
- Berm soil sampling
- Indoor air quality monitoring in the suspected location of the former vapor degreasers

A more detailed account of field investigation procedures follows.

3.2 GROUND-PENETRATING RADAR SURVEY PROCEDURE

A GPR survey was conducted on-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. The GPR survey was performed in the rear parking lots and loading docks of 270 and 280 Duffy Avenue, where historical information indicated that surface discharge had occurred. The survey area was divided into three distinct sections (Figure 3-1). Each section was further divided into subsections to ease performance of the survey. Traverses were set up on a 5-ft grid, and a Subsurface Interface Radar (SIR) System-3 transducer was used to perform the survey. The SIR uses high frequency impulse radar to achieve a high-resolution profile of the subsurface (Appendix C). When anomalies were discovered, their locations were outlined



Map source:
Affiliates & Deborah Lee King, L.S., 1996.

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Ground Penetrating Radar (GPR) Survey Area and Historical Disposal Information

Alsy Manufacturing - Oyster Bay, New York

Figure 3-1

on the ground surface with white paint dots. The results of the GPR survey were used to determine the final locations of some of the probe points.

3.3 GROUND-PENETRATING RADAR SURVEY RESULTS

A brief summary of the results of the GPR survey follows, while a more detailed account of the survey can be found in Appendix C.

3.3.1 Area 1

Area 1 was located north of 270 and 280 Duffy Avenue in the rear parking lots and was divided into two sections. The total survey area measured approximately 320 ft east to west by 150 ft north to south (see Figure 3-1). The GPR survey of this area yielded good contrast between two horizons of subsurface materials at approximately 5 ft below grade. This contrast may be attributed to fill material overlying natural material. Anomalies found in Area 1 corresponded with surface evidence (asphalt patches) of recent excavation/asphalt repair activities. Other anomalies corresponded with leaching areas associated with catch basins located in the survey area.

3.3.2 Area 2

Area 2, located in the loading dock area behind 270 Duffy Avenue, was divided into two survey sections. The total survey area measured approximately 400 ft east to west by 100 ft north to south (see Figure 3-1). An anomaly was located in the southwestern section of the survey area and corresponded with a new sewer system that was reported to have been recently installed.

3.3.3 Area 3

Area 3 was located in an alleyway north of 270 Duffy Avenue (see Figure 3-1). This area was also divided into two survey areas, with the total survey area measuring approximately 280 ft east to west by 20 ft north to south. The anomalies found in Area 3 corresponded with surface evidence (asphalt patches) of recent excavation/asphalt repair activities. There was a distinct contrast between two horizons of subsurface materials at about 5 ft below grade. From the surface to 5 ft, the soil resembled disturbed or reworked material; below 5 ft the material was planar and appeared undisturbed. This contrast in subsurface materials may correspond to the railroad spur that was once located in this alley.

3.4 ELEVATION SURVEY

A licensed land surveyor prepared a Site survey and boundary map prior to the commencement of intrusive sampling events. The map included building footprints, fencing, roadways, and topographic contours in 1-ft intervals (Figure 3-2). Upon completion of the monitoring well installation, the locations and elevations of the newly installed and existing monitoring wells were established. Once the final map was prepared, all on-site sampling points were located.

3.4.1 Topography

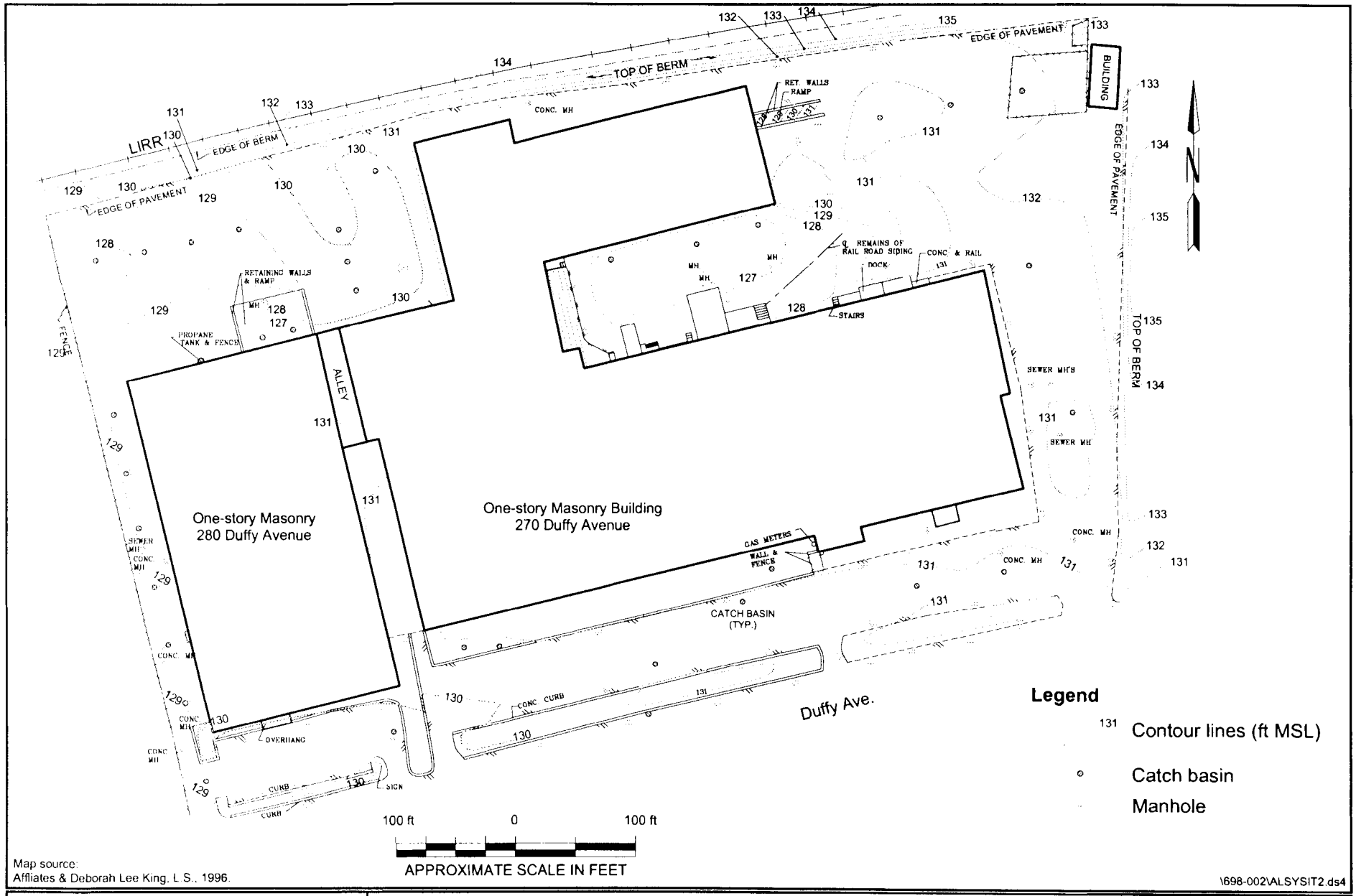
The Site is relatively level, with an overall gentle slope toward the west and southwest. The topography is the result of recent grading and paving. The Site is graded such that all drainage is directed toward catch basins located throughout the property. LMS personnel were present on-site during heavy rain events and noted that the area is well drained, with the majority of precipitation draining to catch basins. No ponding of water was noted, other than where catch basins had reached their maximum holding capacity; these areas were soon drained through the subsurface. Depressions on-site are typically found around catch basins where the fill material has settled. Several loading docks and one large loading area are present on-site. The elevation change from Site grade to the bottom of these loading docks typically ranges from 3 ft to 4 ft. Elevations across the Site range from approximately 127 to 135 ft above MSL. The ground surface rises to a soil berm located along the northern and eastern borders of the Site, then slopes down toward the Long Island Railroad on the north and an industrial site on the east. A relatively level residential area exists 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 C&D reclaimer to the north.

3.5 PROBE SOIL, SOIL GAS, AND GROUNDWATER SAMPLING PROCEDURES

Probe sampling commenced on 30 May 1996 and was completed 24 July 1996. A total of 45 probe points (including those located within catch basins) were installed on-site (Figure 3-3). The purpose of the subsurface investigation was to determine the extent and nature of contamination at the Site and in on-site disposal areas. Soil, soil gas, and groundwater samples were collected from each probe point in accordance with the procedures outlined below.

3.5.1 Soil Probes

All probe points were installed using a truck-mounted drill rig utilizing a hydraulic-piston, direct-push installation method. Soil sampling was accomplished using a 4-ft long, 2.0-in.



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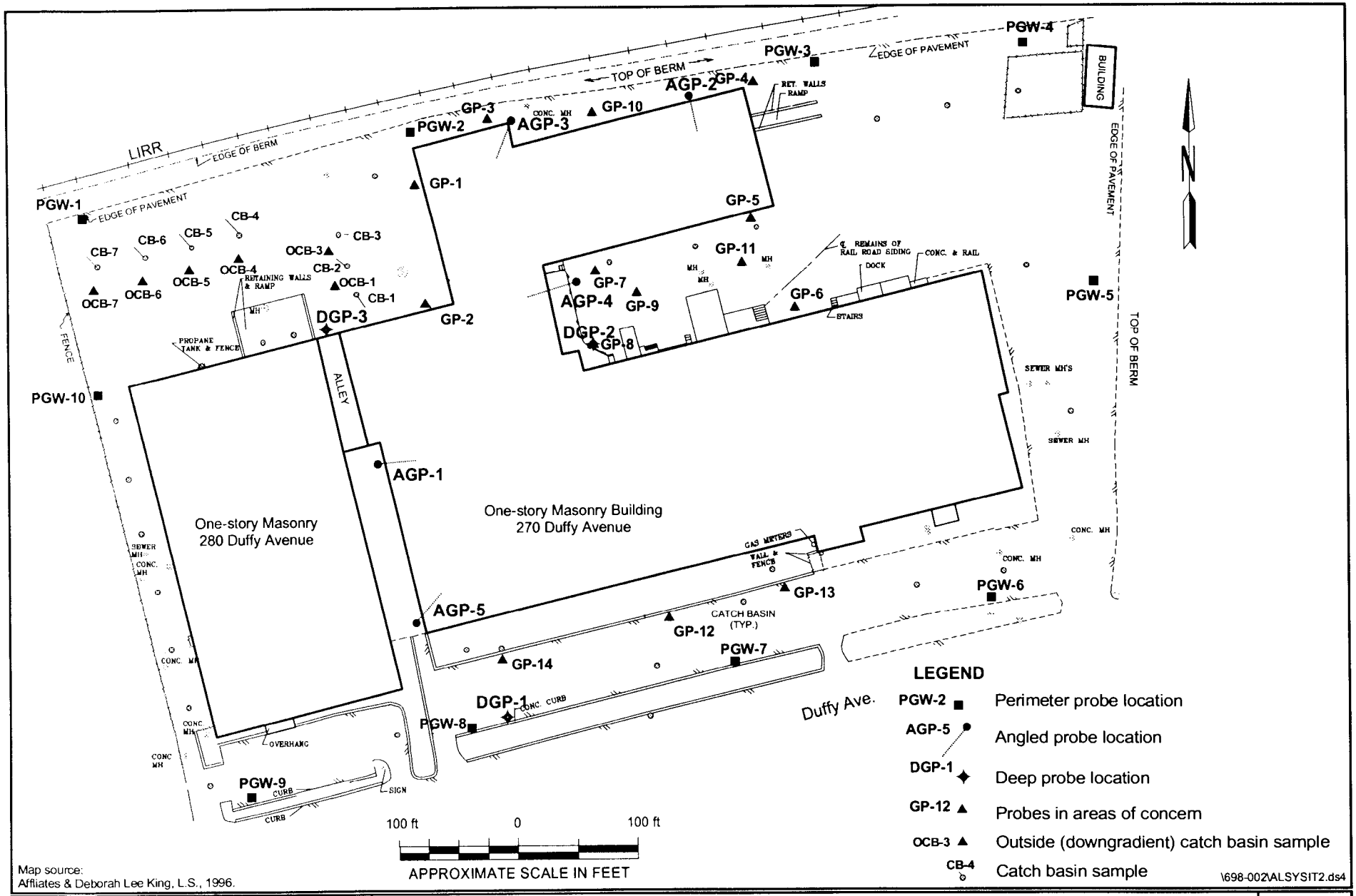
Topographic Site Map

Alsy Manufacturing - Oyster Bay, New York

Figure 3-2



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Probe Point Locations

Alsy Manufacturing - Oyster Bay, New York

Figure 3-3

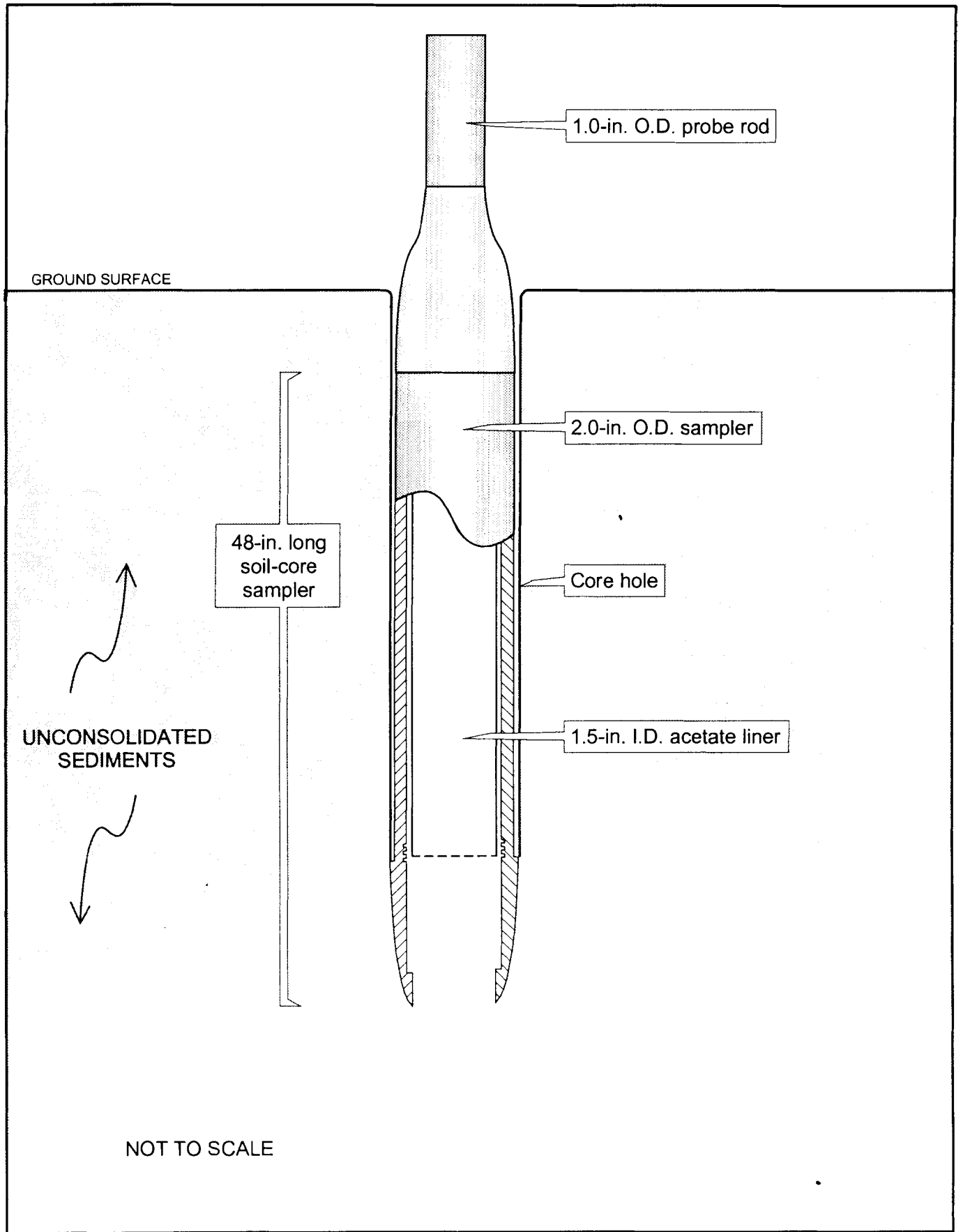
outside diameter (O.D.) core sampler, or a 2-ft long, 1.5-in. O.D. large diameter core sampler (Figure 3-4). The core sampler was pushed or hammered to the desired sampling depth via the hydraulic system. Soil samples were recovered in dedicated acetate liners that were placed inside the samplers prior to use. Upon removal from the sampler, both ends of the liner were capped and the soil sample was scanned with an HNU photoionization detector (PID) and described on a probe log. The following were noted on the probe log: sample depth, soil descriptions, moisture content, color, density, evidence of contamination (odor, sheen, PID readings), and location. Probe logs are included in Appendix A. Soil samples were transferred to laboratory-cleaned glass jars and labeled with the appropriate sample location, sample interval, date, time, sampler, and analyses required. The samples were logged on the appropriate chain-of-custody form and either hand delivered or delivered via courier to the analytical laboratory.

3.5.2 **Soil Gas Probes**

At selected probes, soil gas samples were collected via a soil gas extraction system through the probe rods. Probe rods were driven to the desired sampling depth and the expendable drive point was disengaged from the leading rod by pulling the rods up a few inches, thus creating direct contact between the leading rod and the soil. A dedicated length of polyethylene tubing was then lowered into the rods and connected to the leading rod with a stainless steel adapter (Figure 3-5). O-ring connections provided for a vacuum-tight seal, assuring that the sample was collected from the bottom of the hole. The top of the polyethylene tubing was connected to a vacuum pump capable of withdrawing a controlled amount of soil gas. One tube volume of soil gas was purged prior to sampling. Soil gas samples were collected in Tedlar bags. Sample collection time, depth, and location were noted on the Tedlar bags. The samples were logged on the appropriate chain-of-custody form and either hand delivered or delivered via courier to the analytical laboratory.

3.5.3 **Groundwater Probes**

At selected probe locations, groundwater samples were collected by attaching a groundwater screen sampler to the probe rods (Figure 3-6). The screen sampler is 4 ft in length and is constructed of a tightly wound coil of stainless steel enclosed in a stainless steel sheath. The groundwater screen sampler enables samples to be collected from discrete intervals. When the screen sampler reached the desired sampling depth, the probe rods and screen sheath were raised 4 ft, exposing the screen. Once the screen was in place, a dedicated length of polyethylene tubing with a bottom check valve was inserted into the probe rods to the screened interval. The tubing was then oscillated up and down and water was forced into the tube as the



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Soil Core Sampler Cross Section

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Figure 3-4

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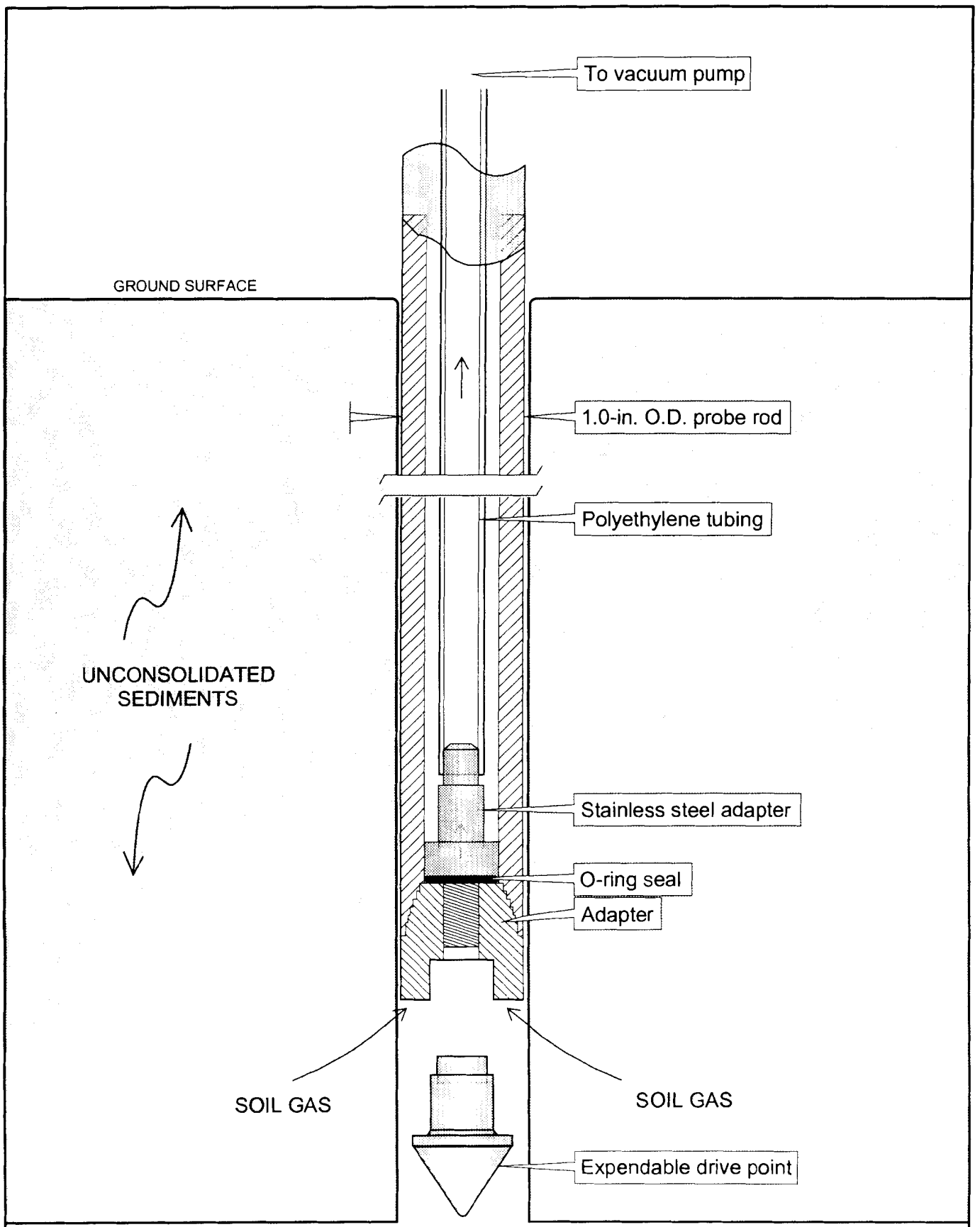

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Probe Soil Gas Extraction System

Alsy Manufacturing - Oyster Bay, New York

Figure 3-5

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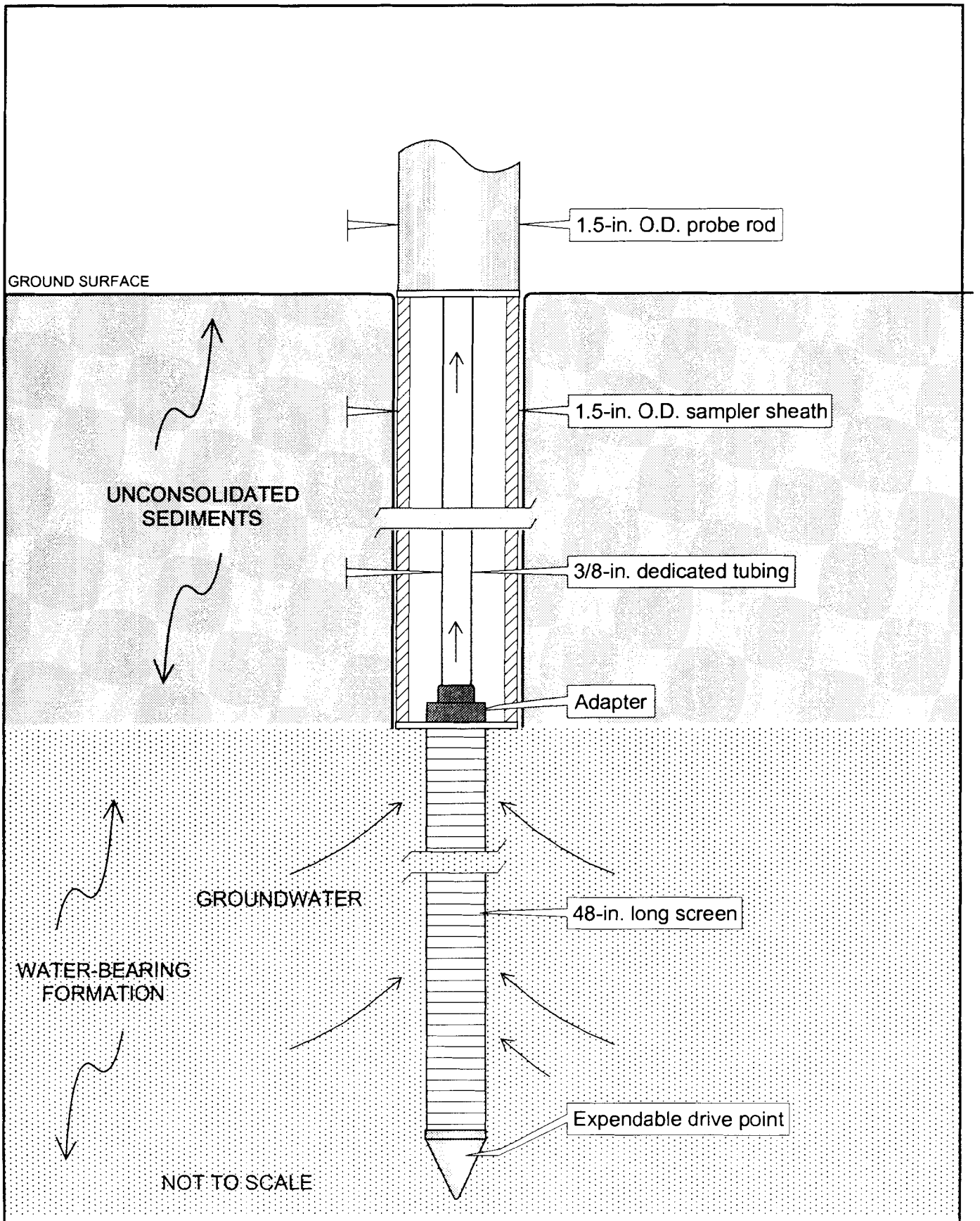

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Probe Unit Groundwater Sampler Cross Section

Alsy Manufacturing - Oyster Bay, New York

Figure 3-6

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check ball was repeatedly raised and lowered. Groundwater samples were transferred from the tubing directly into laboratory-cleaned bottles and labeled with the appropriate sample location, interval, date, time, sampler, and analyses required. The samples were logged on the appropriate chain-of-custody form and either hand delivered or delivered via courier to the analytical laboratory.

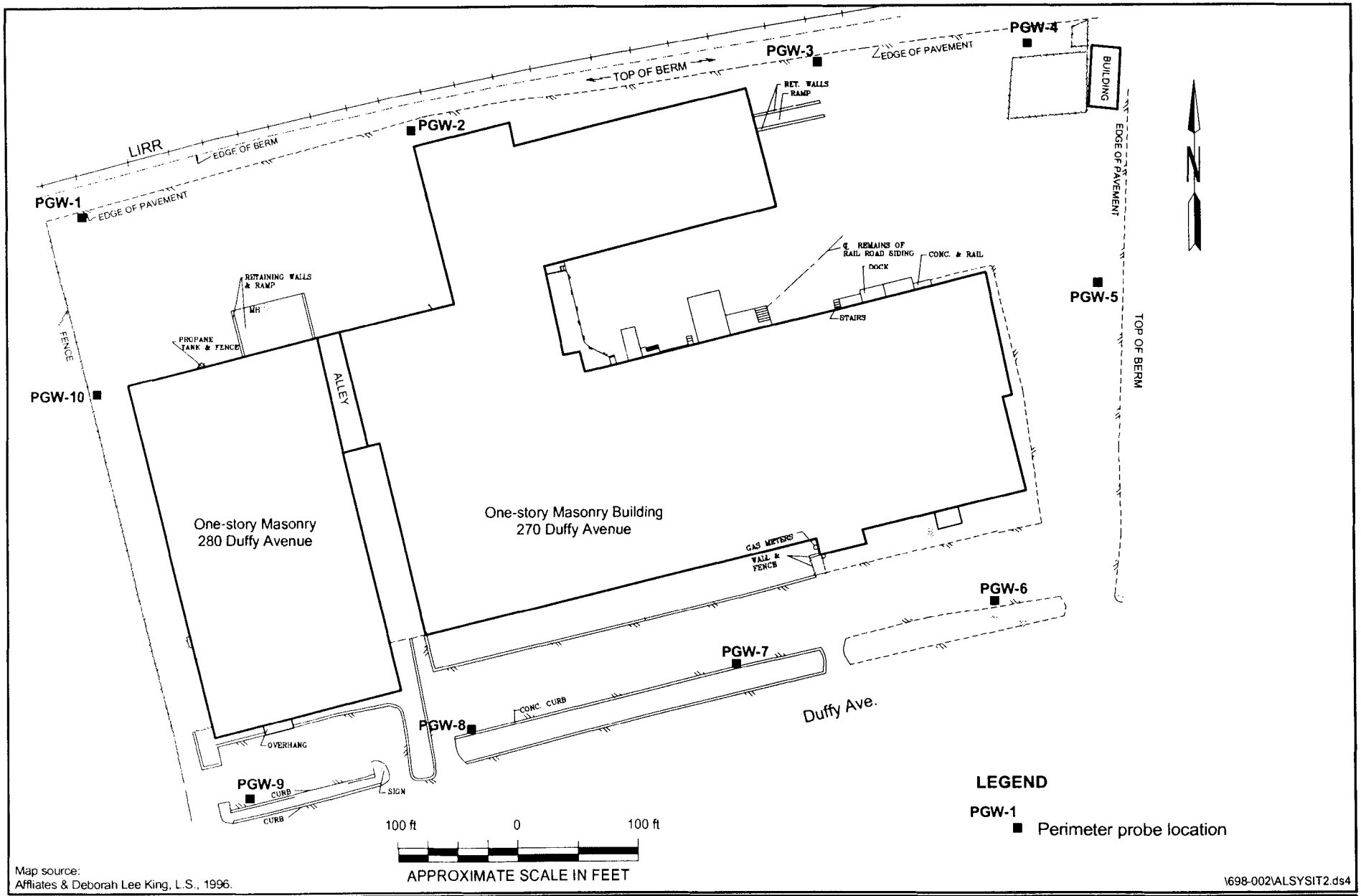
3.6 PROBE SOIL, SOIL GAS AND GROUNDWATER SAMPLING RESULTS

A total of 45 probe points were installed throughout the Site during the RI. Soil, soil gas and groundwater samples were collected from discrete intervals at each point. Both filtered and unfiltered groundwater samples were collected. Due to the excessive turbidity of groundwater samples collected from probe points, only filtered groundwater sample results were compared to applicable criteria.

3.6.1 Subtask 1: Vertical and Lateral Plume Identification at Property Boundaries

A total of 10 perimeter probe points were installed along the up-, down-, and sidegradient boundaries of the property in an effort to identify the vertical and lateral extent of any contaminant plumes entering or leaving the Site (Figure 3-7). Soil gas samples were collected from two discrete intervals above the water table (20 total) and analyzed for VOCs. The soil gas samples were labeled with the prefix "PSG" (perimeter soil gas) with the corresponding sample location number as the suffix, followed by the sample depth in parentheses (e.g., PSG-5 (2-4)). Groundwater samples were collected at each probe point from either three or four discrete depth intervals, from the approximate water table surface to about 50 ft below water table elevation. Groundwater samples were labeled with the prefix "PGW" (perimeter groundwater) with the corresponding sample location number as the suffix, followed by the sample depth in parentheses (e.g., PGW-1 (66-70)). Groundwater samples were submitted for VOC and selected filtered and unfiltered metals screening, as well as confirmatory analyses consisting of TCL VOCs and filtered and unfiltered TAL metals and cyanide. The analyses results for the soil gas and groundwater samples are summarized below.

3.6.1.1 ***Perimeter Probe Soil Gas Results.*** Ten soil gas points were installed, sampled at discrete depth intervals above the water table, and analyzed for VOCs by EPA SW-846 Methods 8010/8020. Data are presented in units of micrograms per liter of air (μg/l) in Table 3-1. Methylene chloride was detected in three of the samples collected for analyses; however, methylene chloride was also detected in an associated blank sample. Methylene chloride is a common laboratory contaminant and its presence in the soil gas samples is not considered



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Perimeter Probe Locations

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Figure 3-7

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.

representative of Site conditions. No other VOCs were detected in samples collected for analyses.

3.6.1.2 ***Perimeter Probe Groundwater Sampling Results.*** **VOCs.** Thirty-seven groundwater samples were collected and analyzed for VOCs: 31 samples were analyzed by EPA SW-846 Methods 8010/8020, and six samples were collected in duplicate (confirmatory samples) and analyzed for TCL VOCs by NYSDEC Analytical Services Protocol (ASP) 91-1. Analytical results were compared to current NYSDOH Ambient Water Quality Class GA Standards and Guidance Values (October 1993) and are presented in Table 3-2.

The compound 1,1-dichloroethane (1,1-DCA) was detected in six of the samples submitted for analyses, ranging in concentration from 1.0 μg/l in sample PGW-8 (86-90) to an estimated concentration (below quantitation limit) of 2.0 μg/l in the confirmatory sample PGW-2 (66-70). Detected concentrations of 1,1-DCA were below the Class GA standard of 5.0 μg/l.

The compound 1,1,1-trichloroethane (1,1,1-TCA) was detected in six of the samples submitted for analyses ranging in concentration from 1.2 μg/l in sample PGW-3 (66-70) to 12 μg/l in PGW-5 (76-80). Concentrations of 1,1,1-TCA in samples PGW-5 (76-80) and PGW-5 (86-90) at 12 and 11 μg/l, respectively, were above the Class GA standard of 5.0 μg/l.

Trichloroethylene was detected in two samples submitted for analyses: PGW-4 (96-100) and PGW-8 (76-80) at 4.4 and 1.1 μg/l, respectively. Concentrations were below the Class GA standard for TCE of 5.0 μg/l.

Tetrachloroethylene was detected in four of the samples submitted for analyses, ranging in concentration from 1.8 μg/l in PGW-3 (66-70) to 8.4 μg/l in PGW-6 (86-90). Concentrations in samples PGW-6 (66-70) and PGW-6 (86-90) at 7.2 and 8.4 μg/l, respectively, were above the Class GA standard of 5.0 μg/l.

Benzene was detected in only one sample submitted for analyses: PGW-3 (86-90) at an estimated concentration of 1.0 μg/l, which was above the Class GA standard of 0.7 μg/l.

Ethylbenzene was detected in only one sample submitted for analyses: PGW-3 (86-90) at an estimated concentration of 1.0 μg/l, which was below the Class GA standard of 5.0 μg/l.

Toluene was detected in two samples submitted for analyses: PGW-3 (86-90) and PGW-10 (76-80) at estimated concentrations of 3.0 and 0.8 μg/l, respectively, which were below the Class GA standard of 5.0 μg/l.

TABLE 3-2 (Page 1 of 3)

PERIMETER PROBE GROUNDWATER SAMPLES
VOLATILES DATA SUMMARY
Alsy Manufacturing

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	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.

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-8 (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.

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.

Total xylenes were detected in two samples submitted for analyses: PGW-3 (86-90) and PGW-10 (76-80) at estimated concentrations of 1.0 and 0.7 μg/l, respectively, which were below the Class GA standard of 5.0 μg/l.

Metals. Sixty groundwater samples (both filtered and unfiltered) were collected for analyses. Analyses were conducted primarily for the following seven metals: arsenic, cadmium, chromium, copper, lead, nickel, and zinc by EPA SW-846 Method 6010. Six of these samples were analyzed for TAL parameters. The results were compared to current NYSDOH Class GA Standards and Guidance Values (October 1993). Sample results are presented in Table 3-3.

Arsenic was detected in 28 of 30 unfiltered samples submitted for analyses, ranging from an estimated concentration of 2.2 μg/l in PGW-6 (86-90) to 165 μg/l in PGW-9 (96-100). Arsenic was detected in five of 30 filtered samples, ranging from an estimated concentration of 2.2 μg/l in PGW-4 (96-100) to 5.1 μg/l in PGW-2 (66-70). Arsenic concentrations in a number of the unfiltered samples were above the Class GA standard of 25 μg/l.

Cadmium was detected in 10 of 30 unfiltered samples submitted for analyses, ranging from an estimated concentration of 2.1 μg/l in PGW-1 (78-80) to 23 μg/l in PGW-5 (96-100). Cadmium was detected in eight of 30 filtered samples, ranging from an estimated concentration of 0.45 μg/l in PGW-3 (66-70) to 4.7 μg/l in PGW-6 (66-70). Cadmium concentrations in three unfiltered samples were above the Class GA standard of 10 μg/l.

Chromium was detected in all 30 of the unfiltered samples submitted for analyses, ranging in concentration from 35 μg/l in PGW-3 (96-100) to 4430 μg/l in PGW-4 (96-100). Chromium was detected in 19 of 30 filtered samples, ranging from an estimated concentration of 1.2 μg/l in PGW-7 (66-70) to an estimated concentration of 6.4 μg/l in PGW-10 (96-100). A majority of the unfiltered samples contained chromium in concentrations above the Class GA standard of 50 μg/l.

Copper was detected in 13 of 30 unfiltered samples collected for analyses, ranging in concentration from 27 μg/l in PGW-3 (96-100) to 2600 μg/l in PGW-4 (96-100). Copper was detected in 13 of 30 filtered samples, ranging in concentration from 3.0 μg/l in PGW-3 (76-80) to 18 μg/l in PGW-7 (76-80). Copper concentrations in a large percentage of the unfiltered samples were above the Class GA standard of 200 μg/l.

Lead was detected in all 30 unfiltered samples submitted for analyses, ranging in concentration from 3.5 μg/l in PGW-1 (66-70) to 150 μg/l in PGW-8 (96-100). A majority of these exceeded the Class GA standard. Lead was detected in 11 of 30 filtered samples, ranging from an

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.

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	113	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.

PERIMETER PROBE GROUNDWATER SAMPLES
METALS DATA SUMMARY
Alsy Manufacturing

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 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.

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.

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.

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.

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.

estimated concentration of 1.9 μg/l in PGW-8 (76-80) to 51 μg/l in PGW-6 (66-70). Lead concentrations in the filtered samples of PGW-5 (76-80) and PGW-6 (66-70) at 31 and 51 μg/l, respectively, were also above the Class GA standard of 25 μg/l.

Nickel was detected in 28 of 30 unfiltered samples submitted for analyses, ranging from an estimated concentration of 11 μg/l in PGW-3 (96-100) to 1210 μg/l in PGW-4 (96-100). A number of these samples exceeded the guidance value of 100 μg/l. Nickel was detected in 28 of 30 filtered samples, ranging from an estimated concentration of 7.8 μg/l in PGW-6 (96-100) to 70 μg/l in PGW-4 (96-100).

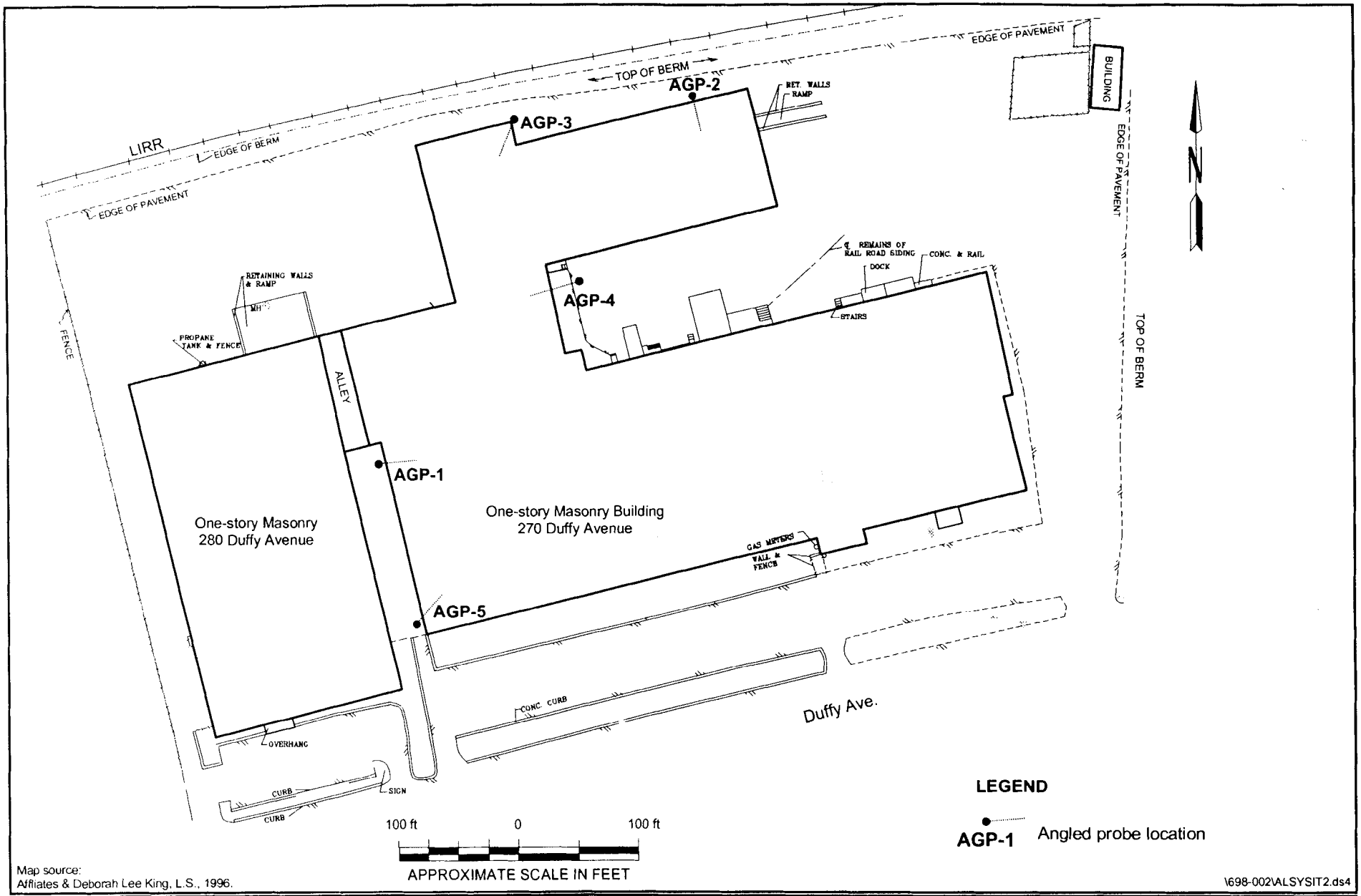
Zinc was detected in all 30 unfiltered samples, ranging from an estimated concentration of 12 μg/l in PGW-1 (66-70) to 6010 μg/l in PGW-4 (96-100). A number of these exceeded the Class GA Standard of 300 μg/l. Zinc was detected in 29 of 30 filtered samples, ranging from an estimated concentration of 3.7 μg/l in PGW-7 (66-70) to 249 μg/l in PGW-3 (66-70). Zinc concentrations in the filtered samples were below the Class GA standard of 300 μg/l.

Concentrations of other metals detected above Class GA standards or guidance values in filtered samples include: antimony concentrations in PGW-2 (66-70) and PGW-3 (96-100) at estimated concentrations of 5.1 and 7.1, respectively, were above the Class GA guidance value of 3.0 μg/l. All other metals detected in perimeter probe samples were below applicable standards or guidance values. A comparison between the concentrations of total and dissolved metals indicated that on the whole, concentrations of detected metals were associated with sediment found in the unfiltered samples. A vast majority of the filtered analyses showed markedly lower concentrations which if compared to guidance or drinking water standards would have been below those numbers.

3.6.2 SUBTASK 2: ON-SITE SOIL CONTAMINATION CHARACTERIZATION

The objective of this subtask was to identify, characterize, and delineate the soil contamination in and around source or discharge points.

Angled Probes. As part of this subtask, five angled probe points were installed to collect soil gas samples from beneath enclosures suspected of leaching contaminants (Figure 3-8). Samples were collected from beneath and in the immediate vicinity of locations of the former vapor degreasers, plating tanks, solvent storage areas, and paint shops. Soil gas samples were collected from two discrete depth intervals above the water table and each sample was analyzed for VOCs. Soil gas samples were labeled with the prefix "AGP" (angled ground probe), with



Map source:
Affiliates & Deborah Lee King, L.S., 1996.

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LMS Lawler, Matusky & Skelly Engineers LLP One Blue Hill Plaza • Pearl River, New York 10965 ENVIRONMENTAL SCIENCE & ENGINEERING CONSULTANTS	**Angled Probe Locations** **Alsy Manufacturing - Oyster Bay, New York**	**Figure 3-8**

the corresponding sample location number as the suffix followed by the depth interval in parentheses (e.g., AGP-1 (20)). The angled probes soil gas analyses are summarized below.

3.6.2.1 ***Angled Probes Analyses Results.*** Five soil gas points were installed and sampled for VOCs by EPA SW-846 Methods 8010/8020. Samples were collected from discrete depths within each probe boring. Data are presented in units of micrograms per liter of air (μg/l) in Table 3-4. Methylene chloride was detected in nine of the 10 samples collected for analyses; however, methylene chloride was also detected in an associated blank sample. Methylene chloride is a common laboratory contaminant and its presence in the soil gas samples is not considered representative of Site conditions.

The compound 1,1,1-TCA was detected in four of 10 samples, ranging in concentration from 1.3 μg/l in AGP-5 (60) to 6.2 μg/l in AGP-2 (60). PCE was detected in three of 10 samples submitted for analyses, ranging in concentration from 1.0 μg/l in AGP-4 (52) to 2.2 μg/l in AGP-2 (60). No other VOCs were detected in the angled probe soil gas samples collected for analyses.

Soil/Shallow Groundwater Probes. In addition, 30 soil and groundwater probes were installed in and around suspect discharge points throughout the Site (Figure 3-9). Sediment samples were collected from the top 4 ft of seven catch basins located to the rear of 270 and 280 Duffy Avenue. These catch basin samples were submitted for VOCs and metals screening. All catch basin samples were labeled with the prefix "CB", with the corresponding sample location number as the suffix, followed by the depth interval in parentheses (e.g., CB-1 (20-24)). Limitations of the sampling equipment did not permit continuous sampling to the bottom of the catch basins; therefore, probes were advanced immediately outside and downgradient of the catch basins. These samples were labeled with the prefix "OCB", with the corresponding sample location number as the suffix, followed by the depth interval in parentheses (e.g., OCB-1 (0-4)). Soil samples were collected from four discrete depth intervals from the ground surface to as close to the water table as the sampling equipment would allow. Soil samples were submitted to the contract analytical laboratory for VOCs and metals screening as well as confirmatory analyses of TCL VOCs, TAL and TCLP metals. Shallow groundwater (66 to 70 ft below grade) samples were also collected at each location. These samples were also labeled with the same "OCB" prefix, with the corresponding sample location identification number and the letters "GW", followed by the depth interval (e.g., OCB-7GW (66-70)). Groundwater samples were submitted for VOCs and filtered and unfiltered metals screening as well as confirmatory analyses of TCL VOCs and filtered and unfiltered TAL metals and cyanide.

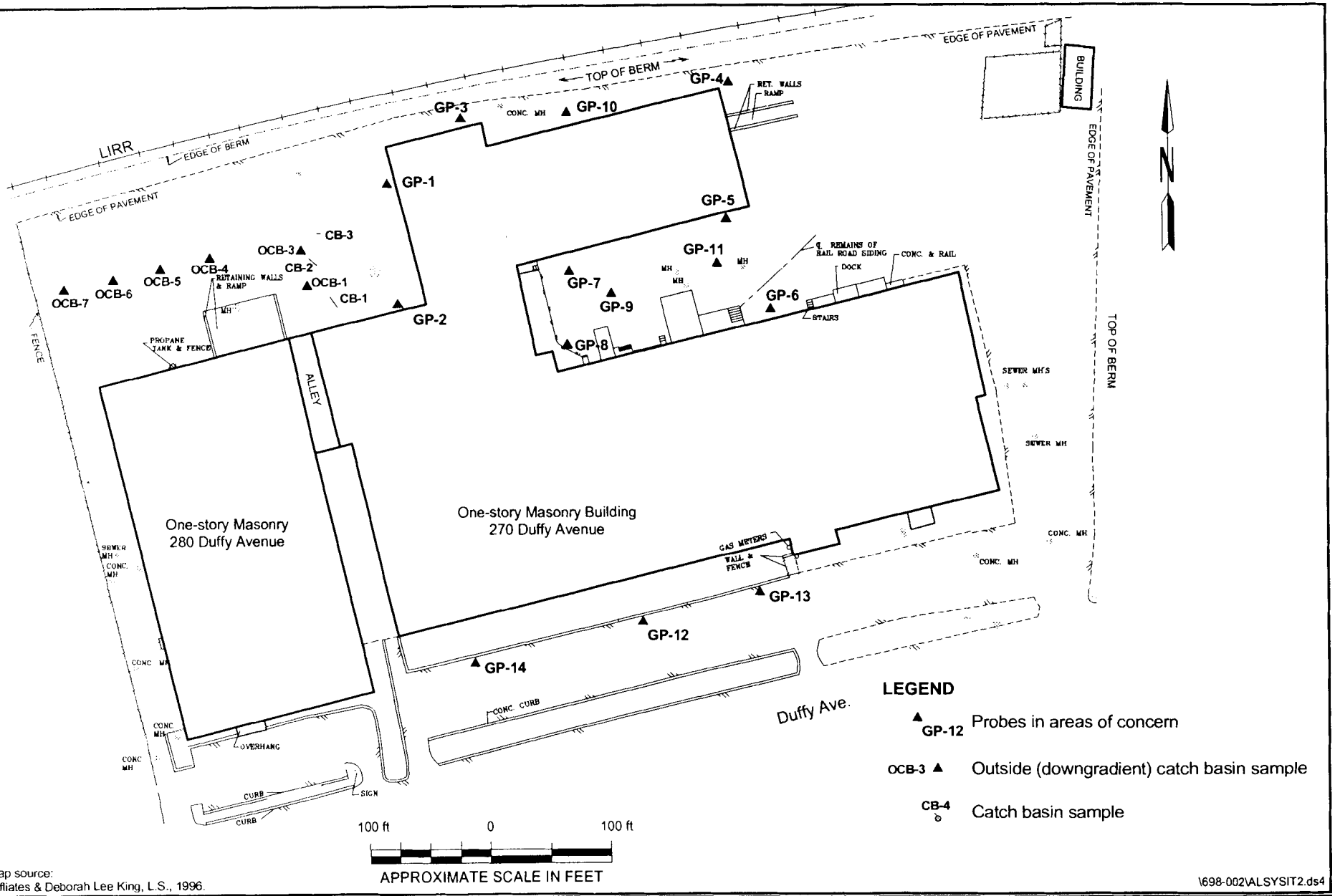
TABLE 3-4

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.



Map source:
Affiliates & Deborah Lee King, L.S., 1996.

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ENVIRONMENTAL SCIENCE & ENGINEERING CONSULTANTS

Soil/Shallow Groundwater Probe Locations

Alsy Manufacturing - Oyster Bay, New York

Figure 3-9

The remaining probe points were installed in areas where historical information indicated contaminant discharge and in areas of concern identified by the GPR survey. Soil and groundwater samples were collected from the same depth intervals as those samples collected from points located outside the catch basins and were submitted for similar analyses. Soil samples were labeled with the prefix "GP" with the corresponding sample location number as the suffix, followed by the depth interval (e.g., GP-1 (0-4)). Groundwater samples were labeled with the prefix "GP", with the corresponding sample location number and the letters "GW" as the suffix, followed by the depth interval (e.g., GP-1GW (66-70)).

The soil/shallow groundwater probe analyses results are summarized below.

3.6.2.2 Soil Sampling Results.

VOCs. A total of 115 shallow soil probe samples were collected for analyses: 98 samples were analyzed for VOCs by EPA SW-846 Methods 8010/8020 and 17 samples were analyzed for TCL VOCs by NYSDEC ASP 91-1. Sample results are presented in Table 3-5. A low-level concentration of PCE was detected in GP-7 (0-4) at an estimated of 0.01 mg/kg. There were no other VOCs detected in the shallow probe soil samples submitted for analyses.

Metals. A total of 114 samples were collected for analyses. Four of five samples collected from each shallow probe sampling point were analyzed for arsenic, cadmium, chromium, copper, lead, nickel, and zinc by EPA SW-846 Method 6010. The remaining sample collected from each soil boring was analyzed for full TAL parameters. Analytical results were compared to the recommended soil cleanup objectives presented in NYSDEC TAGM 94-4046 (January 1994) and are presented in Table 3-6.

Arsenic was detected in 107 of 114 samples submitted for analyses, ranging from an estimated concentration of 0.19 mg/kg in CB-4 (0-4) and CB-5 (0-4) to 197 mg/kg in GP-6 (10-12). Arsenic concentrations in samples GP-6 (10-12), GP-10 (0-4), GP-10 (4-8), GP-11 (0-4), GP-12 (0-4), GP-13 (8-10), GP-14 (0-4) and OCB-1 (44-46) at 197, 13, 8.8, 12, 31, 8.3, 20, and 9.4 mg/kg, respectively, were above the recommended soil cleanup objective of 7.5 mg/kg.

Beryllium was detected in 17 of 114 samples submitted for analyses, ranging from a concentration of 0.03 mg/kg in OCB-3 (22-24) to 0.74 mg/kg in GP-11 (0-4). Beryllium concentrations in GP-1 (10-12), GP-2 (10-12), GP-4 (4-8), GP-7 (0-4), GP-10 (4-8), GP-11 (0-4), and GP-14 (4-8) at 0.42, 0.37, 0.17, 0.19, 0.19, 0.74, and 0.30 mg/kg, respectively, were above the recommend soil cleanup objective of 0.16 mg/kg.

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.

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 OBJECTIVES[2]
VOLATILE ORGANICS[1]	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 OBJECTIVES[2]
VOLATILE ORGANICS[1]	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 OBJECTIVES[2]
VOLATILE ORGANICS[1]	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 OBJECTIVES[2]
VOLATILE ORGANICS[1]	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.

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.

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.

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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.
** - NYSDEC Draft Cleanup Policy and Guidelines, 10/91.
(b) - NYSDEC Division Technical and Administrative Guidance Memorandum (TAGM), 1/94.
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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.

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).
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.

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.
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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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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	**

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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	**

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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	♦	♦	♦	♦	♦	♦	♦	**

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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	♦	♦	♦	♦	♦	♦	♦	**

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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.
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SB - Site Background

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

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

Chromium was detected in 112 of 114 samples submitted for analyses, ranging from 1.2 mg/kg in OCB-4 (4-8) to 46 mg/kg in GP-10 (11-12). Chromium concentrations in GP-1 (10-12), GP-1 (34-36), GP-5 (0-4), GP-5 (34-36), GP-7 (34-36), GP-8 (10-12), GP-9 (12-14), GP-9 (34-36), GP-10 (0-4), GP-10 (4-8), GP-10 (11-12), GP-11 (0-4), GP-11 (4-8), GP-11 (10-12), GP-11 (22-24), GP-12 (0-4), GP-13 (8-10), GP-13 (36-38), GP-14 (0-4), OCB-1 (10-12), OCB-1 (44-46), CB-3 (0-4), OCB-3 (0-4), OCB-3 (10-12), OCB-4 (10-12), OCB-5 (0-4), OCB-6 (10-12), OCB-7 (4-8), and OCB-7 (10-12) at 13, 17, 16, 17, 24, 10, 11, 17, 14, 16, 46, 13, 15, 17, 10, 14, 12, 22, 13, 37, 26, 10, 11, 13, 14, 11, 10, 19, and 11 mg/kg respectively were above the recommended soil cleanup objective of 10 mg/kg.

Copper was detected in 113 of 114 samples ranging from an estimated concentration of 1.2 mg/kg in OCB-4 (4-8) and OCB-5 (44-46) to 1050 mg/kg in GP-10 (4-8). Copper concentrations in GP-4 (4-8), GP-10 (0-4), GP-10 (4-8), GP-10 (11-12), GP-10 (22-24), GP-11 (0-4), GP-11 (4-8), CB-1 (0-4), OCB-1 (10-12), OCB-1 (44-46), CB-2 (0-4), OCB-3 (34-36), and OCB-3 (44-46) at 277, 36, 1050, 64, 72, 200, 33, 97, 93, 84, 128, 30, and 46 mg/kg, respectively, were above the recommended soil cleanup objective of 25 mg/kg.

Iron was detected in 17 of 114 samples ranging from an estimated concentration of 1820 mg/kg in GP-3 (10-12) to 17000 mg/kg in GP-11 (0-4). Iron concentrations in GP-1 (10-12), GP-2 (10-12), GP-4 (4-8), GP-5 (0-4), GP-6 (0-4), GP-7 (0-4), GP-8 (4-8), GP-9 (0-4), GP-10 (4-8), GP-11 (0-4), GP-12 (10-12), GP-13 (4-8), GP-14 (4-8), OCB-1 (4-8), and OCB-3 (22-24) at 13000, 10000, 13000, 6840, 4450, 6780, 2490, 4780, 9730, 17000, 10700, 5430, 11100, 4100, 2050 mg/kg, respectively, were above the recommended soil cleanup objective of 2000 mg/kg.

Nickel was detected in 113 of 114 samples, ranging from an estimated concentration of 0.6 mg/kg in GP-8 (44-46) to 2120 mg/kg in GP-10 (4-8). Nickel concentrations in samples GP-3 (34-36), GP-4 (4-8), GP-4 (10-12), GP-7 (34-36), GP-9 (12-14), GP-10 (4-8), GP-10 (11-12), GP-10 (22-24), GP-11 (0-4), GP-11 (4-8), GP-11 (10-12), GP-12 (4-8), GP-12 (10-12), GP-13 (36-38), CB-1 (0-4), 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 (10-12), OCB-3 (22-24), OCB-3 (34-36), OCB-3 (44-46), OCB-4 (22-24), OCB-4 (36-38), OCB-4 (44-46), OCB-6 (22-24), OCB-7 (4-8), and OCB-7 (10-12) at 13, 517, 14, 14, 30, 2120, 24, 22, 35, 477, 97, 19, 57, 22, 177, 128, 23, 31, 45, 226, 38, 27, 29, 22, 23, 14, 15, 30, 14, 138, and 43 mg/kg, respectively, were above the recommended soil cleanup objective of 13 mg/kg.

Zinc was detected in 113 of 114 samples submitted for analyses ranging from 2.2 mg/kg in OCB-6 (0-4) to 1890 mg/kg in GP-11 (4-8). Zinc concentrations in samples GP-1 (10-12), GP-1 (22-24), GP-2 (10-12), GP-4 (4-8), GP-5 (0-4), GP-7 (0-4), GP-10 (0-4), GP-10 (4-8), GP-11

(0-4), GP-11 (4-8), GP-11 (10-12), GP-12 (0-4), GP-13 (22-24), GP-14 (0-4), OCB-1 (10-12), OCB-1 (44-46), CB-2 (0-4), CB-3 (0-4), OCB-3 (0-4), OCB-3 (10-12), OCB-6 (10-12), and OCB-7 (10-12) at 39, 20, 24, 40, 35, 43, 79, 476, 1890, 76, 62, 30, 20, 22, 33, 37, 27, 28, 27, 33, 21, and 25 mg/kg, respectively, were above the recommended soil cleanup objective of 20 mg/kg.

All other metals detected in the samples were within the concentration levels presented as recommended soil cleanup objectives.

TCLP Metals. A total of 21 samples were submitted for extraction using TCLP and extracts analyzed for Resource Conservation and Recovery Act (RCRA) metals. Results are presented in Table 3-7. Concentrations reported in the TCLP extracts were all below RCRA criteria for hazardous waste.

3.6.2.3 Shallow Probe Groundwater Sampling Results.

VOCs. A total of 20 shallow probe groundwater samples were collected for analyses: 16 samples were analyzed for VOCs by EPA SW-846 Methods 8010/8020 and four samples were analyzed for TCL VOCs by NYSDEC ASP 91-1 (Table 3-8). Sample results were compared to current NYSDOH Ambient Water Quality Class GA Standards and Guidance Values (October 1993).

1,1,1-TCA was detected in seven of 20 samples submitted for analyses, ranging from an estimated concentration of 1.0 μg/l in GP-13GW (66-70) to 8.6 μg/l in GP-7GW (66-70). Concentrations of 1,1,1-TCA in samples GP-7GW (66-70) and GP-8GW (66-70) at 8.6 μg/l and an estimated concentration of 6.0 μg/l, respectively, were above the Class GA standard of 5.0 μg/l.

The compound PCE was detected in six of 20 samples submitted for analyses, ranging from an estimated concentration of 1.0 μg/l in GP-4GW (66-70) to 2.2 μg/l in GP-5GW (66-70). PCE concentrations in samples submitted for analyses were all below the Class GA standard of 5.0 μg/l.

The compound cis- and trans-1,2-dichloroethene (1,2-DCE) was detected in one sample, GP-7GW (66-70) at 5.3 μg/l which is above the Class GA standard of 5.0 μg/l.

1,2-DCA was detected in only one of 20 samples submitted for analyses: GP-7GW (66-70) at 1.4 μg/l, which is below the Class GA standard of 5.0 μg/l.

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 3-8 (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.

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.

Total xylenes were detected in only one of 20 samples submitted for analyses: GP-9GW (66-70) at 2.9 μg/l, which is below the Class GA standard of 5.0 μg/l.

Metals. A total of 19 unfiltered samples and 18 filtered samples were collected for metals analyses. Analyses were conducted primarily for the following seven metals: arsenic, cadmium, chromium, copper, lead, nickel, and zinc by EPA SW-846 Method 6010. In addition, seven of the samples were analyzed for the full TAL parameters. Results were compared to current NYSDOH Class GA Standards and Guidance Values (October 1993) and are presented in Table 3-9.

Arsenic was detected in all 19 unfiltered samples submitted for analyses, ranging from an estimated concentration of 6.8 μg/l in GP-12GW (66-70) to 284 μg/l in OCB-3GW (66-70). Arsenic was detected in seven of 18 filtered samples submitted for analyses, ranging from an estimated concentration of 2.2 μg/l in OCB-1GW (66-70) to 11 μg/l in OCB-7GW (66-70). Arsenic concentrations detected in the filtered samples were well below the Class GA standard of 25 μg/l.

Cadmium was detected in seven of the 19 samples submitted for analyses, ranging from an estimated concentration of 0.76 μg/l in OCB-7GW (66-70) to an estimated concentration of 3.1 μg/l in GP-13GW (66-70). Cadmium was not detected in the corresponding filtered samples.

Chromium was detected in all 19 samples submitted for analyses, ranging from an estimated concentration of 45 μg/l in GP-13GW (66-70) to 992 μg/l in OCB1-GW (66-70). Chromium was detected in seven of 18 filtered samples submitted for analyses, ranging from an estimated concentration of 8.9 μg/l in OCB-1GW (66-70) to 36 μg/l in GP-3GW (66-70). Chromium concentrations in the filtered samples were all below the Class GA standard of 50 μg/l.

Copper was detected in all 19 unfiltered samples submitted for analyses, ranging from 41 μg/l in GP-2GW (66-70) to 975 μg/l in OCB-1GW (66-70). Copper was detected in 14 of 18 filtered samples, ranging from an estimated concentration of 4.7 μg/l in OCB-1GW (66-70) to 47 μg/l in GP-11GW (66-70). Copper concentrations in the filtered samples were all well below the Class GA standard of 200 μg/l.

Lead was detected in all 19 unfiltered samples submitted for analyses, ranging from 17 μg/l in GP-2GW (66-70) to 266 μg/l in OCB-1GW (66-70). Lead was detected in five of 18 filtered samples submitted for analyses, ranging from an estimated concentration of 2.3 μg/l in OCB-6GW (66-70) to an estimated concentration of 3.8 μg/l in GP-4GW (66-70). Lead concentrations in the filtered samples were all well below the Class GA standard of 25 μg/l.

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.
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.

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.

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.
(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.

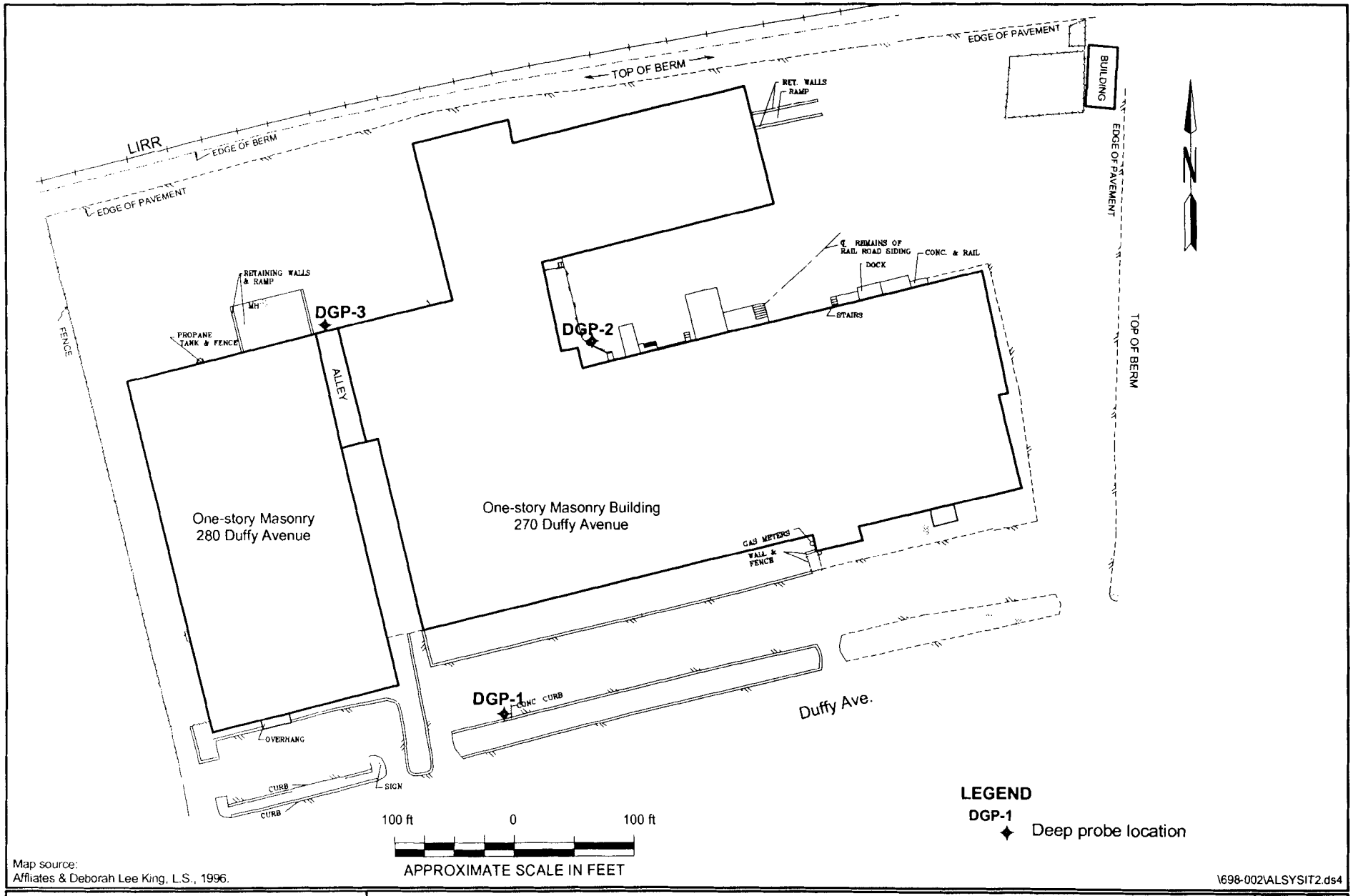
Nickel was detected in all 19 unfiltered samples submitted for analyses, ranging from 43 µg/l in OCB-7GW (66-70) to 964 µg/l in OCB-1GW (66-70). Nickel was detected in all 18 filtered samples submitted for analyses, ranging from an estimated concentration of 11 µg/l in OCB-7GW (66-70) to 197 µg/l in OCB-1GW (66-70). There is currently no Class GA standard or guidance value for nickel.

Zinc was detected in all 19 unfiltered samples submitted for analyses, ranging from an estimated concentration of 44 µg/l in GP-2GW (66-70) to 605 µg/l in GP-3GW (66-70). Zinc was detected in all 18 filtered samples submitted for analyses, ranging from an estimated concentration of 6.2 µg/l in OCB-1GW to 31 µg/l in GP-3GW (66-70). Zinc concentrations in the filtered samples were all well below the Class GA standard of 300 µg/l.

Deep Probes. An additional three deep probes were installed to further characterize on-site soil and groundwater (Figure 3-10). Soil and groundwater samples were collected from each point. Groundwater samples were collected in 10-ft intervals up to 40 ft below the surface of the water table. Soil samples were labeled with the prefix "DGP" (deep ground probe), with the corresponding sample location number as the suffix, followed by the depth interval in parentheses (e.g., DGP-1 (0-4)). Groundwater samples were labeled with the prefix "DGP", with the corresponding sample location number and the letters "GW" as the suffix, followed by the depth interval (e.g., DGP-1GW (66-70)). Soil samples were collected from four discrete depth intervals at each point, with the exception of DGP-2. No soil samples were collected at DGP-2 because the point was advanced in the same location as GP-8, and resampling that location was deemed unnecessary by the NYSDEC representative. Soil samples were submitted to the contract analytical laboratory for VOCs and metals screening as well as confirmatory analyses of TCL VOCs and TAL metals. Groundwater samples were collected from three discrete depth intervals at each probe location. Groundwater samples were submitted for VOCs and filtered and unfiltered metals screening as well as confirmatory analyses of TCL VOCs and filtered and unfiltered TAL metals and cyanide. The deep probes soil and groundwater analyses results are summarized below.

3.6.2.4 Deep Probe Soil Sampling Results.

VOCs. Six deep probe soil samples were collected for analyses: five samples were analyzed for VOCs by EPA SW-846 Methods 8010/8020 and one sample was analyzed for TCL VOCs by NYSDEC ASP 91.1. Results are presented in Table 3-10. No VOCs were detected in any of the samples collected for analyses.



Map source:
Affiliates & Deborah Lee King, L.S., 1996.

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LMS Lawler, Matusky & Skelly Engineers LLP One Blue Hill Plaza • Pearl River, New York 10965 ENVIRONMENTAL SCIENCE & ENGINEERING CONSULTANTS	**Deep Probe Locations** **Alsy Manufacturing - Oyster Bay, New York**	**Figure 3-10**

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.

Metals. Six deep probe soil samples were collected for metals analyses. Four of the samples were analyzed for arsenic, cadmium, chromium, copper, lead, nickel, and zinc by EPA SW-846 Method 6010. The remaining two samples were analyzed for full TAL parameters. Sample results were compared to NYSDEC TAGM recommended soil cleanup objectives and are presented in Table 3-11.

Arsenic was detected in all six samples submitted for analyses, ranging from an estimated concentration of 0.54 mg/kg in DGP-1 (22-24) to 5.0 mg/kg in DGP-3 (0-4). Arsenic concentrations were below the recommended soil cleanup objective of 7.5 mg/kg.

Beryllium was detected in two of six samples submitted for analyses, at concentrations of 0.05 mg/kg in DGP-1 (22-24) and 0.16 mg/kg in DGP-3 (0-4). The beryllium concentration n DGP-3 (22-24) was detected at the recommended soil cleanup objective of 0.16 mg/kg.

Cadmium was detected in only one of the six samples submitted for analyses: DGP-3 (0-4) at an estimated concentration of 0.43 mg/kg, which is below the recommended soil cleanup objective of 1.0 mg/kg.

Chromium was detected in all six samples submitted for analyses, ranging in concentration from 4.8 mg/kg in DGP-3 (44-46) to 18 mg/kg in DGP-1 (22-24). Chromium concentrations in DGP-1 (22-24), DGP-3 (0-4), and DGP-3 (22-24) at 18, 13, and 18 mg/kg, respectively, were above the recommended soil cleanup objective of 10 mg/kg.

Copper was detected in all six samples submitted for analyses, ranging from an estimated concentration of 2.0 mg/kg in DGP-1 (22-24) to 66 mg/kg in DGP-3 (0-4). The copper concentrations in DGP-3 (0-4) and DGP-3 (44-46) at 66 and 35 mg/kg, respectively, were above the recommended soil cleanup objective of 25 mg/kg.

Iron was detected in two of six samples submitted for analyses at concentrations of 3290 mg/kg in DGP-1 (22-24) and 7460 mg/kg in DGP-3 (0-4); which are above the recommended soil cleanup objective of 2000 mg/kg.

Lead was detected in all six samples submitted for analyses, ranging in concentration from 1.1 mg/kg in DGP-1 (22-24) to 20 mg/kg in DGP-3 (0-4). Lead concentrations were well below typical background levels for urban or suburban areas of 200 to 500 mg/kg.

Nickel was detected in all six samples submitted for analyses, ranging from an estimated concentration of 2.3 mg/kg in DGP-1 (44-46) to 42 mg/kg in DGP-3 (0-4). The nickel

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.

concentrations in DGP-3 (0-4), DGP-3 (22-24), and DGP-3 (44-46) at 42, 22, and 28 mg/kg, respectively, were above the recommended soil cleanup objective of 13 mg/kg.
Zinc was detected in all six samples submitted for analyses, ranging in concentration from 6 mg/kg in DGP-1 (22-24) to 51 mg/kg in DGP-3 (0-4). The zinc concentrations in DGP-1 (22-24) and DGP-3 (0-4) at 34 and 51 mg/kg, respectively, were above the recommended soil cleanup objective of 20 mg/kg.

All other metals detected in samples submitted for analyses were below the recommended soil cleanup objectives.

3.6.2.5 Deep Probe Groundwater Sampling Results.

VOCs. A total of nine deep probe groundwater samples were collected for analyses: seven were analyzed for VOCs by EPA SW-846 Methods 8010/8020 and two were analyzed for TCL VOCs by NYSDEC ASP 91.1. Analytical results were compared to current NYSDOH Ambient Water Quality Class GA Standards and Guidance Values (October 1993) and presented in Table 3-12.

1,2-DCA was detected in two samples submitted for analyses, DGP-1GW (66-70) and DGP-2GW (68-70) each at an estimated concentration of 2.0 μg/l. Concentrations of 1,2-DCA in these samples were below the Class GA standard of 5.0 μg/l.

1,1,1-TCA was detected in two samples submitted for analyses; DGP-1GW (66-70) and DGP-2GW (68-70) at estimated concentrations of 3.0 μg/l and 5.0 μg/l, respectively.
Detected concentrations of 1,1,1-TCA in these samples did not exceed the Class GA standard of 5.0 μg/l.

TCE and PCE were each detected in only one sample, DGP-2GW (88-90), at estimated concentrations of 1.0 and 2.0 μg/l, respectively, which were below the Class GA standard of 5.0 μg/l for both compounds.

No other VOCs were detected in the samples submitted for analyses.

Metals. Eighteen (nine unfiltered and nine filtered) samples were collected for analyses. Fourteen samples were analyzed for arsenic, cadmium, chromium, copper, lead, nickel, and zinc by EPA SW-846 Method 6010. In addition, four of the samples were analyzed for full TAL parameters. Results were compared to current NYSDOH Class GA Standards and Guidance Values (October 1993) and are presented in Table 3-13.

TABLE 3-12

DEEP PROBES GROUNDWATER SAMPLES
VOLATILES DATA SUMMARY
Alsy Manfacturing

PARAMETER	DGP-1GW (66-70)	DGP-1GW (88-90)	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.

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.

Arsenic was detected in eight of nine unfiltered samples submitted for analyses, ranging from 22 μg/l in DGP-1GW (66-70) to 164 μg/l in DGP-3GW (96-100). Arsenic was not detected in corresponding filtered samples.

Cadmium was detected in two of nine unfiltered samples submitted for analyses, ranging from an estimated concentration of 1.6 μg/l in DGP-2GW (98-100) to an estimated concentration of 1.9 μg/l in DGP-1GW (96-100). Cadmium was not detected in the corresponding filtered samples.

Chromium was detected in all nine unfiltered samples submitted for analyses, ranging from 110 μg/l in DGP-1GW (89-90) to 3310 μg/l in DGP-2GW (98-100). Chromium was detected in four of nine unfiltered samples submitted for analyses, ranging from an estimated concentration of 8.7 μg/l in DGP-3GW (86-90) to 36 μg/l in DGP-3GW (66-70). Chromium concentrations in the filtered samples were all below the Class GA standard of 50 μg/l.

Copper was detected in all nine unfiltered samples submitted for analyses, ranging from 92 μg/l in DGP-2GW (68-70) to 1160 in DGP-2GW (98-100). Copper was detected in all nine filtered samples submitted for analyses, ranging from an estimated concentration of 5.5 μg/l in DGP-1GW (96-100) to an estimated concentration of 12 μg/l in DGP-3GW (86-90). Copper concentrations in the filtered samples submitted for analyses were all well below the Class GA standard of 200 μg/l.

Lead was detected in all nine unfiltered samples submitted for analyses, ranging from 10 μg/l in DGP-2GW (68-70) to 222 μg/l in DGP-2GW (98-100). Lead was detected in four of nine filtered samples submitted for analyses, ranging from an estimated concentration of 2.7 μg/l in DGP-1GW (96-100) to 5.9 μg/l in DGP-2GW (98-100). Lead concentrations in the filtered samples submitted for analyses were all well below the Class GA standard of 25 μg/l.

Nickel was detected in all nine unfiltered samples submitted for analyses, ranging in concentration from 44 μg/l in DGP-2GW (68-70) to 770 μg/l in DGP-2GW (98-100). Nickel was detected in all nine filtered samples submitted for analyses, ranging from an estimated concentration of 10 μg/l in DGP-2GW (68-70) to 48 μg/l in DGP-3GW (66-70), none of which were above the current NYSDOH groundwater guidance value of 100 μg/l.

Zinc was detected in all nine unfiltered samples submitted for analyses, ranging from 77 μg/l in DGP-1GW (96-100) to 1590 in DGP-2GW (98-100). Zinc was detected in all nine filtered samples submitted for analyses, ranging from an estimated concentration of 12 μg/l in DGP-

1GW (96-100) to 60 μg/l in DGP-2GW (68-70). Zinc concentrations in the filtered samples were all well below the Class GA standard of 300 μg/l.

All other metals detected in samples were below applicable standards or guidance values.

3.7 MONITORING WELL INSTALLATION AND SAMPLING PROCEDURES

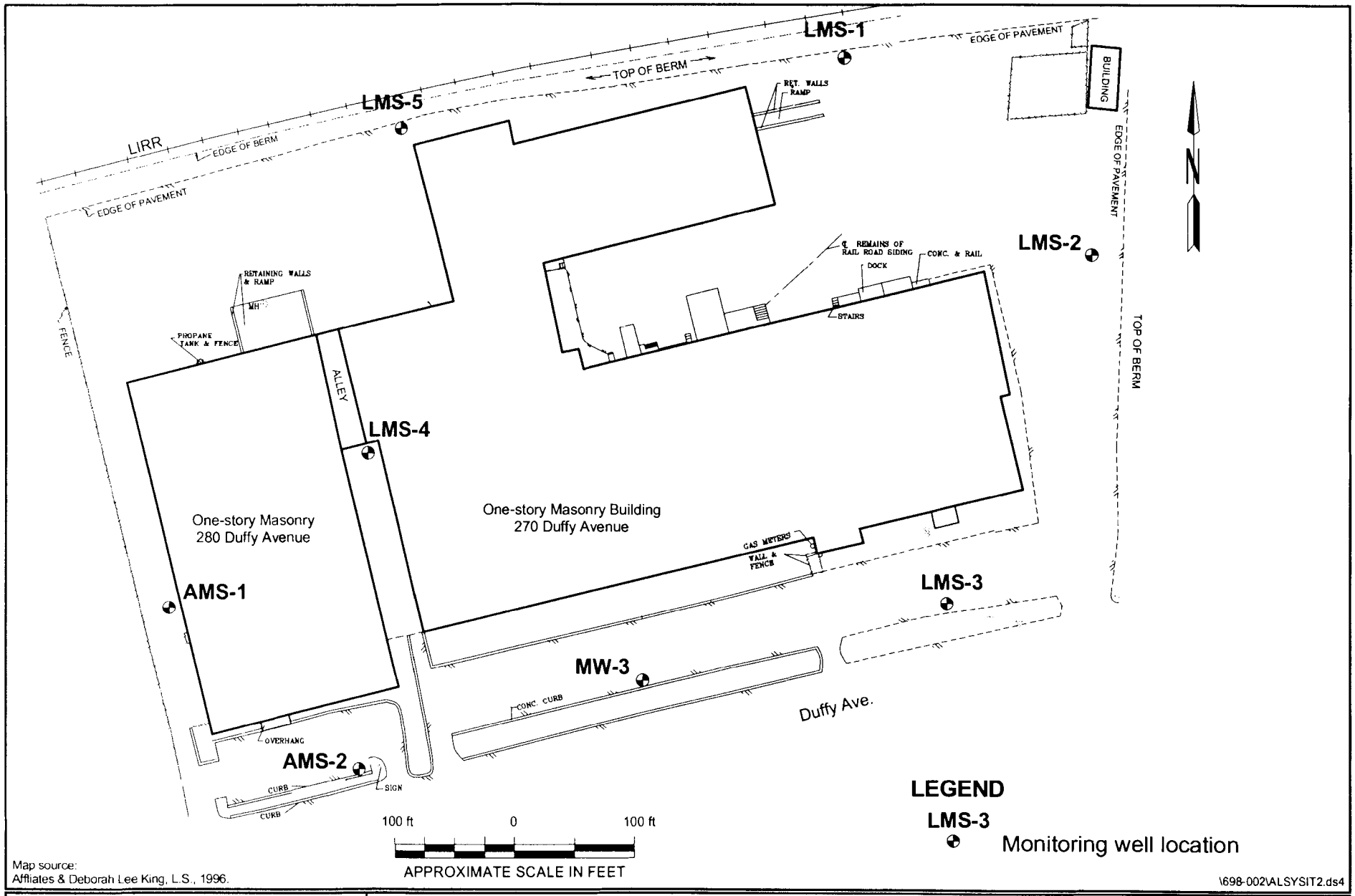
3.7.1 Monitoring Well Installation

The monitoring wells were installed on-site beginning on 3 September 1996 and were completed on 10 September 1996. The borings were advanced using a truck-mounted drill rig utilizing 4.25-in. hollow-stem augers. A total of five borings were advanced and completed as monitoring wells (Figure 3-11). Sampling was accomplished by using a split-spoon sampler according to the standard penetration test method ASTM-D 1586 (Figure 3-12). Split spoons were collected in 5-ft intervals above the water table and continuously below that point. After each split spoon was collected it was opened and the soils were scanned for organic vapors and physically described on a log by the on-site LMS geologist. The field boring logs included the following information: color, relative percentage of grain size, moisture content, blow counts (recorded for each 6 in. advance), visual evidence of contamination, cohesion, odors, depth, detailed stratigraphic information, meter readings (PID), and sample moisture. Boring logs are included in Appendix B.

The final depth of each boring was 76 ft below grade; all wells were set at 75 ft below grade. When the completion depth of each boring was reached, a 2-in. O.D. schedule 40 flush-thread PVC monitoring well was installed. The wells were screened with 0.010 slot, schedule 40 PVC screen. Monitoring well LMS-1 was completed with 10 ft of slotted screen and 65 ft of riser; LMS-2, LMS-3, LMS-4, and LMS-5 were completed with 15 ft of screen and 60 ft of riser.

Once the PVC was in place, the augers were slowly retracted and a filter pack composed of clean silica sand (#2 Morie) was installed in the annulus around the well screen up to 2 ft above the top of the screen. A 2-ft layer of bentonite pellets was added above the sand pack and was hydrated by adding potable water at a slow but steady rate for approximately 20-30 min. The remainder of the borehole was backfilled using a cement-bentonite mixture, consistent with NYSDEC Exhibit 3, Guidelines for Exploratory Boring Monitoring Wells Installation and Documentation of These Activities.

Each monitoring well was fitted with a secured protective flush-mounted casing. The wells were fitted with a positive sealing cover and an inner locking cap. The concrete pad around



Map source:
Affiliates & Deborah Lee King, L.S., 1996.

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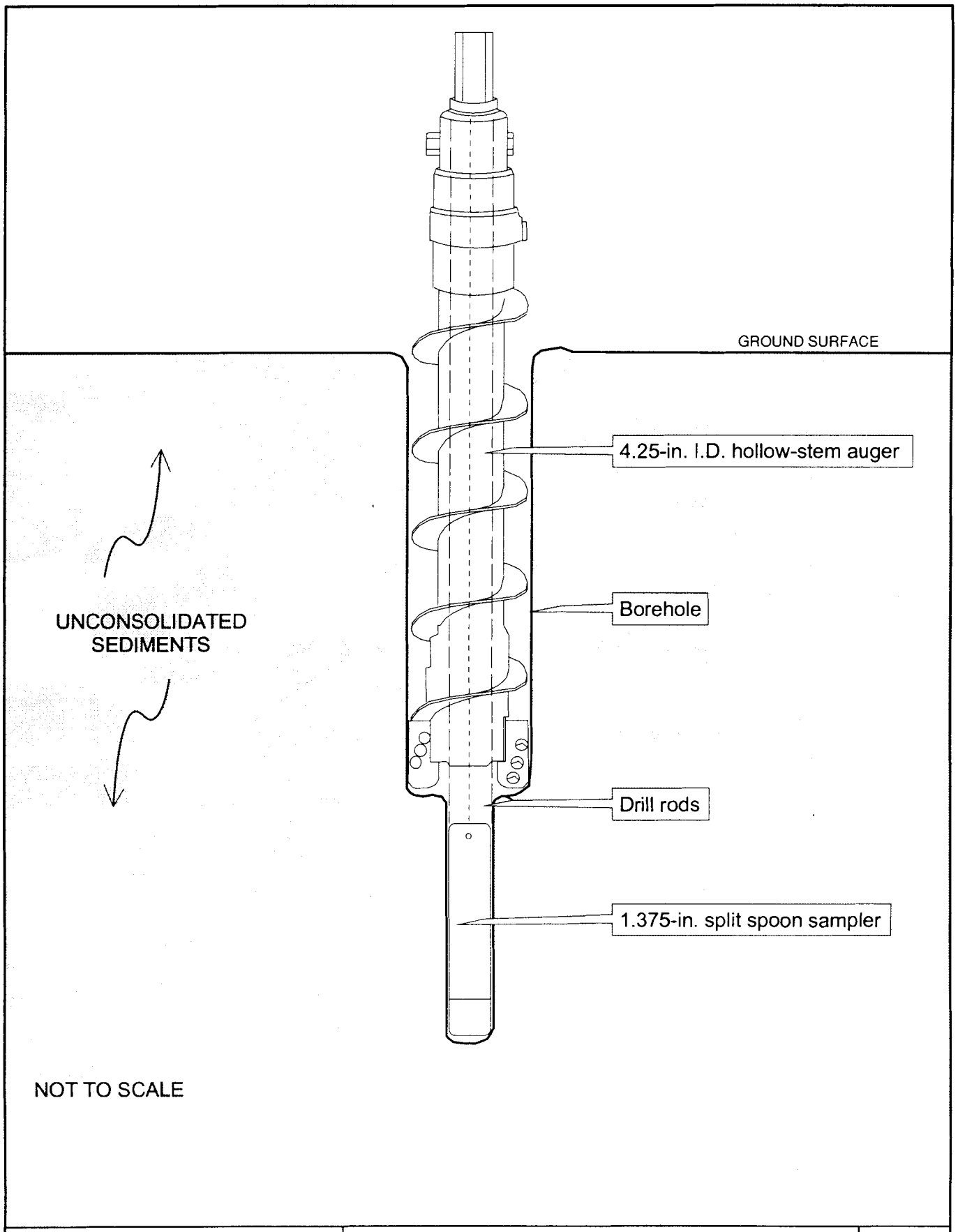
LMS Lawler, Matusky & Skelly Engineers LLP One Blue Hill Plaza • Pearl River, New York 10965 ENVIRONMENTAL SCIENCE & ENGINEERING CONSULTANTS	**Monitoring Well Locations** **Alsy Manufacturing - Oyster Bay, New York**	**Figure 3-11**



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Test Boring/Sampling Cross Section

Alsy Manufacturing - Oyster Bay, New York

Figure 3-12

698\SAMPLERS.ds4

each well was approximately 2 ft in diameter and slightly raised and sloped from the well to help direct drainage away from the well. Care was also taken to set the wells in such a way as to help prevent snow plows from destroying the casing while plowing. Following completion of each monitoring well, a well completion log was filed that included a construction cross section of the well, volume, and type of material used for construction, and intervals where materials were placed (Appendix D).

3.7.2 Monitoring Well Development

The monitoring wells were allowed to set up for a minimum of 24 hrs prior to development. The goal of the development was to provide a low-turbidity sample by removing any fine-grained materials from the well case and sand pack that were disturbed during the well construction process. The wells were developed using dedicated Teflon or PVC bailers. The bailers were lowered to the water table, allowed to fill with water, then quickly removed from the well. The rapid removal of water causes the water within the sand pack around the screen to move rapidly into the well. This action serves to loosen and flush any fine sediment from the well casing and sand pack. As the well was developed, the bailer in the well was surged up and down within the screened zone to allow for additional flushing action in the well. At various points during the development, estimates of well yield and field chemistry measurements of turbidity, temperature, pH, and conductivity were made. The new monitoring wells were developed until either the groundwater reached a turbidity of 50 nephelometric turbidity units (NTU) or less, or 4 hrs had elapsed.

3.7.3 Monitoring Well Sampling

Monitoring wells were sampled from 10 to 12 September 1996. Prior to sampling each well, the initial static water level (SWL) and total well depth were measured to within 0.01 ft using an electronic water level meter. These measurements were used to estimate the volume of water to be purged from the wells prior to sampling. All the wells, with one exception (LMS-3), were purged using dedicated polyethylene tubing attached to a submersible pump. LMS-3 was purged using a dedicated, laboratory-cleaned Teflon bailer. All wells were purged a minimum of three borehole volumes.

After purging, the wells were allowed to recover to at least 90% of the initial water volume before sampling. Samples were collected from the top to mid-water column using dedicated laboratory-cleaned Teflon bailers. Field chemistry measurements including temperature, pH, specific conductivity, and turbidity, were taken before and after sampling. Field data, including

SWL, well depths, purge volumes, and other sampling information, were recorded on the well sampling logs included in Appendix E.

Samples were collected in precleaned bottles or vials supplied by the contract analytical laboratory. All sample bottles were labeled with the site name, job number, sample identification, date, time, and parameters for analysis. Preservatives were added to the samples in the field for the inorganic analyses. Each sample was logged on the appropriate chain-of-custody form and then either hand delivered or delivered via courier directly to the analytical laboratory.

3.7.4 Hydraulic Conductivity Testing

Once the wells were developed and the first round of groundwater samples collected, slug tests were conducted on all the wells. Slug tests were performed on 12 and 13 September 1996. The purpose of the slug test was to determine the horizontal hydraulic conductivity within the screened section of the monitoring well. Slug testing equipment consisted of a weighted stainless steel slug, an in situ pressure transducer, and a Hermit data logger. The procedure includes quickly lowering the slug into the well to create an instantaneous rise in the water level. During this time, the Hermit electronically recorded the rate at which the water rose and fell. The water level in the well was then allowed to return to its original level, at which point the slug was rapidly removed from the well, causing a quick drop in water level. Again, the water level was allowed to return to its original level. The water level change data were downloaded from the data logger to a personal computer and, using equations derived by Bouwer and Rice for partially penetrating unconfined wells, aquifer hydraulic conductivity values were calculated. An approximate thickness of 100 ft for the UGA was used in all calculations.

3.8 MONITORING WELL SAMPLING RESULTS

A total of five new monitoring wells and three existing wells were sampled by LMS personnel from 10 September to 12 September 1996. Monitoring wells were installed and sampled in order to gauge the groundwater quality on-site, and to determine the extent of shallow groundwater contamination as a result of Site activities. Groundwater samples were labeled with the well identification number; samples collected from the new wells had the prefix "LMS", followed by the location number (e.g., LMS-1); samples from the three existing wells were labeled AMS-1, AMS-2, and MW-3. All groundwater samples were submitted to the contract analytical laboratory for TCL VOCs and filtered and unfiltered TAL metals and cyanide. The groundwater analyses results are summarized below.

3.8.1 VOCs

A total of nine groundwater samples were collected and analyzed for TCL VOCs by NYSDEC ASP 91-1. Results were compared to current NYSDOH Ambient Water Quality Class GA Standards and Guidance Values (October 1993) and are presented in Table 3-14.

1,1,1-TCA was detected at low concentrations in four of the samples submitted for analyses, ranging from an estimated concentration of 2 μg/l in MW-3 and LMS-1, respectively, to an estimated concentration of 4.0 μg/l in LMS-2, and LMS-6, respectively. Detected concentrations of 1,1,1-TCA were all below the Class GA standard of 5.0 μg/l.

PCE was detected in two of the nine samples submitted for analyses; LMS-1 and LMS-3 at estimated concentrations of 5.0 and 9.0 μg/l, respectively. The PCE concentration in LMS-3 at an estimated concentration of 9.0 μg/l was above the Class GA standard of 5.0 μg/l.

3.8.2 Metals

A total of eighteen groundwater samples were collected (nine unfiltered and nine filtered) and analyzed for full TAL parameters. The sample results were compared to current NYSDOH Ambient Water Quality Class GA Standards and Guidance Values (October 1993) and presented in Table 3-15.

Arsenic was detected in seven of the nine unfiltered samples submitted for analyses, ranging in concentration from 14 μg/l in AMS-1 to 40 μg/l in LMS-1. Arsenic concentrations in LMS-1 and LMS-5 at 40 and 30 μg/l, respectively, were above the Class GA standard of 25 μg/l. Arsenic was not detected in the corresponding filtered samples.

Cadmium was detected in two of the nine unfiltered samples submitted for analyses - MW-3 and LMS-1 at estimated concentrations of 0.53 and 1.3 μg/l, respectively, which are below the Class GA standard of 10 μg/l. Cadmium was detected in only one filtered sample, LMS-1 at an estimated concentration of 1.1 μg/l, which is well below the Class GA standard of 10 μg/l.

Chromium was detected in seven of nine unfiltered samples submitted for analyses, ranging from 15 μg/l in LMS-6 (blind duplicate of LMS-2) to 94 μg/l in AMS-1. The chromium concentration in AMS-1 at 94 μg/l was above the Class GA standard of 50 μg/l. Chromium was detected in only one filtered sample, LMS-3 at 14 μg/l, which is well below the Class GA standard of 50 μg/l.

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.

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.

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
								[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 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.

Copper was detected in all nine unfiltered samples submitted for analyses, ranging from 6.1 μg/l in MW-3 to 50 μg/l in LMS-1, both of which are below the Class GA standard of 200 μg/l. Copper was detected in only one filtered sample, LMS-4, at an estimated concentration of 16 μg/l, which is well below the Class GA standard of 200 μg/l.

Lead was detected in seven of nine unfiltered samples submitted for analyses, ranging from 8.4 μg/l in AMS-2 to 37 μg/l in LMS-1. The lead concentration in LMS-1 at 37 μg/l was above the Class GA standard of 25 μg/l. Lead was not detected in the corresponding filtered samples.

Nickel was detected in seven of nine unfiltered samples submitted for analyses, ranging from an estimated concentration of 22 μg/l in LMS-6 (blind duplicate of LMS-2) to 8770 μg/l in LMS-4. Nickel was detected in seven of nine filtered samples submitted for analyses, ranging from an estimated concentration of 4.9 μg/l in LMS-3 to 8860 μg/l in LMS-4. There is no current Class GA groundwater standard for nickel.

Zinc was detected in eight of nine unfiltered samples submitted for analyses, ranging from 28 μg/l in AMS-2 to 1380 μg/l in LMS-4. The zinc concentration in LMS-4 at 1380 μg/l was above the Class GA standard of 300 μg/l. Zinc was detected in all nine filtered samples, ranging from 10 μg/l in LMS-3 to 1250 μg/l in LMS-4. The zinc concentration in LMS-4 at 1250 μg/l was above the Class GA standard of 300 μg/l.

3.9 HYDRAULIC CONDUCTIVITY RESULTS

Slug tests conducted on the eight monitoring wells on-site revealed that the horizontal hydraulic conductivity of the UGA ranged from 0.4504 to 75.77 ft/day, with a geometric mean of approximately 31 ft/day. These values are less than the published average hydraulic conductivity value of 270 ft/day for the UGA, but do fall into the ranges for the material in which the wells are screened. With one exception, the wells were found to recover rapidly as would be expected in this material. One explanation for the below average conductivity values may be the estimated UGA thickness used in the calculations or the distance of the Site from the terminus of the glacier. The farther a location is from the glacier's edge, the less energy the meltwater streams have to deposit coarse-grained materials of high hydraulic conductivity. Slug test data are included in Appendix F.

3.10 BERM SAMPLING PROCEDURES

During the field investigation, LMS was provided with information regarding closure activities performed at the Site. One activity that was described was the filling and grading of the area behind the building at 270 Duffy Avenue, which was reported to flood periodically. The 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. Upon receipt of this information, LMS recommended the collection of samples from the berm.

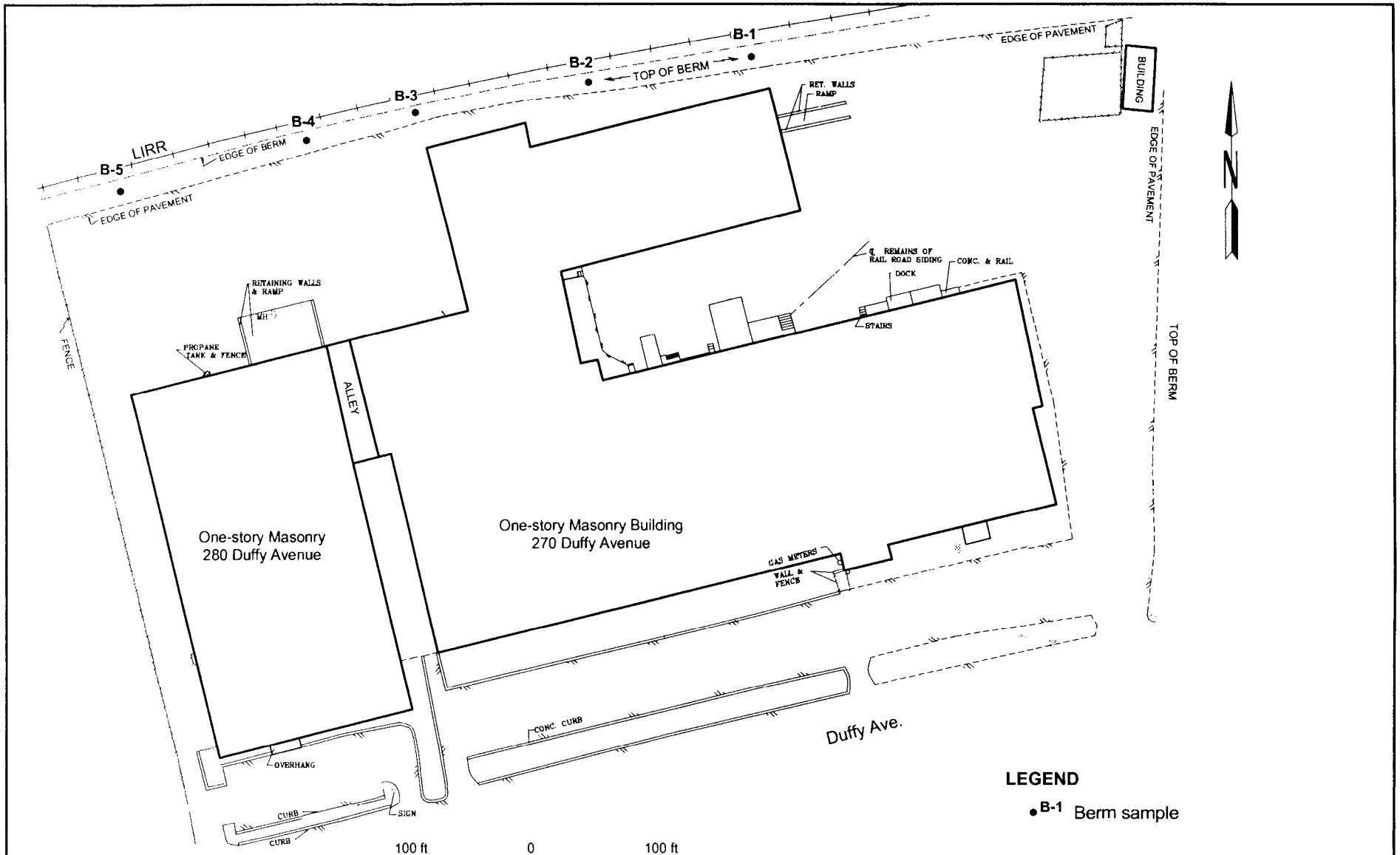
On 13 September 1996, a total of five soil samples were collected from the berm located along the northern border of the Site. Sample locations were proposed by LMS and approved by the NYSDEC representative (Figure 3-13). Each soil sample was collected from the top of the berm to the bottom using a stainless steel hand auger. The auger was advanced through the berm, and the soil recovered was placed in laboratory-cleaned, dedicated stainless steel bowls for compositing. Samples were composited using laboratory-cleaned, dedicated stainless steel spoons. The samples were placed in pre-cleaned glass jars and labeled with the sample location, job number, date, time, sampler, and analyses required. Each sample was logged on the appropriate chain-of-custody form and then either hand delivered or delivered via courier to the analytical laboratory.

3.11 BERM SAMPLING RESULTS

Berm soil samples were collected and analyzed for VOCs, TCL VOCs, TAL metals, and two samples were submitted for extraction using TCLP and the extracts analyzed for RCRA metals. The metals samples were composited over the total depth of the boring, while the VOCs samples were collected from the berm at mid-depth. The samples were labeled with the prefix "B", followed by the sample location number (e.g., B-1). Soil analyses results are summarized below.

3.11.1 VOCs

A total of five berm soil samples were collected for analyses: three were analyzed for VOCs by EPA SW-846 Methods 8010/8020 and two samples were analyzed for TCL VOCs by NYSDEC ASP 91.1. Analytical results are presented in Table 3-16. There were no VOCs detected in samples collected for analyses.



Map source:
Affliates & Deborah Lee King, L.S., 1996.

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Berm Sample Locations

Alsy Manufacturing - Oyster Bay, New York

Figure 3-13

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.

3.11.2 Metals

A total of five berm soil samples were collected and analyzed for full TAL parameters. Analytical results were compared to the NYSDEC TAGM recommended soil cleanup objectives and are presented in Table 3-17.

Arsenic was detected in all five samples, ranging from 10 mg/kg in B-1 to 14 mg/kg in B-2. Arsenic concentrations in samples B-1, B-2, B-3, B-4, and B-5 at 10, 14, 12, 13, and 11 mg/kg were above the recommended soil cleanup objective of 7.5 mg/kg.

Beryllium was detected in all five samples submitted for analyses, ranging from an estimated concentration of 0.30 mg/kg in B-5 to 0.42 mg/kg in B-2. Beryllium concentrations in B-1, B-2, B-3, B-4, and B-5 at 0.35, 0.42, 0.32, 0.33, and 0.30 were above the recommended soil cleanup objective of 0.16 mg/kg.

Cadmium was detected in all five samples submitted for analyses, ranging from an estimated concentration of 0.35 mg/kg in B-5 to 1.5 mg/kg in B-4. Cadmium concentrations in B-3 and B-4 at 1.3 and 1.5 mg/kg, respectively, were above the recommended soil cleanup objective of 1.0 mg/kg.

Chromium was detected in all five samples ranging from 15 mg/kg in B-1 and B-5 to 53 mg/kg in B-3. The chromium concentrations in B-1, B-2, B-3, B--4, and B-5 at 15, 21, 53, 37, and 15 mg/kg, respectively, were above the recommended soil cleanup objective of 10 mg/kg.

Copper was detected in each of the samples submitted for analyses, ranging from 26 mg/kg in B-1 to 288 mg/kg in B-4. Copper concentrations in B-1, B-2, B-3, B-4, and B-5 at 26, 53, 200, 288, and 94 mg/kg, respectively, were above the recommended soil cleanup objective of 25 mg/kg.

Iron was detected in all five samples submitted for analyses ranging from an estimated concentration of 12100 mg/kg in B-1 to 17800 mg/kg in B-5. Iron concentrations in B-1, B-2, B-3, B-4, and B-5 at 12100, 16000, 13400, 17100, and 17800 mg/kg, respectively, were above the recommended soil cleanup objective of 2000 mg/kg.

Mercury was detected in each of the samples submitted for analyses, ranging from 0.20 mg/kg in B-5 to 0.27 mg/kg in B-4. Mercury concentrations in B-1, B-2, B-3, and B-4 at 0.21, 0.26, 0.23, and 0.27 mg/kg, respectively, were above the recommended soil cleanup objective of 0.1 mg/kg.

Nickel was detected in each of the samples submitted for analyses, ranging from 10 mg/kg in B-1 to 487 mg/kg in B-4. Nickel concentrations in B-2, B-3, B-4, and B-5 at 30, 334, 487, and 19 mg/kg, respectively, were above the recommended soil cleanup objective of 13 mg/kg.

Zinc was detected in each of the samples submitted for analyses, ranging from 44 mg/kg in B-1 to 231 mg/kg in B-4. Zinc concentrations in B-2, B-3, B-4, and B-5 at 208, 158, 231, and 121 mg/kg, respectively, were above the recommended soil cleanup objective of 20 mg/kg.

3.11.3 TCLP Metals

A total of 2 samples were submitted for extraction using TCLP and extracts analyzed for RCRA metals. Results are presented in Table 3-18. Concentrations reported in the TCLP extracts were all below Resource Conservation and Recovery Act (RCRA) criteria for hazardous waste.

3.12 INDOOR AIR MONITORING SAMPLING PROCEDURES AND RESULTS

On 22 July 1996, a one-time air monitoring event was performed inside the building and adjacent to the area reported to have housed the vapor degreasers. The air monitoring was required by NYSDEC to fill a data gap regarding the closure of the vapor degreaser area. A patch in the concrete floor of one of the storage rooms in the building as well as old floor plans aided in the determination of the suspected vapor degreaser location. Compound-specific colorimetric detector tubes for 1,1,1 trichloroethane and trichloroethylene 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 tubes were inserted into the air sampler and an air sample was drawn through the detector tube. If the detector tube-specific compounds are present, the tube changes 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.

3.13 DECONTAMINATION

3.13.1 Field Procedures

All equipment that came into contact with potentially contaminated soils or groundwater was decontaminated before being removed from the Site. In addition, equipment utilized during the installation of soil and water probes, soil borings, and monitoring wells was decontaminated between each point, boring, or well location to prevent cross-contamination. All nondedicated

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 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.

sampling equipment was decontaminated between sampling locations by either steam cleaning, or by using the following cold-wash methods:

1. Packed dirt, grit, mud, and debris were removed with a wire or stiff bristle brush.

2. All potentially contaminated surface areas were scrubbed with a water/detergent solution.

3. Scrub solution was rinsed off equipment with a potable water rinse.

Drilling equipment (including augers, split spoons, and the rig itself) was steam cleaned between each boring location. Split spoons were cold washed between each sample location. All equipment was allowed to air dry before reuse.

3.13.2 Laboratory Procedures

Laboratory decontamination of field sampling equipment included the following steps:

1. Scrub with tap water and nonphosphate detergent.

2. Rinse with tap water.

3. Rinse with 10% HNO_3*.

4. Rinse with distilled/deionized water.

5. Rinse with pesticide grade methanol**.

6. Rinse with deionized water.

7. Air dry.

8. Wrap in autoclaved aluminum foil.

3.14 WASTE HANDLING AND DISPOSAL

Work-derived wastes included soil cuttings, decontamination water, disposable personnel protective equipment, well development and purge water, and general trash. These wastes, together with any residual amount of waste derived from previous activities, were handled as described below.

---

* Steps 3 and 4 are omitted if metals are not being analyzed.

** Steps 5 and 6 are omitted if organics are not being analyzed.

3.14.1 Soil Cuttings From Probes and Monitoring Well Installation

Upon completion of sampling activities, all probe points were backfilled to grade level using soil cuttings. Where necessary, the parking lot surface was patched with asphalt.

Drill cuttings from the monitoring wells were placed in clean 55-gal drums supplied by the subcontractor. The drummed soil was then brought to a staging area adjacent to the berm in the northwest corner of the Site. Plastic sheeting was placed on the ground surface and the soil cuttings were transferred from the drums onto the plastic sheeting. When all drill cuttings were placed on the sheeting, the pile was covered with additional sheeting and weighted down.

3.14.2 Well Development, Purge, and Decontamination Water

The groundwater and decontamination water generated from well installation, development, and purging was discharged to an unpaved area of the Site upon approval from the NYSDEC representative.

3.14.3 Disposal of Personnel Protective Equipment and General Trash

Used personnel protective equipment and other trash were stored in appropriate trash bags on-site. Upon completion of field activities, the trash was transported to LMS' laboratory for proper disposal.

CHAPTER 4

CONCLUSIONS

During the RI, soil, soil gas, and groundwater samples were collected from various locations across the Site. Various types and matrices of samples were taken at multiple intervals from the berm, deep perimeter probes, shallow on-site probes, angled probes under the building, and groundwater monitoring wells. A total of 62 individual sampling locations were located around the Site. From these locations 26 soil samples were analyzed for TCLP metals; 126 water, 30 soil gas, and 75 water samples were analyzed for volatile organics; and 25 soil and 66 water samples were analyzed for total metals (an additional 66 water samples were analyzed for dissolved metals). The following is a summary of the overall data and a description of the initial regulatory comparison used to determine the areas where detection of chemical compounds require further risk screening and/or consideration of remediation, if any, in the Feasibility Study (FS).

Concentrations of chemical compounds at the Site have been initially compared in this RI report with the following regulatory guidance:

- NYSDEC Division Technical and Administrative Guidance Memorandum: Determination of Soil Cleanup Objectives and Cleanup Levels (TAGM-94-4046); Appendix A, Table 1 - Recommended Soil Cleanup Objectives for Volatile Organic Contaminants to Protect Groundwater, and

- Table 4 - Recommended Soil Cleanup Objectives for Heavy Metals, Recommended Soil Cleanup Objectives.

Additional ARARs and risk screening will be developed and described in the FS for all locations and media where any of these criteria are exceeded.

Groundwater sample results were compared to the NYSDOH Class GA drinking water standards and Guidance Values for those parameters.

No soil samples were found to exceed the Toxicity Characteristic Leaching Procedure (TCLP) criteria that define a characteristic hazardous waste.

Soil samples from the berm area were found to contain no volatile organic compounds above the cited regulatory levels. Some samples however, exceeded the Recommended Soil Cleanup

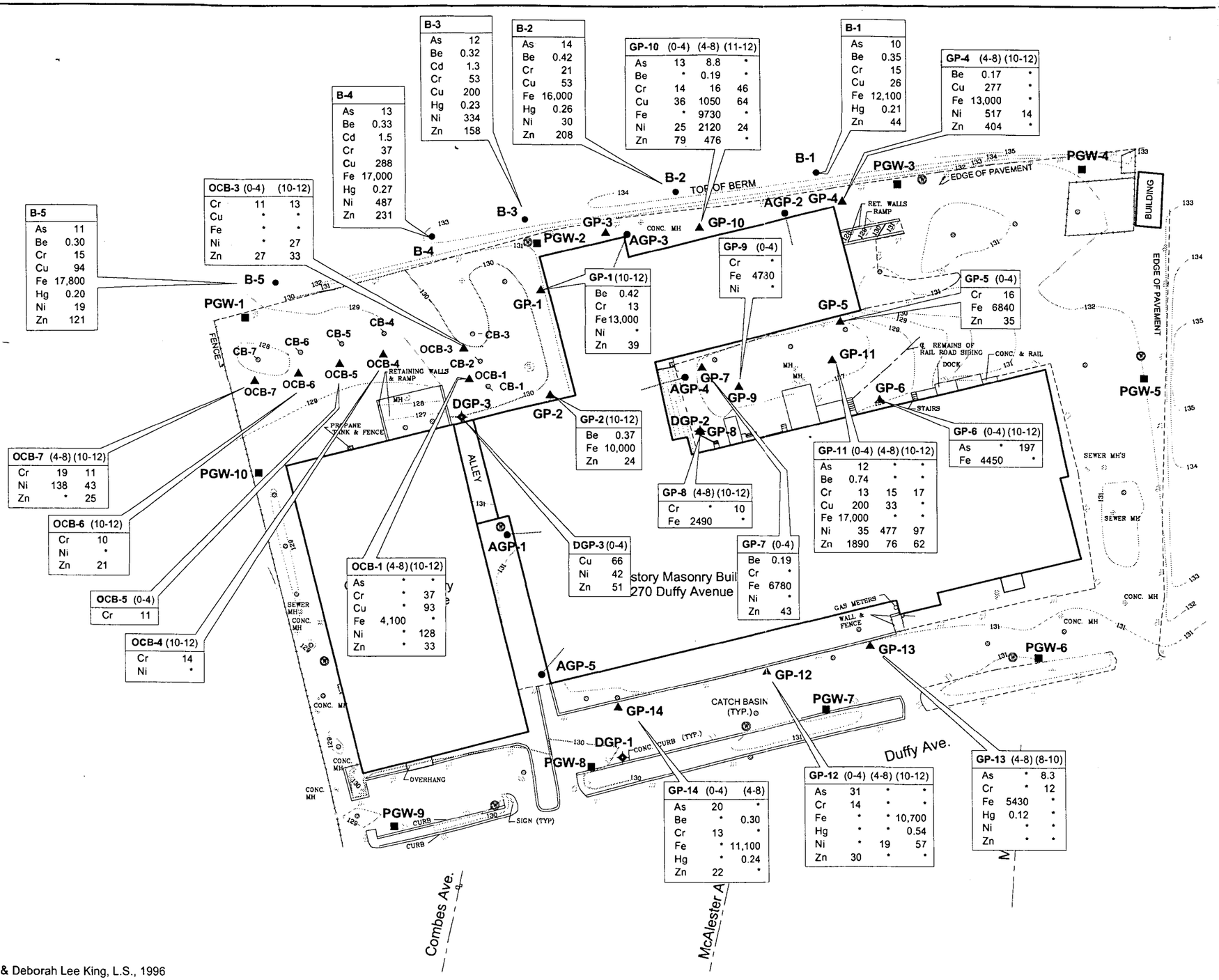
Objective levels for arsenic, beryllium, cadmium, chromium, iron, copper, nickel, zinc, and mercury. The FS will determine the risks posed, if any, by those levels and whether remediation is warranted.

Soil throughout the Site contained no elevated levels of volatile organic compounds that, according to the TAGM, would pose a threat to groundwater; however localized areas contained arsenic, cadmium, copper, chromium, nickel, and zinc in concentrations above the recommended soil cleanup objectives (Figure 4-1). More specifically, the metal exceeding the criteria most often was nickel. The vast majority of these samples represented shallow soil (less than 12 ft in depth); the remaining samples were taken from depths above the water table, between 34 and 46 ft.

Low-levels of organic chemical compounds were found in groundwater at several locations on-Site. Concentrations were generally below the Class GA standard, with some samples containing concentrations just over the standard (Figure 4-2). Low-level PCE, TCE and 1,1,1-TCA contamination was also found at the upgradient (northeastern) border of the Site in LMS-1 and PGW-4. The highest chemical concentrations in groundwater were found along the eastern (side gradient) border of the Site, primarily PCE and 1,1,1-TCA. PCE was detected at a concentration of 8.4 μg/l in PGW-6 and 9.0 μg/l in LMS-3. 1,1,1-TCA was detected in PGW-5 at 12.0 μg/l. The Class GA standard for both compounds is 5.0 μg/l.

Two groundwater sampling points located in the loading dock area of 270 Duffy Avenue (essentially the center of the Site) approximately 60 ft apart (GP-7GW, GP-8GW) contained 1,1,1-TCA just above the Class GA standard at 8.6 and 6.0 μg/l, respectively. Volatile organic contamination was not found in any of the adjacent soil samples or above the Class GA standard in the monitoring wells downgradient of these two locations; in addition 1,1,1-TCA was detected at very low concentrations in soil gas samples AGP-4 (20) and AGP-4 (52).

Several groundwater monitoring wells (both upgradient and downgradient) were found to exceed the standards or guidance for manganese and sodium in both total and dissolved samples. Elevated concentrations of nickel relative to the rest of the site have been detected in the groundwater at two locations (AMS-2 and LMS-4 [Figure 4-3]).



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 recommended soil cleanup objective

NYSDEC TAGM CRITERIA
(Recommended Soil Cleanup Objectives)

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

ABBREVIATIONS

As	Arsenic
Be	Beryllium
Cd	Cadmium
Cr	Chromium
Cu	Copper
Fe	Iron
Hg	Mercury
Ni	Nickel
Zn	Zinc

100 ft 50 ft 0 100 ft

APPROXIMATE SCALE
1 in. = 100 ft

Source:
Affliates & Deborah Lee King, L.S., 1996

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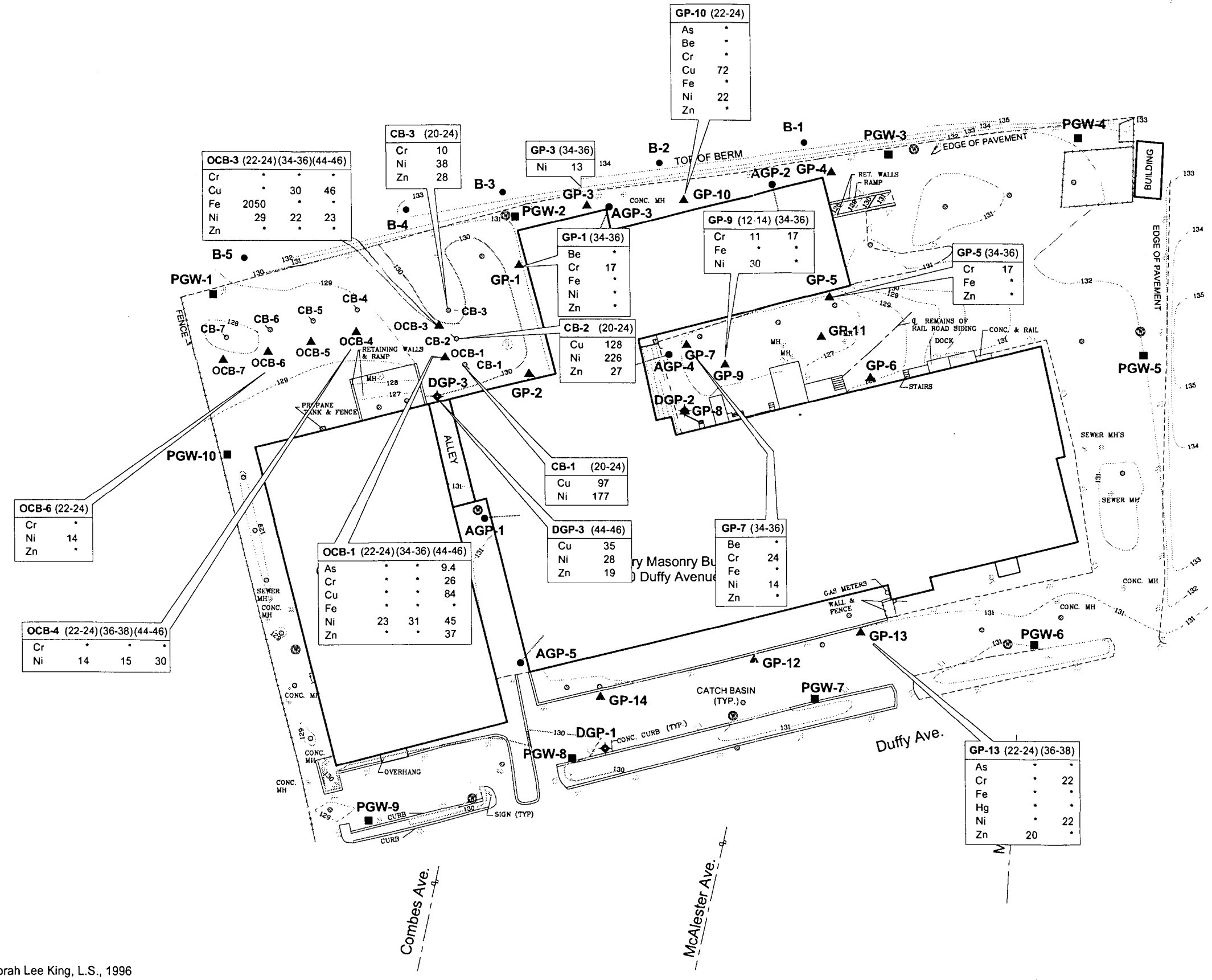
Soil Samples (0-12 ft below grade) in Exceedance of NYSDEC TAGM Criteria
Alsy Manufacturing - Oyster Bay, New York

Figure 4-1a



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 recommended soil cleanup objective

NYSDEC TAGM CRITERIA
(Recommended Soil Cleanup Objectives)

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

ABBREVIATIONS

As	Arsenic
Be	Beryllium
Cd	Cadmium
Cr	Chromium
Cu	Copper
Fe	Iron
Hg	Mercury
Ni	Nickel
Zn	Zinc

100 ft 50 ft 0 100 ft

APPROXIMATE SCALE
1 in. = 100 ft

Source:
Affiliates & Deborah Lee King, L.S., 1996

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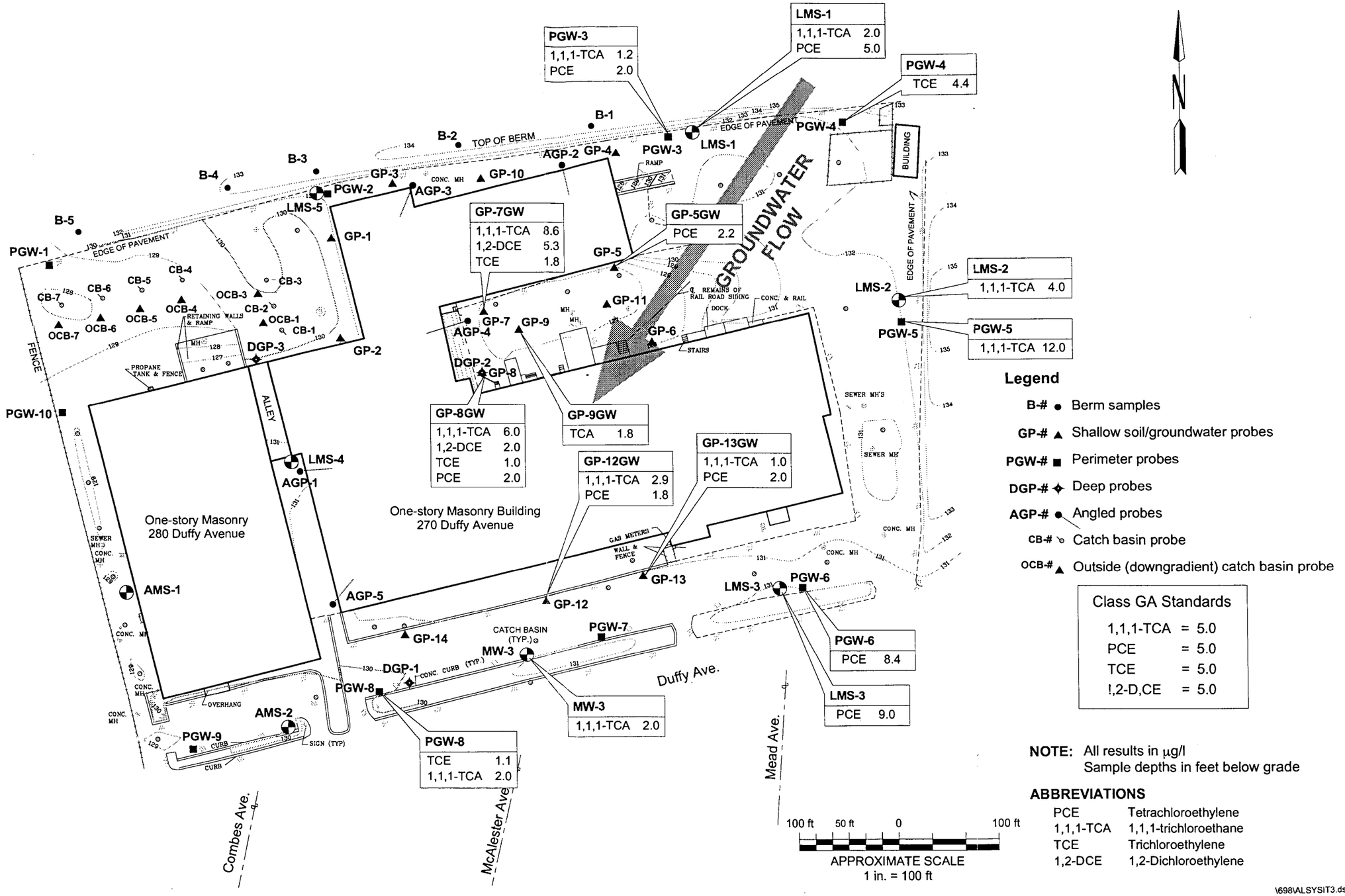
Soil Samples (12 ft below grade and greater) in Exceedance of NYSDEC TAGM Criteria
Alsy Manufacturing - Oyster Bay, New York

Figure 4-1b



Source:
Affliates & Deborah Lee King, L.S., 1996

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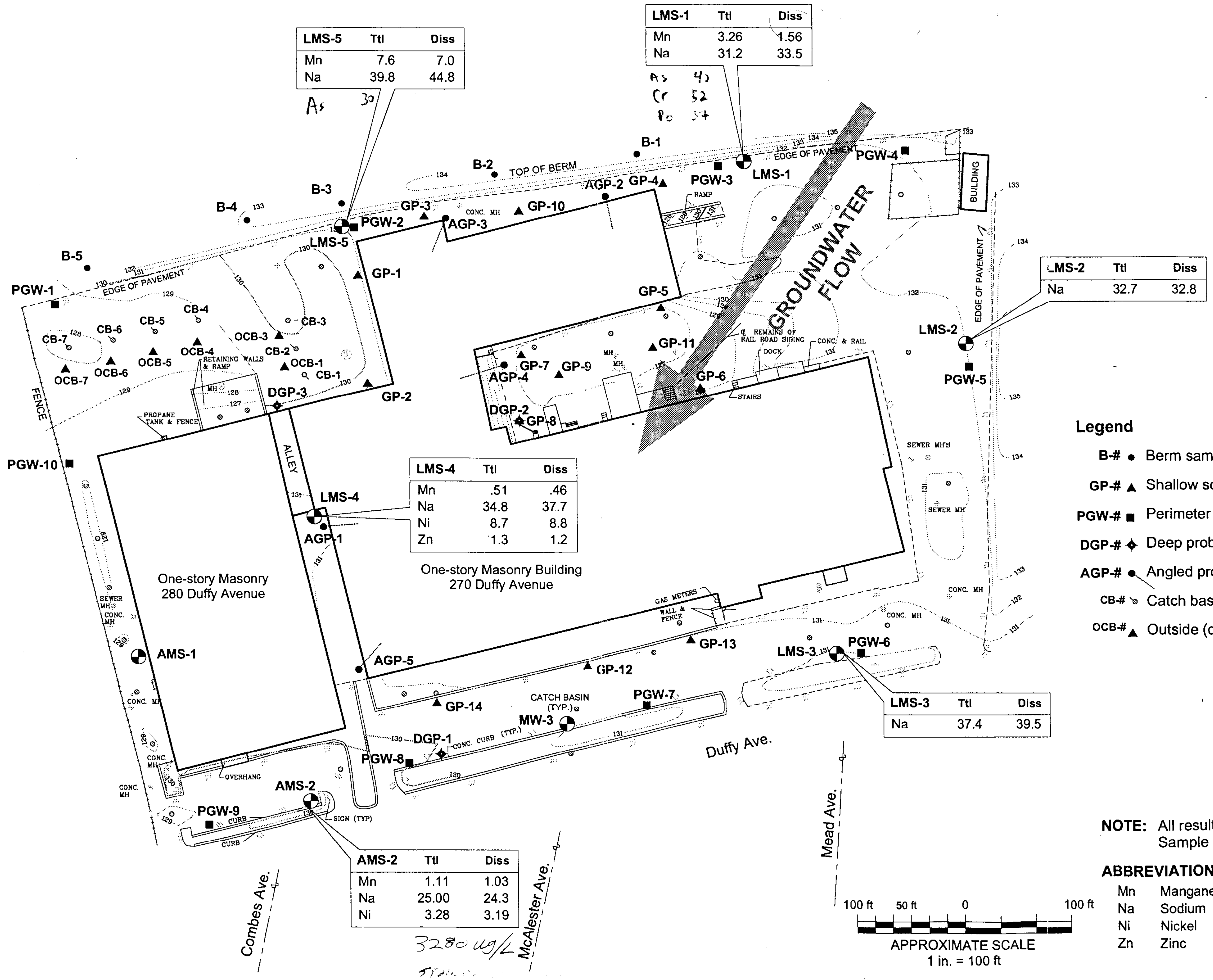
Concentrations of Volatile Organics in Groundwater
Alsy Manufacturing - Oyster Bay, New York

Figure 4-2

obes

in probe



LMS-5 Ttl Diss
Mn 7.6 7.0
Na 39.8 44.8
LMS-1 Ttl Diss
Mn 3.26 1.56
Na 31.2 33.5
LMS-2 Ttl Diss
Na 32.7 32.8
LMS-4 Ttl Diss
Mn .51 .46
Na 34.8 37.7
Ni 8.7 8.8
Zn 1.3 1.2
LMS-3 Ttl Diss
Na 37.4 39.5
AMS-2 Ttl Diss
Mn 1.11 1.03
Na 25.00 24.3
Ni 3.28 3.19
GROUNDWATER FLOW
N
One-story Masonry
280 Duffy Avenue
One-story Masonry Building
270 Duffy Avenue
Duffy Ave.
Mead Ave.
Combes Ave.
McAlester Ave.
TOP OF BERM
EDGE OF PAVEMENT
FENCE
ALLEY
BUILDING
CATCH BASIN (TYP.)
REMAINS OF RAIL ROAD SIDING
GAS METERS
OVERHANG
PROPANE TANK & FENCE
B-1
B-2
B-3
B-4
B-5
PGW-1
PGW-2
PGW-3
PGW-4
PGW-5
PGW-6
PGW-7
PGW-8
PGW-9
PGW-10
LMS-1
LMS-2
LMS-3
LMS-4
LMS-5
AMS-1
AMS-2
MW-3
DGP-1
DGP-2
DGP-3
AGP-1
AGP-2
AGP-3
AGP-4
AGP-5
GP-1
GP-2
GP-3
GP-4
GP-5
GP-6
GP-7
GP-8
GP-9
GP-10
GP-11
GP-12
GP-13
GP-14
CB-1
CB-2
CB-3
CB-4
CB-5
CB-6
CB-7
OCB-1
OCB-3
OCB-4
OCB-5
OCB-6
OCB-7
100 ft 50 ft 0 100 ft
APPROXIMATE SCALE
1 in. = 100 ft

Legend

- B-# ● Berm samples
- GP-# ▲ Shallow soil/groundwater probes
- PGW-# ■ Perimeter probes
- DGP-# ✦ Deep probes
- AGP-# ● Angled probes
- CB-# Catch basin probe
- OCB-# ▲ Outside (downgradient) catch basin probe

NOTE: All results in μg/l
Sample depths in feet below grade

ABBREVIATIONS

Mn	Manganese
Na	Sodium
Ni	Nickel
Zn	Zinc

Source:
Affiates & Deborah Lee King, L.S., 1996

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Concentrations of Metals in Groundwater
Alsy Manufacturing - Oyster Bay, New York

Figure 4-3

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[1] State of New York, Department of Environmental Conservation. Order on Consent, Site # 1-30-027, Index # W1-0579-92-01.

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[3] Richard D. Galli, P.E., P.C. 1990. Phase II Environmental Investigation, Magnusonic Devices, Inc., Hicksville, New York, NYSDEC Site Code 130031.