

REMEDIAL INVESTIGATION
AND FEASIBILITY STUDY

REMEDIAL INVESTIGATION REPORT

Liberty Industrial Finishing Site
Brentwood, Suffolk County, New York

(Site Registry No. 1-52-108)

CONTRACT NO. D002708-25



Dvirka and Bartilucci

Consulting Engineers

JANUARY 1999

REMEDIAL INVESTIGATION REPORT

LIBERTY INDUSTRIAL FINISHING SITE

BRENTWOOD

SUFFOLK COUNTY, NEW YORK

(SITE REGISTRY NO. 1-52-108)

PREPARED FOR

**NEW YORK STATE DEPARTMENT
OF ENVIRONMENTAL CONSERVATION**

BY

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JANUARY 1999

LIBERTY INDUSTRIAL FINISHING SITE REMEDIAL INVESTIGATION REPORT

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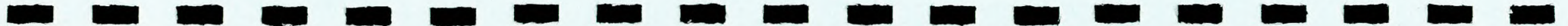
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Summary



S.0 EXECUTIVE SUMMARY

Introduction

As part of New York State's Superfund Program to investigate and remediate hazardous waste sites, the New York State Department of Environmental Conservation (NYSDEC) issued a Work Assignment to Dvirka and Bartilucci Consulting Engineers of Woodbury, New York under its Superfund Standby Contract with the State to undertake a Remedial Investigation and Feasibility Study (RI/FS) for the Liberty Industrial Finishing Site located in Brentwood, Suffolk County, New York. This site was previously used for the manufacture and plating of aircraft components and is currently inactive. The registry number for this New York State Superfund Site is 1-52-108.

The purpose of this RI/FS is to perform a remedial investigation to determine the nature, extent and source(s) of contamination at the site and the risk to human health and the environment, and to perform a feasibility study to identify, evaluate and recommend a cost-effective, environmentally sound, long-term remediation plan, if required.

This document presents a detailed description of the activities and findings of the remedial investigation which was conducted in accordance with the federal Comprehensive Emergency Response, Compensation and Liability Act (CERCLA); Superfund Amendments and Reauthorization Act (SARA); and the NYSDEC Superfund Program, including NYSDEC Technical and Administrative Guidance Memorandum, "Guidelines for Remedial Investigation/Feasibility Studies."

Investigation Activities

The remedial investigation involved the analysis of previously collected information and environmental data in combination with the performance of a focused, comprehensive field investigation/sampling program. The activities conducted at the Liberty Industrial Finishing Site included the following:

- Historical information and aerial photograph review to identify activities at the site, including waste disposal, which could have resulted in environmental contamination;
- Public and private water supply well survey to identify potential groundwater receptors;
- Geophysical survey to determine the location of subsurface drainage systems that could have been used for waste disposal and areas of buried waste;
- Collection of seventeen sediment/sludge samples from storm water wells, sanitary leaching pools and an industrial leaching pool to determine if wastes were disposed to these drainage systems;
- Collection of sixty-five surface soil and forty-two subsurface soil samples to determine if activities at the site resulted in contamination of soil both on-site and off-site;
- Excavation of six test trenches and collection of two soil samples to determine if waste was present in an area of suspected disposal;
- Collection of thirty-one Geoprobe groundwater samples and twenty-seven monitoring well groundwater samples to determine if activities at the site contaminated groundwater on-site and off-site;
- Installation and sampling of seven new monitoring wells, together with ten existing, to determine groundwater quality;
- Measurement of groundwater levels to determine groundwater flow direction;
- Monitoring of vapors and gases to determine impacts on ambient air;
- Performance of a wildlife habitat survey to determine environmental conditions and impacts at the site; and
- Performance of an exposure assessment to determine impacts on human health.

Findings

The findings of the remedial investigation for the Liberty Industrial Finishing Site are based primarily on the results of the sampling program and comparison of the results to the standards, criteria and guidelines (SCGs) selected for the site. While there were a number of exceedances of SCGs detected both on the Liberty Industrial Finishing Site and off-site in the

area of investigation, only those that are considered significant are presented below and will likely require remediation. Based on the analytical results, the contaminants of concern detected at the Liberty site are metals, comprising primarily cadmium, chromium, copper, mercury, nickel and zinc, and the inorganic compound, cyanide. These contaminants are likely the result of spills and disposal of plating waste at the site. Provided below are the findings of the investigation as they relate to significant exceedances of the SCGs and likely need for remediation. The findings are presented as a function of media investigated.

Surface Soil

Significantly contaminated surface soil (cadmium, chromium, copper, mercury, nickel and zinc) was found on the Liberty Industrial Finishing Site at one location. This location is in the area of the underground plating waste storage tanks. This contamination may have resulted from spills of plating waste in the vicinity of the tanks.

Significantly contaminated surface soil (arsenic) was found on the Town of Islip Athletic Field south of the site at one location, which is in the southwest corner of the field. This contamination may have resulted from the use of herbicides in the area of a utility pole. Remediation of this area was performed in 1998 by the U.S. Environmental Protection Agency (USEPA) as part of an Interim Remedial Measure (IRM).

Significantly contaminated surface soil (barium, beryllium, chromium, cobalt, copper, iron, lead, nickel, selenium and zinc) was found on the Brentwood Water District property south of the site at two locations. This contamination likely resulted from sand blasting and/or painting of the elevated water storage tank on the property. This area was remediated by the USEPA in 1998 as part of an IRM.

No significant surface soil contamination was detected on the American Legion property located southeast of the site.

Dry Well/Leaching Pool Sediment/Sludge

Significantly contaminated sediment/sludge (cadmium, chromium, copper and zinc) was detected in one of the four sanitary leaching pools, which is the westernmost pool.

Significantly contaminated sediment/sludge (PAHs and metals, in particular chromium) was detected in four storm water dry wells, one of which is located in the area of the western loading dock and the remaining three located in the area of the former eastern loading dock.

Significantly contaminated sediment/sludge was not found in the industrial emergency leaching pool. Contaminated sediment/sludge was previously removed from this leaching pool.

Subsurface Soil

Significantly contaminated subsurface soil was detected in the area of the underground plating waste storage tanks and along the pipe gallery that leads from the facility building to the tanks. Significant contamination was not found adjacent to storm water dry wells, sanitary leaching pools, boiler blowdown area, industrial emergency leaching pool or area of suspected waste disposal in the southwestern portion of the site.

Groundwater

The results of the well survey indicate that residences and businesses in the area of the Liberty site are served by a public water supply.

Groundwater downgradient of the underground plating waste storage tanks and the former eastern loading dry wells is contaminated with cadmium, cyanide (and possibly antimony), and in particular chromium, likely resulting from plating waste disposal or spills and/or leaking underground waste storage tanks. Groundwater contaminated by cadmium and cyanide (and possible antimony) is primarily shallow on-site and extends approximately 150 feet downgradient of the site. Chromium-contaminated groundwater is significantly more

contaminated and more extensive. Chromium-contaminated groundwater on-site ranges up to 3,600 ug/l and immediately off-site (about 150 feet) is 3,070 ug/l. The most downgradient well located about 500 feet from the site and 50 feet below the water table shows a chromium concentration of 53.7 ug/l, which slightly exceeds the groundwater standard of 50 ug/l. Based on the location of the plume of contaminated groundwater, the primary source of contamination is the waste UST area and pipe gallery, and the dry wells located in the area of the former eastern loading dock. It is in these same areas that the most significantly contaminated surface soil, subsurface soil and dry well sediment/sludge was detected.

Ambient Air

No elevated measurements of volatile organic vapors, hydrogen sulfide or hydrogen cyanide were detected above ambient/background levels during the remedial investigation field program.

Interim Remedial Measures

In addition to the IRMs conducted as a result of the detection of contaminated soil on the Town of Islip Athletic Field and Brentwood Water District property, as a result of a request by NYSDEC to the United States Environmental Protection Agency (USEPA) to conduct a removal assessment at the Liberty Industrial Finishing Site, the USEPA performed Preliminary Assessments (PAs) of the site in September 1997 and January 1998. The results of these PAs showed that approximately 45 drums of hazardous, toxic, corrosive, reactive or poisonous chemicals were stored at the site. Other contaminated material (including wood and concrete debris, paint spray booth filters and filter fabric dust bags), plating tanks with crystalline residue and two drums containing small chemical containers were also discovered on-site.

After Liberty ceased operations and was reportedly no longer financially able to comply with the NYSDEC Consent Order to investigate and remediate the site, due to the lack of site security and utilities (lighting, alarms and fire suppression), in combination with the storage of hazardous and contaminated materials, USEPA began a removal action under authorization

received on July 1, 1998. The removal action included collection of waste characterization samples, collection of soil samples, sampling of material contained within the underground storage tanks, decontamination of plating vats and removal of material for off-site disposal. The removal action is essentially complete. USEPA is awaiting final approval for disposal of drummed material from the site. Additional remedial measures are addressed in the Feasibility Study Report.



1.0 INTRODUCTION

This section presents the overall project objectives of the Remedial Investigation and Feasibility Study for the Liberty Industrial Finishing Site; a description of the site; facility operations and previous investigations; and an overview of the remedial investigation and report organization.

1.1 Project Objectives

As part of New York State's program to investigate and remediate hazardous waste sites, the New York State Department of Environmental Conservation (NYSDEC) issued a Work Assignment to Dvirka and Bartilucci Consulting Engineers of Woodbury, New York, under its Superfund Standby Contract with NYSDEC, to conduct a Remedial Investigation and Feasibility Study (RI/FS) for the Liberty Industrial Finishing Site located in Brentwood, Suffolk County, New York. The RI/FS for this site is being performed with funds allocated under the New York State Superfund Program.

The purpose of this RI/FS is the identification of the source(s) and extent of contamination; definition of pathways of contaminant migration; determination of potential receptors and impacts; evaluation of the need for corrective actions; and identification and preliminary evaluation of remedial measures.

This document, entitled "Remedial Investigation Report - Liberty Industrial Finishing Site," was prepared, and the activities performed as part of the RI/FS, were conducted in accordance with the federal Comprehensive Emergency Response, Compensation and Liability Act (CERCLA), Superfund Amendments and Reauthorization Act (SARA) and the New York State Superfund Program, including the NYSDEC Technical and Administrative Guidance Memorandum, "Guidelines for Remedial Investigation/Feasibility Studies."

1.2 Site Location, Ownership and Access

The Liberty Industrial Finishing Site is an inactive facility located at 550 Suffolk Avenue, Brentwood, Suffolk County, New York (see Figure 1-1). The site is owned by Liberty Industrial Finishing (Liberty). Access to the property is from Suffolk Avenue and the property is partially fenced. Liberty reportedly first occupied the site in July 1978. Operations at the facility ceased in the spring of 1997.

1.3 Site Description

This section includes a site description as provided by the NYSDEC, a 1987 Field Investigation Report prepared by Holzmacher, McLendon and Murrell, P.C. (H2M) and a 1996 document prepared by Galli Engineering, P.C., Liberty's environmental engineer, that described the types of wastes generated at the facility.

The Liberty Industrial Finishing Site consists of 3.9 acres, 1.3 acres of which are undeveloped. Liberty Industrial Finishing (Products) was a medium-sized metal finishing facility engaged in finishing, plating and non-destructive testing of parts and components used primarily in the aircraft industry. All operations were performed in a single story, 30,000 square foot building. Operations included passivation; phosphatizing; electroplating of copper, cadmium and zinc; conversion coating; sulfuric anodizing; chromic anodizing; alodining; painting; and vapor degreasing. Both acidic plating wastes (pH 3-4) and cyanide bearing wastes (pH 12) were generated and segregated due to their incompatibility. Zyglo dye penetrant was used in non-destructive testing. The degreaser originally used 1,1,1-trichloroethane. The facility changed to trichloroethene in late 1993.

As a result of its metal finishing activities, Liberty generated a variety of waste products. These wastes can be divided into four principal categories, namely, metal finishing rinse waters, spent metal finishing baths, paint wastes and thinners, and spent degreasing solvents. A description of each of these waste-generating processes, as well as waste treatment and storage facilities, is provided below.

Metal Finishing Wastewaters

Sources of metal finishing rinse waters include continuous overflows from rinse tanks, plating tank dumps and other sources. Wastes were generated from several different processes; some of which were not compatible with each other. For example, according to the report prepared by Galli Engineering, cyanide bearing wastewater from the copper or cadmium plating processes was never allowed to mix with acidic wastewater from sulfuric or chromic anodizing until after cyanide destruction. Resultant wastewaters were treated in a closed-loop system and reused in the plant. This closed-loop treatment system, which was installed in the first quarter of 1992, is described in a later section.

Sulfuric Anodizing

Sulfuric acid anodizing is an electrolytic process that uses the part being treated as an electrical anode. The surface of the part oxidizes as a result of this electrolytic action. In this case, the parts were usually aluminum. Wastewaters generated were low in pH (3-4) and contained some copper and aluminum. These wastewaters were treated continuously in the on-site, closed-loop waste treatment plant followed by vacuum distillation in the Wastesaver unit.

Sulfuric anodizing generated approximately 10,000 gallons per year of wastewater which was sent to the continuous treatment plant.

Chromic Anodizing

Chromic anodizing is also an electrolytic process that uses the part being treated as an electrical anode. The surface of the part oxidizes as a result of this electrolytic action. In this case, the parts were usually aluminum. Wastewaters generated were low in pH (3-4) and may have contained copper and aluminum. These wastewaters were treated continuously (for metals precipitation) in the waste treatment plant followed by vacuum distillation in the Wastesaver unit.

Chromic anodizing generated approximately 40,000 gallons per year of wastewater which was sent to the continuous treatment plant.

Alodining

Alodine is a conversion coating in which a surface is oxidized in the presence of chromate in order to provide better paint adhesion. Parts were usually aluminum. Wastewaters generated were low in pH (3-4) and may have contained copper and aluminum. These wastewaters were treated continuously for metals precipitation in the waste treatment plant followed by vacuum distillation in the Wastesaver unit.

Alodining generated approximately 20,000 gallons per year of wastewater which was sent to the continuous treatment plant.

Cadmium Plating and Copper Plating

These two plating operations generated wastewaters containing copper or cadmium, and cyanide at a pH of about 12. These wastewaters may have been mixed together before the first step in the batch treatment, which is the destruction of cyanide. This was followed by treatment through the continuous equipment for metals precipitation and distillation in the Wastesaver unit. TiCad is a process similar to cadmium plating, except that a small amount of titanium is added to the solution. TiCad wastewater was treated the same way as the wastewater from cadmium plating.

Cadmium and TiCad plating generated approximately 50,000 gallons per year of wastewater which was sent to the continuous treatment plant.

Copper Stripping

Copper stripping operations generated wastewaters containing copper or cadmium, and cyanide, at a pH of about 12. This waste may also have been mixed with cadmium plating

wastewater before the first step in the batch treatment, which is the destruction of cyanide. This was followed by treatment through the continuous equipment for metals precipitation and distillation in the Wastesaver.

Copper stripping generated approximately 6,000 gallons per year of wastewater which was sent to the continuous treatment plant.

Zyglo

As part of nondestructive testing, Zyglo dye penetrant was applied to metal parts. The Zyglo was allowed to penetrate and rinsed off with water. The parts were then inspected under fluorescent light to identify microscopic cracks in the part being tested.

Solutions containing Zyglo dye penetrant were treated separately in an ultrafiltration process. The material passing through the filter was returned for reuse in the process and the concentrate was collected for disposal as liquid hazardous waste.

Zyglo wastes were drummed and sent to KBF in Farmingdale, New York, a licensed treatment, storage and disposal (TSD) facility. Approximately 3,850 gallons of Zyglo wastes per year were generated.

Other Operations

The major operations listed above constitute the bulk of Liberty's processing operations. However, there were other operations, smaller in scale or incidental in nature, that were also conducted by Liberty. These include zinc plating and cleaning operations. Wastes from these processes were treated in much the same way as the ones previously discussed.

Waste Paint and Thinners

Waste paints and thinners were generated in much smaller quantities than metal finishing wastewaters (typically about 50 gallons/month). Paint was mixed in volumes as small as 1/2 quart and rarely exceeding one gallon, depending on the application. Paints and thinners were typically handled as small volumes from small containers. Wastes were accumulated as they were generated and placed in secure 55 gallon drums. The drums were manifested and disposed off-site at licensed TSD facilities. Approximately four drums of solid paint waste (filters, floor sweeps, dust masks and rags) were collected and sent for disposal by incineration, and ten drums of liquid paint wastes (unused excess paint, cleanup wastes and thinners) were sent to Republic Environmental in Pennsylvania, a licensed TSD facility, for incineration.

All paints, thinners and paint shop wastes were handled within a paint mixing room which was fitted with a complete secondary containment berm in 1980.

Waste Degreaser Solvents

Spent degreasing solvents were generated in much smaller quantities than metal finishing wastewaters (typically two drums per year). Degreaser waste solvent was placed in secure 55 gallon drums, manifested and reclaimed for re-use off-site at Pride Solvents, Inc., a licensed TSD facility. Fresh and waste solvent were stored within the drum storage area which was fitted with a complete secondary containment berm in 1991.

The degreaser was installed in late 1991 and was initially set up for 1,1,1-trichloroethane as the working solvent. On April 15, 1993, application was made to the NYSDEC to switch to trichloroethene, and this application was approved on December 30, 1993.

Continuous Treatment Equipment

The continuous waste treatment plant was installed in 1992. It consisted of stirred pH adjustment tanks, flocculation tanks, a filter press and related controls. It was also supplemented by ion exchange equipment, a cyanide destruct tank and holding tanks.

The clean water produced by the treatment system was used as feed to the Wastesaver unit. The sludge concentrate containing metals, salts and solids was fed to the filter press. The resultant sludge was disposed of as hazardous waste at Envirite, a licensed TSD facility in Pennsylvania, for stabilization. Approximately eight tons of this sludge was produced per year.

Wastesaver Unit

The Wastesaver unit is a vacuum distillation unit capable of distilling (evaporating) 150-200 gallons per hour. The process water from the Wastesaver unit contained approximately 40 ppm total dissolved solids and was reused in the process. The liquid concentrate from the unit was disposed of as hazardous waste at a licensed TSD facility.

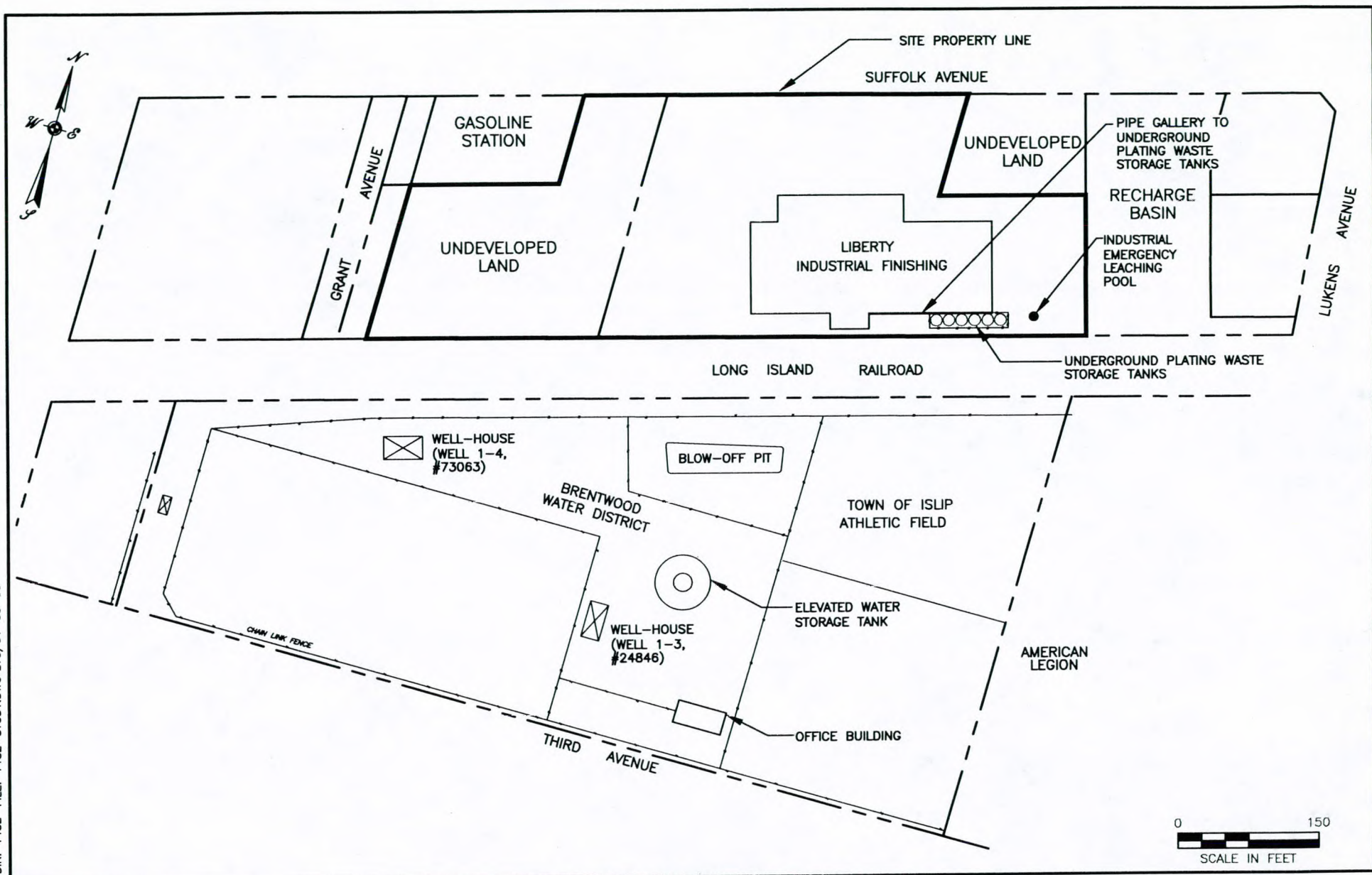
Secondary Containment

Shortly after Liberty took occupancy of the premises in July 1978, Article XII of the Suffolk County Sanitary Code took effect, requiring containment for the six outdoor underground storage tanks (USTs) and the indoor tanks. Lawrence Donnelly, P.E., reportedly submitted plans and specifications for constructing the six outdoor USTs in 1977. According to the Galli Engineering report, this work was performed in 1977 and 1978. H2M reports that Tanks 5 and 6 were upgraded with secondary containment and leak detection in 1980, and Tanks 1, 2, 3 and 4 were upgraded to Suffolk County standards in 1985.

Underground Plating Waste Storage Tanks

There are six "out-of-service" underground storage tanks that held plating wastes located along the south side of the facility building (see Figure 1-2). Each tank was made from 10-foot diameter concrete rings which were placed on top of a concrete slab. As shown on Figure 1-2, the tanks were installed vertically. The depths of the tanks vary from 7 feet to 14 feet. These tanks were cleaned, filled with clean soil and capped with concrete as part of the 1998 U.S. Environmental Protection Agency (USEPA) removal action (RA). The historic uses for each of the tanks and some historic liquid sample results obtained from NYSDEC for several of the tanks follow:

- Tank No. 1 - acid/alkali wastewater holding tank. A TCLP sample collected by USEPA in 1998 contained cadmium (1,400 ppm) and chromium (8,300 ppm) and had a pH of 3.8.
- Tank No. 2 - cyanide wastewater holding tank. Liquid samples from this tank in 1984 detected as high as 3,020 ppm of cadmium, 2,860 ppm of chromium, 2.1% of cyanide, 710 ppm of copper, 38 ppm of lead, 178 ppm of nickel and 330 ppm of zinc. A USEPA TCLP sample from 1998 contained cyanide (6.2 ppm), cadmium (8.6 ppm) and chromium (2.6 ppm), with a pH of 7.03.
- Tank No. 3 - acid/alkali rinse water holding tank. A 1984 sample from this tank contained low levels of cadmium, chromium, copper, zinc and cyanide. A 1998 USEPA TCLP sample contained cadmium (0.87 ppm) and chromium (0.43 ppm), with a pH of 6.46.
- Tank No. 4 - cyanide rinse water holding tank. Cadmium, chromium and cyanide were not detected in a TCLP sample collected in 1998 by USEPA. The pH of this sample was 5.35.
- Tank No. 5 - concentrated acid/alkali residue holding tank. Liquid samples from this tank in 1984 detected as high as 4,840 ppm of cadmium, 8,680 ppm of chromium, 15% of cyanide, 790 ppm of copper, 80 ppm of lead, 920 ppm of nickel and 310 ppm of zinc. In 1998, a USEPA-collected TCLP sample contained 24 ppm of cadmium and 96 ppm of chromium, with a pH of 4.41.
- Tank No. 6 - concentrated cyanide residue holding tank. Liquid samples from this tank in 1984 detected as high as 3,200 ppm of cadmium, 1,210 ppm of chromium, 89 ppm of cyanide, 52 ppm of copper, 20 ppm of lead, 128 ppm of nickel and 180 ppm of zinc. The USEPA TCLP sample collected in 1998 contained cadmium at 0.61 ppm and chromium at 0.52 ppm, with a pH of 7.14.



LIBERTY INDUSTRIAL FINISHING SITE
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
BRENTWOOD, NEW YORK

STUDY AREA MAP



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FIGURE 1-2

According to NYSDEC, the accuracy of the 1984 samples from Tanks No. 2, No. 5 and No. 6 are in question due to large differences in the detected concentrations between the samples collected by Liberty and the NYSDEC. Cyanide was detected in Tank No. 5 in 1984, which conflicts with the reported use of this tank for acid/alkali wastes. No cyanide was detected in the 1998 sample from Tank No. 5. Additionally, the Tank No. 2 samples from 1984 and 1998 contained concentrations of metals similar to the samples from Tanks No. 5 and No. 6, which were reportedly used for concentrated wastes. Therefore, it is possible that Tank No. 2 was also used at one time to hold concentrated wastes.

All of the tanks were reportedly installed in 1977. Initially, Tanks No. 1 through No. 4 had no liners and were only coated with sealer to prevent leakage. As regulatory requirements increased, liners were added to the tanks. Piping from inside the building was contained in a shallow pipe trench and was connected to the various tanks. The tanks were reported to have been removed from service in 1992. All piping was dismantled and the tanks were emptied. At one time, the pipe galley was connected to the industrial emergency leaching pool immediately east of the tank farm.

Over the years, problems were experienced with the tanks. Some of the more significant problems were the following:

- Tank No. 2 leakage was suspected in August 1982, 1983 and 1984.
- In 1983/1984, it was determined that Tank No. 3 leaked.
- In October 1979, July 1982 and 1983/1984, there was evidence suggesting possible leakage from Tank No. 5.
- In September 1979, there were holes in the liner for Tank No. 6. Approximately 1,500 gallons of concentrated cyanide wastes leaked from the tank.
- On numerous occasions, the tanks were found to be overfilled. The high level sensors were inoperative. This overfilling resulted in the pipe galley filling with plating wastes.

Of particular importance is the suspected leakage of concentrated wastes from Tanks No. 5 and No. 6. The high levels of hexavalent chromium in monitoring well 10, located downgradient of Tanks No. 5 and No. 6, are attributed to former tank leaks.

In 1998, these USTs were pumped out and filled with clean soil as part of a USEPA removal action at the site. After the tanks were filled, a concrete cap was installed over each tank.

1.3.1 Land Use

The Liberty Industrial Finishing Site is located in a primarily industrial area. The site is bounded on the north by residential property, on the west by a gasoline station, on the east by a recharge basin and on the south by the main southern line for the Long Island Rail Road (see Figure 1-2). A public supply well field operated by the Brentwood Water District is located immediately south of the western portion of the site. Another Brentwood Water District well field is located approximately 8,000 feet directly downgradient of the site. A baseball/athletic field, used by a nearby public school, is located south of the site.

1.3.2 Climate

The climate of the Liberty Industrial Finishing study area (Long Island) is considered temperate. Air masses and weather systems mostly originate in the humid continental climate of North America and are tempered by the maritime influences within the region. As a result of these influences, daily and annual temperatures have a reduced range. Precipitation is fairly uniform, but generally heavier in the winter and spring.

Monthly precipitation data for the 30-year period between 1961 and 1990 were collected at Islip MacArthur Airport. This data is compiled by the National Climatic Data Center (NCDC). According to NCDC, the average annual precipitation for Islip MacArthur Airport was 46.07 inches for the 30-year period. The weather station at Islip MacArthur Airport is located approximately 7 miles to the east of the Liberty Industrial Finishing Site.

The normal daily mean temperature for the 30-year period from 1961 to 1990 was reported at 51.3°F. The normal daily minimum temperature for this 30-year period was reported at 43.4°F. The normal daily maximum temperature for this 30-year period was reported at 53.9°F.

The prevailing wind direction is from the west-northwest. The strength of the wind generally increases in the winter and decreases in the summer. Significant gusts occur during winter, however, significant gusts related to thunderstorms or squall lines also occur in the summer. Wind speeds and direction by month for the five-year period from 1985 through 1989 from Islip MacArthur Airport are presented by the windrose diagrams shown in Figure 1-3.

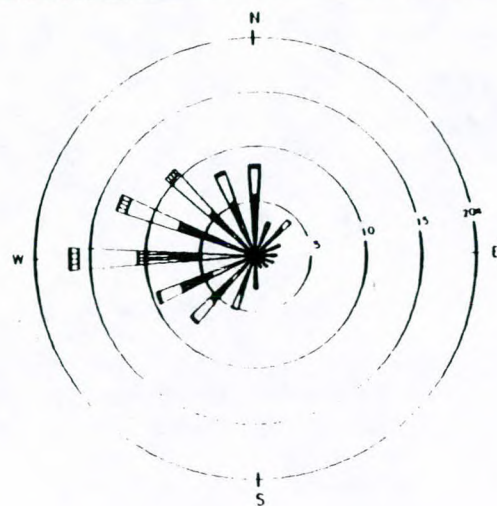
1.3.3 Topography and Surface Features

The topography at the Liberty Industrial Finishing Site and surrounding area is relatively flat. The site is located at an elevation of approximately 95 feet above mean sea level (msl).

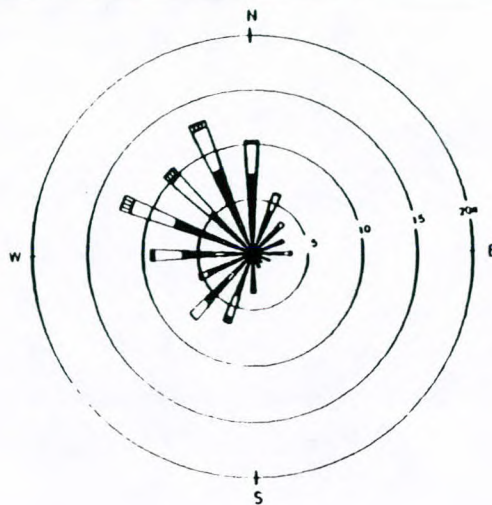
The site is presently abandoned. The on-site features include a single story 30,000-square foot building in the center of the property with paved asphalt areas surrounding the building to the north, east and west. Immediately to the north of the building is a grass and shrub area and the area south-southwest of the building consists of grass lands and forested areas. Dense forested areas are located east and west off the paved areas. The Long Island Rail Road tracks are located immediately south of the site. The site is fenced on the north and portions of the south and east sides of the property.

Storm water that collects on paved portions of the site is directed to a series of catch basins and dry wells (leaching pools) located on the north, west and east portions of the property.

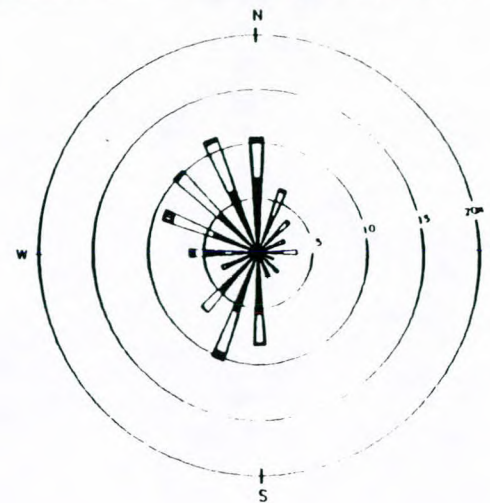
Shallow depressions exist on the paved areas where dry wells are located which control and direct local storm water runoff to the dry wells. Ponding of surface water in these areas have been noted during periods of high precipitation.



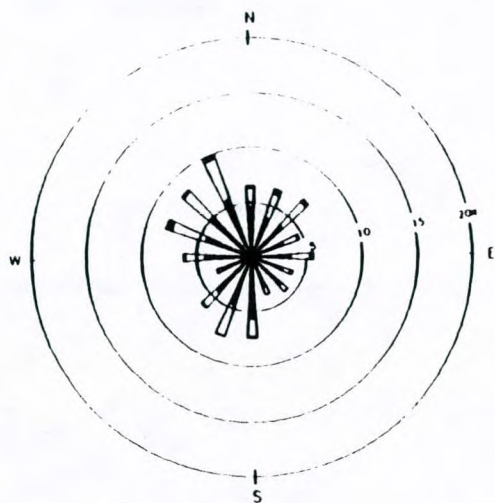
January



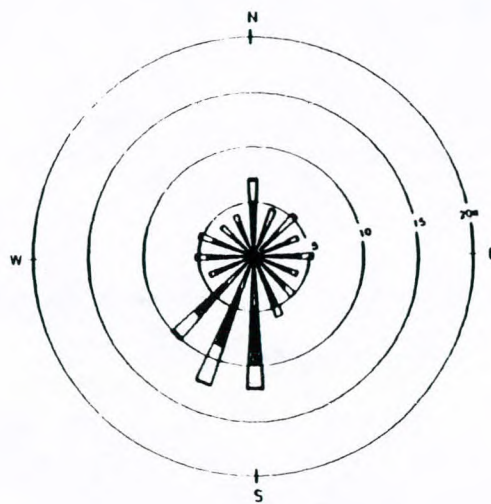
February



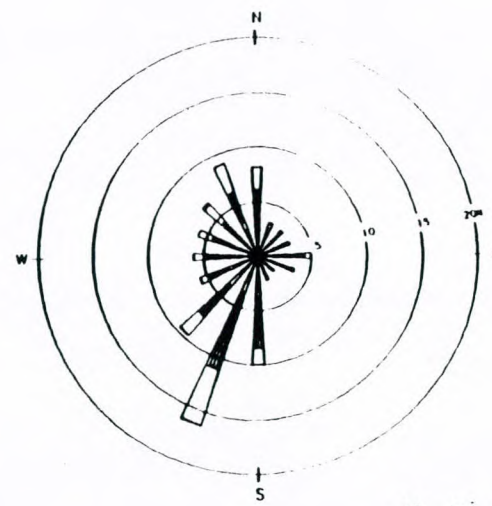
March



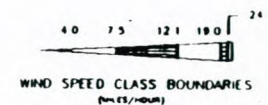
April



May



June

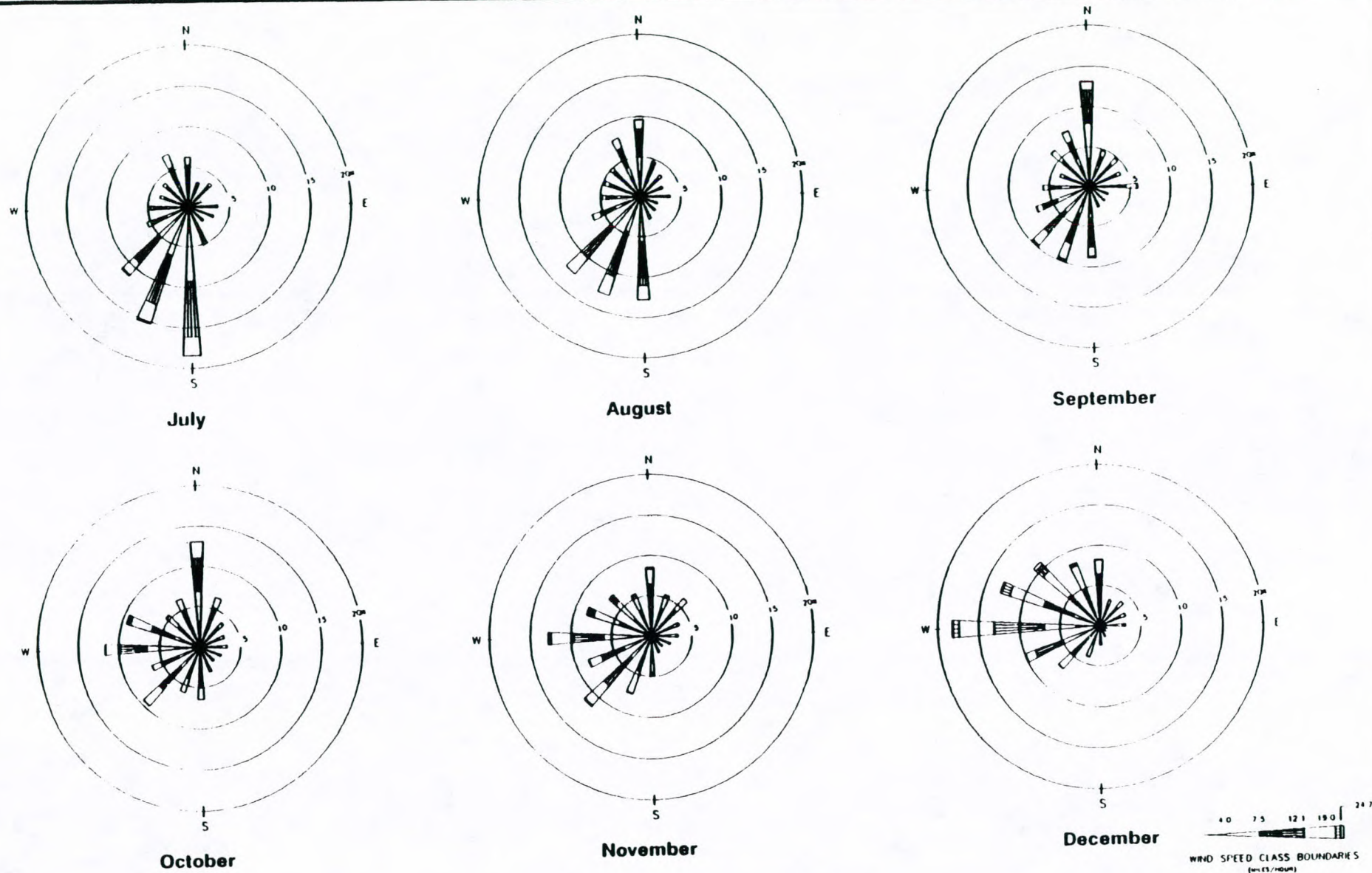


LIBERTY INDUSTRIAL FINISHING SITE
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
BRENTWOOD, NEW YORK
5 YEAR WIND ROSE BY MONTH
ISLIP MacARTHUR AIRPORT
1985 THROUGH 1989



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FIGURE 1-3



LIBERTY INDUSTRIAL FINISHING SITE
 REMEDIAL INVESTIGATION/FEASIBILITY STUDY
 BRENTWOOD, NEW YORK
5 YEAR WIND ROSE BY MONTH
ISLIP MacARTHUR AIRPORT
1985 THROUGH 1989



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FIGURE 1-3 (Cont)

An on-site sanitary system is located in the north parking lot of the facility. The system consists of a septic tank and four leaching pools.

An underground storage tank farm area consisting of six tanks is located on the south side of the building. As discussed in Section 1.3, these tanks were abandoned in-place by the USEPA in 1998.

A debris pile consisting of wood, scrap metal, plastic and garbage is located in the southeastern portion of the site.

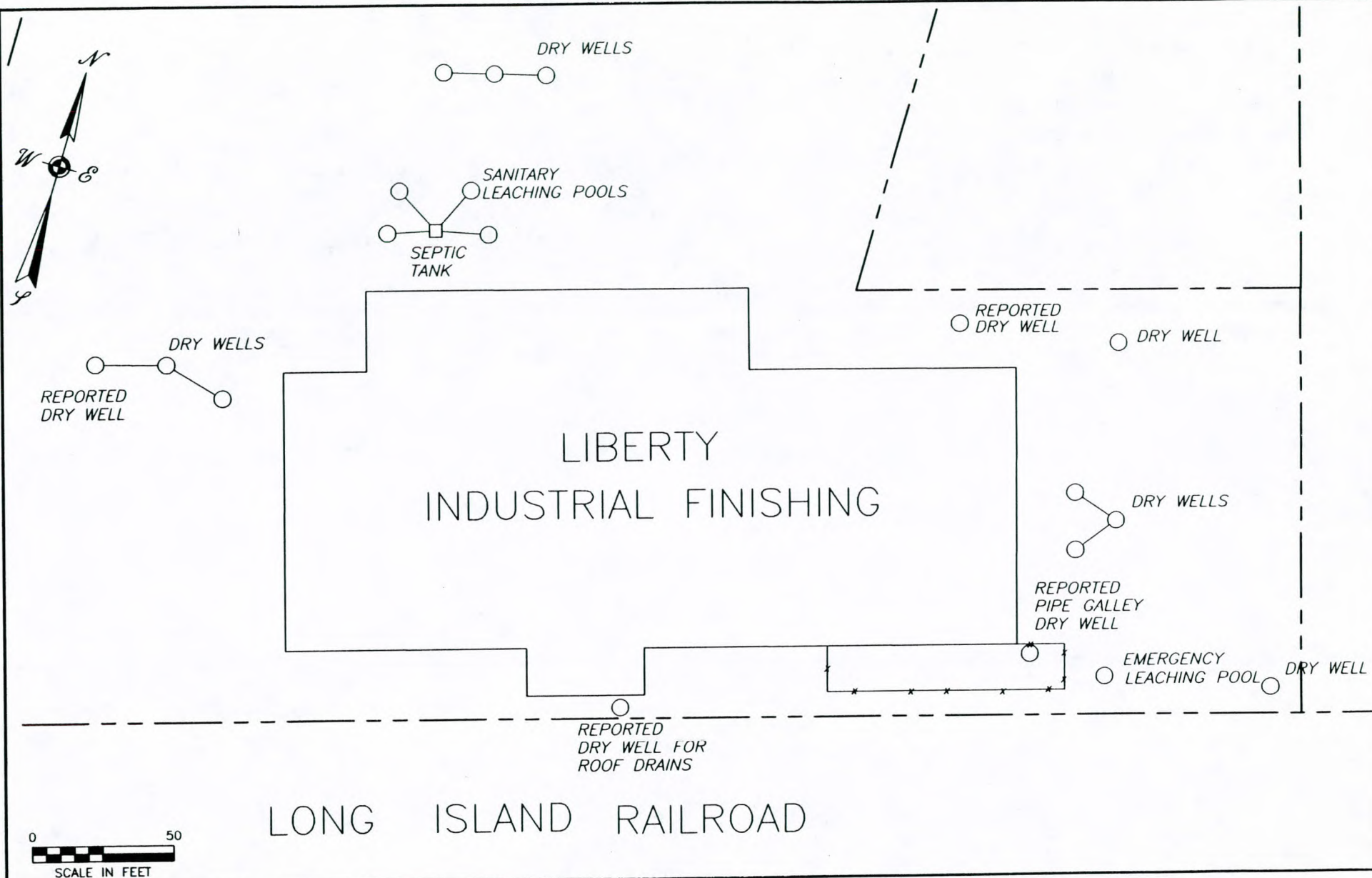
1.3.4 Soils

Soils in the Liberty Industrial Finishing study area are predominantly glacial outwash consisting of highly permeable sands with some areas of locally gravely sands. According to the Soil Survey of Suffolk County, New York, prepared by the United States Soil Conservation Service, the predominant soil type designated in the general vicinity of the site is the Haven loam (with 0-2% slopes).

1.3.5 Storm Water/Surface Water/Sanitary Waste Drainage

Storm water that collects on the paved portions of the site is directed to a series of catch basins and dry wells located on the north, west and east sides of the property (see Figure 1-4). These structures are constructed of perforated concrete rings, typically 10 to 15 feet deep, which facilitates the infiltration of storm water runoff on-site. Storm water that falls on unpaved areas of the site, infiltrates directly into highly permeable, sandy soils.

Several roof drains were identified onsite including: three on the south side of the building and two on the north of the building. Based on a review of the available engineering drawings of the site, the roof drains were originally connected to subsurface dry wells (see Figure 1-4).



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DRY WELL/LEACHING POOL LOCATIONS MAP



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Sanitary waste is managed with an on-site sanitary system located in the north parking lot of the site. The system consists of a solid cement septic tank and a series of four leaching pools. The leaching pools are constructed of perforated concrete rings, approximately 10 to 15 feet deep (see Figure 1-4).

1.3.6 Regional Geology

Long Island is composed of a thick succession of unconsolidated sediments of Upper Cretaceous and Pleistocene age that forms Long Island's principal aquifers and confining units. These unconsolidated sediments overlie a southeasterly sloping crystalline bedrock basement of Precambrian age.

The geologic formations associated with the Liberty Industrial Finishing study area, from youngest to oldest are: (1) the Upper Glacial; (2) the Magothy; (3) the Raritan Clay; (4) the Lloyd; and (5) crystalline bedrock. For the purpose of this remedial investigation of the Liberty Industrial Finishing Site, only the Upper Glacial and the Magothy formations will be discussed, because these units comprise the stratigraphy of concern for this investigation.

1.3.7 Regional Hydrogeology

The two major water-bearing aquifers in the region of the Liberty Industrial Finishing Site are the Upper Glacial and the Magothy formations.

The Upper Glacial aquifer consists of highly permeable, sand and gravel layers with occasional thin clay beds. The average horizontal conductivity for the Upper Glacial aquifer is reported at 267 ft/day (McClymonds and Franke, 1972).

The Magothy aquifer is the principal water supply aquifer underlying Suffolk County. It consists primarily of lenticular beds of very fine to medium sand that are interbedded with clay and sandy clay, silt, and some gravel and sand. Discontinuous layers of gray lignitic clay are

common in the upper zones of this aquifer. The average horizontal hydraulic conductivity for the Magothy aquifer is 48 ft/day (McClymonds and Franke, 1972).

1.3.8 Regional Groundwater Flow

Based on the Suffolk County Department of Health Services (SCDHS) groundwater contour map, entitled "Water Table Contours and Locations of Observation Wells in Suffolk County, NY - March 1997," the regional groundwater flow direction in the vicinity of the Liberty is to the southeast.

1.3.9 Water Supply

Potable water in the vicinity of the Liberty Industrial Finishing Site is supplied by the Brentwood Water District. Private wells are also present in the vicinity of the site, but are typically used for industrial and commercial purposes. A public and private water well survey was conducted for the area of the site and is presented in Section 2 (Figure 2-1).

1.4 **Site History**

Shortly after Liberty moved into the Brentwood Facility, the SCDHS noted serious problems with their operations. Plating wastes were discharged to various leaching pools throughout the site. The highest concentrations were found in an "emergency only" leaching pool located immediately east of the underground plating tanks. Surface discharges were also observed by SCDHS and the plating tanks themselves were also a concern. The SCDHS was most concerned with possible contamination of the nearby supply wells located to the south of the site. These concerns resulted in the SCDHS Commissioner stating on April 2, 1979, that, "the continuance of these discharges will likely result in irreversible or irreparable damage to our groundwater natural resource, that the continuance of these discharges presents an imminent danger to the health and welfare of those residents served by the Brentwood Water District..." Liberty eventually signed a Consent Order with Suffolk County to correct the deficiencies.

Problems again occurred at the site on September 18, 1984, during a NYSDEC inspection. A liquid sample from the sanitary system detected 33.0 ppm of cadmium, 35.9 ppm of copper, 6.0 ppm of lead, 6.0 ppm of silver, 17.0 ppm of zinc, lesser concentrations of chromium and cyanide, and as much as 3.8 ppm of 1,1,1-trichloroethane. A storm water dry well was contaminated primarily with lead, cadmium and chromium. A soil sample from outside the northeast corner of the building contained an EP Toxicity concentration of 3.04 mg/l for cadmium. As a result of this inspection, the sanitary system and the dry well were pumped and cleaned in July 1985.

A new waste treatment system was installed in early 1992. A July 14, 1995, NYSDEC inspection identified only minor problems with the current operations. There was no evidence of any improper discharges during the inspection.

A Consent Order, with an effective date of March 18, 1996, requires the site operator/owner perform a Focused Remedial Investigation (FRI) limited to the area around the six underground plating tanks that leaked and a nearby industrial leaching pool that has historically received untreated plating wastes. Based on available information, this area is suspected to be the main source for high levels of hexavalent chromium and, to a lesser extent cadmium, detected in a downgradient off-site well. The Consent Order is not being satisfied by Liberty because of alleged financial difficulties.

1.5 Previous Investigations

Phase II Investigation

A Phase II Investigation was performed by Liberty's consultant in 1987, under a Consent Order. Five monitoring wells were installed (MW-5 through MW-9). MW-5 and MW-6 are a well couplet consisting of on-site shallow and deep monitoring wells. MW-7 was used for upgradient groundwater quality. Monitoring wells MW-8 and MW-9 were located off-site, downgradient and south of the site. Monitoring well MW-6 is a deep well screened at between 255 and 265 feet below mean sea level (MSL). The other wells were shallow water table wells, screened from 5 feet above to 10 feet below the water table. MW-1 through MW-4 are existing wells that were installed

during a prior investigation. MW-2, MW-4 and MW-5 through MW-9 were sampled as part of the Phase II Investigation. Some exceedances of the groundwater standards for metals were detected in some of the wells. However, the exceedances were marginal with the following exceptions:

- MW-4 (5/14/87) - 8,120 ppb of chromium (filtered)
- MW-2 (5/14/87) - 210 ppb of chromium (filtered)

MW-2 and MW-4 are both located on the southern property boundary in the eastern portion of the property (well locations are shown on Figure 2-4). These wells are each approximately 54 feet deep.

Supplemental Phase II Investigation

Soil sampling for EP Toxicity, volatile organic compounds and cyanide was performed at three locations. These soil samples were collected at the following locations: 1) immediately south of Tank No. 5 at a depth of 18 inches below ground surface (bgs); 2) immediately south of MW-5 and MW-6 at 13 inches bgs; and 3) the sediment at the bottom of the industrial/emergency leaching pool. Total metals were not included in the sampling parameters. The most notable detection was 11.5 ppm of cyanide in the sediment at the bottom of the leaching pool.

Additional rounds of groundwater samples were collected. A new monitoring well (MW-10) was constructed immediately downgradient of the tank farm and the industrial leaching pool. A sample collected from this well on February 22, 1991, indicated total and hexavalent chromium at 5.8 ppm and cadmium at 0.049 ppm. A second sample (both unfiltered and filtered) was collected from MW-10 on November 25, 1992. The unfiltered sample detected 2.8 ppm of total chromium, 2.3 ppm of hexavalent chromium and 0.135 ppm of cadmium. Total chromium was also detected in the filtered sample at 2.8 ppm suggesting that the chromium is dissolved in the groundwater, rather than as a particulate.

As a result of the 11.5 ppm of cyanide detected in the Supplemental Phase II Investigation, 9 inches of sediment were removed from the industrial emergency leaching pool in March 1992.

Samples were collected for EP Toxicity and cyanide analysis. The confirmatory soil sample detected 31.6 ppm of cyanide. A shallow soil boring was performed in the leaching pool to better define that extent of the residual soil contamination. Based on this data, an additional 36 inches of soil were excavated from the bottom of the leaching pool in August 1992.

1.6 Interim Remedial Measures

As a result of a request by NYSDEC to the United States Environmental Protection Agency (USEPA) to conduct a removal assessment at the Liberty Industrial Finishing Site, the USEPA performed Preliminary Assessments (PAs) of the site in September 1997 and January 1998. The results of these PAs showed that approximately 45 drums of hazardous, toxic, corrosive, reactive or poisonous chemicals were stored at the site without regard to chemical compatibility or other environmental controls. Other contaminated material (including wood and concrete debris, paint spray booth filters and filter fabric dust bags), plating tanks with crystalline residue and two drums containing small chemical containers were also discovered on-site. According to the USEPA, a removal action was not performed at that time because Liberty was apparently in compliance with their March 8, 1996 Consent Order with NYSDEC.

After Liberty ceased operations and was reportedly no longer financially able to comply with the NYSDEC Consent Order, due to the lack of site security and utilities (lighting, alarms, fire suppression), in combination with the storage of hazardous and contaminated materials, USEPA began a removal action under authorization received on July 1, 1998. The removal action included collection of waste characterization samples, collection of soil samples, sampling of material contained within the underground storage tanks, decontamination of plating vats and removal of material for off-site disposal. The removal action is essentially complete. USEPA is awaiting final approval for disposal of drummed material from the site.

In addition, as discussed in Section 1.2 above, contaminated soil was removed for off-site disposal at several areas on the Town of Islip athletic fields and Brentwood Water District properties. Remediation of the Town of Islip and Brentwood Water District properties has been completed to the satisfaction of NYSDEC and no further action is required for these properties.

1.7 Overview of the Remedial Investigation Report Organization

The Liberty Industrial Finishing Site Remedial Investigation and Feasibility Study was designed to identify the contaminant source(s), define the vertical and horizontal extent of soil and groundwater contamination, and provide recommendations for implementation of remedial measures at the site. The approach of the RI/FS was to utilize existing data obtained from previous investigations and data collected during the RI/FS as the basis for its design.

Section 1.0 discusses the project's objectives and background, as well as a review of the site history, including a discussion of previous investigations and a summary of results. Section 2.0 is a detailed description of the field program. Section 3.0 describes the results of the physical characteristics of the study area including ecology, geology and hydrogeology. Section 4.0 discusses the nature and extent of the contamination, including a discussion regarding standards, guidelines and criteria for the various sampling media, data validation, analytical results, and the fate and transport of the contaminants detected. Section 5.0 presents the conclusions of the RI, including a discussion of the source(s) and extent of soil and groundwater contamination. Section 6.0 provides an exposure assessment based on the findings of the RI to identify potential receptors and contaminant migration pathways.

Section 2



2.0 STUDY AREA INVESTIGATION

Presented in the following sections is a summary of the field activities performed at the Liberty Industrial Finishing Site as part of the remedial investigation. The field activities were performed in accordance with the approved Work Plan, dated September 1997. However, as the investigation progressed, additional activities were performed as a result of the geophysical survey, visual observations made in the field, and evaluation of preliminary soil and groundwater sampling results. The additional activities include additional on-site soil borings and groundwater sampling using a Geoprobe™, surface soil sampling, dry well and septic tank sediment sampling, and test trench excavation.

2.1 Overview of Field Activities

The field activities performed at the Liberty Industrial Finishing Site were conducted with the goal of defining the nature of site contamination, locating the sources of contamination and defining the horizontal and vertical limits of on-site and off-site soil and groundwater contamination. Field activities and supporting research included the following tasks:

- Aerial Photography Review
- Private/Public Water Supply Well Survey
- Geophysical Survey
- Test Trench Excavation
- Surface Soil Sampling
- Existing Monitoring Well Survey
- Existing Monitoring Well Sampling
- Dry Well and Leaching Pool Sediment/Sludge Sampling
- Geoprobe Soil Sampling
- Geoprobe Groundwater Sampling

- Monitoring Well Construction
- Monitoring Well Groundwater Sampling
- Groundwater Level Measurements
- Air Monitoring
- Surveying and Mapping
- Wildlife Habitat Survey
- Health and Safety Program
- Quality Assurance/Quality Control Program

A detailed description of the field program is presented below. The Wildlife Habitat Survey is presented in Section 3.

2.2 Historical Aerial Photograph Review

Historical aerial photographs of the Liberty Industrial Finishing Site from 1955 through 1996 were reviewed to evaluate historical site activities and land development. A discussion of the review is provided below.

1955 Aerial Photograph

An aerial photograph obtained for 1955 showed a small building (interpreted as a residential structure) in the northeastern portion of the site. Dense shrubs were adjacent to the building on the western and southern sides of the building. The majority of the central portion of the site appeared to be clear, with no vegetation. The eastern, southern and western portions of the site consisted of dense vegetation. A water tower is located south of the Long Island Rail Road (LIRR) tracks.

1962 Aerial Photograph

This aerial photograph indicated two small buildings in the northeastern portion of the site. An unpaved road is present leading from the buildings to Suffolk Avenue. Dense trees cover a majority of the site with small cleared areas immediately south of the buildings and a large cleared area in the central portion of the site. To the west of the site, a building is noted, which is presently a gasoline service station.

1966 Aerial Photograph

The 1966 aerial photograph indicates the same two small buildings (interpreted as a residence and a garage) identified in the 1962 aerial photograph. Two distinctive cleared areas are noted on-site. The first area is located in the central portion of the site and the second area is immediately south of the small buildings. The remainder of the site is densely covered with trees. The athletic ball fields are visible south of the LIRR tracks.

1969 Aerial Photograph

By 1969, the current one-story building is present on-site. The two small buildings identified in earlier photographs are not present. The majority of the parking area has been cleared of trees and does not appear to be paved. There are several small cleared areas in the rear of the building and on the east side of the property. The area west of the parking lot consists of dense trees with a small cleared path extending from the LIRR into the treed area. The area to the northeast of the site is sparsely covered with vegetation. The blow-off pit located at the Brentwood water tower is also present.

1972 Aerial Photograph

In the 1972 aerial photograph, the parking lot surrounding the building does not appear to be paved. Cleared areas are located near the central rear portions of the building and along the eastern side of the building. A distinctive cleared area is present in the southwestern portion of

the site. The area immediately to the west of the parking lot is densely covered with vegetation. In addition, a small cleared area is present in the vicinity of the boiler blow-down pipe located on the north side of the building.

1977 Aerial Photograph

By 1977, the parking lot area of the site appears to be paved. Cleared areas are still present in the rear of the building and in the southwestern portion of the site. The blow-off pit for the Brentwood Water District has been reconstructed and is located north of its former location and closer to the LIRR tracks.

1984 Aerial Photograph

By 1984, a distinctive cleared path is noted in the southwest corner of the site leading from the parking lot towards the rear central portion of the building. An extension has been added to the rear of the main site building. A new structure on the roof is present on the southeast side of the building and is interpreted as part of the facility's process equipment. A recharge basin located immediately east of the site is also present.

1988 Aerial Photograph

The process equipment on the roof of the building (southeast portion of building) is present in the 1988 aerial photograph. A dark area in the vicinity of the eastern loading dock is present, and is interpreted as ponded surface water. Because of the altitude of the aerial photography, the dry wells known to exist on-site could not be identified. A pathway was noted on the western side of the site from Suffolk Avenue leading towards the rear of the main site building. Cleared areas west of the rear extension and in the vicinity of rear loading dock area are present.

1992 Aerial Photograph

In the 1992 aerial photograph, with the exception of the east side, it appears that the majority of the parking lot is paved. Cleared areas are present near the building extension and in the vicinity of the tank farm. Dark stains are present in the northwestern portion of the parking lot and are interpreted as ponded surface water. Based on field observations, this area is a low point of the parking lot where surface water tends to accumulate.

1996 Aerial Photograph

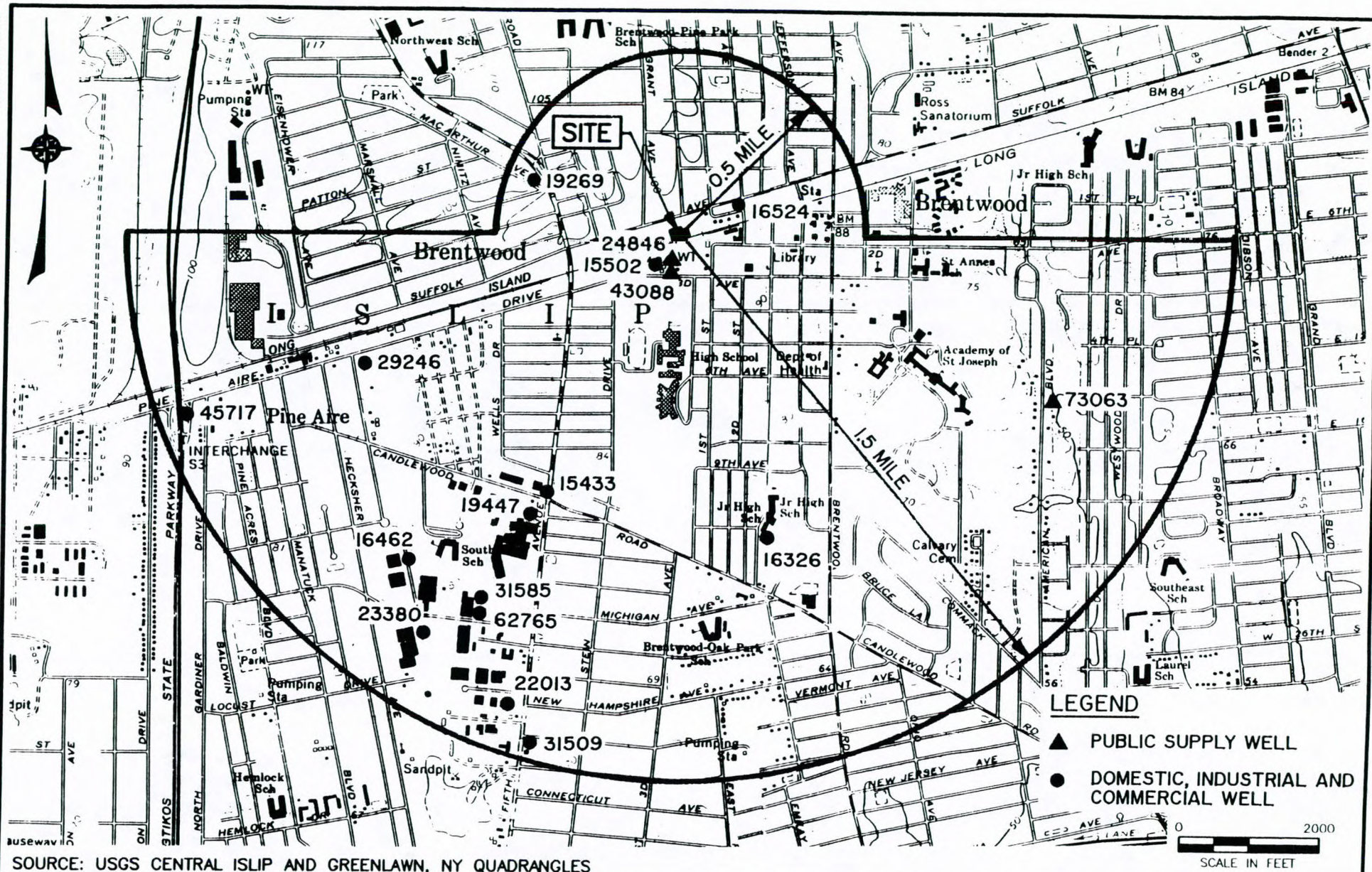
The 1996 aerial photograph is consistent with present site conditions. Dense vegetation is present in the western and northeastern portions of the site. Because of the altitude of the aerial flight, dry wells or manhole covers could not be identified on the photograph. Vegetation is sparse behind the main site building. The loading docks are visible on the west and east sides of the building.

2.3 Public/Private Water Supply Well Survey

A private and public water supply well survey was conducted in the vicinity of the Liberty Industrial Finishing Site to determine if there are any potential receptors that could be impacted by groundwater contamination that may be migrating from the site. A map showing the site and surrounding area which were surveyed is presented on Figure 2-1.

The survey was conducted for the identification of public water supply wells, identification of private wells, and identification of commercial/industrial and domestic wells located within ½ mile upgradient and 1 ½ miles downgradient of the site.

Provided below are the results of this survey.



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PUBLIC, DOMESTIC, INDUSTRIAL AND COMMERCIAL WELL SURVEY

FIGURE 2-1

2.3.1 Public Water Supply Wells

The Liberty Industrial Finishing Site is located within the Brentwood Water District service area. Information was obtained from the NYSDEC, SCDHS and the Brentwood Water District to identify public water supply wells located within a ½ mile upgradient and 1 ½ miles downgradient of the site. Figure 2-1 depicts the location of all public water supply wells within the survey area. A summary of the public water supply well information, including pumping capacity and ownership, is provided in Table 2-1. The locations of these wells, as well as the industrial/commercial and domestic wells shown on Figure 2-1, are approximate.

The Brentwood Water District (BWD) Third Avenue Well Field is located south of the Liberty site, across the Long Island Rail Road tracks (see Figure 1-2). The Third Avenue Well Field consists of two public water supply wells, Number 24846 (BWD Number 1-3) and Number 73063 (BWD Number 1-4). As shown on Table 2-1, Well 24846 is screened from 461 to 516 feet below grade and has a pump capacity of 1,200 gallons per minute. Well 73063 is screened from 709 to 769 feet below grade and has a pump capacity of 1,400 gallons per minute. Information obtained from BWD personnel indicates that neither of these wells has been impacted by activities at the Liberty site.

2.3.2 Private Water Supply Wells

Information was also obtained from the NYSDEC, SCDHS and Brentwood Water District to determine the locations of any private, domestic and industrial/commercial wells within a radius of 1/2 mile upgradient of the site and 1 1/2 miles downgradient of the site. Figure 2-1 illustrates the locations of these wells in the vicinity of the site which were obtained from these sources of information. The information obtained for the wells is summarized in Table 2-2.

Table 2-1

**PUBLIC SUPPLY WELLS WITHIN 0.5 MILE
UPGRADIENT AND 1.5 MILES DOWNGRAIENT
OF LIBERTY INDUSTRIAL FINISHING SITE**

Well Number	Use	Depth (feet below ground surface)	Pump Capacity (gallons per minute)	Screened Interval (feet below ground surface)	Owner	Well Field
24846	Public Supply	516	1,200	461 - 516	Town of Islip	Brentwood Water District
43088	Public Supply	753	1,438	693 - 753	Town of Islip	Brentwood Water District
73063	Public Supply	905	1,400	709-769	Town of Islip	Brentwood Water District

Table 2-2

**DOMESTIC AND INDUSTRIAL/COMMERCIAL
WELLS WITHIN 0.5 MILE UPGRADIENT AND 1.5 MILES
DOWNGRADIENT OF LIBERTY INDUSTRIAL FINISHING SITE**

Well Number	Use	Depth (feet below ground surface)	Pump Capacity (gallons per minute)	Owner
15502	Ind/Comm.	70	45	NA
15433	Comm.	50	40	Suffolk Shirt Laundry
16326	Temporary Construction	80	20	Brentwood School District
16462	Temporary Construction	80	20	Brentwood School District
16524	Comm.	62	20	Franklin National Bank
19269	Domestic	93	30	Uoi Reality
19447	Ind/Comm.	63	25	Entenmann's Bakery
22013	Ind/Comm.	74	40	Suffolk County Police Station
23380	Drinking & Sanitary	78	25	Lumex, Inc.
29246	Domestic	92	40	Kupster Realty Corp.
31509	Ind/Comm.	79	800	Urban Sand and Gravel
31585	Ind/Comm.	92	200	Design Products, Inc.
45717	Observation	75	80	Suffolk County/DEC
62765	Domestic	75	360	Abe Farber Associates

Notes: Ind/Comm.: Industrial/commercial
NA: Not Available

2.4 Site Preparation

Because of the proximity of the Liberty Industrial Finishing Site to Dvirka and Bartilucci Consulting Engineers' (D&B's) Woodbury office, no on-site facilities (office trailers, equipment trailers, etc.) were established at the site for D&B or its subcontractors. All equipment, materials and supplies were transported to the site as needed.

A temporary decontamination pad was constructed on the asphalt pavement in the southeastern portion of the property. The decontamination pad, measuring 10 feet by 10 feet, was constructed of a wooden frame using 4-inch by 4-inch lumber and plywood, covered with heavy plastic sheeting. Potable water for the decontamination of equipment and for drilling was obtained from the Brentwood Water District's well field located immediately south of the site. Soil cuttings generated during the drilling activities were contained in 55-gallon drums and stored on pallets in the southeastern side of the site. Split spoon samplers were decontaminated in a 5-gallon bucket at each of the drill sites when the drilling was conducted off-site.

To provide the necessary site access for the geophysical survey crew, the western and portions of the southern areas were cleared of heavy vegetation. The land clearing was conducted using a rubber tired backhoe by Trade Winds Environmental Restoration, Inc. under the direction of the D&B field geologist.

2.5 Geophysical Survey

Hager-Richter Geoscience, Inc. conducted geophysical surveys at the site. The objectives of the geophysical survey were: 1) to detect subsurface structures such as dry wells and underground storage tanks (USTs); and 2) to detect possible metal-containing wastes disposed at the site.

Two complementary geophysical methods were used—electromagnetic induction terrain conductivity (EM) and ground penetrating radar (GPR). The EM survey was conducted across the entire accessible portions of the site (exclusive of the tank farm area), and the GPR survey

was focused in areas of possible subsurface structures (dry wells and USTs) based on the results of preliminary examination of the EM data. Section 4 presents the results of the geophysical survey. Appendix A contains the Geophysical Survey Report prepared by Hager-Richter Geoscience, Inc.

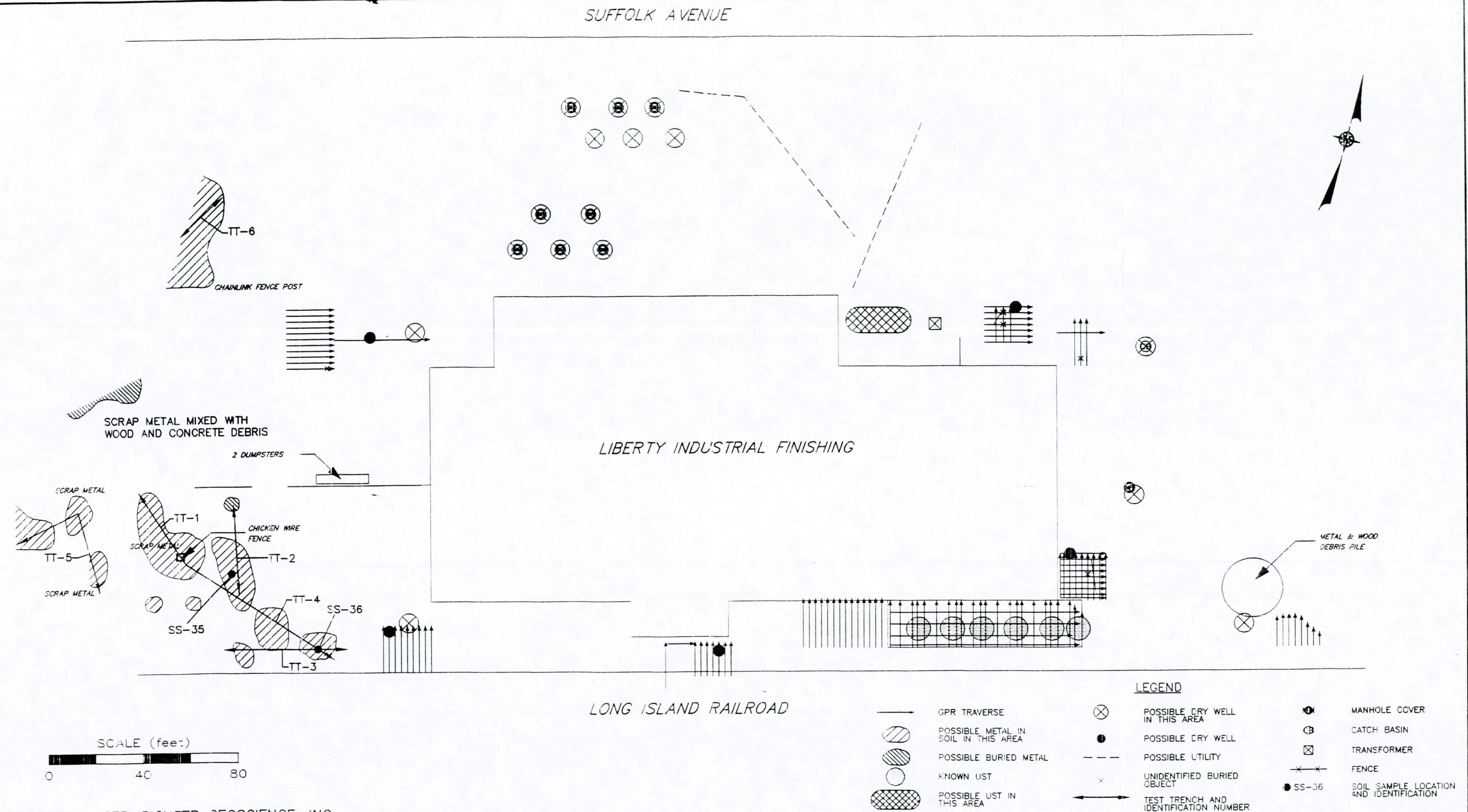
The EM survey was conducted using a Geonics EM31 terrain conductivity meter in the vertical dipole mode. In this configuration, the conductivity of the subsurface is sampled to a nominal depth of 18 feet. EM data were collected at approximately 2.5-foot intervals along lines spaced 10 feet apart. The 12-foot long boom of the EM31 was oriented perpendicular to the lines of traverse. Preliminary processing of the EM data was conducted in the field on a notebook computer.

The GPR traverse spacing and orientation varied with the particular targets. The GPR antenna was pulled by hand for all traverses. A 500 MHz antenna with a survey wheel that triggered data collection at equal distance intervals was used for the GPR survey. Data was recorded with a 60 nanosecond (nsec) time window.

2.6 Test Trench Sampling

Based on the geophysical survey results, several electromagnetic anomalies were detected in the southwestern portion of the site (see Figure 2-2). On June 5, 1998, six test trenches (TT-1 through TT-6) were excavated by Trade-Winds Environmental Restoration, Inc. to characterize the anomalies (see Figure 2-2). Test trenches were excavated with a backhoe to an approximate depth of 5 feet below grade and were logged by the D&B field geologist for soil characteristics, fill material content, and observations regarding color and odor. Test Trench Logs are provided in Appendix B. Fill material consisting of trace amounts of scrap metal, cast iron pipes, aluminum cans, glass, plastic, concrete, brick, wire fencing, part of a steel drum and empty, rusted paint cans were observed on the surface and to a depth of approximately 1 foot. Below the fill material, native soils were encountered which consisted of varying amounts of sand, silt, gravel and small cobbles.

FILE: 1482-10A
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LIBERTY INDUSTRIAL FINISHING SITE
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
BRENTWOOD, NEW YORK

GEOPHYSICAL ANOMALIES AND TEST TRENCH LOCATIONS

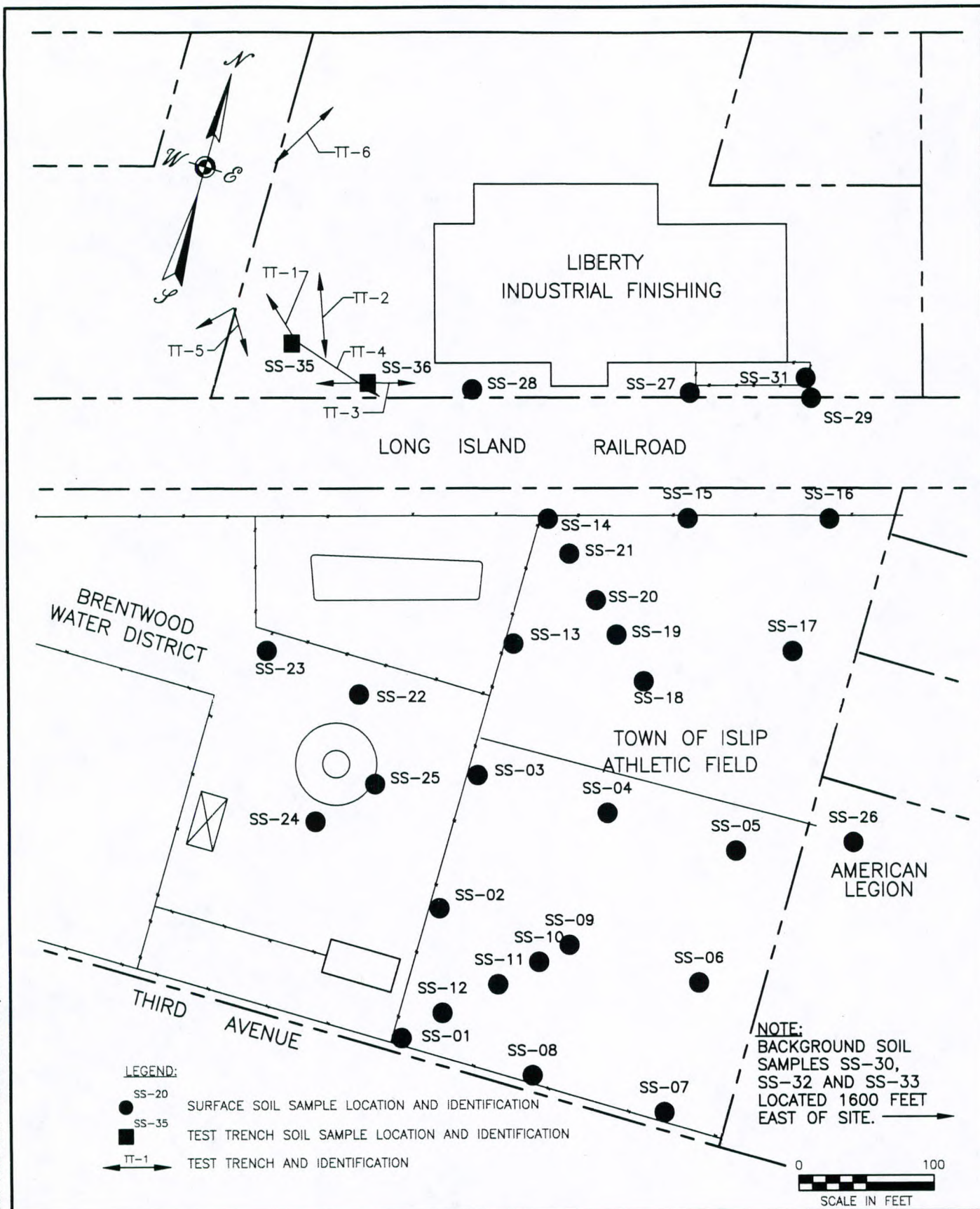
To characterize the soils in this area of the site, soil samples were collected for laboratory analysis. Soil sample SS-35 (collected 1 foot below grade) was collected from test trench TT-2, in the vicinity of a rusted drum (see Figure 2-2). Soil sample SS-36 (collected 1 to 2 feet below grade) was collected from test trench TT-3, beneath rusted, 5-gallon cans and scrap metal. Both soil samples were analyzed for Target Analyte List (TAL) metals, cyanide and pH. The results for samples SS-35 and SS-36 are discussed in Section 4.

2.7 Surface Soil Sampling

To characterize the possible impacts to the surface soils in the vicinity of the Liberty Industrial Finishing Site, 67 soil samples (including 2 samples collected from test trenches discussed in Section 2.6) were collected for laboratory analysis (see Figure 2-3). Except for one sample (SS-31), surface soil samples were collected from 0-2 inches and 2-6 inches below ground surface utilizing a dedicated, disposable polyethylene scoop. Each sample was analyzed for TAL metals. Seven soil samples, from four locations (SS-27, SS-28, SS-29 and SS-31) were collected on-site. Eight soil samples from four locations (SS-22, SS-23, SS-24 and SS-25) were collected from the Brentwood Water District property located south of the site. Forty-two soil samples from twenty-one locations (SS-01 through SS-21) were collected from the Town of Islip athletic field, also south of the site. Two soil samples from SS-26 were collected on the American Legion property. Six soil samples from three locations (SS-30, SS-32 and SS-33) were collected from the Brentwood Public Library property located approximately 1,600 feet east of the site to characterize background surficial soil quality. The analytical results of the surface soil samples are discussed in Section 4.

2.8 Existing Monitoring Well Survey

Monitoring wells previously installed on the Liberty site (MW-01, MW-02, MW-03, MW-04, MW-05, MW-06 and MW-07), off-site wells installed on the Brentwood Water District property (MW-01A, MW-02A, MW-03A, MW-04A and MW-08), and wells installed at the Town of Islip athletic field (MW-09 and MW-10) were inventoried and evaluated for well construction and hydraulic connection to the aquifer (see Figure 2-4). In addition, water level



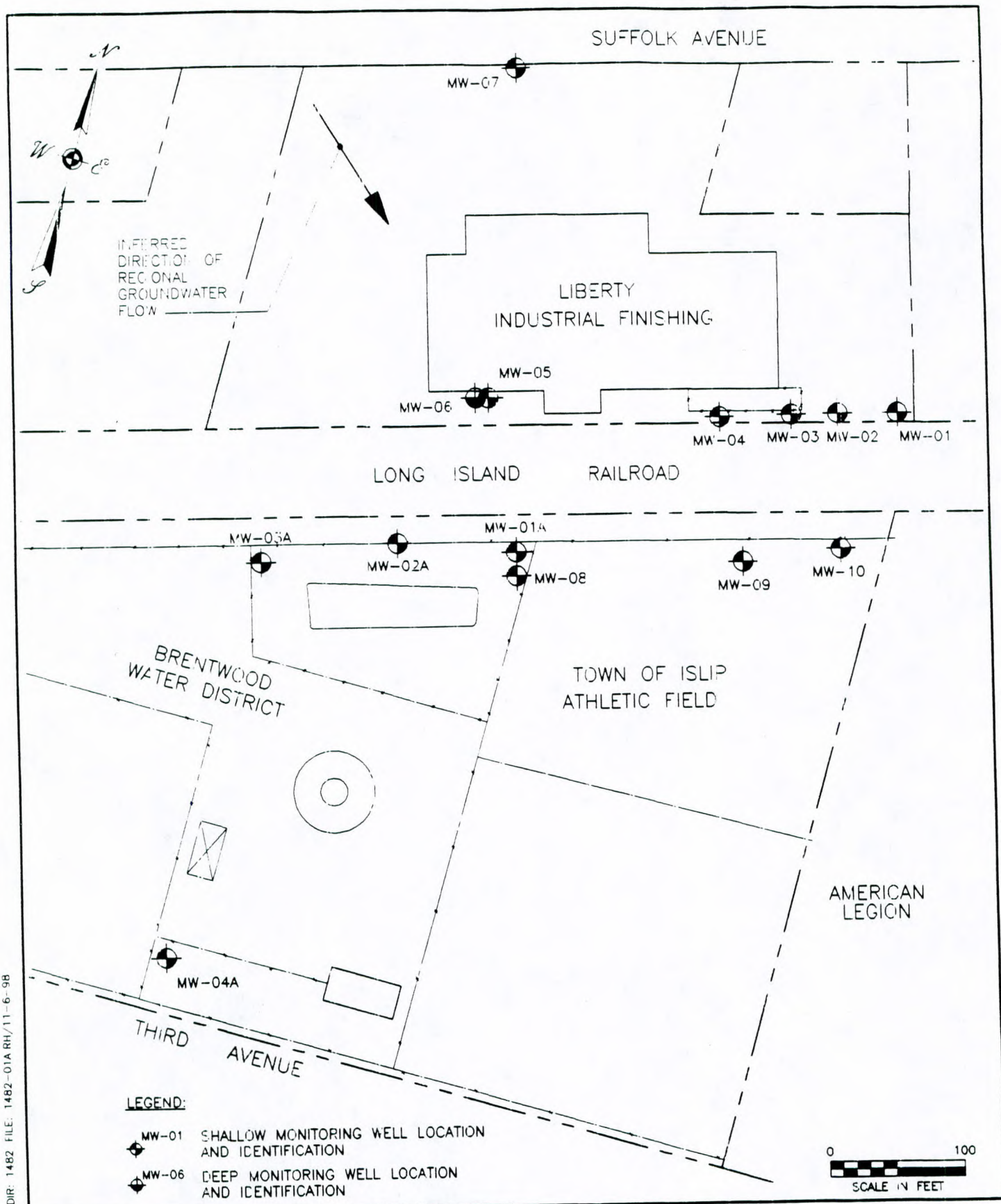
LIBERTY INDUSTRIAL FINISHING SITE
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
BRENTWOOD, NEW YORK

SURFACE SOIL SAMPLE AND TEST TRENCH LOCATIONS

FIGURE 2-3



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REMEDIAL INVESTIGATION/FEASIBILITY STUDY
BRENTWOOD, NEW YORK

EXISTING MONITORING WELL LOCATIONS



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FIGURE 2-4

elevations and total depths of each well were measured and compared to the available well construction logs. The well survey revealed that monitoring wells MW-01A, MW-02A and MW-04A were dry and, therefore, could not be sampled, and monitoring well MW-09 could not be sampled because the well was filled with debris. Based on a comparison of the available well construction information, all remaining wells were determined to be useable for groundwater sampling and water level measurements.

2.9 Existing Well Sampling

To establish a current baseline of water quality data for the existing wells, ten monitoring wells (MW-01, MW-02, MW-03, MW-03A, MW-04, MW-05, MW-06, MW-07, MW-08 and MW-10) were selected from the wells identified during the existing well survey and sampled for laboratory analysis. The depth to water measured during this sampling event ranged from 44.31 feet below grade to 49.22 feet below grade in the shallow wells and 46.95 in Magothy well MW-06. The total depths of these wells are 54 feet (MW-01, MW-02, MW-03, M-04 and MW-07), 55 feet (MW-03A), 57 feet (MW-05), 265 feet (MW-06), 56 feet (MW-08) and 49 feet (MW-10). The analytical parameters for these samples included the Target Compound List (TCL) +30 organics, TAL metals and cyanide. Results of the analyses are presented in Section 4. The wells were sampled by purging the calculated volume of water using a clean 2-inch diameter Grundfos™ submersible pump collecting the samples off of the pump with a low pumping rate.

2.10 Dry Well/Leaching Pool Sediment/Sludge Sampling

To characterize the sediment/sludge in the dry wells and sanitary leaching pool on-site, four dry well samples (S-03, S-09, S-14 and B-05D) and two leaching pool samples (S-05 and S-07) were collected utilizing a Ponar-grab sampler. An additional eleven sediment/sludge samples (S-13, S-15, B-02D, B-04D, B-06D, B-07D, B-25D, B-30S, B-31S, B-32S and B-33S) were collected from dry wells and leaching pools, respectively, using a truck-mounted Geoprobe™. The additional sediment/sludge samples (B-02D and B-05D) were collected from the same dry wells as samples S-14 and S-09, respectively. All samples were analyzed for

TCL +30 organics, TAL metals and cyanide. Figure 2-5 presents the locations of the sediment/sludge samples.

2.11 Geoprobe Soil Sampling

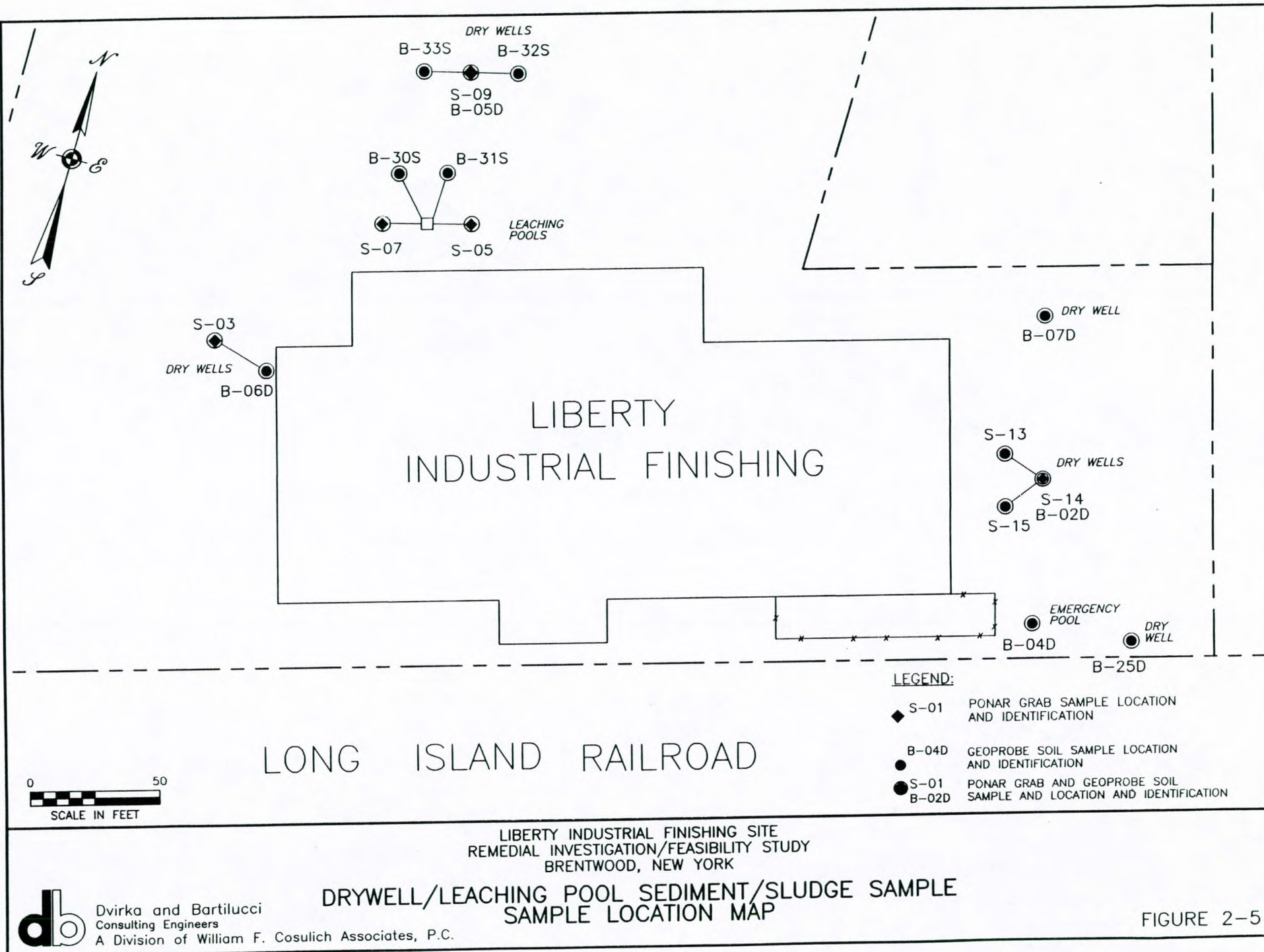
To characterize the subsurface soils onsite in potential source areas of contamination, 12 shallow borings and 18 deep borings were constructed on-site using a truck mounted Geoprobe™ rig (see Figure 2-6). The borings were drilled in suspected source areas including the underground waste storage tanks, dry wells and the boiler blow-down area.

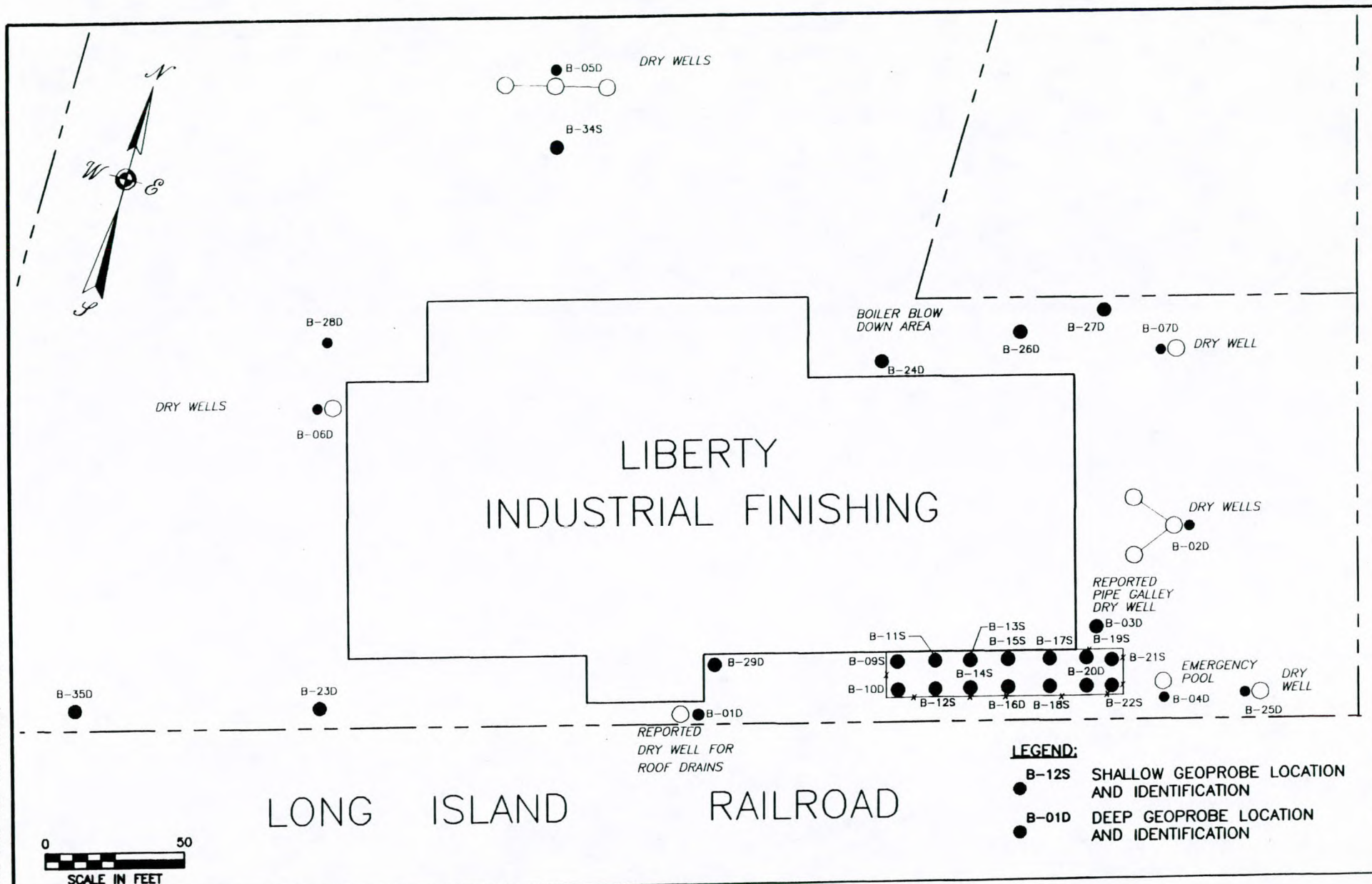
Soil samples were collected from each shallow boring continuously from land surface to approximately 15 feet below ground surface (bgs) using a polyethylene lined 4-foot long soil core. Shallow borings B-09S, B-11S, B-12S, B-13S, B-14S, B-15S, B-17S, B-18S, B-19S, B-21S and B-22S were drilled in the vicinity of the underground plating waste storage tank (UST) area. Shallow boring B-34S was drilled on the downgradient side of the middle dry well located in the northern parking lot.

Soil samples were collected from each deep boring (B-01D, B-02D, B-03D, B-04D, B-05D, B-06D, B-07D, B-10D, B-16D, B-20D, B-23D, B-24D, B-25D, B-26D, B-27D, B-28D, B-29D and B-35D) continuously from the surface to 24 feet bgs and discrete 2-foot cores were collected every 5 feet from 24 feet bgs to the water table (approximately 45 feet bgs).

After each sample was collected, the core was removed from the sampler and screened at 1-foot intervals for the presence of volatile organic compounds (VOCs) using a photoionization detector (PID), and hydrogen cyanide and hydrogen sulfide using a hydrogen cyanide/sulfide detector. The sample was then geologically logged. Data was recorded in the field book and transferred onto the appropriate field forms. Boring Logs are contained in Appendix C.

At each shallow boring, one soil sample was selected for laboratory analysis. At each deep boring, two soil samples were selected for laboratory analysis. A total of 41 samples were analyzed for TAL metals, cyanide and pH. Based on soil screening, hydrogen cyanide and





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GEOPROBE SOIL SAMPLE LOCATIONS



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FIGURE 2-6

hydrogen sulfide was non-detectable, and at a few locations, low levels of VOCs were detected. Samples were selected based on the bottom depths of the USTs and the dry wells. Generally, for the shallow and deep borings, one soil sample was collected approximately 12-16 feet below grade (bottom of USTs and dry wells). A second soil sample from the deep borings was collected above the water table interface. The soil samples were transferred directly from the polyethylene sample liner to the appropriate sample container using a clean disposable wooden depressor. The sample containers were placed on ice in a cooler and transferred to the laboratory for analysis. The boreholes were backfilled with native soil on completion of sampling. Borings constructed in pavement were patched with asphalt.

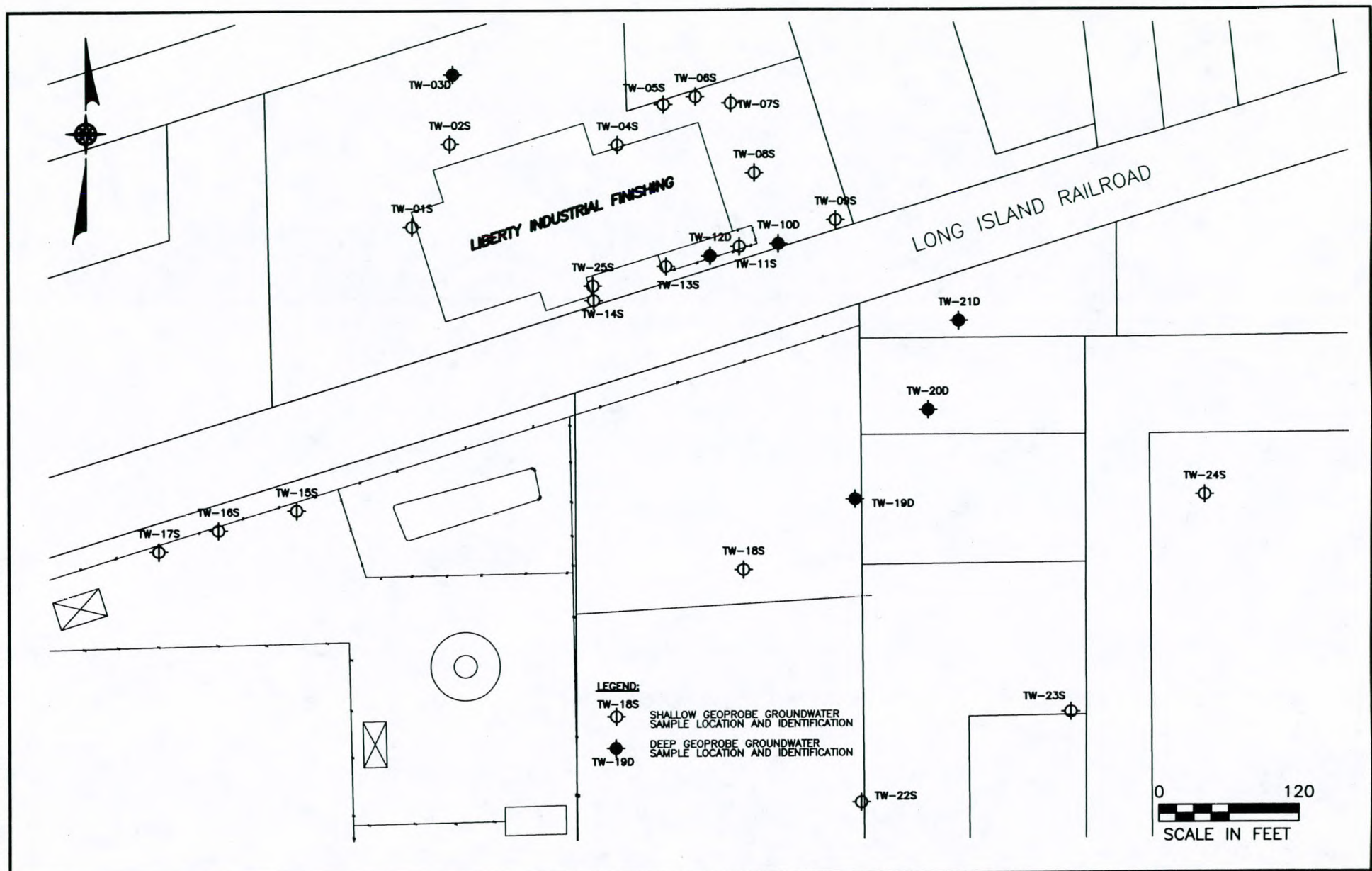
Prior to collecting each sample, the soil core sampler was decontaminated using a steam cleaner. A new polyethylene liner was used for each sample collected.

2.12 Geoprobe Groundwater Sampling

Twenty-five probes were drilled by Vironex Environmental, Inc. using the Geoprobe[™] sampling system to collect groundwater samples for a preliminary screening of water quality in the vicinity of the site. Permanent monitoring well locations were to be selected based on the water quality results of the groundwater Geoprobe sampling program. Locations of the groundwater probes are illustrated on Figure 2- 7.

A total of 31 groundwater samples were collected from 25 groundwater probe borings and analyzed for TAL metals and cyanide. Of the 31 samples, 25 samples were collected approximately 50 feet bgs (5 feet below the water table) and 6 deep samples (TW-03D, TW-10D, TW-12D, TW-19D, TW-20D and TW-21D) were collected from 100 feet bgs. The two sample intervals were selected to characterize the vertical distribution of groundwater contamination.

At each of the sampling intervals, a preserved and an unpreserved sample was collected for TAL metals analysis. All preserved samples were analyzed to provide the total metals concentration (dissolved and suspended). For a comparison to the total metals analysis, five



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BRENTWOOD, NEW YORK

GEOPROBE GROUNDWATER SAMPLE LOCATIONS



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FIGURE 2-7

unpreserved samples were analyzed after the samples were filtered in the laboratory. The filtered analysis was conducted to evaluate the amount of metals dissolved in the groundwater and hence their mobility in the subsurface.

The Geoprobe™ sampling system includes a groundwater sampling device mounted to the back of a truck. The screen point sampler was hydraulically driven into the ground by the hammer system to the desired depth, opened and then retracted approximately 2 feet to expose a stainless steel screen. Hydrostatic pressure in the formation causes water to rise within the screen and into the drill rods. Three eighths (3/8) inch diameter polyethylene tubing fitted with a clean stainless steel check valve was inserted into the probe rods and slowly oscillated up and down to draw a column of water to the surface. Approximately 1/2 gallon of water was purged from each sample interval prior to collection. In addition, each sample was monitored in the field for pH, conductivity, temperature, dissolved oxygen and turbidity. The laboratory provided bottles that were labeled with the project name, sample number, date and analysis to be performed. New latex gloves were worn during the sampling and handling of each sample. Chain-of-custody forms were completed for each sample delivery.

Prior to collecting the groundwater samples, the sampler and probe rods were decontaminated by high pressure steam. Dedicated polyethylene tubing was used to collect each sample. During groundwater sampling, the probe hole and ambient air (breathing and working zones) were monitored for the presence of VOCs.

Upon removal of the rods, the borehole was allowed to collapse. Portions of the borehole that remained open were backfilled with clean quartz sand and patched with asphalt or bentonite grout.

2.13 Monitoring Well Installation

Seven new monitoring wells were constructed in the vicinity and downgradient of the Liberty Industrial Finishing Site. The wells were constructed by Parratt-Wolff, Inc. using a truck-mounted drill rig. The locations for downgradient monitoring wells MW-11, MW-12,

MW-13, MW-14, MW-15 and MW-16, were selected based on the regional groundwater flow direction and groundwater quality results of the Geoprobe™ sampling program. New monitoring wells MW-14, MW-16, MW-17 are deep (below 100') and MW-11, MW-12, MW-13 and MW-15 are shallow water table wells (50' below grade). MW-17 was placed upgradient of the site. Figure 2-8 illustrates the locations of both existing and new monitoring wells.

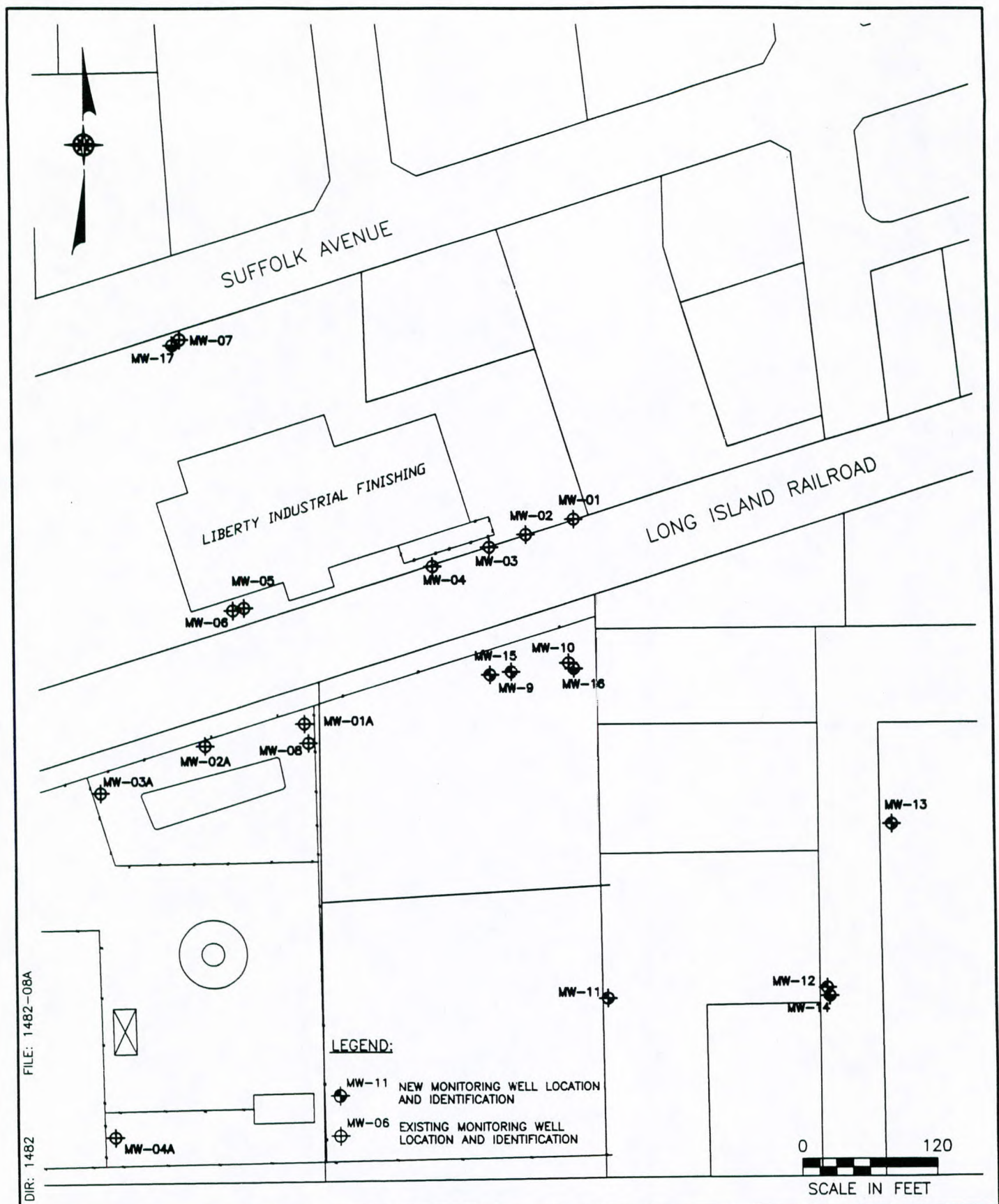
2.13.1 Monitoring Well Borehole Construction, Sampling and Logging

The monitoring well boreholes were drilled using 4¼-inch ID hollow stem augers. Soil samples were collected from grade at 5-foot intervals to the completion of the borehole using a 2-foot long 2-inch diameter split spoon (see Boring Logs in Appendix C). Split spoon samples were collected in accordance with ASTM-1586. Upon examination of each soil sample, the sample was logged in accordance with the Modified Burmister Soil Classification System.

During the drilling process, borehole vapors and the ambient air were monitored for the presence of VOCs, hydrogen sulfide and hydrogen cyanide. Drill cuttings were contained in 55-gallon drums, transported and staged on pallets on-site. At the completion of drilling, the drill rig and tools were cleaned with high pressure steam at the decontamination pad.

2.13.2 Monitoring Well Construction

Groundwater monitoring wells were installed in each borehole. The wells were constructed with 2-inch diameter, Schedule 40, flush joint PVC riser pipe and 10-slot, PVC well screen. Shallow wells were constructed with 10 feet of screen below the water table and 5 feet above the water table to accommodate fluctuations in groundwater levels. Deep wells were constructed with 10 feet of screen. Clean, Number 0 Grade sand pack was tremied around the well screen to a depth of 2 feet above the top of the well screen and 6 inches below the bottom of the well screen number; Number 00 Grade sand pack was tremied approximately 6 inches above the Number 0 sand pack. A 2 to 3-foot thick bentonite seal was then placed above the sand pack. During construction of the shallow wells, the bentonite seal was hydrated and allowed to swell before continuing well construction.



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MONITORING WELL LOCATIONS



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FIGURE 2-8

The remaining annular space was backfilled with cement grout. A flush-mounted vault was cemented at the ground surface to complete well construction. Table 2-3 summarizes the monitoring well construction details. Monitoring Well Construction Diagrams are included in Appendix D.

2.13.3 Monitoring Well Development

The new monitoring wells were developed by pumping and surging to remove sediment from the well and to provide hydraulic connection to the surrounding formation. A WaterraTM pump with dedicated polyethylene tubing was used to develop the monitoring wells.

Water quality measurements, including pH, specific conductivity, temperature, percent dissolved oxygen and turbidity, were collected at regular intervals during development.

2.14 **Groundwater Level Measurements**

Groundwater level measurements were obtained from 18 wells (7 wells installed during the RI/FS and 11 existing wells). The static water levels were measured to the nearest one hundredth (0.01) foot using an electronic water-level indicator. All static water levels were obtained from a surveyed reference point, clearly marked on the top of the well casing. The electronic water level indicator was decontaminated between use in each well. Water level information is provided in Section 3.

2.15 **Monitoring Well Groundwater Sampling**

Groundwater samples were collected between June 1 and June 5, 1998, from each of the 7 newly installed wells and 10 selected existing wells. The wells sampled include: MW-01, MW-02, MW-03, MW-03A, MW-04, MW-05, MW-06, MW-07, MW-08, MW-10, MW-11, MW-12, MW-13, MW-14, MW-15, MW-16 and MW-17 (see Figure 2-8).

Table 2-3

**LIBERTY INDUSTRIAL FINISHING SITE
MONITORING WELL CONSTRUCTION DETAILS**

Site	Date of Installation	Well Depth (feet bgs)	Total Depth (feet bgs)	Ground Surface Elevation (feet)	Measuring Point Elevation (feet)	Casing Diameter (inches)	Screens (feet bgs)		Annular Fills (feet bgs)	
							Interval	Description	Interval	Type
MW-01	NA	54	55	92.9	92.7	4	39.0-54.0	Slotted Schedule 40	0.0-2.0 2.0-33.0 33.0-38.0 38.0-55.0	Seal Seal Seal Filter
MW-01A	NA	48	48	93.67	94.42	4	33.0-48.0	Slotted Schedule 40	NA	
MW-02	NA	54	55	92.87	92.4	4	39.0-54.0	Slotted Schedule 40	0.0-2.0 2.0-33.0 33.0-38.0 38.0-55.0	Seal Seal Seal Filter
MW-02A	NA	45.5	45.5	94.64	95.46	4	30.5-45.5	Slotted Schedule 40	NA	
MW-03	NA	54	55	93.08	92.38	4	39.0-54.0	Slotted Schedule 40	0.0-2.0 2.0-33.0 33.0-38.0 38.0-55.0	Seal Seal Seal Filter
MW-03A	NA	55	55	94.9	96.56	4	40.0-55.0	Slotted Schedule 40	NA	
MW-04	NA	54	55	93.09	92.74	4	39.0-54.0	Slotted Schedule 40	0.0-2.0 2.0-33.0 33.0-38.0 38.0-55.0	Seal Seal Seal Filter
MW-05	4/87	57	57	93.22	94.42	4	39.0-57.0	Slotted Schedule 40	0.0-2.0 2.0-35.0 35.0-40.0 40.0-57.0	Seal Seal Seal Filter

Table 2-3 (continued)

**LIBERTY INDUSTRIAL FINISHING SITE
MONITORING WELL CONSTRUCTION DETAILS**

Site	Date of Installation	Well Depth (feet bgs)	Total Depth (feet bgs)	Ground Surface Elevation (feet)	Measuring Point Elevation (feet)	Casing Diameter (inches)	Screens (feet bgs)		Annular Fills (feet bgs)	
							Interval	Description	Interval	Type
MW-06	4/17/87	265	300	93.19	93.82	4	255.0-265.0	Slotted Schedule 40	0.0-2.0 2.0-248.0 248.0-253.0 253.0-265.0	Seal Seal Seal Filter
MW-07	4/20/87	54	55	93.36	93.31	4	39.0-54.0	Slotted Schedule 40	0.0-2.0 2.0-33.0 33.0-38.0 38.0-55.0	Seal Seal Seal Filter
MW-08	4/23/87	56	56	93.23	94.04	4	41.0-56.0	Slotted Schedule 40	0.0-2.0 2.0-34.0 34.0-39.0 39.0-56.0	Seal Seal Seal Filter
MW-10	10/1/91	49	49	91.84	91.53	4	34.0-49.0	Slotted Schedule 40	0.0-2.0 2.0-27.0 27.0-32.0 32.0-49.0	Seal Seal Seal Filter
MW-11	5/14/98	50	51	92	91.75	2	35.0-50.0	Slotted Schedule 40	0.0-2.0 2.0-30.0 30.0-32.0 32.0-50.0	Seal Seal Seal Filter
MW-12	5/14/98	50	52	91.08	90.81	2	35.0-50.0	Slotted Schedule 40	0.0-2.0 2.0-30.0 30.0-32.0 32.0-50.0	Seal Seal Seal Filter

Table 2-3 (continued)

**LIBERTY INDUSTRIAL FINISHING SITE
MONITORING WELL CONSTRUCTION DETAILS**

Site	Date of Installation	Well Depth (feet bgs)	Total Depth (feet bgs)	Ground Surface Elevation (feet)	Measuring Point Elevation (feet)	Casing Diameter (inches)	Screens (feet bgs)		Annular Fills (feet bgs)	
							Interval	Description	Interval	Type
MW-13	5/8/98	50	52	90.84	90.64	2	35.0-50.0	Slotted Schedule 40	0.0-2.0 2.0-29.0 29.0-32.0 32.0-50.0	Seal Seal Seal Filter
MW-14	5/13/98	100	102	91.12	90.76	2	90.0-100.0	Slotted Schedule 40	0.0-2.0 2.0-83.0 83.0-85.0 85.0-100.0	Seal Seal Seal Filter
MW-15	5/7/98	50	53	91.92	91.55	2	35.0-50.0	Slotted Schedule 40	0.0-2.0 2.0-30.0 30.0-32.0 32.0-50.0	Seal Seal Seal Filter
MW-16	5/6/98	100	103	91.97	91.61	2	90.0-100.0	Slotted Schedule 40	0.0-2.0 2.0-83.0 83.0-85.0 85.0-100.0	Seal Seal Seal Filter
MW-17	5/12/98	100	102	93.35	93.04	2	90.0-100.0	Slotted Schedule 40	0.0-2.0 2.0-82.0 82.0-86.0 86.0-100.0	Seal Seal Seal Filter

NA - Not available.

All wells were analyzed for TAL metals and cyanide. Results of the analyses are discussed in Section 4.

The monitoring wells were sampled by first measuring the depth to water and well bottom in order to calculate the well volume necessary for purging. The wells were then purged a minimum of three to five well volumes using a Grundfos RediFlo-2™ 2-inch submersible pump. The purge water was monitored for pH, conductivity, turbidity, temperature and dissolved oxygen. The number of well volumes purged was a function of stabilization of the field parameters.

The groundwater samples were collected directly from the Grundfos™ pump utilizing disposable tubing. The groundwater was pumped directly into the laboratory supplied sample jars and stored in a cooler on ice. Chain-of-Custody forms were completed prior to shipment to the laboratory. Decontamination of the submersible pump used for well purging and sampling was performed by washing with a solution of Alconox detergent and water and scrubbing, then rinsing with potable water. Five gallons of potable water was then pumped through the pump. The pump cable and wires were wiped with deionized water and a clean paper towel.

Appropriate QA/QC samples were collected to meet the Data Quality Requirements outlined in Section 6.0 of the RI/FS Work Plan for the Liberty Industrial Finishing Site.

2.16 Air Monitoring

Ambient air monitoring was performed throughout the field investigation activities. A Photovac Microtip PID was used to detect total organic vapors and Triple Plus Crowcon detector was used to detect hydrogen cyanide and hydrogen sulfide during soil probe installation, well boring drilling and construction, and groundwater sampling.

Air monitoring was performed during the investigation to establish ambient air conditions during field activities. The primary purpose for air monitoring was for the protection of the workers' health and safety, and to collect information regarding the presence of organic vapors,

hydrogen sulfide and hydrogen cyanide at the point of sample collection. No levels above background for volatile organic compounds, hydrogen sulfide and hydrogen cyanide were detected during the remedial investigation field program.

2.17 Surveying and Mapping

All new and existing monitoring well locations were surveyed for horizontal and vertical control by YEC, Inc. The elevations were tied to the National Geodetic Vertical Datum of 1929 (NGVD - 1929). Horizontal control was tied to the New York State Plane Coordinate System. The elevations are used in the calculation of groundwater elevations (with depth to water measurements) for developing groundwater contour maps of the site and surrounding study area. Appendix E contains the survey report.

2.18 Health and Safety Program

Prior to performance of the field program and as part of the RI/FS Work Plan, a site-specific Health and Safety Plan was prepared in order to establish occupational health and safety requirements, responsibilities and procedures to protect workers during the field investigation at the Liberty Industrial Finishing Site. The requirements for worker health and safety were based on the following:

- The Standard Operating Safety Guides, US Environmental Protection Agency (EPA), Office of Emergency and Remedial Response;
- The Occupational Health and Safety Administration (OSHA) Regulations, 29 CFR Parts 1019.120 and 1926;
- NYSDEC Division of Hazardous Waste Remediation Technical and Administrative Memorandums 4016 and 4031;
- Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities, NIOSH, OSHA, USCG and EPA;
- Health and Safety Procedures for Hazardous Waste Sites, Dvirka and Bartilucci Consulting Engineers; and

- Superfund Amendments and Reauthorization Act (SARA), Title I, Section 126.

Activities associated with the investigation were performed in accordance with this Health and Safety Plan. Level D personal protective equipment was maintained throughout the investigation field activities based on results of the Air Monitoring Program.

2.19 Quality Assurance/Quality Control Program

As part of the RI/FS Work Plan, a Quality Assurance and Quality Control (QA/QC) Plan was prepared which describes the sample collection and analytical procedures to be used to ensure high quality, valid data. QA/QC samples were collected during the investigation to ensure quality control for the soil and groundwater characterization of the site. The results of these samples will enable data evaluation for accuracy and provide support for the development of a remediation plan for the site. This QA/QC Plan included detailed descriptions of the following:

- Data Quality Objectives and Scope
- Data Usage
- Monitoring Network Design and Rationale
- Monitoring Parameters
- Data Quality Requirements and Assessment
- Sampling Procedures
- Decontamination Procedures
- Laboratory Sample Custody Procedures
- Field Management Documentation
- Calibration Procedures and Preventive Maintenance
- Performance of Field Audits
- Control and Disposal of Contaminated Material
- Documentation, Data Reduction and Reporting

- Data Validation
- Performance and System Audits
- Corrective Action
- Trip Blanks
- Field Blanks
- Matrix Spikes/Matrix Spike Duplicates and Spiked Blanks
- Method Blanks/Holding Blanks
- Field Management Forms
- NYSDEC Sample Identification, Preparation and Analysis Summary Forms
- Data Quality Requirements and Assessments

Sample collection and analytical procedures undertaken during this investigation were performed in accordance with the procedures outlined in the QA/QC Plan contained in the RI/FS Work Plan.

2.20 Data Validation/Usability

American Environmental Network (AEN, formerly IEA Laboratories), was utilized to perform analyses of the soil and groundwater samples collected during the remedial investigation. AEN is a New York State Department of Health (NYSDOH) Environmental Laboratory Approved Program (ELAP) and Contract Laboratory Program (CLP) certified laboratory meeting requirements for performing sample analysis according to NYSDEC 12/95 Analytical Services Protocols (ASP). Summary documentation regarding data validation was completed by the laboratory using NYSDEC forms (Contract Laboratory Sample Information Sheets) and submitted with the data packages, as required in the RI/FS Work Plan.

Seventeen (17) sediment/sludge samples, forty-two (42) subsurface soil samples, sixty-seven (67) surface soil samples, twenty-seven (27) monitoring well groundwater and thirty-one (31) Geoprobe groundwater samples were collected during the field investigations for

the Remedial Investigation/Feasibility Study at the Liberty Industrial Finishing Site. The sediment/sludge samples and first round (December 1997) of monitoring well groundwater samples were analyzed for Target Compound List (TCL) +30 organics, Target Analyte List (TAL) metals and cyanide. The surface soils samples were analyzed for TAL metals. The Geoprobe (subsurface) soil, the surface soil (SS-35 and SS-36) second round of monitoring well groundwater (June 1998) and Geoprobe groundwater samples were analyzed for TAL metals and cyanide. Five of the Geoprobe groundwater samples were filtered in the laboratory and analyzed for dissolved metals. All soil samples (sediment and subsurface) collected from the Geoprobe locations as well as two surface soil samples (SS-35 and SS-36) were also analyzed for pH. Sample analysis was performed by Severn Trent Laboratories (STL), a subcontractor to Dvirka and Bartilucci Consulting Engineers (D&B), in accordance with New York State Department of Environmental Conservation (NYSDEC) 10/95 Analytical Services Protocol (ASP) methods. The data packages submitted by STL were validated by Enviroscience, Inc., a subcontractor to D&B, in accordance with NYSDEC ASP Quality Assurance/Quality Control (QA/QC) requirements.

The findings of the validation process are summarized below.

Sample analysis was performed in accordance with the NYSDEC 10/95 ASP methods specified in the work plan. All analyses were performed within the method specified holding times.

One sample, B-23D (12-16), was inadvertently not analyzed by the laboratory. It was entered into their system, but not slated for any analysis. When this error was noted it was determined that the location not be resampled.

Several compounds have been qualified as non-detect due to laboratory contamination. That is, the method blank associated with the samples contained the same compound that was detected in the sample and the sample concentration was less than five times the concentration found in the method blank. The compounds and samples which have been qualified are as follows:

Bis(2-ethylhexyl)phthalate in samples MW-02, MW-03A, MW-06, MW-10, B-02D (14-18), B-05D (13-17), B-06D (3-7), and B-07D (14-18), and di-n-butyl-phthalate in samples MW-06, B-04D (18), B-25D (14-18), B-30S (17-21), B-32S (12-16) and B-33S (12-16) have been qualified as non-detect.

Acetone has been qualified as non-detect in sediment/sludge samples B-04D (18), B-25D (14-18), B-30S (17-21), B-31S (16-20), B-32S (12-16), B-33S (12-16), S-07, S-13, S-14 and S-15. Methylene chloride has been qualified as non-detect in samples S-07, S-13, S-14 and S-15.

Sample S-03 required reanalysis of the semivolatile fraction at a secondary dilution due to the concentration of bis(2-ethylhexyl)phthalate exceeding the instrument calibration range. Therefore, the results from the initial undiluted run should be utilized for all compounds except bis(2-ethylhexyl)phthalate which should come from the reanalysis.

The pesticide results which have the "P" qualifier have been qualified as estimated possibly biased low. The "P" qualifier indicates that the percentage (%) difference in concentrations between the primary and confirmation columns was greater than 25% and the lower value reported. This qualification does not affect the usability of the data since all the pesticide results were significantly lower than the NYSDEC Recommended Soil Cleanup Objectives which were utilized for comparison of the results.

Only five of the Geoprobe groundwater samples were analyzed for both total and dissolved metals. A comparison was made between the total and dissolved results for analytes which exceed standards (see Table 2-4); however, no correlation could be made. An example is iron in TW-09S and TW-12S. The total iron values were greatly different, 87,700 and 338,000 ug/l, respectively, but the dissolved results were similar at 3,760 ug/l and 2,410 ug/l, respectively. This may be due to the different turbidity values for each sample. Therefore, results of the total metals have been qualified as estimated biased high due to high turbidity

TABLE 2-4
LIBERTY INDUSTRIAL FINISHING SITE
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
COMPARISON OF TOTAL AND DISSOLVED METALS
GEOPROBE GROUNDWATER SAMPLES

SAMPLE ID	TW-02S	TW-09S	TW-12S	TW-16S	TW-19D	NYSDEC CLASS GA
SAMPLE DEPTH, FT	55	55	55	55	100	GROUNDWATER
DATE OF COLLECTION	3/10/98	3/9/98	2/27/98	3/2/98	2/24/98	STANDARDS
	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)
TOTAL METALS						
Antimony	8.8	10.6	35.7	3.1	8.5	3
Arsenic	---	---	28.4	---	70.6	25
Beryllium	---	---	---	---	7.7	3
Cadmium	---	22.8	22.5	---	23.6	10
Chromium	430	720	9070	673	4290	50
Copper	---	---	203	---	508	200
Iron	23400	87700	338000	120000	676000	300
Lead	---	63.6	63.8	41.8	231	25
Manganese	---	5070	3690	1820	13400	300
Selenium	---	---	12.4	---	27.6	10
Sodium	---	---	88500	34400	23800	20000
Thallium	---	---	15.4	4.5	33	4
Zinc	---	819	1430	1000	1660	300
Cyanide	---	---	---	---	---	100
DISSOLVED METALS						
Antimony	---	6.5	30.3	---	---	3
Cadmium	---	13.6	---	---	---	10
Chromium	---	---	6720	---	---	50
Iron	597	3760	2410	1750	2740	300
Manganese	---	7210	335	1510	956	300
Sodium	---	---	86700	38500	22400	20000
Zinc	---	---	---	691	---	300

NOTES

---: Result does not exceed NYSDEC Class GA Groundwater Standards

NA: Sample not analyzed for that parameter

Samples analyzed for TAL Metals and Cyanide only

results. The high levels of metals are likely attributable to the suspended solids contained in the samples.

Based upon the validation process, the analytical results for the samples collected as part of the RI/FS for the Liberty Industrial Finishing Site are deemed valid and usable for environmental assessment purposes, as qualified above.

Section 3



3.0 PHYSICAL CHARACTERISTICS OF THE SITE AND STUDY AREA

This section provides a discussion of the ecology, geology and hydrogeology of the Liberty Industrial Finishing Site.

3.1 Ecology

This section provides an overall habitat based assessment of the Liberty Industrial Finishing Site. This assessment conforms to the guidelines contained in Step 1 of the NYSDEC Technical and Administrative Guidance Memorandum entitled, "Fish and Wildlife Impact Analysis for Inactive Hazardous Waste Sites" (October, 1994). The purpose of this assessment is to provide a description of the existing ecology of the site, including a site specific description of major habitat types with associated wildlife populations, and identify any other significant on-site resources. The information contained in this section was obtained during the remedial investigation field program and supplemented with data from outside sources, including the NYSDEC, U.S. Fish and Wildlife Service and New York State Historic Preservation Officer. The field survey for this assessment was conducted during August 1998.

3.1.1 Major Habitat Types

The Liberty Industrial Finishing Site is an upland area located at 550 Suffolk Avenue, Brentwood, Suffolk County, New York. The site is bordered by residential development north of Suffolk Avenue, Long Island Rail Road tracks and associated right-of-way to the south, and undeveloped lots immediately east and west which border small retail businesses, including a gas station to the west and commercial establishments to the east. South of the railroad tracks are managed recreational baseball fields and a school. The site is characterized by predominantly disturbed lands on the facility's footprint consisting of a building structure and paved area with forested areas immediately east and west. To the east of the property is also a large fenced sump managed by the Suffolk County Department of Public Works, Highway Department for storm water collection and recharge from the local area. The forested areas east and west of the site are

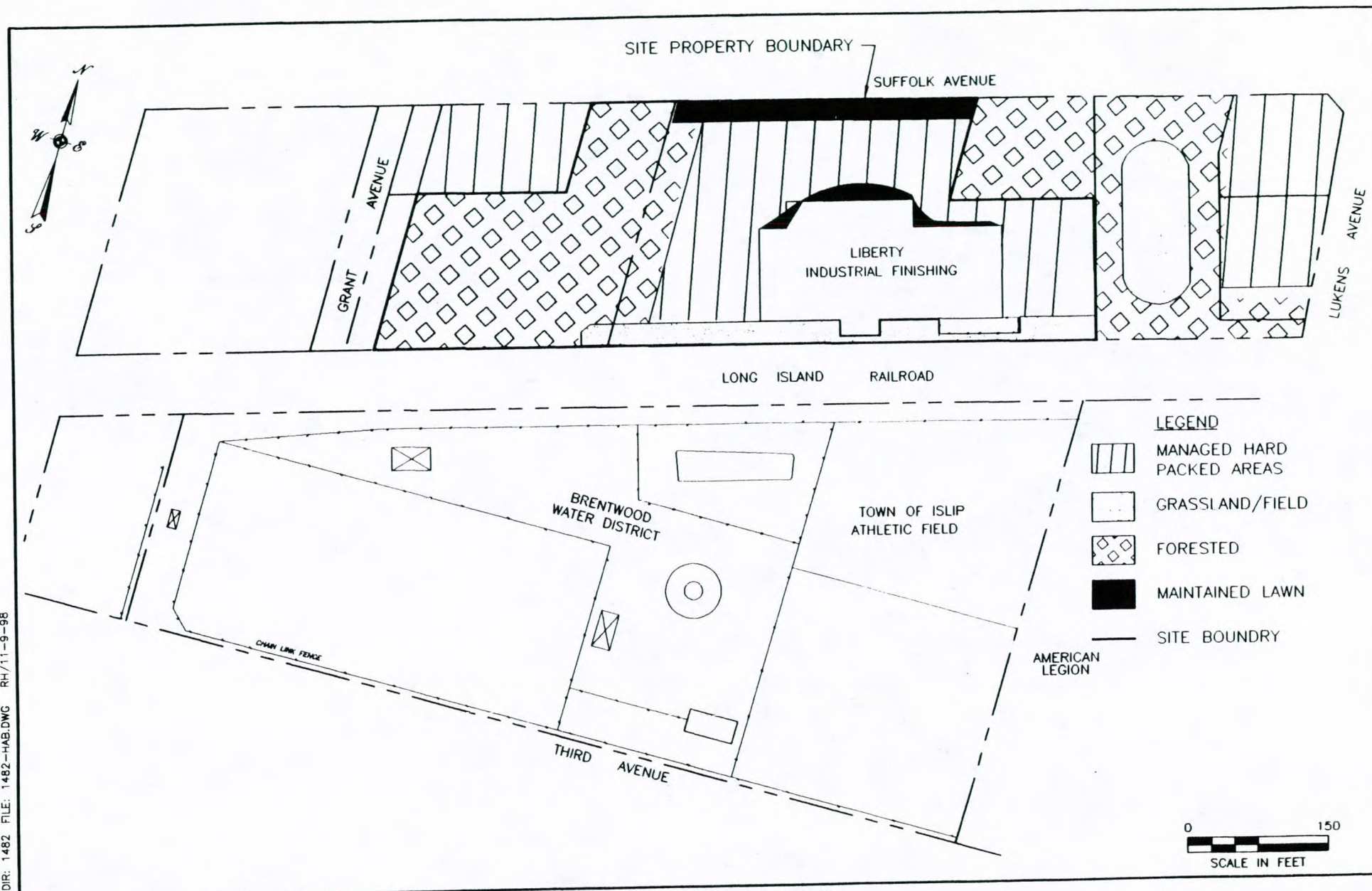
well established with trees generally 40 to 60 feet tall with limited undergrowth. The building is surrounded on the north, east and west by paved area except for a small area of maintained lawn and ornamental planting. A buffer area along Suffolk Avenue is also a strip of maintained lawn with oak trees planted about every 40 feet. The area on the south and southwest side of the building consists of primary successional grasslands which cover the areas between the forested edge to the west and the railroad right-of-way to the south. The major habitat types for the site are listed as follows:

- Grassland/Field: herbaceous, non-woody growth ranging from one to two feet tall;
- Forested: woody vegetation dominates with trees typically 40 to 60 feet high;
- Maintained Lawn: planted grass areas supporting some planted ornamental shrubbery and spaced trees; and
- Managed Hard Packed Areas: includes paved roads, parking areas and the railroad tracks.

The distribution of habitat types for the Liberty Industrial Finishing Site, inclusive of the area bordered by Suffolk Avenue to the north, the Long Island Rail Road right-of-way to the south, Grant Avenue to the west and Lukens Avenue to the east, is displayed in Figure 3-1. Detailed discussion of the major communities found on the site are described below in greater detail. A list of vegetative species observed on the Liberty site is provided in Table 3-1.

3.1.1.1 - Grassland/Field

This cover type represents approximately 15% of the mapped area and is found in three areas: southwest corner of the building; within the Suffolk County managed recharge basin; and south of (behind) the commercial buildings. These areas have revegetated following clearing of the areas and all have likely been maintained in low growth either through activity or occasional mowing. The area southwest of the building is sparsely vegetated primarily because land clearing activities were required to conduct the geophysical survey of the site. Common species



LIBERTY INDUSTRIAL FINISHING SITE
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
BRENTWOOD, NEW YORK

HABITAT MAP

FIGURE 3-1



Dvirka and Bartilucci
Consulting Engineers
A Division of William F. Cosulich Associates, P.C.

Table 3-1

**VEGETATIVE SPECIES OBSERVED ON THE
LIBERTY INDUSTRIAL FINISHING SITE**

<u>Common Name</u>	<u>Scientific Name</u>
<i>Herbaceous Plants</i>	
Yarrow	Achillea millefolium
Common ragweed	Ambrosia artemisiifolia
Dogbane	Apocynum androsaemifolium
Bearberry	Arctostaphylos uva-ursi
Aster	Aster spectabilis
Aster	Aster undulatus
Common lambsquarters	Chenopodium album
Spotted wintergreen	Chimaphila maculata
Daisy	Chrysanthemum sp.
Chicory	Cichorium intybus
Crown vetch	Coronilla Varia
Lady's slipper	Cypripedium acaule
Queen Anne's lace	Daucus carota
Crabgrass	Digitaria sp.
Strawberry	Fragaria virginiana
Bush clover	Lespedeza virginiana
Butter and eggs	Linaria vulgaris
Yellow woodsorrel	Oxalis stricta
Ground cherry	Physalis heterophylla
Pokeweed	Phytolacca americana
Broadleaf plantain	Plantago major
Nightshade	Solanum dulcamara
Common goldenrod	Solidago juncea
Common mullein	Verbascum thapsus
Vetch	Vicia sp.
<i>Shrubs and Vines</i>	
Forsythia	Forsythia sp.
Winterberry	Ilex verticillata

Table 3-1 (continued)

VEGETATIVE SPECIES OBSERVED ON THE
LIBERTY INDUSTRIAL FINISHING SITE

<u>Common Name</u>	<u>Scientific Name</u>
Japanese honeysuckle	Lonicera japonica
Virginia creeper	Parthenocissus quinquefolia
Poison ivy	Rhus radicans
Catbrier	Smilax rotundifolia
Summer grape	Vitis aestivalis
Fox grape	Vitis labrusca
<i>Trees</i>	
Norway maple	Acer platanoides
Flowering dogwood	Cornus florida
Black gum	Nyssa sylvatica
Red pine	Pinus resinosa
Pitch pine	Pinus rigida
Black cherry	Prunus serotina
White oak	Quercus alba
Scrub oak	Quercus illicifolia
Black oak	Quercus velutina
Black locust	Robinia pseudoacacia

include daisy (Chrysanthemum sp), chicory (Cichorium intybus), common goldenrod (Solidago juncea), and common ragweed (Ambrosia artemisiifolia). The vegetation was thicker and more monotypic within the Suffolk County recharge basin, likely because of the basin slopes and style of maintenance.

3.1.1.2 - Forested

This cover type makes up the majority of the vegetated habitat in the review area and about 35% of the cover on the site. Trees are mixed deciduous and coniferous and are representative of undeveloped lots in the area. The forested areas provide an effective screen of the Liberty site to the east and west. The trees are typically 40 to 60 feet tall and include black cherry (Prunus serotina), black locust (Robinia pseudoacacia) and red pine (Pinus resinosa) as the dominant types. The tree canopy is quite dense and limits ground cover within the forest, although a variety of vine-like plants are growing at the forest edge. Poison ivy (Rhus radicans) is the dominant ground growth within the forested areas.

3.1.1.3 - Maintained Lawn

This cover type is limited to the north face of the Liberty building and the border along the sidewalk between the facility and Suffolk Avenue. This habitat covers less than 5% of the mapped area and is generally characterized by maintained lawn area and ornamental shrubs against the building and intermittently planted oaks near Suffolk Avenue.

3.1.1.4 - Managed Hard Packed Areas

This habitat includes building footprints, paved parking areas, railroad tracks and packed areas devoid of vegetation which are effectively utilized as parking areas. This is the dominant habitat type on site covering about 45% of the total area surveyed.

3.1.2 Wetlands

There are no New York State or federally regulated wetlands located on the Liberty site or within one mile of the site. The U.S. Fish and Wildlife Service National Wetlands inventory maps indicate the nearest wetland to be approximately 1.5 miles to the south/southwest. The New York State Department of Environmental Conservation maintains no wetland mapping for site or within one mile of the site.

3.1.3 Mammals

The predominantly developed nature of the areas surrounding the site precludes its habitation by mammals which require a large home range. No mammals were observed during the site field investigation although scats and tracks were observed that would indicate the presence of white footed mice (Peromyscus leucopus), meadow voles (Microtus pennsylvaticus), cottontail rabbits (Sylvilagus floridanus) and raccoons (Procyon lotor). Probable mammal inhabitants are listed in Table 3-2.

3.1.4 Birds

Birds were present and actively feeding within the forested habitats and ornamental shrubbery. Several species of finches and sparrows were observed moving through the vegetation. Common species to the area including American robin (Turdus migratorius) and Northern mockingbird (Mimus polyglottus) were also active near the building and forest edge. No breeding was observed although breeding indications would be limited at the time of the field survey. A subset of the New York State Bird Atlas listing for Suffolk County, New York is presented in Table 3-3 providing species observed and/or expected to utilize the Liberty site.

Table 3-2

**MAMMALS LIKELY TO INHABIT LIBERTY
INDUSTRIAL FINISHING SITE**

<u>Common Name</u>	<u>Scientific Name</u>
Norway rat	Rattus norvegicus
Gray Squirrel	Sciurus carolinensis
Cottontail rabbit	Sylvilagus floridanus
Mice/voles/shrews	Peromyscus sp., Sorex sp., Microtus sp., Blarina sp.
House mouse	Mus musculus
Raccoon	Procyon lotor

Table 3-3

**AVIFAUNA LIKELY TO INHABIT LIBERTY
INDUSTRIAL FINISHING SITE**

<u>Common Name</u>	<u>Scientific Name</u>
Canada goose	<i>Branta canadensis</i>
Kestrel	<i>Falco sparverius</i>
Killdeer	<i>Charadrius vociferus</i>
Herring gull	<i>Larus argentatus</i>
Mourning dove	<i>Zenaida macroura</i>
Yellow-bellied sapsucker	<i>Sphyrapicus varius</i>
Red-bellied woodpecker	<i>Melanerpes carolinus</i>
Downy woodpecker	<i>Picoides pubescens</i>
Hairy woodpecker	<i>Picoides villosus</i>
American crow	<i>Corvus brachyrhynchos</i>
Blue jay	<i>Cyanocitta cristata</i>
Black-capped chickadee	<i>Parus atricapillus</i>
Tufted titmouse	<i>Parus bicolor</i>
White-breasted nuthatch	<i>Sitta carolinensis</i>
Red-breasted nuthatch	<i>Sitta canadensis</i>
Brown creeper	<i>Certhia americana</i>
House wren	<i>Troglodytes aedon</i>
Winter wren	<i>Troglodytes troglodytes</i>
Carolina wren	<i>Thryothorus ludovicianus</i>
Gray catbird	<i>Dumetella carolinensis</i>
Northern mockingbird	<i>Mimus polyglottos</i>
American robin	<i>Turdus migratorius</i>
Wood thrush	<i>Hyocichla mustelina</i>
Yellow warbler	<i>Dendroica petechia</i>
Yellow-rumped warbler	<i>Dendroica coronata</i>
Pine warbler	<i>Dendroica pinus</i>
Ovenbird	<i>Seiurus aurocapillus</i>
Common grackle	<i>Quiscalus quiscula</i>
European starling	<i>Sturnus vulgaris</i>
House sparrow	<i>Passer domesticus</i>
Northern cardinal	<i>Cardinalis cardinalis</i>

Table 3-3 (continued)

**AVIFAUNA LIKELY TO INHABIT LIBERTY
INDUSTRIAL FINISHING SITE**

<u>Common Name</u>	<u>Scientific Name</u>
Indigo bunting	Passerina cyanea
Brown-headed cowbird	Molothrus ater
House finch	Carpodacus mexicanus
American goldfinch	Carduelis tristis
Rufous-sided towhee	Pipilo erythrophthalmus
Field sparrow	Spizella pusilla
Song sparrow	Melospiza melodia

3.1.5 Fish

There are no open or ponded water systems present on or near the site that would be capable of supporting fish populations.

3.1.6 Reptiles and Amphibians

No reptiles or amphibians were observed on the Liberty site. The site includes many discarded items such as bottles, magazines, and some vinyl sheets that would offer cover to snakes common to the area. Cultivated lawns with ornamental shrubs likely provide habitat for common toad species. Table 3-4 contains a list of reptiles and amphibians common to the area that could likely inhabit the site and/or surrounding areas.

3.1.7 Rare Species and Critical Habitats

Based on a review of the New York Natural Heritage files by the NYSDEC Wildlife Resources Center for nearby habitats, there are no rare species or critical habitats known to occur on or adjacent to the Liberty Industrial Finishing site. In addition, except for occasional transient individuals, no federally listed or proposed endangered or threatened species exist within a two mile radius of the site according to the U.S. Department of the Interior, Fish and Wildlife Service.

3.1.8 Biological Associations Found in the Project Vicinity

The area surrounding the Liberty site within a 2.5 mile radius is largely residential communities to the north and commercial operations or parklands to the east, west and south. An association of cover types with common dominant species is presented in Table 3-5. This cover type/biological association discussion is focused to the analyzed area.

Table 3-4

**REPTILES AND AMPHIBIANS LIKELY TO
INHABIT LIBERTY INDUSTRIAL FINISHING SITE**

<u>Common Name</u>	<u>Scientific Name</u>
Eastern garter snake	Thamnophis sirtalis
Eastern ribbon snake	Thamnophis sauritis
Fowler's toad	Bufo woodhousei fowleri

Table 3-5

**FLORAL AND FAUNAL ASSOCIATIONS OBSERVED
WITHIN LIBERTY INDUSTRIAL FINISHING SITE**

<u>Species</u>	<u>Grassland/Field</u>	<u>Forested</u>	<u>Maintained Lawn</u>	<u>Hard packed</u>
<i>Plants</i>				
Common ragweed	X			
Daisy	X			
Crown vetch	X			
Goldenrod	X			
Poison Ivy	X	X		
Virginia creeper	X	X		
Flowering Dogwood		X		
Red pine		X		
Black locust		X		
<i>Animals</i>				
Gray Squirrel	X	X	X	X
Mice/voles/shrews	X	X	X	X
Finches	X	X	X	
Sparrows	X	X	X	
Eastern garter snake	X	X	X	

3.1.9 Observations of Stress Potentially Related to Site Contaminants

As described in Section 3.1.1.1, the grassland area to the southwest of the Liberty building is sparsely vegetated. This area of the site was land cleaned prior to the habitat assessment to provide access to the field crew conducting the geophysical survey.

3.1.10 - Habitat Values of Vegetative Zones Within the Project Site

The assessment of habitat value provides for assessments of primary functions such as food chain production, specialized habitat and hydrologic interactions. As part of the analysis, cultural values concerning recreation, aesthetics or other special features must be taken into consideration.

The information gathered during the remedial investigation can provide for a hierarchy of habitat values for the cover types found at the Liberty Industrial Finishing site. It should be noted that this approach is highly subjective. Those functions assumed to be valuable in relative efficiency or importance are ranked as 3 (high), 2 (moderate), or 1 (low). Specific factors and brief descriptions which were utilized in the habitat value analysis of the site's qualitative evaluation are as follows:

- Nutrient Transport Function - Transport of nutrients derived from plant material is strongly dependent on the hydrologic characteristics of the particular ecosystem. For example, wetlands located in lower lying areas export more plant-derived material than do the higher marsh areas infrequently affected by creek/river overflow. Similarly, transport in the riverine systems is dependent on the river flow regime, especially during periods of peak discharge. In contrast, very little material is exported from isolated ponds and marshes, except during periods of episodic overflow resulting from exceptionally high precipitation.
- Food Chain Support - This function refers to the secondary productivity values of consumer species that a particular ecosystem can support. Secondary productivity is an overall measure of the efficiency of the habitat in terms of nutrient to transfer higher trophic levels.

- Hydroperiod - This factor refers to the frequency of inundation either by river flow runoff or direct precipitation. Areas of good hydrologic linkage help maintain a regular interchange of nutrients and other materials necessary to support diverse flora and fauna.
- Elevational Location - From the above, it is apparent that hydrologic relationships will progressively deteriorate as the depth of flooding decreases. The weakest hydrologic linkages exist in those areas physically isolated from other areas in the system.
- Cultural Evaluation - This particular factor is difficult to assess in detail because of the number of socio-economic considerations which may be involved. Hence, the evaluation in relation to local residential, commercial, or industrial development is largely left to the professional judgment of the project personnel on a specific case-by-case basis.
- Recreation - Recreation is a vital personal and social need which provides opportunity for self-expression, physical exercise, and a change of pace from normal or routine activities. Outdoor recreation is a major leisure activity and is growing in national importance with a trend towards a higher standard of living. A significant portion of the total recreational output is water based or water related. As such, greater weight is given to those types of habitats.
- Socio-Economic - This factor pertains to benefits which can be attributed directly to renewable resources, recreational enjoyment, or other features associated with a particular habitat.
- Aesthetics - Selected types of habitats are distinctive landscape features which can please the aesthetic sense through the intrinsic appreciation of natural beauty. Wetlands, or any other type of natural landscape, can also be offensive if their features have been adversely modified by incompatible human activities. Aesthetic value can be largely determined by the degree of visual diversity and contrast between the physical elements, such as landform, water bodies, vegetation types and land use types.
- Food Chain Production - This factor determines the growth of vegetation in a habitat and influences the populations and secondary productivity of animals that feed on the plants, or that feed at high trophic levels in the community.
- Primary Productivity - Primary productivity is a measure of the stored food potential of the vegetation in excess of that used by the plants in metabolism. This determination provides an overall measure of the energy input directly available to the consumer species. It should be noted that the possible range of productivity values, both within and between particular environments, is extremely variable and dependent

on a number of local conditions. For the present analysis, literature values for primary productivity as a function of biomass were utilized.

- Water Purification Factor - Through a variety of physical, biological, and chemical processes, some habitats function to naturally purify water by removing organic and mineral particulate matter from runoff and/or rivers and streams. For example, wetlands may be significant in minimizing some of the harmful effects of pollutants introduced into natural ecological systems by the activities of man. Thus, wetlands, especially when part of riverine or estuarine systems, can be an integral part of water quality and pollution control objectives.

Based on the above factors, a qualitative analysis of the habitat value of the vegetative communities on the Liberty site is presented in Table 3-6. Based on these results, the habitats are all of relatively low value because of their fragmented nature and location within a well developed area. The forested areas scored slightly higher simply because they are the only remaining relatively undeveloped areas of the assessment zone. However, the forested areas are limited in size and will not support or provide useful habitat other than to species that have developed a strong tolerance of human presence. The property is best suited for rehabilitation and reuse as either an industrial or commercial enterprise.

3.2 Site Geology

Based on data from previous investigations and data obtained during this investigation, the upper two geologic formations underlying the study area comprise the stratigraphic units for this remedial investigation. In descending order, these two formations are the Upper Glacial and the Magothy formations. During the remedial investigation, only the Upper Glacial aquifer was encountered, to a depth of approximately 100 feet below ground surface (bgs). During a previous investigation, the Magothy aquifer was encountered at approximately 150 feet bgs.

The soil samples collected from borings indicate that the Upper Glacial aquifer beneath the site and immediately downgradient of the site, consists of unconsolidated, glacial outwash deposits of stratified, brown, fine to coarse, quartz sand, and various amounts of fine to coarse quartz gravel.

Table 3-6

**QUALITATIVE HABITAT VALUE ANALYSIS WITHIN THE
LIBERTY INDUSTRIAL FINISHING SITE**

<u>Evaluation Factor</u>	<u>Grassland/Field</u>	<u>Forested</u>	<u>Maintained Lawn</u>	<u>Hard packed</u>
Food Chain Production	1	2	1	1
Primary Productivity	1	1	1	1
Nutrient Transport	1	1	1	1
Food Chain Support	2	2	2	1
Hydroperiod	1	1	1	1
Elevational Location	2	2	2	2
Cultural Location	1	1	1	1
Recreation	1	1	1	1
Socio-Economic	2	2	2	2
Aesthetics	1	2	1	1
Water Purification Factor	<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>
<i>Totals</i>	14	16	14	13

Notes:

1 = Low

2 = Moderate

3 = High

Based on regional geologic literature and previous investigations, the Upper Glacial aquifer beneath the site has an approximate thickness of 150 feet as interpreted from the geologic log for monitoring well MW-06. Monitoring well MW-06 was drilled to 300 feet below grade. Interbedded lenses and layers of clay were noted beginning at 150 feet bgs and marks the contact between the Upper Glacial and Magothy formations.

In addition, the Brentwood Water District wells (S-24846 and S-43088) are screened from 693 to 753 feet bgs and from 460 to 516 feet bgs, respectively. Both wells are screened in the Magothy aquifer. Boring logs from these supply wells indicated that the contact between the Upper Glacial and Magothy formations is approximately 150 feet bgs, which is consistent with the geologic information obtained from monitoring well MW-06.

3.3 Site Hydrogeology

Synoptic groundwater level measurements during the remedial investigation were collected on June 5, 1998. A water table contour map was constructed from the data to determine the groundwater gradients and flow direction in the shallow Upper Glacial aquifer in the vicinity of the Liberty Industrial Finishing site. Groundwater elevation data is presented in Table 3-7 and the water table contour map is presented in Figure 3-2.

Water table elevations ranged from 52.29 feet above MSL at MW-14 to 53.04 feet above MSL at MW-07 with a 0.75-foot change in hydraulic head across the study area. As illustrated on the water table contour map, the horizontal groundwater flow direction is fairly consistent across the study area. Groundwater flows predominately in a southeasterly direction in the area of the site which is consistent with regional groundwater flow.

A comparison of the groundwater elevations in the shallow wells (50 feet bgs) to the deep wells (100 feet bgs) at monitoring well clusters MW-12/MW-14, MW-10/MW-16 and MW-7/MW-17 indicates that the groundwater elevations in the shallow wells are higher than in the deep wells. This condition illustrates that there is a slight downward hydraulic head potential

TABLE 3-7
GROUNDWATER LEVEL MEASUREMENTS
JUNE 5, 1998

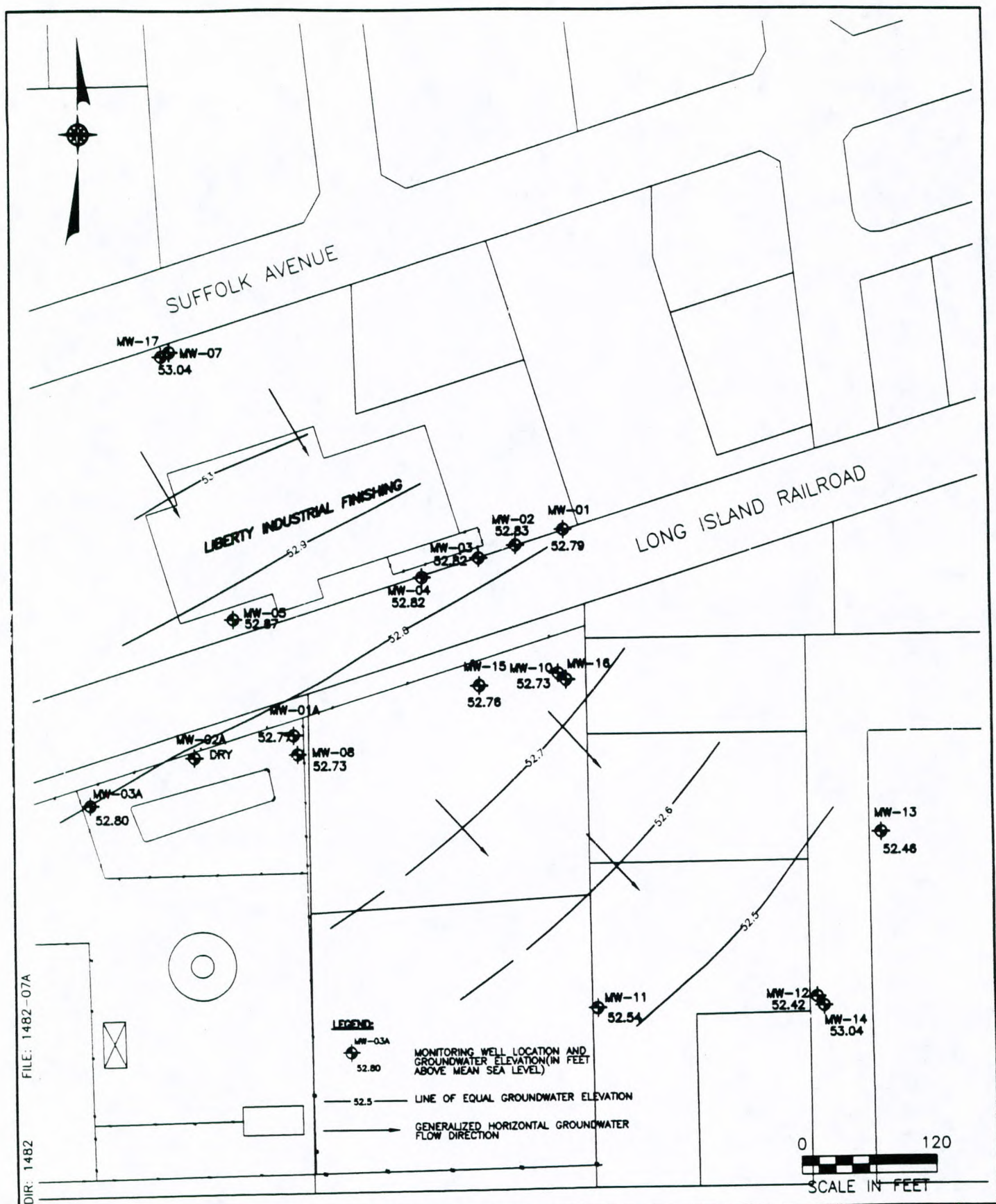
Page: 1 of 1
Date: 11/13/98

SITE	DATE	MP ELEVATION ⁽²⁾ (feet)	TIME	DEPTH TO WATER (feet)	 WATER ELEV. ⁽¹⁾ (feet)	WATER ELEV. ⁽²⁾ (feet)
MW-01	06/05/98	92.700	10:00	39.91	NA	52.79
MW-01A	06/05/98	94.420	09:40	41.65	NA	52.77
MW-02	06/05/98	92.400	10:05	39.57	NA	52.83
MW-02A	06/05/98	95.460	09:35	D	NA	NA
MW-03	06/05/98	92.380	10:10	39.56	NA	52.82
MW-03A	06/05/98	96.560	09:30	43.76	NA	52.80
MW-04	06/05/98	92.740	10:15	39.92	NA	52.82
MW-05	06/05/98	94.420	10:20	41.55	NA	52.87
MW-06	06/05/98	93.820	10:25	41.50	NA	52.32
MW-07	06/05/98	93.310	09:50	40.27	NA	53.04
MW-08	06/05/98	94.040	09:45	41.31	NA	52.73
MW-10	06/05/98	91.530	09:05	38.80	NA	52.73
MW-11	06/05/98	91.750	08:55	39.21	NA	52.54
MW-12	06/05/98	90.810	08:50	38.39	NA	52.42
MW-13	06/05/98	90.640	08:00	38.18	NA	52.46
MW-14	06/05/98	90.760	08:45	38.47	NA	52.29
MW-15	06/05/98	91.550	09:10	38.79	NA	52.76
MW-16	06/05/98	91.610	09:00	38.96	NA	52.65
MW-17	06/05/98	93.040	09:55	40.07	NA	52.97

(1) Change in Water Elevation since last reported measurement

D = Dry NA = Not Available

(2) Measurements Based on Mean Sea Level



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FIGURE 3-2

ranging from 0.08 feet to 0.13 feet at these locations. The vertical head potential is slight compared to the horizontal head potential.

Section 4



4.0 NATURE AND EXTENT OF CONTAMINATION

The purpose of this section is to present the analytical results for the samples collected as part of the remedial investigation, and to provide a discussion of the nature, location and significance of contamination found at and downgradient of the Liberty Industrial Finishing Site. The significance of contamination is based on a comparison of the contaminant concentrations to the standards, criteria and guidelines (SCGs) selected for the site which are described below.

4.1 Identification of Standards, Criteria and Guidelines

This section provides the standards, criteria and guidelines that are used to identify the contaminants, media and areas of concern, and on a preliminary basis, the potential threat to human health and the environment.

4.1.1 Surface Soil, Subsurface Soil and Sediment/Sludge

The SCGs used to evaluate the extent of soil and sediment/sludge contamination are based on the NYSDEC Technical and Administrative Guidance Memorandum (TAGM) No. 4046, "Determination of Soil Cleanup Objectives and Cleanup Levels," dated January 1994, and are contained in the respective data tables. The Recommended Soil Cleanup Objectives (RSCOs) are developed to protect human health resulting from ingestion of soil and groundwater as a potable water supply. TAGM 4046 includes site background as the RSCO for some inorganic parameters. The average site background, as calculated from detected concentrations in background samples, for beryllium, iron and zinc was greater than the listed RSCO. The average background value was, therefore, used as the SCG for these parameters.

4.1.2 Groundwater

For review and interpretation of groundwater sample analytical results, the SCGs selected for the Liberty Industrial Finishing Site are based on the NYSDEC Technical and Operational

Guidance Series (TOGS) – “Ambient Water Quality Standards and Guidance Values,” dated June 1998. The water quality standards and guidance values provide ambient contaminant concentrations developed to protect New York State groundwater and refer to their best-classified usage. Analytical results obtained for groundwater samples are compared to Class GA groundwater standards/guidelines for which the use is potable water supply, and are contained in the respective data tables.

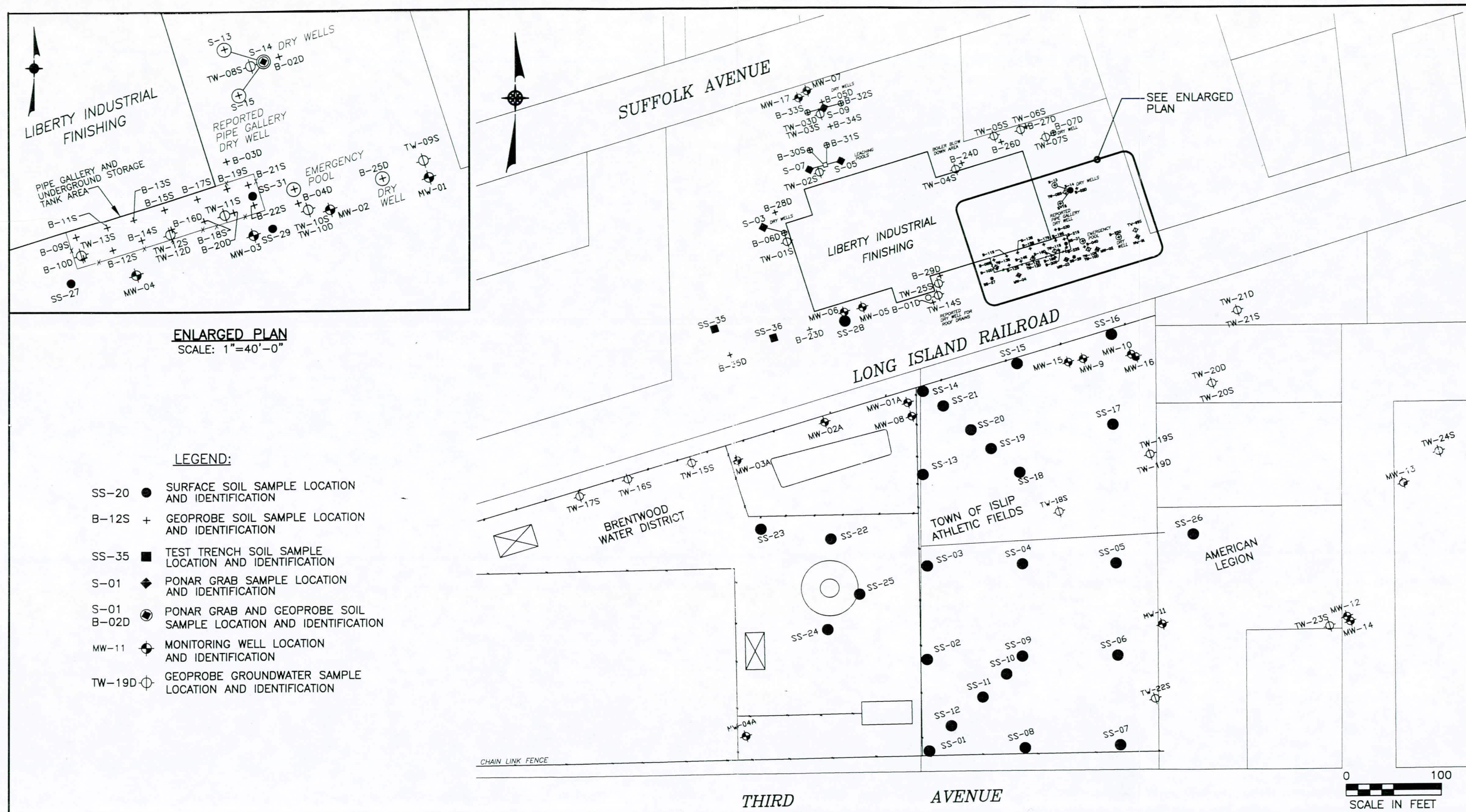
Presented below as a function of media sampled are the results of the chemical characterization of the Liberty Industrial Finishing Site. Media include surface soil, subsurface soil, dry well and sanitary leaching pool sediment/sludge, and groundwater. Results of ambient air monitoring were previously provided in Section 2.16. No elevated levels of volatile organic vapors, hydrogen sulfide or hydrogen cyanide gas above background were detected at the site. Complete analytical data tables for each media are contained in Appendices F through J. In order to focus on the contaminants, media and areas of the site and study area which are of concern, only those sample results that exceed the SCGs are presented and discussed in this section.

4.2 Results of Site Characterization

Presented below are the results of the site characterization activities conducted at the Liberty Industrial Finishing Site. Site characterization results include discussions of surface soil, subsurface soil, sediment/sludge and groundwater samples. Data tables providing exceedances of the SCGs are contained in the appropriate subsections. Sample locations are shown on Figure 4-1.

4.2.1 Surface Soil Sample Results

Sixty-seven surface soil samples were collected at the Liberty Industrial Finishing Site and study area to assess surface and near surface soil quality and determine if activities at the Liberty Industrial Finishing facility have impacted this media. Four areas were identified in the study area relative to potential surface soil contamination, these being the Liberty Industrial



Finishing Site (on-site), the Brentwood Water District property (water district), the Town of Islip athletic fields (athletic fields) and the American Legion property. In addition, near surface soil samples were collected from shallow test trenches excavated in the southwest portion of the site in an area of anomalous geophysical survey measurements.

At 33 locations, surface soil samples were collected at two depth intervals, 0-2 and 2-6 inches below ground surface (bgs), except at one location (SS-31) where a sample was collected only from 0-2 inches bgs. Samples from the test trenches were collected from 0-12 and 12-24 inches bgs. Nine samples were collected at six locations on the Liberty Industrial Finishing Site, eight samples were collected at four locations on the Brentwood Water District property, forty-two samples were collected at twenty-one locations on the athletic fields, and two samples were collected at one location on the American Legion Property. In addition, six background samples (SS-30, SS-32 and SS-33) were collected at three locations on the Brentwood Library property located approximately 1,600 feet east of the site. These background samples exhibited beryllium (0.27 to 0.34 mg/kg), iron (5,610 to 16,400 mg/kg) and zinc (23 to 127 mg/kg), which were well within the expected background values of the northeastern United States. The background samples were analyzed for TAL metals. Figure 4-1 illustrates the surface soil sample locations and Table 4-1 presents the exceedances of the SCGs. The results of the sample analyses are presented below by area. While a number of metals exceeded SCGs, those that significantly exceeded the SCGs are discussed in detail.

Liberty Industrial Finishing Site

All of the surface soil samples collected on the Liberty Industrial Finishing Site exceeded SCGs for at least two metals. Metals that exceeded SCGs in this area are beryllium (approximately background); cadmium (minor exceedances [approximately same order of magnitude], except for SS-31 [277 mg/kg] which is located in the underground plating waste storage tank area); chromium (minor exceedances, except for SS-31 [412 mg/kg]); copper (minor exceedances, except for SS-31 [145 mg/kg]); iron (range of background, except for SS-31

TABLE 4-1
LIBERTY INDUSTRIAL FINISHING SITE
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
SUMMARY OF EXCEEDANCES OF NYSDEC RECOMMENDED SOIL CLEANUP OBJECTIVES
SURFACE SOIL SAMPLES
TAL METALS

SAMPLE LOCATION	Water District		American Legion		On-site				NYSDEC RECOMMENDED SOIL CLEANUP OBJECTIVES
SAMPLE ID	SS-25	SS-25	SS-26	SS-26	SS-27	SS-27	SS-28	SS-28	
SAMPLE DEPTH, IN	0-2	2-6	0-2	2-6	0-2	2-6	0-2	2-6	
DATE OF COLLECTION	4/22/97	4/22/97	4/22/97	4/22/97	4/22/97	4/22/97	4/22/97	4/22/97	
METALS	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Arsenic	7.6	---	---	---	---	---	---	---	7.5
Barium	943	---	---	---	---	---	---	---	300
Beryllium	17.8	5.8	---	---	0.42	0.34	0.47	---	[0.31]
Cadmium	---	---	---	---	26.1	35.4	24	12.8	10
Chromium	1010	264	---	---	55.6	80.5	82.9	---	50
Cobalt	393	97	---	---	---	---	---	---	30
Copper	3130	1020	---	---	61.8	48.3	61.3	35.7	25
Iron	153000	54300	10800	11200	---	---	---	---	[9986.7]
Lead	2220	1360	---	---	---	---	---	---	400
Mercury	---	0.44	---	---	---	---	---	---	0.1
Nickel	1050	437	---	---	49.4	63	42.9	30.8	13
Selenium	50.1	11.5	---	---	---	---	---	---	2
Vanadium	---	---	---	---	---	---	---	---	150
Zinc	3540	2730	61.8	---	208	180	229	127	[46.7]

SAMPLE LOCATION	On-site					Background			NYSDEC RECOMMENDED SOIL CLEANUP OBJECTIVES
SAMPLE ID	SS-29	SS-29	SS-31	SS-35	SS-36	SS-30	SS-30	SS-32	
SAMPLE DEPTH, IN	0-2	2-6	0-2	0-1	1-2	0-2	2-6	0-2	
DATE OF COLLECTION	4/22/97	4/22/97	4/22/97	6/11/98	6/11/98	4/22/97	4/22/97	4/22/97	
METALS	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
pH	NA	NA	NA	6.23	5.58	NA	NA	NA	
Arsenic	---	---	---	---	---	---	---	---	7.5
Barium	---	---	---	---	---	---	---	---	300
Beryllium	---	---	0.5	0.35	0.41	---	---	---	[0.31]
Cadmium	21.6	10.6	277	---	---	---	---	---	10
Chromium	67.9	51.8	412	---	---	---	---	---	50
Cobalt	---	---	---	---	---	---	---	---	30
Copper	37.2	---	145	---	---	---	---	---	25
Iron	---	---	43000	---	---	---	---	10400	[9986.7]
Lead	---	---	---	---	---	---	---	---	400
Mercury	---	---	1.5	---	---	---	---	---	0.1
Nickel	27.4	13.9	146	---	---	---	---	---	13
Selenium	---	---	---	---	---	---	---	---	2
Vanadium	---	---	---	---	---	---	---	---	150
Zinc	137	89.8	607	52.9	63.8	---	---	---	[46.7]
Cyanide	NA	NA	NA	---	---	NA	NA	NA	

NOTES

---: Result does not exceed NYSDEC Recommended Soil Cleanup Objective

[]: Average of detected site background concentrations

Sample analyzed for TAL Metals only

TABLE 4-1
LIBERTY INDUSTRIAL FINISHING SITE
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
SUMMARY OF EXCEEDANCES OF NYSDEC RECOMMENDED SOIL CLEANUP OBJECTIVES
SURFACE SOIL SAMPLES
TAL METALS

SAMPLE LOCATION	Background								NYSDEC
SAMPLE ID	SS-32	SS-33	SS-33						RECOMMENDED
SAMPLE DEPTH, IN	2-6	0-2	2-6						SOIL CLEANUP
DATE OF COLLECTION	4/22/97	4/22/97	4/22/97						OBJECTIVES
METALS	(mg/kg)	(mg/kg)	(mg/kg)						(mg/kg)
Arsenic	---	---	---						7.5
Barium	---	---	---						300
Beryllium	---	---	0.34						[0.31]
Cadmium	---	---	---						10
Chromium	---	---	---						50
Cobalt	---	---	---						30
Copper	---	---	---						25
Iron	---	16400	13300						[9986.7]
Lead	---	---	---						400
Mercury	---	---	---						0.1
Nickel	---	---	---						13
Selenium	---	---	---						2
Vanadium	---	---	---						150
Zinc	---	127	62.3						[46.7]

NOTES

---: Result does not exceed NYSDEC Recommended Soil Cleanup Objective

[]: Average of detected site background concentrations

Samples analyzed for TAL Metals only except SS-35 and SS-36 which were also analyzed for pH and Cyanide

NA: Not Analyzed

TABLE 4-1
LIBERTY INDUSTRIAL FINISHING SITE
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
SUMMARY OF EXCEEDANCES OF NYSDEC RECOMMENDED SOIL CLEANUP OBJECTIVES
SURFACE SOIL SAMPLES
TAL METALS

SAMPLE LOCATION	Athletic Field								NYSDEC
SAMPLE ID	SS-01	SS-01	SS-02	SS-02	SS-03	SS-03	SS-04	SS-04	RECOMMENDED
SAMPLE DEPTH, IN	0-2	2-6	0-2	2-6	0-2	2-6	0-2	2-6	SOIL CLEANUP
DATE OF COLLECTION	4/22/97	4/22/97	4/22/97	4/22/97	4/22/97	4/22/97	4/22/97	4/22/97	OBJECTIVES
METALS	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Arsenic	381	967	---	---	---	---	---	---	7.5
Barium	---	---	---	---	---	---	---	---	300
Beryllium	0.4	---	1.5	---	---	0.35	---	---	[
Cadmium	---	---	---	---	---	---	---	---	10
Chromium	---	---	74.6	---	---	---	---	---	50
Cobalt	---	---	35.9	---	---	---	---	---	30
Copper	61.9	---	208	34.3	26.7	27.8	28.9	---	25
Iron	12800	14400	22400	14400	14500	15800	10900	10700	2000
Lead	---	---	---	---	---	---	---	---	400
Mercury	0.26	0.22	0.2	0.21	---	0.18	0.32	0.24	0.1
Nickel	27.5	---	77.1	18.8	---	13.6	13.1	---	13
Selenium	2	---	4.5	2.5	---	---	---	---	2
Vanadium	---	---	---	---	---	---	---	---	150
Zinc	362	---	728	159	122	108	122	78.5	20

SAMPLE LOCATION	Athletic Field								NYSDEC
SAMPLE ID	SS-05	SS-05	SS-06	SS-06	SS-07	SS-07	SS-08	SS-08	RECOMMENDED
SAMPLE DEPTH, IN	0-2	2-6	0-2	2-6	0-2	2-6	0-2	2-6	SOIL CLEANUP
DATE OF COLLECTION	4/22/97	4/22/97	4/22/97	4/22/97	4/22/97	4/22/97	4/22/97	4/22/97	OBJECTIVES
METALS	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Arsenic	---	---	---	---	---	---	---	---	7.5
Barium	---	---	---	---	---	---	---	---	300
Beryllium	---	0.32	---	---	---	---	---	---	[0.31]
Cadmium	---	---	---	---	---	---	---	---	10
Chromium	---	---	---	---	---	---	---	---	50
Cobalt	---	---	---	---	---	---	---	---	30
Copper	---	---	---	---	---	---	---	---	25
Iron	10800	10700	---	---	---	---	---	---	[9986.7]
Lead	---	---	---	---	---	---	---	---	400
Mercury	0.26	0.17	0.21	0.14	0.16	0.14	0.43	0.36	0.1
Nickel	---	---	---	---	15	---	---	---	13
Selenium	---	---	---	---	---	---	---	---	2
Vanadium	---	---	---	---	---	---	---	---	150
Zinc	79.3	62.4	65.5	49.4	183	98.4	156	169	[46.7]

NOTES

---: Result does not exceed NYSDEC Recommended Soil Cleanup Objective

[]: Average of detected site background concentrations

Sample analyzed for TAL Metals only

TABLE 4-1
LIBERTY INDUSTRIAL FINISHING SITE
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
SUMMARY OF EXCEEDANCES OF NYSDEC RECOMMENDED SOIL CLEANUP OBJECTIVES
SURFACE SOIL SAMPLES
TAL METALS

SAMPLE LOCATION	Athletic Field								NYSDEC
SAMPLE ID	SS-09	SS-09	SS-10	SS-10	SS-11	SS-11	SS-12	SS-12	RECOMMENDED
SAMPLE DEPTH, IN	0-2	2-6	0-2	2-6	0-2	2-6	0-2	2-6	SOIL CLEANUP
DATE OF COLLECTION	4/22/97	4/22/97	4/22/97	4/22/97	4/22/97	4/22/97	4/22/97	4/22/97	OBJECTIVES
METALS	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Arsenic	---	---	---	---	---	---	---	---	7.5
Barium	---	---	---	---	---	---	---	---	300
Beryllium	---	---	---	---	---	---	---	0.39	[0.31]
Cadmium	---	---	---	---	---	---	---	---	10
Chromium	---	---	---	---	---	---	---	---	50
Cobalt	---	---	---	---	---	---	---	---	30
Copper	---	---	---	---	---	---	---	---	25
Iron	10400	---	---	---	---	---	---	10500	[9986.7]
Lead	---	---	---	---	---	---	---	---	400
Mercury	0.21	0.27	---	---	---	---	---	---	0.1
Nickel	---	---	---	---	---	---	---	---	13
Selenium	---	---	---	---	---	---	---	---	2
Vanadium	---	---	---	---	---	---	---	---	150
Zinc	55.7	48.8	48.4	50.2	---	---	76	75.3	[46.7]

SAMPLE LOCATION	Athletic Field								NYSDEC
SAMPLE ID	SS-13	SS-13	SS-14	SS-14	SS-15	SS-15	SS-16	SS-16	RECOMMENDED
SAMPLE DEPTH, IN	0-2	2-6	0-2	2-6	0-2	2-6	0-2	2-6	SOIL CLEANUP
DATE OF COLLECTION	4/22/97	4/22/97	4/22/97	4/22/97	4/22/97	4/22/97	4/22/97	4/22/97	OBJECTIVES
METALS	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Arsenic	---	10.2	---	9.7	---	---	---	---	7.5
Barium	---	---	---	---	---	---	---	---	300
Beryllium	1.5	0.48	0.63	0.62	0.62	0.49	---	0.22	[0.31]
Cadmium	---	---	---	---	---	---	---	---	10
Chromium	---	---	---	---	---	---	---	---	50
Cobalt	---	---	---	---	---	---	---	---	30
Copper	150	---	58.2	37	50.5	29.1	---	---	25
Iron	19500	14100	12300	14200	---	---	---	---	[9986.7]
Lead	---	---	---	---	---	---	---	---	400
Mercury	0.22	0.28	0.18	0.35	0.23	---	0.22	0.19	0.1
Nickel	64.5	---	26.2	16.2	19.6	---	---	---	13
Selenium	3.8	---	---	---	---	---	---	---	2
Vanadium	---	---	---	---	---	---	---	---	150
Zinc	494	91.2	224	182	194	112	59.5	---	[46.7]

NOTES

---: Result does not exceed NYSDEC Recommended Soil Cleanup Objective

[]: Average of detected site background concentrations

Sample analyzed for TAL Metals only

TABLE 4-1
LIBERTY INDUSTRIAL FINISHING SITE
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
SUMMARY OF EXCEEDANCES OF NYSDEC RECOMMENDED SOIL CLEANUP OBJECTIVES
SURFACE SOIL SAMPLES
TAL METALS

SAMPLE LOCATION	Athletic Field								NYSDEC
SAMPLE ID	SS-17	SS-17	SS-18	SS-18	SS-19	SS-19	SS-20	SS-20	RECOMMENDED
SAMPLE DEPTH, IN	0-2	2-6	0-2	2-6	0-2	2-6	0-2	2-6	SOIL CLEANUP
DATE OF COLLECTION	4/22/97	4/22/97	4/22/97	4/22/97	4/22/97	4/22/97	4/22/97	4/22/97	OBJECTIVES
METALS	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Arsenic	---	---	---	---	---	---	---	---	7.5
Barium	---	---	---	---	---	---	---	---	300
Beryllium	0.39	---	0.38	0.4	0.5	0.42	0.36	0.32	[0.31]
Cadmium	---	---	---	---	---	---	---	---	10
Chromium	---	---	---	---	---	---	---	---	50
Cobalt	---	---	---	---	---	---	---	---	30
Copper	---	---	---	---	---	---	---	---	25
Iron	---	---	11600	11100	10200	12400	---	11600	[9986.7]
Lead	---	---	---	---	---	---	---	---	400
Mercury	---	0.15	0.21	0.19	---	---	---	0.17	0.1
Nickel	---	---	---	---	---	---	---	---	13
Selenium	---	---	---	---	---	---	---	---	2
Vanadium	---	---	---	---	---	---	---	---	150
Zinc	---	---	---	---	76.2	---	41.4	---	[46.7]

SAMPLE LOCATION	Athletic Field				Water District				NYSDEC
SAMPLE ID	SS-21	SS-21	SS-22	SS-22	SS-23	SS-23	SS-24	SS-24	RECOMMENDED
SAMPLE DEPTH, IN	0-2	2-6	0-2	2-6	0-2	2-6	0-2	2-6	SOIL CLEANUP
DATE OF COLLECTION	4/22/97	4/22/97	4/22/97	4/22/97	4/22/97	4/22/97	4/22/97	4/22/97	OBJECTIVES
METALS	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Arsenic	---	---	---	---	---	---	---	---	7.5
Barium	---	---	---	---	---	---	385	---	300
Beryllium	0.36	0.84	0.72	---	0.74	1.1	8.3	5.3	[0.31]
Cadmium	---	---	---	---	---	---	---	---	10
Chromium	---	---	---	---	---	---	382	217	50
Cobalt	---	---	---	---	---	---	199	106	30
Copper	---	34.5	107	---	117	128	1250	728	25
Iron	---	11600	10500	---	12500	12300	67500	44700	[9986.7]
Lead	---	---	---	---	---	---	837	542	400
Mercury	---	---	---	---	---	---	---	---	0.1
Nickel	---	14	53.4	---	50.3	58.4	513	272	13
Selenium	---	---	---	---	---	2.1	17.4	11	2
Vanadium	---	---	---	---	---	---	---	---	150
Zinc	87.2	159	434	66.8	408	568	3050	2220	[46.7]

NOTES

---: Result does not exceed NYSDEC Recommended Soil Cleanup Objective

[]: Average of detected site background concentrations

Sample analyzed for TAL Metals only

[43,000 mg/kg]); mercury (only at SS-31 [1.5 mg/kg]); nickel (minor exceedances, except for SS-31); and zinc (slightly above range of background, except for SS-31 [607 mg/kg]).

Town of Islip Athletic Field

All of the surface soil samples collected on the Town of Islip Athletic Field except SS-11 exceeded the SCGs for at least one metal. Metals that exceeded SCGs in this area are arsenic (minor exceedances at two locations and significant exceedances at SS-01 (381 mg/kg at 0-2 inches and 967 mg/kg at 2-6 inches) which is located at the southwest corner of the athletic field; beryllium (approximately background); chromium (minor exceedances at only one location); cobalt (minor exceedance at only one location); copper (minor exceedances, except for two locations (208 mg/kg at SS-02 and 150 mg/kg at SS-13); iron (range of background); mercury (minor exceedances); nickel (minor exceedances, except for two locations [77.1 mg/kg at SS-02 and 64.5 mg/kg at SS-13]); selenium (minor exceedances); zinc (approximate range of background, except for four locations [362 at SS-01, 728 mg/kg at SS-02, 494 mg/kg at SS-13 and 224 mg/kg at SS-14]).

Brentwood Water District Property

All of the surface soil samples collected on the Brentwood Water District property exceeded the SCGs for at least one metal. Metals that exceeded SCGs in this area are arsenic (minor exceedances at one location); barium (minor exceedances, except for SS-25 [943 mg/kg]); beryllium (significant exceedances at two locations [8.3 and 5.3 mg/kg at SS-24, and 17.8 and 5.8 mg/kg at SS-25]); chromium (significant exceedances at two locations [382 and 217 mg/kg at SS-24, and 1,010 and 264 mg/kg at SS-25]); cobalt (significant exceedances at two locations [199 and 106 mg/kg at SS-24, and 393 and 97 mg/kg at SS-25]); copper (significant exceedances at two locations [1,250 and 728 mg/kg at SS-24, and 3,130 and 1,020 mg/kg at SS-25]); iron (significant exceedances at two locations [67,500 and 44,700 mg/kg at SS-24, and 153,000 and 54,300 mg/kg at SS-25]); lead (significant exceedances at two locations [837 and 542 mg/kg at SS-24, 2,220 and 1,360 mg/kg at SS-25]); mercury (minor exceedances at one

location); nickel (significant exceedances at two locations [513 and 272 mg/kg at SS-24, and 1,050 and 437 mg/kg at SS-25]); selenium (significant exceedance at one location [50.1 mg/kg at SS-25]); zinc (significant exceedances at all locations ranging from 408 to 3,540 mg/kg, particularly at SS-24 [3,050 and 2,220 ug/kg] and SS-25 [3,540 and 2,730 ug/kg]).

American Legion Property

The two surface soil samples collected on the American Legion property exceeded the SCG for iron, and one sample exceeded the SCG for zinc. However, the detected concentrations are all within the range of background for these metals.

4.2.2 Dry Well/Leaching Pool Sediment/Sludge Sample Results

Seventeen sediment/sludge samples were collected from the bottom of ten storm water dry wells, four sanitary leaching pools and the industrial emergency leaching pool. The samples were collected to characterize the sediment/sludge quality and determine if wastes disposed in these subsurface drainage structures could impact the subsurface soil and potentially groundwater beneath these structures. The samples were analyzed for TCL +30 organics, TAL metals and cyanide. Figure 4-1 illustrates the sediment/sludge sample locations and Table 4-2 presents the exceedances of the SCGs. The results are presented below and are discussed by the type of drainage structure and constituents that exceeded the SCGs.

No volatile organic compounds, pesticides or PCBs were found to exceed the SCGs in any of the sediment/sludge samples. Furthermore, there are no SCGs/Recommended Soil Cleanup Objectives for cyanide. No cyanide was detected 12 of the 15 locations. At the three sample locations where cyanide was detected (S-07, S-13 and S-15), the concentrations were 2.6 mg/kg, 6.69 mg/kg and 4.34 mg/kg, respectively.

TABLE 4-2
LIBERTY INDUSTRIAL FINISHING SITE
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
SUMMARY OF EXCEEDANCES OF NYSDEC RECOMMENDED SOIL CLEANUP OBJECTIVES
DRYWELL/LEACHING POOL SEDIMENT/SLUDGE SAMPLES

SAMPLE LOCATION	Sanitary Leaching Pools				Storm Water Dry Wells					NYSDEC RECOMMENDED SOIL CLEANUP OBJECTIVES
	S-05	S-07	B-30S	B-31S	S-03	S-09	S-13	S-14	S-15	
SAMPLE ID	S-05	S-07	B-30S	B-31S	S-03	S-09	S-13	S-14	S-15	
SAMPLE DEPTH, FT	0-2"	0-2"	17-21	16-20	0-2"	0-2"	0-2"	0-2"	0-2"	
DATE OF COLLECTION	12/19/97	12/19/97	3/31/98	3/31/98	12/19/97	12/19/97	12/19/97	12/19/97	12/19/97	
pH	NA	NA	6.41	4.61	NA	NA	NA	NA	NA	
<u>VOLATILE ORGANICS (ug/kg)</u>	---	---	---	---	---	---	---	---	---	
<u>SEMIVOLATILE ORGANICS (ug/kg)</u>										
Phenol	---	---	---	---	77	---	---	120	1300	30
Dimethyl Phthalate	---	---	---	---	---	---	2300	3500	2300	2000
Benzo(a)anthracene	---	---	---	---	790	530	860	920	1900	224
Chrysene	---	---	---	---	2000	1300	1300	1600	2600	400
Benzo(b)fluoranthene	---	---	---	---	1200	---	---	1300	2000	1100
Benzo(k)fluoranthene	---	---	---	---	1300	---	---	1200	1600	1100
Benzo(a)pyrene	---	120	---	---	760	600	1000	1100	2000	61
Dibenzo(a,h)anthracene	---	---	---	---	---	---	---	170	---	14
Total CaPAHs	---	---	---	---	---	---	---	---	10100	10000
<u>PESTICIDE/PCBs (ug/kg)</u>	---	---	---	---	---	---	---	---	---	
<u>METALS (mg/kg)</u>										
Beryllium	---	---	---	---	0.42	---	0.54	---	0.4	[0.31]
Cadmium	---	89.8	---	42	303	18.9	52.8	186	34.9	10
Chromium	---	148	---	---	579	---	330	314	191	50
Copper	---	519	---	90.5	131	36.2	172	208	62.5	25
Iron	---	---	---	---	10700	---	---	---	12800	[9986.7]
Mercury	---	0.96	---	---	---	---	---	---	---	0.01
Nickel	---	---	---	---	102	15.1	51.7	67	31.9	13
Selenium	---	3.8	---	---	---	---	---	---	---	2
Zinc	---	127	---	115	528	152	554	866	248	[46.7]
Cyanide	---	2.6*	---	---	---	---	6.69*	---	4.34*	

NOTES

---: Result does not exceed NYSDEC Recommended Soil Cleanup Objectives

[]: Average of detected site background concentrations

Samples analyzed for TCL +30 Organics, TAL Metals and Cyanide

*:Detections of Cyanide - no NYSDEC Recommended Soil Cleanup Objective

NA: Not Analyzed

TABLE 4-2
LIBERTY INDUSTRIAL FINISHING SITE
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
SUMMARY OF EXCEEDANCES OF NYSDEC RECOMMENDED SOIL CLEANUP OBJECTIVES
DRYWELL/LEACHING POOL SEDIMENT/SLUDGE SAMPLES

SAMPLE ID	B-02D	B-04D	B-05D	B-06D	B-07D	B-30S	B-31S	B-32S	NYSDEC RECOMMENDED SOIL CLEANUP OBJECTIVES
SAMPLE DEPTH, FT	14-18	18	13-17	3-7	14-18	17-21	16-20	12-16	
DATE OF COLLECTION	3/26/98	3/31/98	3/27/98	3/26/98	3/26/98	3/31/98	3/31/98	3/31/98	
pH	5.89	7.12	5.94	8.6	6.7	6.41	4.61	6.09	
VOLATILE ORGANICS (ug/kg)	---	---	---	---	---	---	---	---	
SEMIVOLATILE ORGANICS (ug/kg)									
Phenol	---	---	---	---	---	---	---	---	30
Dimethyl Phthalate	---	---	---	---	---	---	---	---	2000
Benzo(a)anthracene	---	---	1400	---	2500	---	---	---	224
Chrysene	---	---	1700	---	3300	---	---	---	400
Benzo(b)fluoranthene	---	---	1200	---	2000	---	---	---	1100
Benzo(k)fluoranthene	---	---	1200	---	2100	---	---	---	1100
Benzo(a)pyrene	---	---	1400	110	2400	---	---	120	61
Dibenzo(a,h)anthracene	---	---	130	---	540	---	---	---	14
Total CaPAHs	---	---	---	---	12840	---	---	---	10000
PESTICIDE/PCBs (ug/kg)	---	---	---	---	---	---	---	---	---
METALS (mg/kg)									
Beryllium	---	---	---	0.21	---	---	---	---	0.16
Cadmium	---	---	11	12.5	12.6	---	42	---	10
Chromium	---	---	---	---	---	---	---	---	50
Copper	---	---	---	---	---	---	90.5	---	25
Iron	4450	3100	2080	2390	2860	---	---	3590	2000
Mercury	---	---	---	---	---	---	---	---	0.1
Nickel	---	---	---	---	---	---	---	---	13
Selenium	---	---	---	---	---	---	---	---	2
Zinc	31.7	39.8	53	40.8	85.3	21.6	115	66.7	20
Cyanide	---	---	---	---	---	---	---	---	

NOTES

---: Result does not exceed NYSDEC Recommended Soil Cleanup Objectives

Samples analyzed for TCL +30 Organics, TAL Metals and Cyanide

NA: Not Analyzed for

Sanitary Leaching Pools

Four samples (S-05 [0-2], S-07 [0-2], B-30S [17-21] and B-31S [16-20]) were collected from the on-site wastewater disposal system which comprises a septic tank and four leaching pools. One sample was collected from each leaching pool. Samples B-30S and B-31S were collected with a Geoprobe from 0-4 feet at the bottom of the pool. The depths in parenthesis for the Geoprobe samples are relative to ground surface. The remaining "S" samples were surficial grab samples collected from the bottom of the pools with a ponar dredge.

Two of the sediment/sludge samples collected from the on-site sanitary leaching pools exceeded the SCGs for at least one metal. In addition, one leaching pool exceeded the SCG for one semivolatile organic compound. The semivolatile organic that exceeded SCGs is benzo(a)pyrene (minor exceedance at one location).

Metals that exceeded SCGs are cadmium (minor exceedance at one location and a significant exceedance at S-07 [0-2] [89.8 mg/kg]); chromium (one significant exceedance at S-7 [0-2] [148 mg/kg]); copper (minor exceedance at one location and a significant exceedance at S-07 [0-2] [519 mg/kg]); mercury (minor exceedance at one location); selenium (minor exceedance at one location); zinc (significant exceedances at S-07 [0-2] [127 mg/kg] and B-31S [115 mg/kg]).

Based on these results, although a somewhat elevated concentration of zinc was detected in sample B-31S, only the sediment/sludge in the sanitary leaching pool from which sample S-07 was collected is of concern.

Storm Water Dry Wells

Twelve samples (B-02D [14-18], B-05D [13-17], B-06D [3-7], B-07D [14-18], B-25D [14-18], B-32S [12-16], B-33S [12-16], S-03 [0-2], S-09 [0-2], S-13 [0-2], S-14 [0-2] and S-15 [0-2]) were collected from storm water dry wells that were located in loading dock and paved

areas of the site. Samples B-02D (14-18) and S-14 (0-2), and B-05D (13-17) and S-09 (0-2) were collected from the same dry wells. Samples B-02D, B-05D, B-06D, B-07D, B-25D, B-32S and B-33S were collected from 0-4 feet at the bottom of the dry well. The depths in parenthesis for these "D" samples are relative to ground surface. The "S" samples were surficial grab samples collected from the bottom of the dry wells with a ponar dredge.

All of the sediment/sludge samples collected from the on-site storm water dry wells exceeded the SCGs for at least one semivolatile organic compound or one metal, except for samples B-02D (14-18) and B-25D (14-18).

The semivolatile organics that exceeded SCGs include benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene and dibenzo(a,h)anthracene. Minor exceedances of SCGs were detected at locations B-06D (3-7), B-32S (12-16) and B-33S (12-16) (minor exceedances of benzo[a]pyrene only). More significant exceedances of SVOC SCGs occurred at B-05D (12-17), B-07 (14-18), S-03 (0-2), S-09 (0-2), S-13 (0-2), S-14 (0-2) and S-15 (0-2), with the most significant exceedances occurring at B-07D [14-18] and S-15 [0-2] where total carcinogenic polycyclic aromatic hydrocarbons (CaPAHs) exceeded the SCG of 10 mg/kg at concentrations of 12.84 mg/kg and 10.1 mg/kg, respectively. In addition, S-14 nearly exceeded the total CaPAH SCG at a concentration of 9.91 mg/kg.

Metals that exceeded the SCGs are beryllium (minor exceedances at three locations); cadmium (minor exceedances at six locations and significant exceedances at S-03 [0-2] [303 mg/kg] and S-14 [0-2]); chromium (significant exceedances at four locations: S-03 [0-2] [579 mg/kg]; S-13 [0-2] [330 mg/kg]; S-14 [0-2] [314 mg/kg]; and S-15 [0-2] [919 mg/kg]); copper (minor exceedances at two locations and significant exceedances at S-03 [0-2] [131 mg/kg], S-13 [0-2] [172 mg/kg] and S-14 [0-2] [208 mg/kg]; iron (minor exceedances at two locations); nickel (minor exceedances at four locations except at S-03 [0-2] [102 mg/kg]); and zinc (minor exceedances at three locations, and significant exceedances at S-03 [0-2] [528 mg/kg], S-09 [0-2] [152 mg/kg], S-13 [0-2] [554 mg/kg], S-14 [0-2] [866 mg/kg] and S-15 [0-2] [248 mg/kg]). As described above, although there is no SCG/Recommended Soil Cleanup

Objective for cyanide, cyanide was detected at locations S-07 [0-2] (2.6 mg/kg), S-13 [0-2] (6.69 mg/kg) and S-15 [0-2] (4.34 mg/kg).

Based on these results, in particular as a result of significantly elevated levels of metals, the dry wells from which samples S-03, S-13, S-14 and S-15 were collected are of concern. These dry wells are located in the vicinity of the western loading dock (S-03) and former eastern loading dock (S-13, S-14 and S-15). These dry wells also contained elevated levels of carcinogenic PAHs. While sample locations B-05D and B-07D also contained elevated levels of CaPAHs, these contaminants are likely the result of runoff from the asphalt paved surfaces and not the result of industrial waste discharges at the site. In addition, there is little exceedance of groundwater SCGs for these organic compounds as determined from the first round of monitoring well sampling. As a result, the dry wells from which samples B-05D and B-07D were collected are not of concern.

Emergency Leaching Pool

One sample, B-04D [18], was collected from the industrial emergency leaching pool. There were no exceedances of semivolatile organic compounds or metals in this sample.

Based on these results, the emergency leaching pool is not of concern. (It should be noted that contaminated sediment/sludge was previously removed from this leaching pool.)

4.2.3 Subsurface Soil Sample Results

Thirty Geoprobe borings were drilled on the Liberty Industrial Finishing Site and 41 subsurface soil samples were collected and analyzed for TAL metals and cyanide. The samples were collected to define the limits of on-site subsurface soil contamination from known or suspected sources. These sources include drainage structures (storm water dry wells, sanitary leaching pools and the industrial emergency leaching pool), either observed in the field or suspected based on the results of the geophysical survey and/or engineering drawings of the site,

and the underground plating waste storage tanks. Figure 4-1 illustrates the soil boring locations and Table 4-3 presents the exceedances of the SCGs. The results of the sample analyses are presented below and discussed by area of concern.

Storm Water Dry Wells

Five samples (B-02D [35-37], B-05D [35-37], B-06D [35-37], B-07D [35-37] and B-25D [40-42]) were collected immediately adjacent to observed storm water dry well locations.

Twelve samples (B-01D [12-16], B-01D [39-41], B-03D [12-16], B-03D [40-42], B-23D [35-37], B-26D [8-12], B-26D [40-42], B-27D [8-12], B-27D [40-42], B-28D [12-16], B-28D [40-42] and B-34S [12-16]) were collected from areas of suspected dry well locations based on the site engineering drawings and the geophysical survey results.

Subsurface soil samples collected adjacent to known or suspected storm water dry wells indicated a minor exceedance of the SCG for nickel at one of twelve locations. Based on these results, subsurface soil in the vicinity of observed or suspected dry well locations is not of concern.

UST Area

Nineteen subsurface soil samples were collected from the area of the underground plating waste storage tanks, these being B-09S [10-14], B-10D [16-20], B-10D [40-42], B-11S [12-16], B-12S [12-16], B-13S [12-16], B-14S [12-16], B-15S [2-6], B-16D [12-16], B-16D [40-42], B-17S [8-12], B-18S [12-16], B-19S [8-12], B-20D [8-12], B-20D [40-42], B-21S [8-12], B-22S [8-12], B-29D [0-4] and B-29D [4-8].

Subsurface soil samples collected in the area of the underground storage tanks indicated exceedances of SCGs for metals at nine of thirteen locations (ten of nineteen samples). Metals that exceeded SCGs are cadmium (minor exceedances at three locations and significant

TABLE 4-3
LIBERTY INDUSTRIAL FINISHING SITE
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
SUMMARY OF EXCEEDANCES OF NYSDEC RECOMMENDED SOIL CLEANUP OBJECTIVES
SUBSURFACE SOIL SAMPLES
TAL METALS and pH

SAMPLE LOCATION	Storm Water Dry Wells										NYSDEC
SAMPLE ID	B-01D	B-01D	B-02D	B--03D	B--03D	B-05D	B-06D	B-07D	B-23D	B-25D	RECOMMENDED
SAMPLE DEPTH, FT	12-16	39-41	35-37	12-16	40-42	35-37	35-37	35-37	35-37	40-42	SOIL CLEANUP
DATE OF COLLECTION	3/5/98	3/5/98	3/26/98	3/6/98	3/6/98	3/27/98	3/26/98	3/26/98	3/27/98	3/9/98	OBJECTIVES
METALS	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
pH	6.85	5.69	5.95	6.22	6.2	5.53	6.92	5.83	5.33	6.2	
Beryllium	---	---	---	---	---	---	---	---	---	---	[0.31]
Cadmium	---	---	---	---	---	---	---	---	---	---	10
Chromium	---	---	---	---	---	---	---	---	---	---	50
Copper	---	---	---	---	---	---	---	---	---	---	25
Iron	---	---	---	---	---	---	---	---	---	---	[9986.7]
Nickel	---	---	---	---	---	---	---	---	---	---	13
Zinc	---	---	---	---	---	---	---	---	---	---	[46.7]
Cyanide	---	---	---	---	---	---	---	---	---	---	

SAMPLE LOCATION	Storm Water Dry Wells							UST Area			NYSDEC
SAMPLE ID	B-26D	B-26D	B-27D	B-27D	B-28D	B-28D	B-34S	B-09S	B-10D	B-10D	RECOMMENDED
SAMPLE DEPTH, FT	8-12	40-42	8-12	40-42	12-16	40-42	12-16	10-14	16-20	40-42	SOIL CLEANUP
DATE OF COLLECTION	3/4/98	3/4/98	3/5/98	3/5/98	3/13/98	3/13/98	3/31/98	3/11/98	3/11/98	3/11/98	OBJECTIVES
METALS	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
pH	6.65	7.41	6.48	5.75	7.91	6.94	6.69	11.2	7.88	7.52	
Beryllium	---	---	---	---	---	---	---	---	---	---	[0.31]
Cadmium	---	---	---	---	---	---	---	---	---	---	10
Chromium	---	---	---	---	---	---	---	---	---	---	50
Copper	---	---	---	---	---	---	---	---	---	---	25
Iron	---	---	---	---	---	---	---	---	---	---	[9986.7]
Nickel	---	---	---	13.8	---	---	---	---	---	---	13
Zinc	---	---	---	---	---	---	---	---	---	---	[46.7]
Cyanide	---	---	---	---	---	---	---	2.17*	---	---	

NOTES

---: Result does not exceed NYSDEC Recommended Soil Cleanup Objective

*Detections of Cyanide - no NYSDEC Recommended Soil Cleanup Objective

Samples analyzed for TAL Metals only

TABLE 4-3
LIBERTY INDUSTRIAL FINISHING SITE
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
SUMMARY OF EXCEEDANCES OF NYSDEC RECOMMENDED SOIL CLEANUP OBJECTIVES
SUBSURFACE SOIL SAMPLES
TAL METALS and pH

SAMPLE LOCATION	UST Area											NYSDEC
SAMPLE ID	B-11S	B-12S	B-13S	B-14S	B-15S	B-16D	B-16D	B-17S	B-18S	B-19S	B-20D	RECOMMENDED
SAMPLE DEPTH, FT	12-16	12-16	12-16	12-16	2-6	12-16	40-42	8-12	12-16	8-12	8-12	SOIL CLEANUP
DATE OF COLLECTION	3/11/98	3/11/98	3/11/98	3/12/98	3/12/98	3/12/98	3/12/98	3/12/98	3/12/98	3/6/98	3/6/98	OBJECTIVES
METALS	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
pH	8.44	9	8.75	8	9.36	8.32	7.76	7.99	7.98	8.71	6.65	
Beryllium	---	---	---	---	---	---	---	---	---	---	---	[0.31]
Cadmium	---	126	---	19	118	---	---	19.7	---	22.7	---	10
Chromium	---	---	---	---	972	---	---	---	---	---	---	50
Copper	---	---	---	---	87.8	---	---	---	---	---	---	25
Iron	---	---	---	---	---	---	---	---	---	---	---	[9986.7]
Nickel	---	---	---	---	139	14.8	---	---	18.7	17.4	13.2	13
Zinc	---	---	---	---	---	---	---	---	---	---	---	[46.7]
Cyanide	---	8.08*	5.71*	5.58*	14.6*	---	---	17.9*	2.13*	5.38*	---	

SAMPLE LOCATION	UST Area					Industrial Pool	Blowdown Area		Disposal Area		NYSDEC
SAMPLE ID	B-20D	B-21S	B-22S	B-29D	B-29D	B-04D	B-24D	B-24D	B-35D	B-35D	RECOMMENDED
SAMPLE DEPTH, FT	40-42	8-12	8-12	0-4	4-8	40-42	0-4	45-47	4-8	35-37	SOIL CLEANUP
DATE OF COLLECTION	3/6/98	3/5/98	3/5/98	3/10/98	3/10/98	3/31/98	3/4/98	3/4/98	3/31/98	3/31/98	OBJECTIVES
METALS	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
pH	6.33	7.2	6.97	5.42	4.75	6.44	6.51	8.79	5.67	5.86	
Beryllium	---	---	---	---	---	---	---	---	---	---	[0.31]
Cadmium	---	---	---	---	---	---	---	---	---	---	10
Chromium	---	---	---	1320	1530	---	---	---	---	---	50
Copper	---	---	---	39.8	31.6	---	---	---	---	---	25
Iron	---	---	---	---	---	---	---	---	---	---	[9986.7]
Nickel	---	---	---	22	---	15.4	---	---	---	---	13
Zinc	---	---	---	---	---	---	112	---	---	---	[46.7]
Cyanide	---	---	---	---	---	---	---	---	---	---	

NOTES

---: Result does not exceed NYSDEC Recommended Soil Cleanup Objective

*Detections of Cyanide - no NYSDEC Recommended Soil Cleanup Objective

Samples analyzed for TAL Metals only

exceedances at B-12S [12-16] [126 mg/kg] and B-15S [2-6] [118 mg/kg]); chromium (significant exceedances at B-15S [2-6] [972 mg/kg], B-29D [0-4] [1,320 mg/kg] and B-29D [4-8] [1,530 mg/kg]); copper (minor exceedances at three locations); and nickel (minor exceedances at five locations and a significant exceedance at B-15S [2-6] [139 mg/kg]). A number of samples also showed high pH levels ranging from 8.71 to 11.2. Based on these results, subsurface soil in the vicinity of the plating waste UST area is of concern, with the primary contaminants being cadmium and chromium. B-29D is located west of the UST area in the area of the pipe gallery where the pipes exit the facility building and enter the gallery leading to the USTs.

Emergency Leaching Pool

One subsurface soil sample, B-04D [40-42], was collected adjacent to the industrial emergency leaching pool.

The only metal that exceeded SCGs is nickel, which slightly exceeded the SCG.

Based on these results, subsurface soil in the area of the emergency leaching pool is not of concern.

Boiler Blowdown Area

Two subsurface soil samples, B-24D (0-4) and B-24D (45-47), were collected in the boiler blowdown area. The samples were collected directly beneath the boiler blowdown discharge pipe.

One of the two samples collected in the blowdown area exceeded the SCG for zinc, with a significant exceedance at B-24D (0-4) (112 mg/kg).

Based on these results, although a somewhat elevated level of zinc was detected in the shallow subsurface soil, this area is not of concern.

Area of Suspected Waste Disposal

Two subsurface soil samples, B-35D (4-8) and B-35D (35-37), were collected in an area of suspected waste disposal located in the southwestern portion of the site. The samples were collected in an area identified in the historical aerial photographs.

Neither of the two samples collected in the area of suspected waste disposal exceeded the SCGs for metals. Based on these results, subsurface soil in the area of suspected dumping is not of concern.

4.2.4 Geoprobe Groundwater Sample Results

Thirty-one groundwater samples were collected from groundwater probes at the Liberty Industrial Finishing Site and downgradient areas. The results of the groundwater probe sampling were used to screen groundwater quality in the vicinity of the site and to determine the locations of permanent monitoring wells. Twenty-five shallow groundwater samples were collected from the water table at approximately 50 to 55 feet below ground surface (bgs), and six deep groundwater samples were collected at approximately 100 feet bgs. The samples were analyzed for TAL metals and cyanide. Figure 4-1 illustrates the sample locations and Table 4-4 presents the exceedances of the SCGs.

Since groundwater Geoprobe samples are generally turbid, for a comparison of the Geoprobe results to dissolved metals in groundwater, five unpreserved samples were analyzed for dissolved metals after the samples were filtered in the laboratory. These filtered samples were TW-02S (55'), TW-09S (55'), TW-12D (55'), TW-16S (55') and TW-19D (100'). Table 4-4 also presents the results of the dissolved metal analysis.

TABLE 4-4
LIBERTY INDUSTRIAL FINISHING SITE
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
SUMMARY OF EXCEEDANCES OF NYSDEC CLASS GA GROUNDWATER STANDARDS
GEOPROBE GROUNDWATER SAMPLES

SAMPLE ID	TW-01S	TW-02S	TW-03S	TW-03D	TW-04S	TW-05S	TW-06S	TW-07S	NYSDEC CLASS GA GROUNDWATER STANDARDS
SAMPLE DEPTH, FT	55	55	55	100	55	55	55	55	
DATE OF COLLECTION	3/26/98	3/10/98	3/25/98	3/25/98	2/26/98	3/3/98	2/26/98	3/9/98	
	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)
TOTAL METALS									
Antimony	5.7	8.8	6.2	6.1	6.2	3.9	4.4	10.7	3
Arsenic	33.9	---	26.3	60.9	34.7	---	---	---	25
Beryllium	3.9	---	---	6.8	5.2	---	---	---	3
Cadmium	---	---	---	---	12.1	---	---	22	10
Chromium	1460	430	1510	2680	1670	444	1170	1360	50
Copper	235	---	---	503	---	---	---	342	200
Iron	199000	23400	178000	424000	191000	74000	97100	152000	300
Lead	111	---	63.3	194	121	34.2	49.6	571	25
Manganese	4030	---	5860	10600	4650	2620	2870	4600	300
Selenium	16.4	---	14.9	28.4	---	---	---	10.3	10
Sodium	24500	---	---	20900	---	---	51000	48100	20000
Thallium	---	---	---	14.5	5.8	---	---	---	4
Zinc	627	---	679	993	675	742	---	1940	300
Cyanide	---	---	---	---	---	---	---	---	100
DISSOLVED METALS									
Antimony	NA	---	NA	NA	NA	NA	NA	NA	3
Cadmium	NA	---	NA	NA	NA	NA	NA	NA	10
Chromium	NA	---	NA	NA	NA	NA	NA	NA	50
Iron	NA	597	NA	NA	NA	NA	NA	NA	300
Manganese	NA	---	NA	NA	NA	NA	NA	NA	300
Sodium	NA	---	NA	NA	NA	NA	NA	NA	20000
Zinc	NA	---	NA	NA	NA	NA	NA	NA	300

NOTES

---: Result does not exceed NYSDEC Class GA Groundwater Standards

NA: Sample not analyzed for that parameter

Samples analyzed for TAL Metals and Cyanide only

TABLE 4-4
LIBERTY INDUSTRIAL FINISHING SITE
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
SUMMARY OF EXCEEDANCES OF NYSDEC CLASS GA GROUNDWATER STANDARDS
GEOPROBE GROUNDWATER SAMPLES

SAMPLE ID	TW-08S	TW-09S	TW-10S	TW-10D	TW-11S	TW-12S	TW-12D	TW-13S	NYSDEC CLASS GA GROUNDWATER STANDARDS
SAMPLE DEPTH, FT	50	55	55	100	55	55	100	55	
DATE OF COLLECTION	3/26/98	3/9/98	3/10/98	3/10/98	2/26/98	2/27/98	2/27/98	2/27/98	
	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)
TOTAL METALS									
Antimony	5.3	10.6	5.5	8.9	8.7	35.7	4.1	4.8	3
Arsenic	---	---	---	26.6	---	28.4	---	---	25
Beryllium	---	---	---	3.2	---	---	---	---	3
Cadmium	15.7	22.8	---	---	---	22.5	---	12.8	10
Chromium	846	720	1110	1170	1530	9070	941	974	50
Copper	---	---	---	248	---	203	---	---	200
Iron	100000	87700	155000	198000	14800	338000	112000	123000	300
Lead	59.2	63.6	72.5	76.6	---	63.8	27.2	35.4	25
Manganese	2220	5070	4070	3180	352	3690	2660	2110	300
Selenium	---	---	11.8	19.1	---	12.4	---	---	10
Sodium	---	---	22700	---	27100	88500	22200	45000	20000
Thallium	---	---	6.2	8.2	---	15.4	---	---	4
Zinc	523	819	561	467	---	1430	---	312	300
Cyanide	---	---	---	---	---	---	---	---	100
DISSOLVED METALS									
Antimony	NA	6.5	NA	NA	NA	30.3	NA	NA	3
Cadmium	NA	13.6	NA	NA	NA	---	NA	NA	10
Chromium	NA	---	NA	NA	NA	6720	NA	NA	50
Iron	NA	3760	NA	NA	NA	2410	NA	NA	300
Manganese	NA	7210	NA	NA	NA	335	NA	NA	300
Sodium	NA	---	NA	NA	NA	86700	NA	NA	20000
Zinc	NA	---	NA	NA	NA	---	NA	NA	300

NOTES

---: Result does not exceed NYSDEC Class GA Groundwater Standards

NA: Sample not analyzed for that parameter

Samples analyzed for TAL Metals and Cyanide only

TABLE 4-4
LIBERTY INDUSTRIAL FINISHING SITE
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
SUMMARY OF EXCEEDANCES OF NYSDEC CLASS GA GROUNDWATER STANDARDS
GEOPROBE GROUNDWATER SAMPLES

SAMPLE ID	TW-14S	TW-15S	TW-16S	TW-17S	TW-18S	TW-19S	TW-19D	TW-20S	NYSDEC CLASS GA GROUNDWATER STANDARDS
SAMPLE DEPTH, FT	55	55	55	55	55	55	100	55	
DATE OF COLLECTION	3/2/98	3/2/98	3/2/98	3/2/98	2/23/98	2/24/98	2/24/98	2/25/98	
	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)
TOTAL METALS									
Antimony	6.2	5	3.1	7.5	4.8	3.2	8.5	7.4	3
Arsenic	---	---	---	---	---	---	70.6	---	25
Beryllium	---	---	---	---	---	3.7	7.7	---	3
Cadmium	---	---	---	---	---	18.9	23.6	---	10
Chromium	302	544	673	604	860	643	4290	1750	50
Copper	---	---	---	---	---	---	508	---	200
Iron	467000	57500	120000	70800	182000	123000	676000	86400	300
Lead	---	---	41.8	32.7	91.6	44.4	231	29.1	25
Manganese	1420	1780	1820	3890	4300	5000	13400	2130	300
Selenium	---	---	---	---	---	---	27.6	---	10
Sodium	42400	33300	34400	---	---	26600	23800	22900	20000
Thallium	---	---	4.5	---	7.9	---	33	---	4
Zinc	---	472	1000	386	879	515	1660	---	300
Cyanide	---	---	---	---	---	---	---	---	100
DISSOLVED METALS									
Antimony	NA	NA	---	NA	NA	NA	---	NA	3
Cadmium	NA	NA	---	NA	NA	NA	---	NA	10
Chromium	NA	NA	---	NA	NA	NA	---	NA	50
Iron	NA	NA	1750	NA	NA	NA	2740	NA	300
Manganese	NA	NA	1510	NA	NA	NA	956	NA	300
Sodium	NA	NA	38500	NA	NA	NA	22400	NA	20000
Zinc	NA	NA	691	NA	NA	NA	---	NA	300

NOTES

---: Result does not exceed NYSDEC Class GA Groundwater Standards

NA: Sample not analyzed for that parameter

Samples analyzed for TAL Metals and Cyanide only

TABLE 4-4
LIBERTY INDUSTRIAL FINISHING SITE
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
SUMMARY OF EXCEEDANCES OF NYSDEC CLASS GA GROUNDWATER STANDARDS
GEOPROBE GROUNDWATER SAMPLES

SAMPLE ID	TW-20D	TW-21S	TW-21D	TW-22S	TW-23S	TW-24S	TW-25S		NYSDEC CLASS GA GROUNDWATER STANDARDS
SAMPLE DEPTH, FT	100	55	100	55	55	55	55		
DATE OF COLLECTION	2/25/98	2/25/98	2/25/98	2/23/98	2/24/98	2/26/98	3/9/98		
	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)		(ug/l)
TOTAL METALS									
Antimony	8.6	7	6.3	9.2	8.4	5	9.2		3
Arsenic	55.1	27.2	34.9	---	---	---	---		25
Beryllium	5.8	---	7.1	---	---	---	---		3
Cadmium	14.2	---	---	---	---	---	---		10
Chromium	3900	1930	1880	986	764	359	174		50
Copper	549	---	223	---	---	---	---		200
Iron	530000	312000	275000	206000	115000	54600	24600		300
Lead	150	82.5	89.7	64.6	69.2	26.3	39.9		25
Manganese	8960	7600	4770	2370	5350	3350	2000		300
Selenium	22	14.8	13.2	10.7	---	---	---		10
Sodium	22000	21200	27000	---	---	---	24500		20000
Thallium	31.6	14.7	14.6	10.3	---	---	---		4
Zinc	869	783	---	1170	---	---	450		300
Cyanide	---	---	---	---	---	---	---		100
DISSOLVED METALS									
Antimony	NA	NA	NA	NA	NA	NA	NA		3
Cadmium	NA	NA	NA	NA	NA	NA	NA		10
Chromium	NA	NA	NA	NA	NA	NA	NA		50
Iron	NA	NA	NA	NA	NA	NA	NA		300
Manganese	NA	NA	NA	NA	NA	NA	NA		300
Sodium	NA	NA	NA	NA	NA	NA	NA		20000
Zinc	NA	NA	NA	NA	NA	NA	NA		300

NOTES

---: Result does not exceed NYSDEC Class GA Groundwater Standards

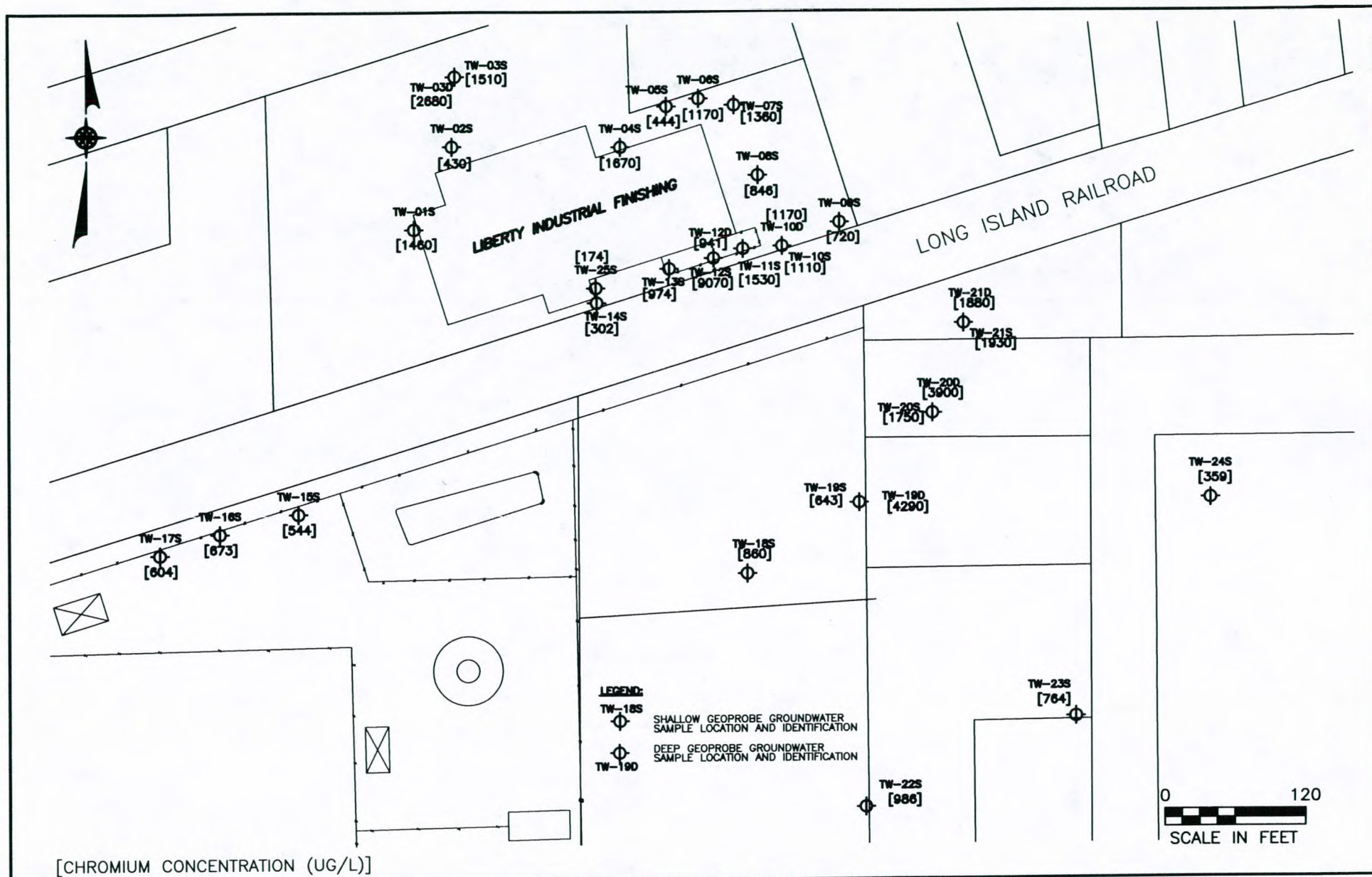
NA: Sample not analyzed for that parameter

Samples analyzed for TAL Metals and Cyanide only

Based on the results of sampling the underground plating waste storage tanks and dry wells during previous investigations, the initial round of groundwater samples collected from the existing groundwater monitoring wells as part of this investigation (discussed in the following section), and the soil and dry well/leaching pool sample results described above, the primary contaminant of concern found at the Liberty Industrial Finishing Site is chromium. As a result, the discussion of the groundwater Geoprobe results will be based on chromium. Since the sample results cannot be compared directly to the SCGs as a result of leaching of metals due to acidification of the turbid Geoprobe samples, the discussion is based on a relative comparison of results to identify elevated levels of contaminants and areas of concern. It should be noted that comparison of total metals to the five filtered/dissolved metal results do not indicate a consistent trend. This inconsistency is likely due to differences in turbidity between the samples that were filtered. The analytical results and more detailed discussion of the filtered samples are provided in Section 4.3.

The results for chromium in the unfiltered Geoprobe samples are presented on Figure 4-2. Assuming that background for chromium is about 500 to 700 ug/l based on the results for TW-15S, TW-16S and TW-17S located west of the site, significantly elevated concentrations of chromium were detected at the following locations:

<u>Sample</u>	<u>Concentration (ug/l)</u>	<u>Location</u>
TW-01S	1,460	Adjacent to West Loading Dock Dry Well
TW-03S/TW-3D	1,510/2,680	Adjacent to North Parking Lot Dry Well
TW-04S	1,670	Boiler Blowdown Area
TW-06S	1,170	Area of Suspected Former Dry Well Northeast of Building
TW-07S	1,360	Adjacent to Dry Well Northeast of Building
TW-10S/TW-10D	1,110/1,170	Adjacent to Emergency Leaching Pool
TW-11S	1,530	Waste UST Area
TW-12S	9,070	Waste UST Area
TW-19D	4,290	Approximately 240 Feet Downgradient of Site



LIBERTY INDUSTRIAL FINISHING SITE
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
BRENTWOOD, NEW YORK

GEOPROBE GROUNDWATER SAMPLE CHROMIUM RESULTS



Dvirka and Bartilucci
Consulting Engineers
A Division of William F. Cosulich Associates, P.C.

FIGURE 4-2

<u>Sample</u>	<u>Concentration (ug/l)</u>	<u>Location</u>
TW-20S/TW-20D	1,750/3,900	Approximately 180 Feet Downgradient of Site
TW-21S/TW-21D	1,930/1,880	Approximately 120 Feet Downgradient of Site

The results of the chromium distribution in groundwater indicate that a number of on-site subsurface drainage structures are sources of groundwater contamination. In addition, the results indicate that the underground plating waste storage tanks are a significant source of groundwater contamination. The results also indicate that a plume of chromium contaminated groundwater is migrating off-site in the direction of groundwater flow to the southeast and that the plume is migrating deeper as it moves away from the site.

4.2.5 Monitoring Well Groundwater Sample Results

The following section presents the results of the groundwater samples collected from the monitoring wells on and downgradient of the Liberty Industrial Finishing Site. Two rounds of groundwater samples were collected. The first round, which was collected December 15-17, 1997, included ten existing wells to provide a baseline of groundwater quality at the site. The results of this initial sampling round were also used to select the analyte list for the groundwater sampling program to be conducted after the new monitoring wells were installed. The samples analyzed for the first round were TCL +30 organics, TAL metals and cyanide.

The second round of groundwater samples, which were collected June 1-5, 1998, included seventeen wells (ten existing and seven new). The samples for the second round were analyzed for TAL metals and cyanide. The results from the first set of analysis indicated that only metals and cyanide exceeded the Class GA groundwater standards and guidelines. Consequently, the second round of groundwater quality analysis only included metals and cyanide. Figure 4-1 illustrates the locations of the monitoring wells and Table 4-5 presents the exceedances of the SCGs for the second round of groundwater samples. Discussion of the

TABLE 4-5
LIBERTY INDUSTRIAL FINISHING SITE
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
SUMMARY OF EXCEEDANCES OF NYSDEC CLASS GA GROUNDWATER STANDARDS
MONITORING WELL GROUNDWATER SAMPLES

SAMPLE ID	MW-01	MW-01	MW-02	MW-02	MW-03	MW-03	MW-03A	MW-03A	MW-04	NYSDEC CLASS GA GROUNDWATER STANDARDS
WELL DEPTH, feet	54	54	54	54	54	54	55	55	54	
AQUIFER	Shallow Upper Glacial	Shallow Upper Glacial	Shallow Upper Glacial	Shallow Upper Glacial	Shallow Upper Glacial	Shallow Upper Glacial	Shallow Upper Glacial	Shallow Upper Glacial	Shallow Upper Glacial	
DATE OF COLLECTION	12/16/97	6/1/98	12/16/97	6/1/98	12/15/97	6/1/98	12/17/98	6/3/98	12/15/97	
<u>VOLATILE ORGANICS (ug/l)</u>	---	NA	---	NA	---	NA	---	NA	---	---
<u>SEMIVOLATILE ORGANICS (ug/l)</u>	---	NA	---	NA	---	NA	---	NA	---	---
<u>PESTICIDE/PCBs (ug/l)</u>	---	NA	---	NA	---	NA	---	NA	---	---
<u>METALS (ug/l)</u>										
Antimony	---	---	---	6	22.5	13	---	---	---	3
Cadmium	---	---	---	---	16.3	---	---	---	---	10
Chromium	---	---	379	366	3600	1960	---	---	165	50
Sodium	---	---	24300	23800	38900	41700	---	---	---	20000
Cyanide	---	---	---	---	---	---	---	---	---	100

SAMPLE ID	MW-04	MW-05	MW-05	MW-07	MW-07	MW-08	MW-08	MW-10	MW-10	NYSDEC CLASS GA GROUNDWATER STANDARDS
WELL DEPTH, feet	54	57	57	54	54	56	56	49	49	
AQUIFER	Shallow Upper Glacial	Shallow Upper Glacial	Shallow Upper Glacial	Shallow Upper Glacial	Shallow Upper Glacial	Shallow Upper Glacial	Shallow Upper Glacial	Shallow Upper Glacial	Shallow Upper Glacial	
DATE OF COLLECTION	6/1/98	12/16/97	6/1/98	12/15/97	6/1/98	12/17/97	6/3/98	12/17/97	6/3/98	
<u>VOLATILE ORGANICS (ug/l)</u>	NA	---	NA	---	NA	---	NA	---	NA	---
<u>SEMIVOLATILE ORGANICS (ug/l)</u>	NA	---	NA	---	NA	---	NA	---	NA	---
<u>PESTICIDE/PCBs (ug/l)</u>	NA	---	NA	---	NA	---	NA	---	NA	---
<u>METALS (ug/l)</u>										
Antimony	9.3	---	---	---	---	---	---	20.7	16.8	3
Cadmium	---	---	---	---	---	---	---	369	177	10
Chromium	1850	---	---	---	---	---	---	3070	2930	50
Sodium	90200	21200	21200	27700	43200	---	---	32400	29500	20000
Cyanide	417	---	---	---	---	---	---	---	---	100

NOTES

---: Result does not exceed NYSDEC Class GA Groundwater Standards

NA: Sample not analyzed for parameter

Samples analyzed for TCL +30 Organics, TAL Metals and Cyanide, except as noted

TABLE 4-5
LIBERTY INDUSTRIAL FINISHING SITE
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
SUMMARY OF EXCEEDANCES OF NYSDEC CLASS GA GROUNDWATER STANDARDS
MONITORING WELL GROUNDWATER SAMPLES

SAMPLE ID	MW-11	MW-12	MW-13	MW-15	MW-14	MW-16	MW-17	MW-06	MW-06	NYSDEC CLASS GA GROUNDWATER STANDARDS
WELL DEPTH, feet	50	50	50	50	100	100	100	265	265	
AQUIFER	Shallow Upper Glacial	Shallow Upper Glacial	Shallow Upper Glacial	Shallow Upper Glacial	Deep Upper Glacial	Deep Upper Glacial	Deep Upper Glacial	Magothy	Magothy	
DATE OF COLLECTION	6/4/98	6/4/98	6/5/98	6/4/98	6/4/98	6/3/98	6/1/98	12/16/97	6/1/98	
<u>VOLATILE ORGANICS (ug/l)</u>	NA	NA	NA	NA	NA	NA	NA	---	NA	---
<u>SEMIVOLATILE ORGANICS (ug/l)</u>	NA	NA	NA	NA	NA	NA	NA	---	NA	---
<u>PESTICIDE/PCBs (ug/l)</u>	NA	NA	NA	NA	NA	NA	NA	---	NA	---
<u>METALS (ug/l)</u>										
Antimony	4.5	---	---	---	---	---	4.9	---	4.4	3
Cadmium	---	---	---	---	---	15.2	---	---	---	10
Chromium	---	---	---	210	53.7	---	---	---	---	50
Sodium	---	---	41100	---	27200	---	---	---	---	20000
Cyanide	---	---	---	---	---	---	---	---	---	100

NOTES

---: Result does not exceed NYSDEC Class GA Groundwater Standards

NA: Sample not analyzed for parameter

Samples analyzed for TCL +30 Organics, TAL Metals and Cyanide, except as noted

sample results is provided below for the shallow Upper Glacial aquifer (water table), deep Upper Glacial aquifer (approximately 50 feet below the water table) and Magothy aquifer (approximately 200 feet below the water table).

4.2.5.1 - Shallow Upper Glacial Aquifer

Based on the results of the initial round of monitoring well sampling, four metals were found to exceed groundwater standards, these being antimony, cadmium, chromium and sodium.

Antimony was found to exceed the groundwater standard of 3 ug/l at two locations, MW-03 (22.5 ug/l) and MW-10 (20.7 ug/l). MW-03 is located on-site and MW-10 is located off-site. Both wells are downgradient of the underground plating waste storage tanks.

Cadmium was found to exceed the groundwater standard of 10 ug/l at two locations, MW-03 (16.3 ug/l) and MW-10 (369 ug/l).

Chromium was found to exceed the groundwater standard of 50 ug/l at four locations: MW-02 (379 ug/l), MW-03 (3,600 ug/l), MW-04 (165 ug/l) and MW-10 (3,070 ug/l). Wells MW-02, MW-03 and MW-04 are located on-site and MW-10 is located off-site. These wells are immediately downgradient of the waste UST area.

Sodium was found to exceed the groundwater standard of 20,000 ug/l at five locations: MW-02 (24,300 ug/l), MW-03 (38,900 ug/l), MW-05 (21,200 ug/l), MW-07 (27,700 ug/l) and MW-10 (32,400 ug/l). Wells MW-02, MW-03, MW-05 and MW-07 are located on-site and MW-10 is located off-site. MW-07 is in an upgradient location and, therefore, represents background sodium levels for the site.

During the second round of sampling, five metals were found to exceed groundwater standards. These metals are antimony, cadmium, chromium, sodium and cyanide.

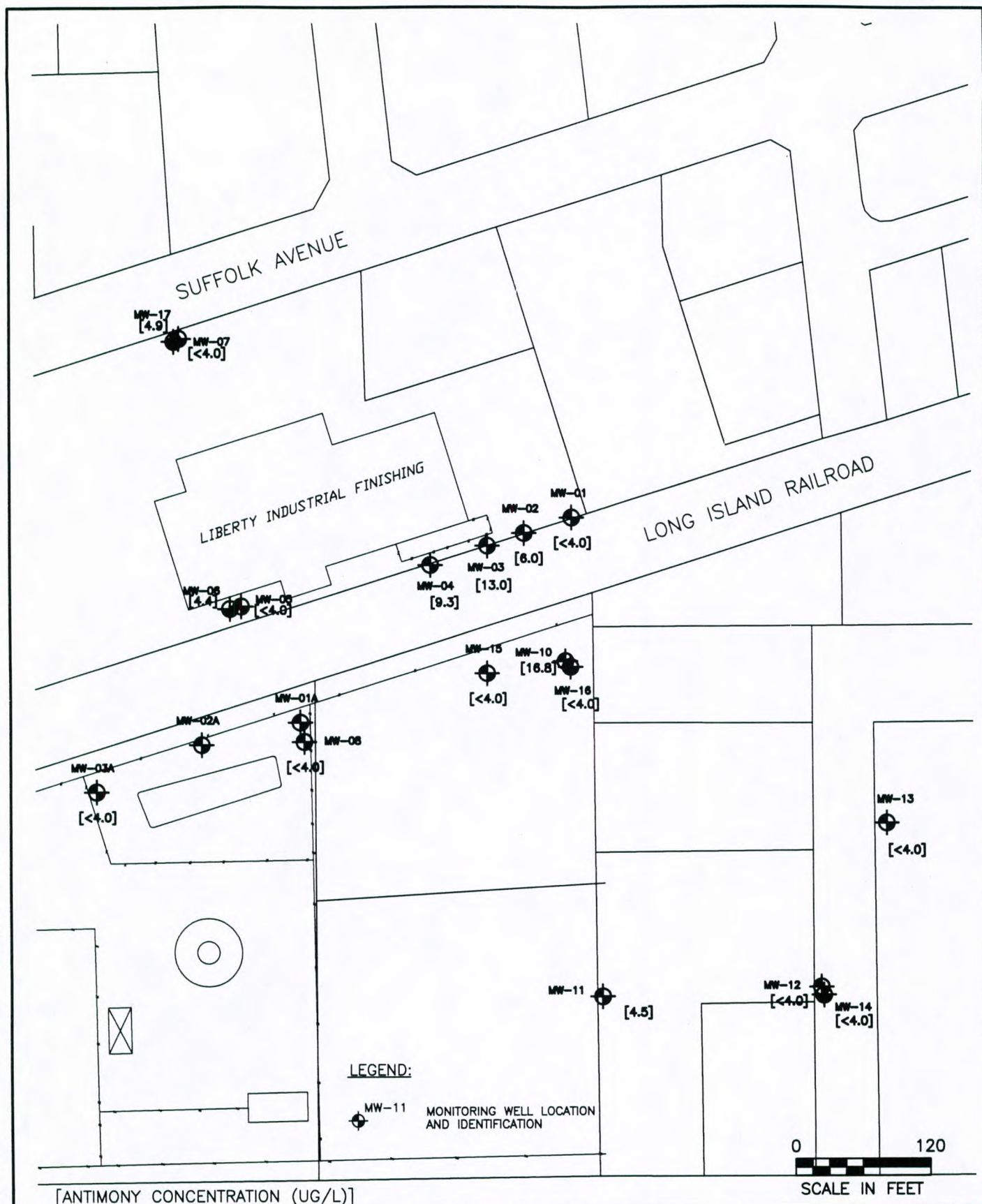
Antimony was found to exceed the groundwater standard of 3 ug/l at four locations: MW-02 (6 ug/l), MW-03 (13 ug/l), MW-04 (9.3 ug/l), and MW-10 (16.8 ug/l). Wells MW-02, MW-03 and MW-04 are located on-site and MW-10 is located off-site. Wells MW-03, MW-04 and MW-10 are downgradient of the UST area and MW-02 is located downgradient of the former eastern loading dock dry wells. Figure 4-3 illustrates the distribution of antimony in the groundwater in the vicinity of the site. Although antimony exceeds standards at a few on-site locations and may be attributable to waste material in the USTs/dry wells, since antimony was detected in the deep upgradient well at 4.9 ug/l as described below and the exceedances of the SCG are minor, this metal is not a contaminant of concern regarding groundwater.

Cadmium was found to exceed the groundwater standard of 10 mg/l at one location, MW-10, which is downgradient of the UST area, at a concentration of 177 ug/l. Figure 4-4 illustrates the distribution of cadmium in groundwater in the vicinity of the site.

Chromium was found to exceed the groundwater standard of 50 ug/l at five locations: MW-02 (366 ug/l), MW-03 (1,960 ug/l), MW-04 (1,850 ug/l), MW-10 (2,935 ug/l) and MW-15 (210 ug/l). These wells are located downgradient of the UST area and the former eastern loading dock dry wells. Figure 4-5 illustrates the distribution of chromium in groundwater in the vicinity of the site.

Sodium was found to exceed the groundwater standard of 20,000 ug/l at six locations: MW-02 (23,800 ug/l), MW-03 (41,700 ug/l), MW-04 (90,200 ug/l), MW-07 (43,200 ug/l), MW-10 (29,500 ug/l) and MW-13 (41,100 ug/l). MW-07 is in an upgradient location and represents background sodium levels for the site. Because exceedances of sodium were found in the upgradient monitoring well in similar concentrations as on-site and downgradient wells, exceedances of this metal are not likely to have resulted from site activities. As a result, sodium is not a contaminant of concern relative to the Liberty Industrial Finishing Site.

Cyanide was found to exceed the groundwater standard of 100 ug/l at one location, MW-04, which is downgradient of the UST area, at a concentration of 417 ug/l.



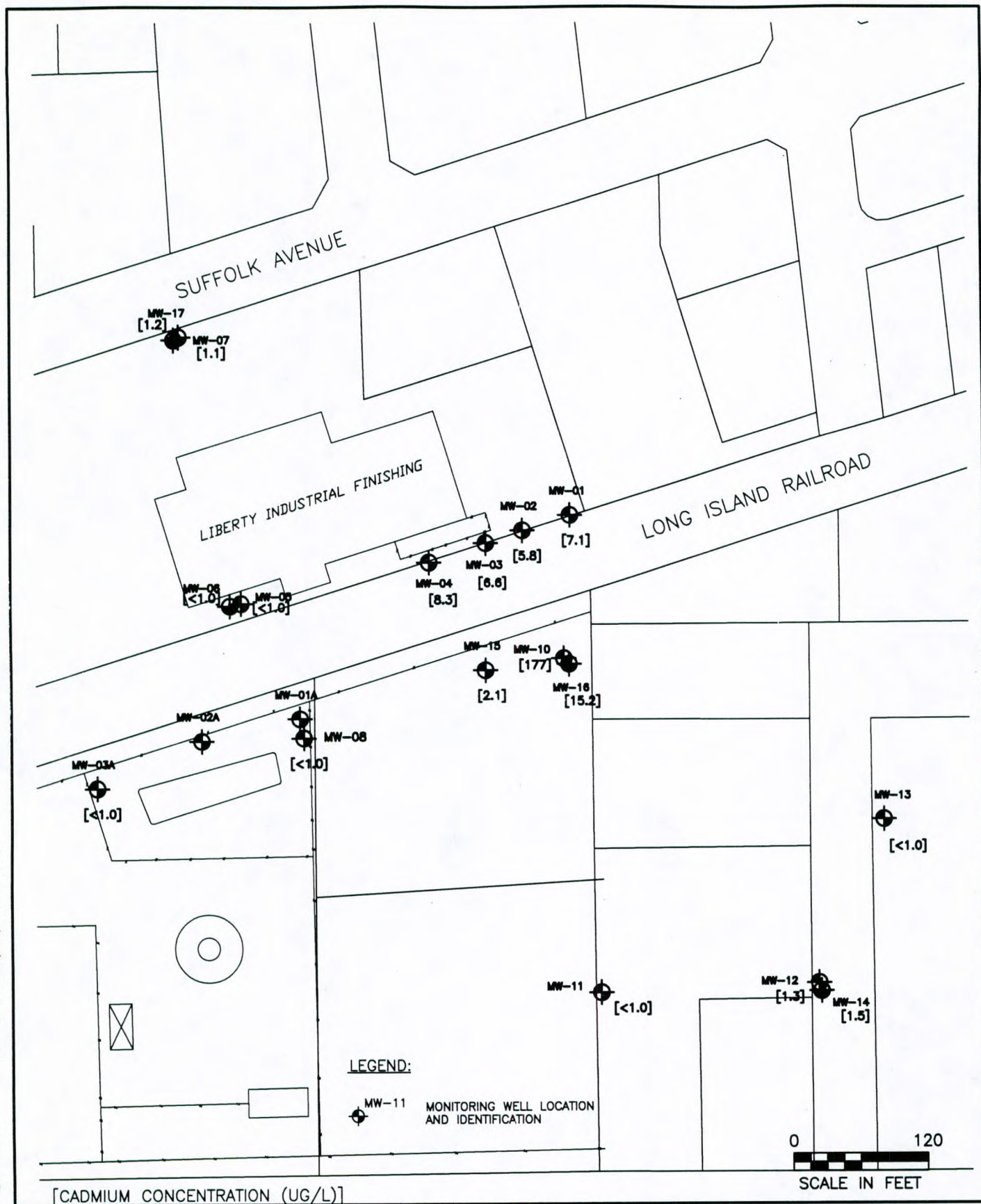
LIBERTY INDUSTRIAL FINISHING SITE
 REMEDIAL INVESTIGATION/FEASIBILITY STUDY
 BRENTWOOD, NEW YORK

MONITORING WELL GROUNDWATER SAMPLE RESULTS FOR ANTIMONY



Dvirka and Bartilucci
 Consulting Engineers
 A Division of William F. Cosulich Associates, P.C.

FIGURE 4-3



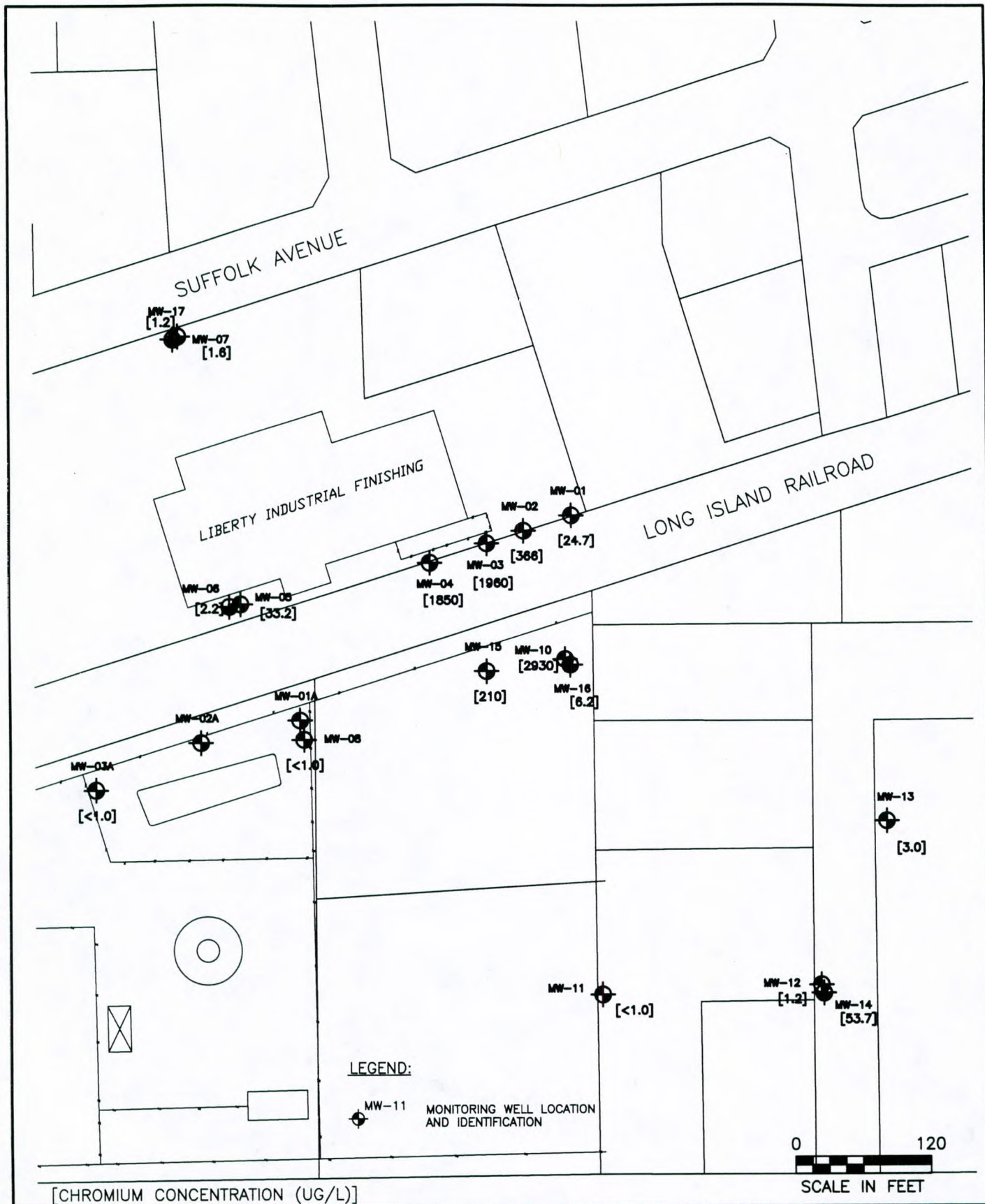
LIBERTY INDUSTRIAL FINISHING SITE
 REMEDIAL INVESTIGATION/FEASIBILITY STUDY
 BRENTWOOD, NEW YORK

MONITORING WELL GROUNDWATER SAMPLE RESULTS FOR CADMIUM



Dvirka and Bartilucci
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FIGURE 4-4



LIBERTY INDUSTRIAL FINISHING SITE
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
BRENTWOOD, NEW YORK

**MONITORING WELL GROUNDWATER
SAMPLE RESULTS FOR CHROMIUM**



Dvirka and Bartilucci
Consulting Engineers
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FIGURE 4-5

4.2.5.2 - Deep Upper Glacial Aquifer

Three deep Upper Glacial aquifer wells (MW-14, MW-16 and MW-17) were sampled during the second round. As shown by the results of the groundwater sampling, four metals were found to exceed the groundwater standards. These metals are antimony, cadmium, chromium and sodium.

Antimony was found to exceed the groundwater standard of 3 ug/l at one location, MW-17, which is an upgradient well, at a concentration of 4.9 ug/l.

Cadmium was found to exceed the groundwater standard of 10 ug/l at MW-16, which is located downgradient of the UST area, at a concentration of 15.2 ug/l.

Chromium was found to exceed the groundwater standard of 50 ug/l at MW-14, which is located well downgradient of the UST area (approximately 500 feet), at a concentration of 53.7 ug/l.

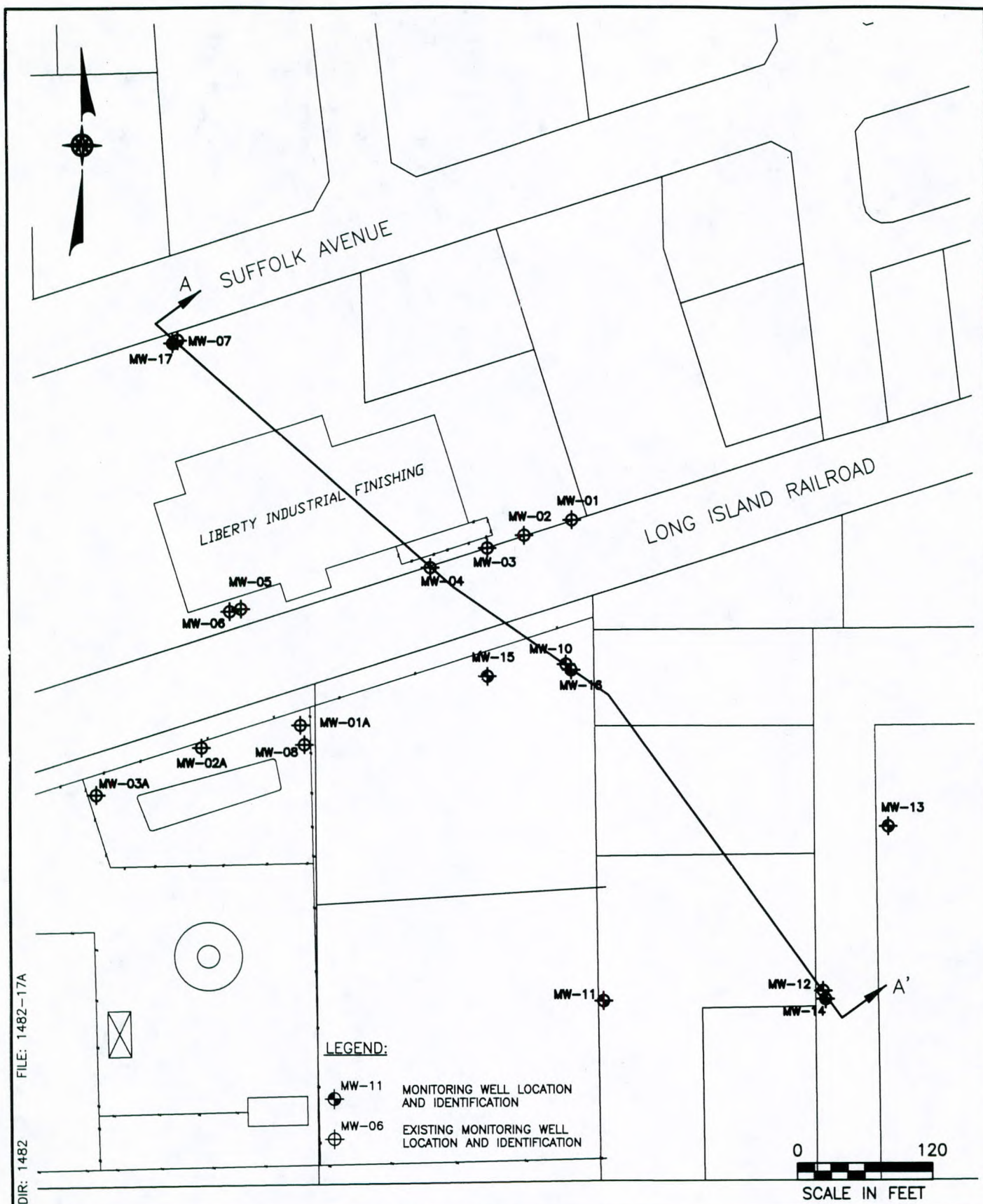
Sodium was found to exceed the groundwater standard of 20,000 ug/l at MW-14 at a concentration of 27,200 ug/l.

4.2.5.3 - Magothy Aquifer

One Magothy aquifer well, MW-06, was sampled during the second round. As shown by the results of the groundwater sampling, antimony was found to exceed groundwater standard of 3 ug/l at a concentration of 4.4 ug/l. This is about the same concentration of antimony detected in upgradient well MW-17 and represents background.

Based on these results, there is a plume of metals-contaminated groundwater originating from the Liberty Industrial Finishing Site. Cadmium and cyanide (and antimony) are detected above groundwater standards immediately downgradient of the underground plating waste

storage tanks and, to a lesser extent, downgradient of the former eastern loading dock dry wells. However, while chromium is also found in significant concentrations immediately downgradient of UST/dry well areas, it is migrating off-site in significant concentrations and migrating with depth as the plume extends away from the site. The location of the cross-section, which is parallel to groundwater flow, is shown in Figure 4-6. This migration of chromium is illustrated by the geochemical cross-section illustrated in Figure 4-7.



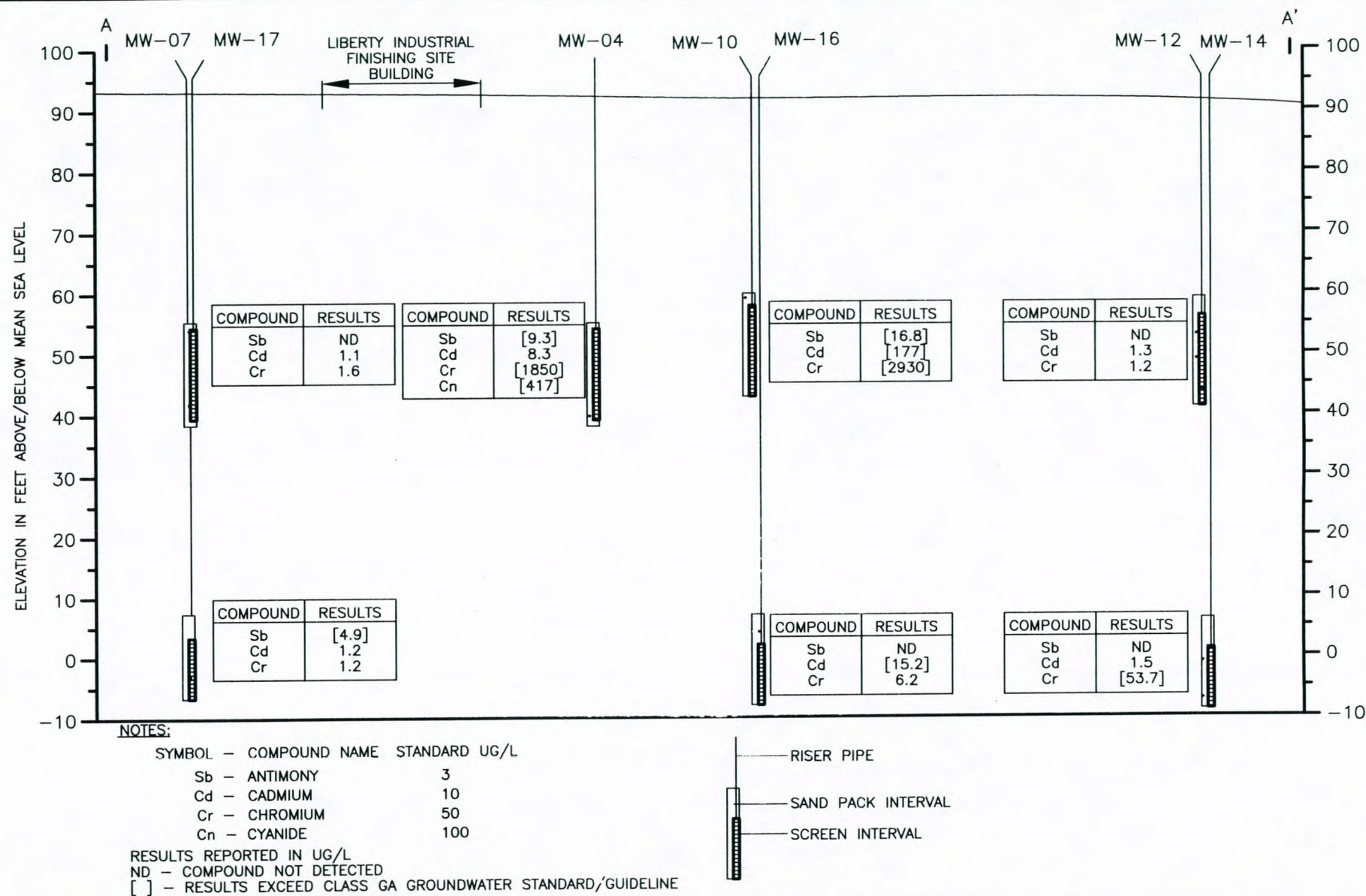
LIBERTY INDUSTRIAL FINISHING SITE
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
BRENTWOOD, NEW YORK

GEOCHEMICAL CROSS-SECTION LOCATION



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FIGURE 4-6



LIBERTY INDUSTRIAL FINISHING SITE
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
BRENTWOOD, NEW YORK



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GEOCHEMICAL CROSS-SECTION A-A'

FIGURE 4-7

Section 5

5.0 CONCLUSIONS

The following conclusions regarding the nature, source and extent of contamination at the Liberty Industrial Finishing Site are based on the results of the remedial investigation and comparison to standards, criteria and guidelines (SCGs) selected for the site. While there were a number of exceedances of SCGs detected both on the Liberty Industrial Finishing Site and off-site in the area of investigation, only those that are considered significant are presented below and will likely require remediation. However, final determination regarding the need for remediation will be based on the exposure assessment. Conclusions are provided below as a function of the media investigated.

5.1 Surface Soil

Significantly contaminated surface soil (cadmium, chromium, copper, mercury, nickel and zinc) was found on the Liberty Industrial Finishing Site at one location. This location is in the area of the underground plating waste storage tanks. This contamination may have resulted from spills of plating waste in the vicinity of the tanks.

Significantly contaminated surface soil (arsenic) was found on the Town of Islip Athletic Field south of the site at one location, which is in the southwest corner of the field. This contamination may have resulted from the use of herbicides in the area of a utility pole. This area has been remediated by the USEPA in 1998.

Significantly contaminated surface soil (barium, beryllium, chromium, cobalt, copper, iron, lead, nickel, selenium and zinc) was found on the Brentwood Water District property south of the site at two locations. This contamination likely resulted from sand blasting and/or painting of the elevated water storage tank on the property. Remediation of this area was performed by USEPA in 1998.

No significant surface soil contamination was detected on the American Legion property located southeast of the site.

The locations of significant surface soil contamination are illustrated in Figure 5-1.

5.2 Dry Well/Leaching Pool Sediment/Sludge

Significantly contaminated sediment/sludge (cadmium, chromium, copper and zinc) was detected in one of the four sanitary leaching pools, which is the westernmost pool.

Significantly contaminated sediment/sludge (PAHs and metals, in particular chromium) was detected in four storm water dry wells, one of which is located in the area of the western loading dock and the remaining three located in the area of the former eastern loading dock.

Significantly contaminated sediment/sludge was not found in the industrial emergency leaching pool. Contaminated sediment/sludge was previously removed from this leaching pool.

The locations of significantly contaminated dry well/leaching pool sediment/sludge are illustrated in Figure 5-2.

5.3 Subsurface Soil

Significantly contaminated subsurface soil was detected in the area of the underground plating waste storage tanks and along the pipe gallery that leads from the facility building to the tanks. Significant contamination was not found adjacent to storm water dry wells, sanitary leaching pools, boiler blowdown area, industrial emergency leaching pool or area of suspected waste disposal in the southwestern portion of the site.

The locations of significant subsurface soil contamination are illustrated in Figure 5-3.

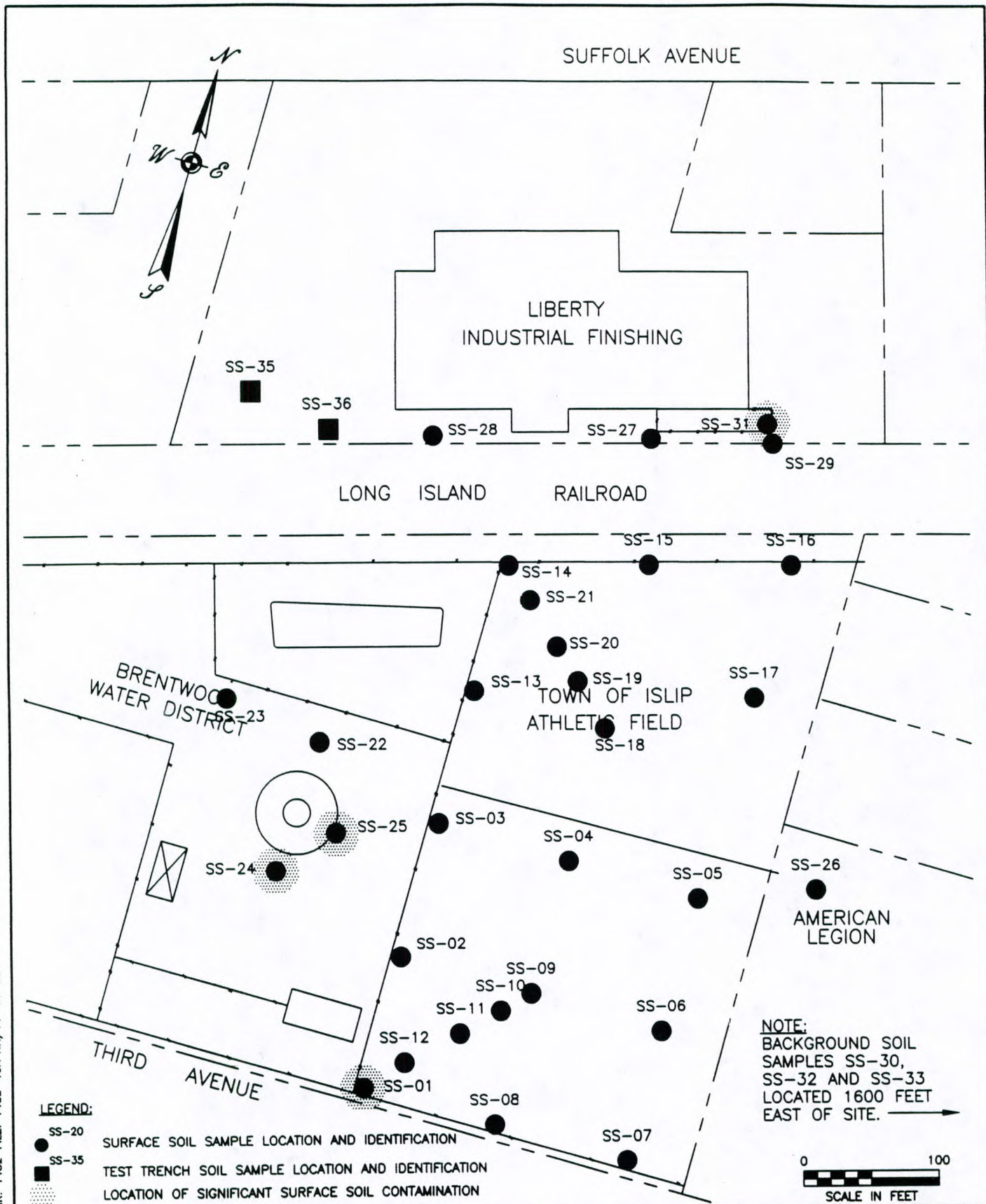
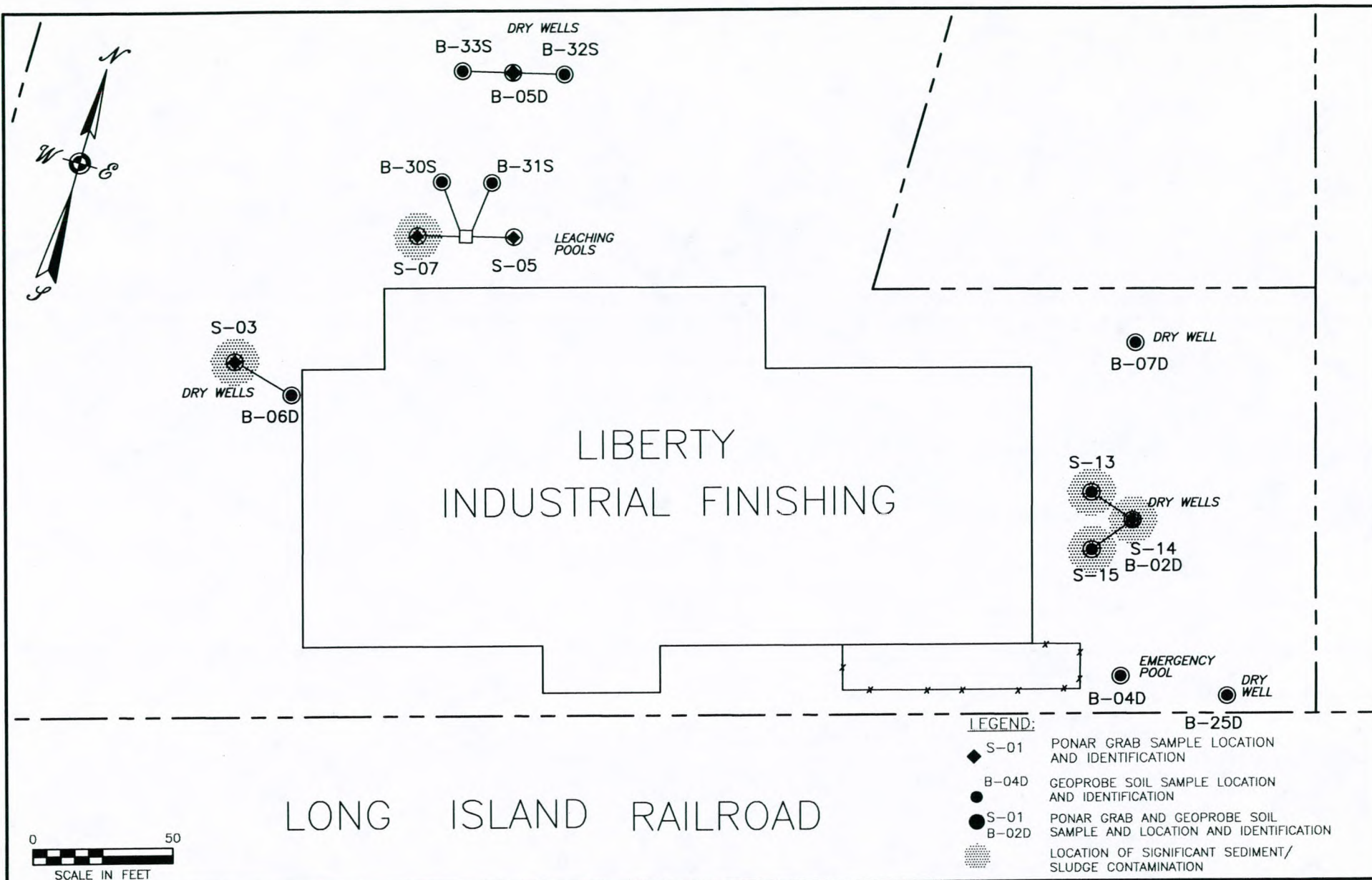


FIGURE 5-1



LIBERTY INDUSTRIAL FINISHING SITE
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
BRENTWOOD, NEW YORK

LOCATIONS OF SIGNIFICANT DRYWELL/
LEACHING POOL SEDIMENT/SLUDGE CONTAMINATION



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FIGURE 5-2

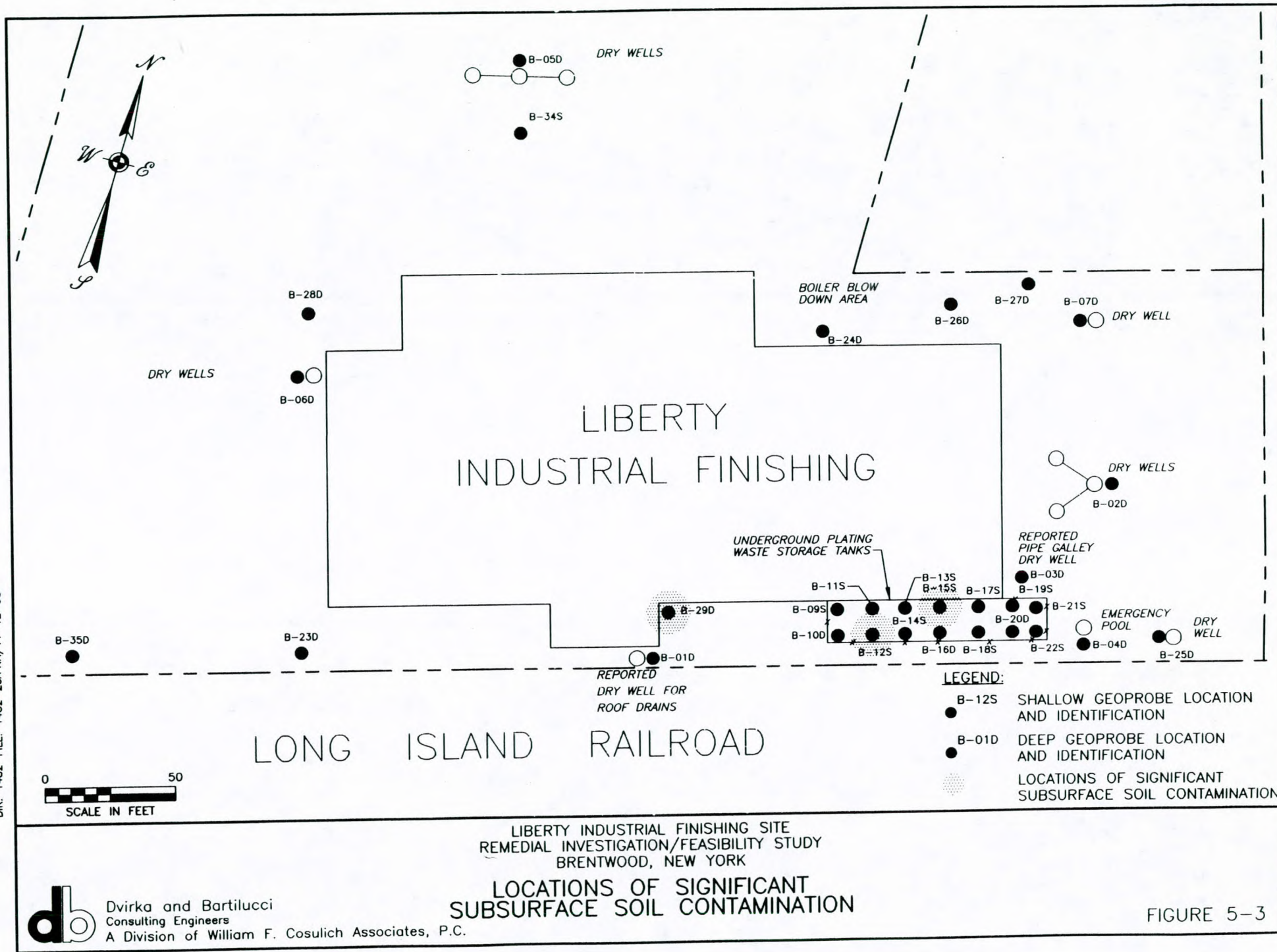


FIGURE 5-3



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5.4 Groundwater

Groundwater downgradient of the underground plating waste storage tanks and the former eastern loading dry wells is contaminated with cadmium, cyanide (and possibly antimony), and in particular chromium, likely resulting from plating waste disposal or spills and/or leaking underground waste storage tanks. Groundwater contaminated by cadmium and cyanide (and possibly antimony) is primarily shallow on-site and extends approximately 150 feet downgradient of the site. Chromium-contaminated groundwater is significantly more contaminated and more extensive. Chromium-contaminated groundwater on-site ranges up to 3,600 ug/l and immediately off-site (about 150 feet) is 3,070 ug/l. The most downgradient well located about 500 feet from the site and 50 feet below the water table shows a chromium concentration of 53.7 ug/l, which slightly exceeds the groundwater standard of 50 ug/l. Based on the location of the plume of contaminated groundwater, the primary source of contamination is the waste UST area and pipe gallery, and the dry wells located in the area of the former eastern loading dock. It is in these same areas that the most significantly contaminated surface soil, subsurface soil and dry well sediment/sludge was detected.

5.5 Ambient Air

No elevated measurements of volatile organic vapors, hydrogen sulfide or hydrogen cyanide were detected above ambient/background levels during the remedial investigation field program.

Section 6



6.0 EXPOSURE ASSESSMENT

The results of the remedial investigation for the Liberty Industrial Finishing Site indicate that contaminants above standards, criteria and guidelines (SCGs) are present at and downgradient of the site. In order to determine the significance of contamination and the need for remediation, an assessment of potential human exposure to site and off-site contamination is necessary. The findings of this exposure assessment will identify the media and areas of investigation, which will require remediation and which will be addressed in the feasibility study.

The contaminants of concern at the Liberty Industrial Finishing Site, as identified by the significance and frequency of exceedances of the SCGs, are metals, in particular, cadmium, chromium, nickel and zinc, and the inorganic compound cyanide. These contaminants, which likely have been the result of spills and disposal of plating wastes at the site, have been identified above SCGs in surface soil, subsurface soil, dry well/leaching pool sediment/sludge and groundwater. For the most part, exceedances of the SCGs are not substantial except for few surface soil locations on-site and off-site, a few subsurface soil locations on-site, and groundwater on-site and off-site. Off-site surface soil contamination is likely not to be related to on-site contamination.

This assessment addresses possible human exposure to the contaminants of concern identified for the site resulting from ingestion, inhalation, and dermal contact and absorption. Based on the results of the investigation there does not appear to be exposure to significant levels of contamination by ecological receptors.

6.1 Ingestion

Potential exposure to contaminants at the Liberty Industrial Finishing Site via ingestion would likely occur primarily through direct contact with surface soil and groundwater, but could also occur through contact with subsurface soil and dry well/leaching pool sediment/sludge. The following describes possible exposure to each of these media.

6.1.1 Surface Soil

Contamination assessment of surface soil included analysis of nine samples collected on-site; forty-two samples collected on the Town of Islip athletic field south of the site; eight samples collected on the Brentwood Water District property, also south of the site; two samples collected on the American Legion property southwest of the site, and six samples collected on Brentwood Library property 1,600 feet east of the site, which is considered to be representative of background for the study area. All of the surface soil samples, including the background samples, exceeded the SCGs for at least one contaminant.

Although there are a large number of exceedances of SCGs for surface soils both on-site and off-site, except for a few locations, the exceedances are not substantial, and the frequency and intensity of exposure to the soils is not high. Exposure to surface soil on the inactive Liberty Industrial Finishing Site involves occasional trespassers; exposure to surface soil on the athletic field involves periodic users of the field; exposure to surface soil on the water district property involves workers; and exposure to surface soil on the American Legion property involves periodic visitors to the property. Exposure to surface soil on the Brentwood Library property also involves periodic visitors to the site. As a result of limited exposure, in general, the ingestion hazard for surface soil is low.

However, there are a few locations where substantial exceedances of the SCGs were detected, which could create significant exposure hazards. These locations are the following: surface soil in the eastern portion of the underground waste storage tank area on the Liberty Industrial Finishing Site; surface soil in the southwest corner of the athletic field in the vicinity of a utility pole; and surface soil in the vicinity of the elevated storage tank on the water district property. The locations of these areas of concern are shown in Figure 5-1.

6.1.2 Subsurface Soil

Subsurface soil samples exceeded SCGs in eighteen of forty-one samples collected on-site. Similar to the results for surface soils, most of the exceedances were not substantial, except for three samples in the area of the underground waste storage tanks and pipe gallery that conveyed plating waste from the facility building to the underground tanks.

Although there were a number of exceedances of SCGs, including a few which were significant, since the subsurface soils are isolated and not readily accessible, unless they are exposed to direct contact and the contact is frequent, the risk created by contaminated subsurface soil at the site is low. However, should these subsurface soils be exposed as the result of construction or remediation, proper precautions should be undertaken to mitigate contact with these soils.

6.1.3 Dry Well/Leaching Pool Sediment/Sludge

Sediment/sludge samples collected from sanitary leaching pools, storm water dry wells and an industrial leaching pool on-site indicated that sixteen of the seventeen samples exceeded the SCGs and that substantial exceedances of SCGs occurred at four of these locations. The substantial exceedances occurred at the western-most sanitary leaching pool and the three storm water dry wells located in the area of the former eastern loading dock of the Liberty Industrial Finishing Site building.

Although essentially all of the sediment/sludge samples exceeded SCGs, since the leaching pools and dry wells are isolated below ground surface and are not readily accessible, the sediment/sludge contained in the subsurface drainage structures do not create a significant exposure hazard. However, similar to subsurface soils described above, should these sediments/sludges and perhaps underlying soil be exposed as the result of construction or remediation, proper precautions should be undertaken to mitigate contact with this material.

6.1.4 Groundwater

Contaminants above SCGs were detected both on-site and off-site to a distance approximately 500 feet downgradient of the site and to a depth of about 50 feet below the water table based on available data. Based on the survey of public and private wells conducted as part of the remedial investigation, the closest public water supply well downgradient/southeast of the Liberty Industrial Finishing Site is located greater than 1½ miles from the site. The public water supply wells located immediately south of the site on the Brentwood Water District property are 516 to 753 feet in depth and have not shown impacts resulting from the contaminants of concern identified for the Liberty Industrial Finishing Site. In addition, the area downgradient of the site is served by public water and it is unlikely that there are potential receptors exposed to contaminated groundwater. As a result, contaminated groundwater caused by the Liberty Industrial Finishing Site does not pose a current hazard to human health.

However, because of the significantly elevated levels of contamination (two orders of magnitude above drinking water standards for chromium), and the potential for the contaminants to migrate deep into the Magothy aquifer due to the downward vertical groundwater flow gradient in the study area and the specific gravity of metals being greater than water, there is the potential for contamination of the Magothy aquifer, which is the primary source of drinking water on Long Island and the formation in which the Brentwood Water District public water supply are screened. As a result of this potential of contamination of the drinking water supply, groundwater presents a medium risk for exposure to site-related contaminants.

6.2 **Inhalation**

Inhalation hazards can be caused by the presence of high concentrations of volatile organic vapors emanating from a contaminant source or the presence of airborne dust containing contaminants. Contaminant sources at the Liberty Industrial Finishing Site are spills and subsurface disposal of waste which are not, in general, exposed to the atmosphere (subsurface soil and dry well/leaching pool sediment/sludge). In addition, volatile organic compounds were not detected above SCGs in leaching pool/dry well sediment/sludge or in groundwater at and

downgradient of the site, which could be released to the atmosphere if exposed and if present. Surface soil contaminated with metals is exposed to the atmosphere at various locations at and downgradient of the site; however, the contaminant concentrations at these locations are for the most part low. Air monitoring conducted for volatile organic vapors, hydrogen sulfide and hydrogen cyanide in areas of known or suspected contamination during the site investigation indicated no elevated levels of these contaminants in the breathing zone.

Dust generation at the site is minimal since the site is paved, or hard packed in open areas, and vegetated. Vegetation, pavement and hard packed surfaces minimize the effects of wind on erosion and atmospheric transport of surface soils. Off-site, due to limited activities and vegetated areas on the Brentwood Water District and American Legion properties, there is little potential for generation of contaminated dust. However, activities on the Town of Islip athletic field could create dust, which could cause potential concern. However, as discussed above in Section 6.1, except in the extreme southwest corner of the athletic field, surface soil contamination is not significant, and exposure to these dusts is infrequent and limited to periodic usage of the fields. As a result, the risk of inhalation exposure from contaminants identified at the Liberty Industrial Finishing Site and off-site is low.

6.3 Dermal Contact and Absorption

Dermal contact involves exposure of contaminants to the skin or eyes. Absorption exposures may occur as a result of skin or mucous membrane contact with contaminants. The most likely potential for dermal contact with contamination at the Liberty Industrial Finishing Site is through direct contact with contaminated surface soil. As discussed above, potential contact with other contaminated media at the site (subsurface soil, dry well/leaching pool sediment/sludge and groundwater) is low. Except for the areas of concern identified in Section 6.1, potential exposure to contaminated surface soil by dermal contact and absorption is low due to the low levels of contaminants and infrequent opportunity for exposure to these contaminants.

Contact exposure to contaminated groundwater is possible only by entering the locked monitoring wells or contacting contaminated water supply, which is extremely remote due to the

area of the Liberty Industrial Finishing Site being served by public water and the frequent testing by the public water suppliers. As a result, the risk of dermal contact and absorption is low, except for those areas where significant surface soil contaminant concentrations were detected on-site, on the water district property and on the athletic field.

6.4 Conclusions and Recommendations

Exposure to contaminants originating at and from the Liberty Industrial Finishing Site can come from any one of four media, which include surface soil, subsurface soil, dry well/leaching pool sediment/sludge and groundwater. Based on the remedial investigation results and exposure assessment, none of the contaminated media is an immediate, acute health hazard. However, due to potential exposure to surface soil with significant exceedances to SCGs, remediation is recommended for these soils to prevent possible chronic exposures. In addition, because of the potential for migration of groundwater contamination into the Magothy aquifer, which is the primary source of drinking water supply in the study area, and the medium risk posed by this contamination, remediation of groundwater contamination at the Liberty Industrial Finishing Site should be considered to prevent further contaminant migration away from the site and impacts to water supply.



APPENDIX A

GEOPHYSICAL SURVEY REPORT

**GEOPHYSICAL SURVEY
550 SUFFOLK AVENUE
BRENTWOOD, NEW YORK**

Prepared for:

Dvirka and Bartilucci Consulting Engineers
330 Crossways Park Drive
Woodbury, New York 11797-2015

Prepared by:

Hager-Richter Geoscience, Inc.
8 Industrial Way - D10
Salem, New Hampshire 03079

File 97D40
February, 1998

Geophysical Survey
550 Suffolk Avenue
Brentwood, New York
File 97D40 February, 1998

0. EXECUTIVE SUMMARY

Hager-Richter Geoscience, Inc. conducted a geophysical survey at 550 Suffolk Avenue in Brentwood, New York for Dvirka and Bartilucci Consulting Engineers (D&B) in February, 1998. The geophysical survey is part of an environmental investigation by D&B for the New York State Department of Environmental Conservation (NYSDEC).

The subject site is an inactive former metal finishing facility. The site property is about 3.9 acres in size. According to information provided by D&B, various sets of site plans indicate the possible presence subsurface structures of interest to the environmental investigation, such as dry wells and underground storage tanks (USTs), at differing locations in the exterior areas of the site. In addition, D&B indicated that wastes might have been disposed in the southwestern portion of the site. The accessible portions of the exterior areas of the site were specified by D&B as the area of interest for the geophysical survey.

The objectives of the geophysical survey were: (1) to locate subsurface structures of interest to the environmental investigation, such as dry wells and USTs, in the specified area of interest, and (2) to detect possible disposal areas in the southwest corner of the site.

Two complementary geophysical methods were used, electromagnetic induction terrain conductivity (EM) and ground penetrating radar (GPR). The EM survey was conducted across the accessible portions of the area of interest, and the GPR survey was focused in areas of possible subsurface structures as determined from plans provided by D&B and from preliminary examination of the EM data.

The results of the geophysical survey at 550 Suffolk Avenue site in Brentwood, New York are as follows:

- Several subsurface structures, including possible dry wells and a possible UST were detected on the basis of the geophysical data.
- The GPR data confirmed the locations of six known USTs at the southeast corner of the existing building.
- Areas with possible metal in the soil were detected in the southwest corner of the site.

Geophysical Survey
550 Suffolk Avenue
Brentwood, New York
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FIGURES

1. General Site Location
2. Site Sketch Plan
3. Apparent Conductivity
4. In-phase Component
5. Apparent Conductivity - SW Corner
6. Interpretation
7. GPR Record of Known UST

APPENDIX

Terrain Conductivity (EM) Surveys
Ground Penetrating Radar Surveys

Geophysical Survey
550 Suffolk Avenue
Brentwood, New York
File 97D40 February, 1998

1. INTRODUCTION

Hager-Richter Geoscience, Inc. conducted a geophysical survey at 550 Suffolk Avenue in Brentwood, New York for Dvirka and Bartilucci Consulting Engineers (D&B) of Woodbury, New York in February, 1998. The geophysical survey is part of an environmental investigation by D&B for the New York State Department of Environmental Conservation (NYSDEC).

The subject site is an inactive former metal finishing facility. Figure 1 shows the general location of the site, and Figure 2 is a site sketch plan. The site property is about 3.9 acres in size. According to information provided by D&B, various sets of site plans indicate the possible presence subsurface structures of interest to the environmental investigation, such as dry wells and underground storage tanks (USTs), at differing locations in the exterior areas of the site. In addition, D&B indicated that wastes might have been disposed in the southwestern portion of the site. The accessible portions of the exterior areas of the site were specified by D&B as the area of interest for the geophysical survey.

The objectives of the geophysical survey were: (1) to detect subsurface structures, such as dry wells and USTs in the specified area of interest, and (2) to detect possible metal-containing waste disposed in the southwestern portion of the site.

Two complementary geophysical methods were used, electromagnetic induction terrain conductivity (EM) and ground penetrating radar (GPR). The EM survey was conducted across the accessible portions of the area of interest, and the GPR survey was focused in areas of possible subsurface structures as determined from plans provided by D&B and from preliminary examination of the EM data.

Jonathon Puliafico of Hager-Richter conducted the field operations on January 22 and 23, 1998. The work was coordinated with Mr. Robert Mozer of D&B. Mr. Keith Robins of D&B was on site during the field work and specified the areas of interest for the survey.

Geophysical Survey
550 Suffolk Avenue
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2. EQUIPMENT AND PROCEDURES

2.1 General

The equipment, general procedures, and limitations of EM and GPR surveys are described in the Appendix. Details specific to this project are given below.

2.2 Site Specific

As stated in the Introduction, the area of interest for the geophysical survey was specified by D&B as the accessible portions of the exterior areas of the site. The geophysical survey grid was tied to fixed features such as buildings and fencing.

2.2.1 EM Survey. The EM survey was conducted using a Geonics EM31 terrain conductivity meter in the vertical dipole mode. In this configuration, the conductivity of the subsurface is sampled to a nominal depth of 18 feet. EM data were collected at approximately 2½-foot intervals along lines spaced 10 feet apart. The 12-foot long boom of the EM31 was oriented perpendicular to the lines of traverse, thereby providing overlapping coverage. Data were recorded along a baseline at the start and end of the survey to check for instrument drift. No drift was detected. Preliminary processing of the EM data was conducted in the field on a notebook computer.

2.2.2 GPR Survey. The GPR survey was focused in areas of possible subsurface structures as determined from plans provided by D&B and from preliminary examination of the field processed EM data. The locations of the GPR survey were determined with the concurrence of the D&B site representative. The GPR traverse spacing and orientation varied with the particular targets. The GPR antenna was pulled by hand for all traverses. A 500 MHz antenna with an optional survey wheel that triggers data collection at equal distance intervals was used for the GPR survey. Data were recorded with a 60 nsec. time window.

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550 Suffolk Avenue
Brentwood, New York
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3. RESULTS AND DISCUSSION

Figures 3 - 5 are color contour plots of the EM data and show the locations of the EM data stations at the 550 Suffolk Avenue site. Figure 6 shows the locations of the GPR traverses and our integrated interpretation of the geophysical data.

3.1 EM Survey

Apparent conductivity data are useful in environmental investigations for (1) detecting the presence of anomalously conductive ground, which might be caused by the presence of fluids and/or soils with properties unlike those of the natural materials on site, such as disposal areas and contaminant plumes, and (2) detecting buried metal. The in-phase component data, on the other hand, are *only* used to interpret the presence of metal objects. Metal-containing objects, whether buried or above ground, produce anomalously higher or lower apparent conductivity and in-phase component values in EM data, and the amplitude of the anomalies is commonly so large that the anomalies cannot be caused by natural soils.

The EM survey at the 550 Suffolk Avenue site was conducted for two purposes: (1) to reconnoiter for subsurface structures at the site, and (2) to detect possible disposal areas in the southwest corner of the site. Each of the two purposes is best served by contour plots of the EM data at different scales and contour intervals. Figures 3 and 4 show the EM data for the entire site, and are useful for interpretation in terms of the presence of subsurface structures. Figure 5 shows the EM data collected in the southwestern corner of the site at a larger scale and contoured with a smaller contour interval and is useful for interpretation in terms of the presence of possible disposal areas.

3.1.1 Subsurface Structures. On both Figures 3 and 4, areas of pink and blue represent locally anomalous positive and negative values of apparent conductivity and in-phase component that are typical of anomalies associated with metal objects. Several such anomalies are attributed to the abundant surface metal at the site, as shown on Figure 6. The anomalies due to surface metal could mask the anomalies due to the presence of subsurface metal, if any. Thus, whether subsurface metal is present in such areas near surface metal cannot be determined on the basis of the EM data.

Figures 3 and 4 exhibit several small areas of high amplitude anomalies not associated with visible surface metal. Such high amplitude anomalies cannot be due to natural soils, and are attributed to possible subsurface metal. A few linear anomalies between the building and Suffolk Avenue are attributed to possible subsurface utilities. Several of the other EM anomalies correlate with the

Geophysical Survey
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approximate locations of possible dry wells and a UST shown on site plans provided by D&B, and on Figure 6, such anomalies are attributed to the possible dry wells and UST. It is, of course, possible that other metal objects are the cause of the anomalies, and only "ground truth" through excavation can determine the exact cause of the anomalies. Because the footprint of the EM anomalies is larger than the possible dry wells and UST, the exact location of the object cannot be determined from the EM data alone, and the legend for Figure 6 notes that the possible dry wells and UST are located within the area of the anomaly.

3.1.2 Possible Disposal Areas. According to information provided by D&B, wastes were possibly disposed in a brushy area in the southwest corner of the site. Figure 5 shows the EM data collected in the southwest corner of the site plotted with a smaller contour interval to bring out details of local variations in apparent conductivity.

The background values for apparent conductivity in the southwest corner at the subject site are very low, and in fact, exhibit values of about -5 to -8 mmho/m. Negative conductivities do not exist in the real world, and we caution that the negative values of apparent conductivity actually indicate that the conductivity is close to zero. Values of apparent conductivity close to zero are typical of unsaturated sandy soils such as those found on Long Island.

The *relative* variations in apparent conductivity are real, however, and are useful for determining whether areas of anomalous apparent conductivity are present. If liquid wastes containing dissolved metal salts had been disposed in the southwest corner of the site, one would expect to detect areas of anomalously elevated apparent conductivity. The amplitude of such anomalies could vary widely, from several mmho/m to several hundred mmho/m, depending on the amount disposed and the composition of the liquid. Such areas of elevated apparent conductivity were not detected on the basis of the EM data.

On the other hand, if scrap metal had been disposed in the southwest corner of the site, one would expect local sharp positive or negative anomalies in *both* the apparent conductivity data and the in-phase component data. Several areas with sharply negative apparent conductivity were detected in the southwest corner of the site. The in-phase data do not exhibit as sharply negative values except near some visible surface metal. The negative anomalies are labeled as areas possibly containing metal on Figure 6 for completeness, but we note that the identity of the source cannot be determined on the basis of the EM data alone.

3.2 GPR Survey and Integrated Interpretation

The GPR survey at the 550 Suffolk Avenue site was focused in the general areas of subsurface structures shown on plans provided by D&B. The locations of the GPR survey were selected in coordination with the D&B site representative. Figure 6 shows the location of the GPR traverses

Geophysical Survey
550 Suffolk Avenue
Brentwood, New York
File 97D40 February, 1998

and the integrated interpretation of the EM and GPR data.

GPR signal penetration at the 550 Suffolk Avenue site was good, with reflections received for about 40 nsec, corresponding to an estimated depth range of 4 to 8 feet, depending on the electrical properties of the subsurface. The GPR records for the vicinity of the six tanks at the southeast corner of the building indicate that the tanks are located as shown on the plans provided by D&B. Figure 8 is an example of a GPR record for a traverse that crosses a portion of one of the tanks. Possible dry wells detected on the basis of the GPR records are shown on Figure 6 as black circles. A few possible segments of subsurface utilities and a few unidentified small objects were also detected on the basis of the GPR records, and their locations are shown on Figure 6.

Geophysical Survey
550 Suffolk Avenue
Brentwood, New York
File 97D40 February, 1998

4. CONCLUSIONS

Based on the geophysical survey conducted at 550 Suffolk Avenue in Brentwood, New York, we conclude:

- Several subsurface structures, including possible dry wells and a possible UST were detected on the basis of the geophysical data.
- The GPR data confirmed the locations of six known USTs at the southeast corner of the existing building.
- Areas with possible metal in the soil were detected in the southwest corner of the site.

Geophysical Survey
550 Suffolk Avenue
Brentwood, New York
File 97D40 February, 1998

5. LIMITATIONS

This report was prepared for the exclusive use of Dvirka and Bartilucci Consulting Engineers (Client). No other party shall be entitled to rely on this Report or any information, documents, records, data, interpretations, advice or opinions given to Client by Hager-Richter Geoscience, Inc. (H-R) in the performance of its work. The Report relates solely to the specific project for which H-R has been retained and shall not be used or relied upon by Client or any third party for any variation or extension of this project, any other project or any other purpose without the express written permission of H-R. Any unpermitted use by Client or any third party shall be at Client's or such third party's own risk and without any liability to H-R.

The detection of subsurface utilities was not an objective of this survey, and the survey was not designed to detect such. However, some utilities and/or other subsurface objects were detected and their locations are provided as a courtesy. Other utilities may be present and the Client or any third party shall not rely on this report for information on such.

H-R has used reasonable care, skill, competence and judgment in the performance of its services for this project consistent with professional standards for those providing similar services at the same time, in the same locale, and under like circumstances. Unless otherwise stated, the work performed by H-R should be understood to be exploratory and interpretational in character and any results, findings or recommendations contained in this Report or resulting from the work proposed may include decisions which are judgmental in nature and not necessarily based solely on pure science or engineering. It should be noted that our conclusions might be modified if subsurface conditions were better delineated with additional subsurface exploration including, but not limited to, test pits, soil borings with collection of soil and water samples, and laboratory testing.

Except as expressly provided in this limitations section, H-R makes no other representation or warranty of any kind whatsoever, oral or written, expressed or implied; and all implied warranties of merchantability and fitness for a particular purpose, are hereby disclaimed.

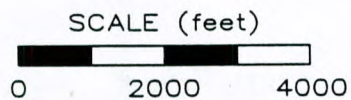
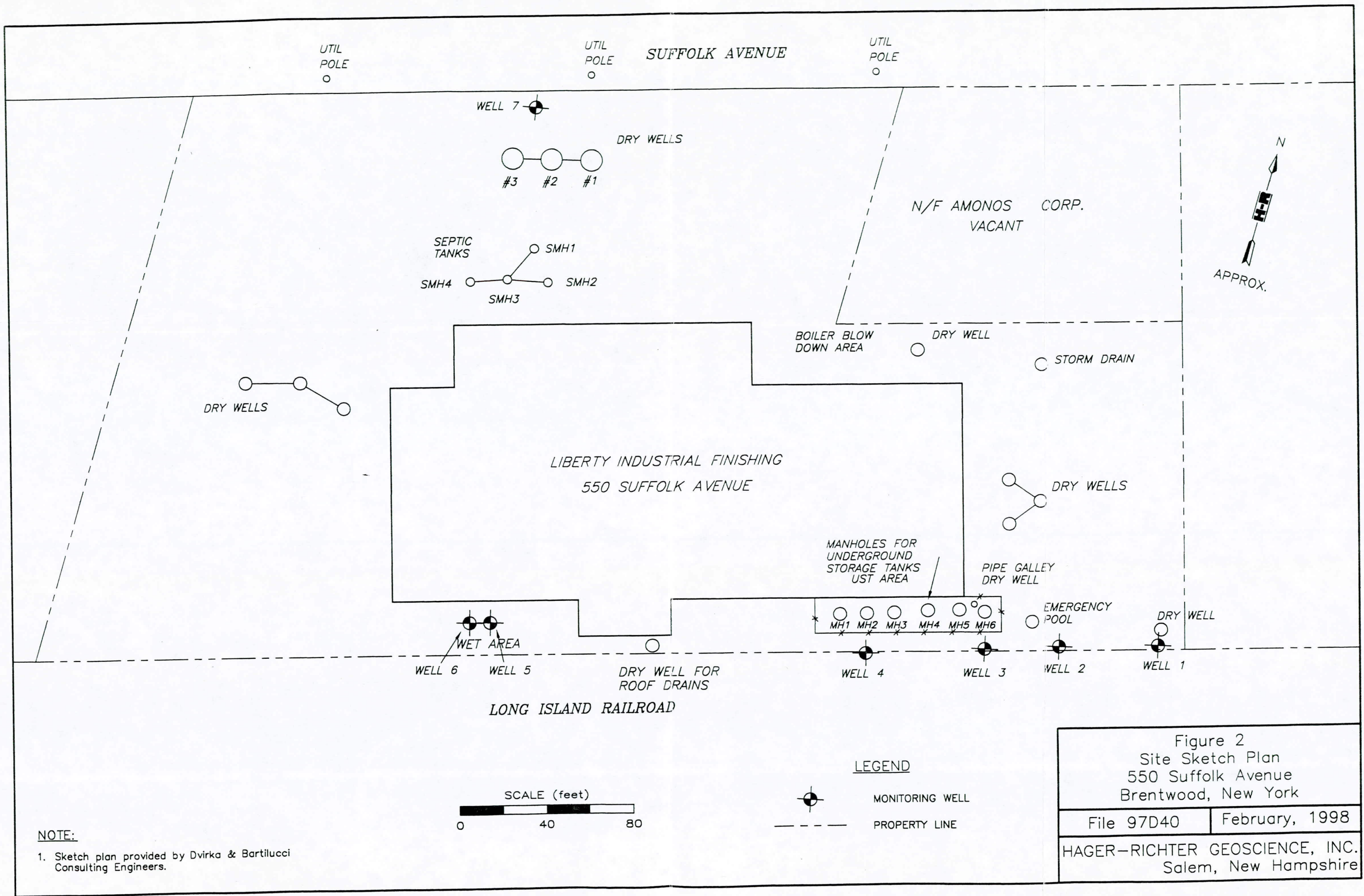


Figure 1
General Site Location
550 Suffolk Avenue
Brentwood, New York

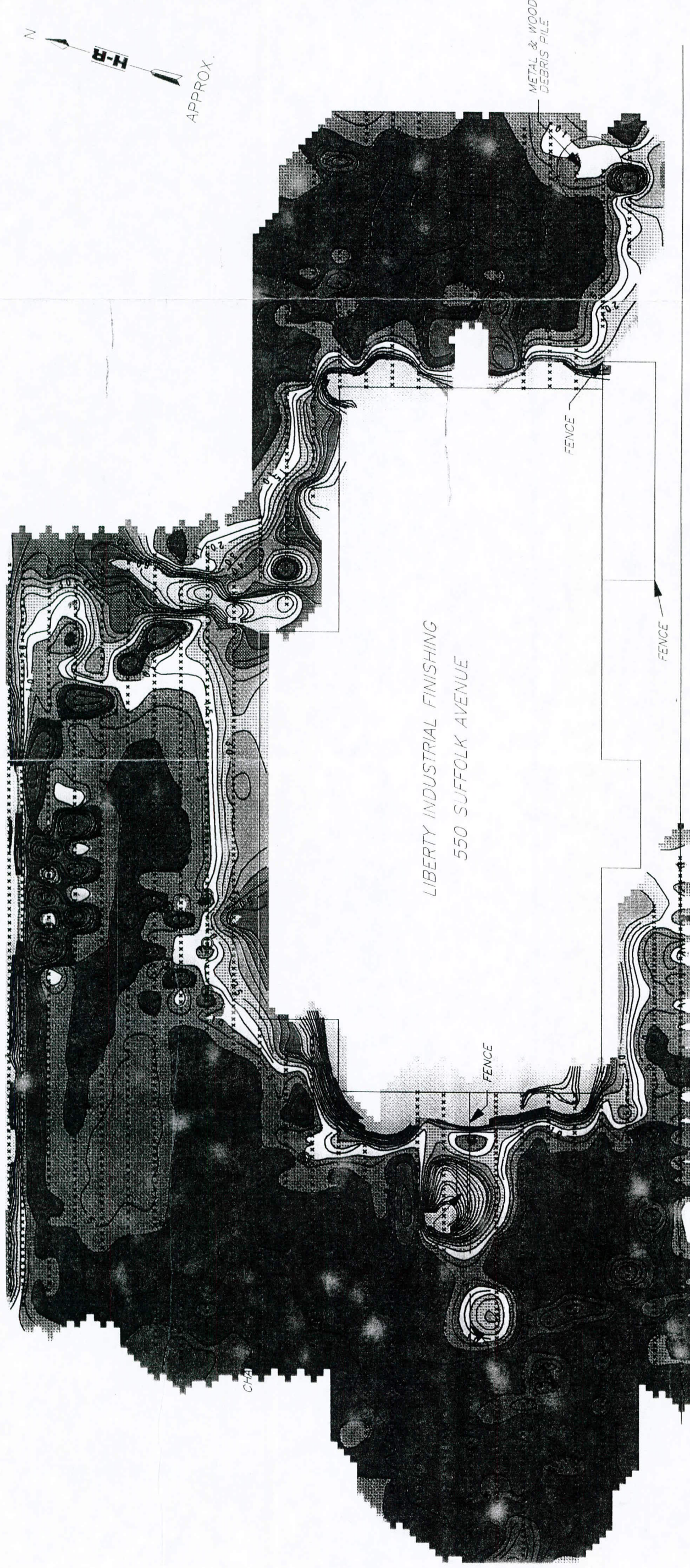
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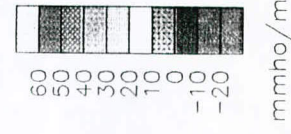
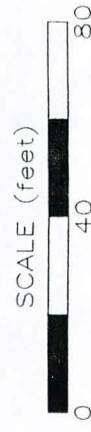


SUFFOLK AVENUE



LEGEND

- * DATA STATION
- ⊗ CATCH BASIN
- ⊙ MANHOLE COVER
- ⊠ TRANSFORMER



NOTES:

1. Data were recorded with EM31 in vertical dipole mode with boom perpendicular to traverse line where possible.
2. Sketch plan developed from plans provided by Dvirka & Bartilucci Consulting Engineers and field notes.

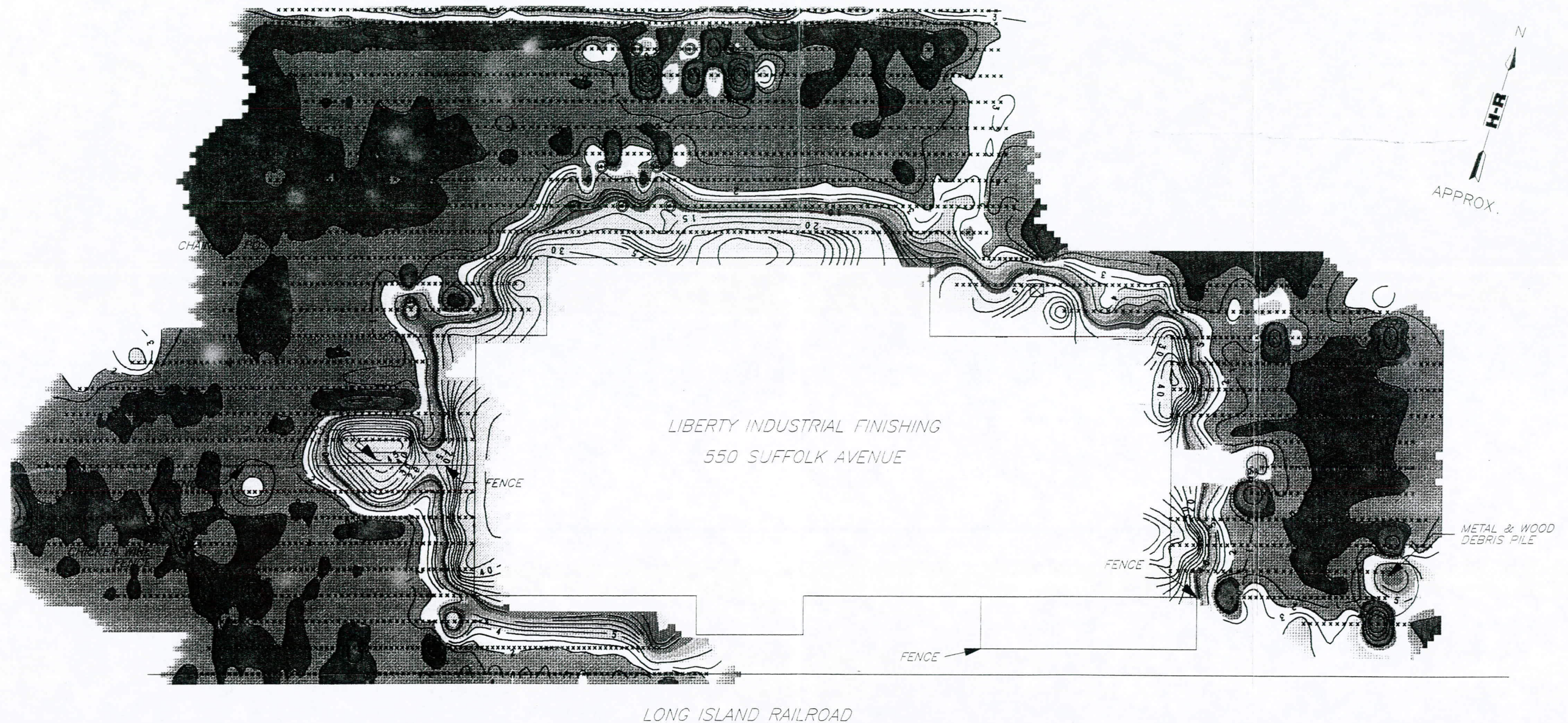
Figure 3

Apparent Conductivity
550 Suffolk Avenue
Brentwood, New York

File 97D40 February, 1998

HAGER-RICHTER GEOSCIENCE, INC.
Salem, New Hampshire

SUFFOLK AVENUE



LIBERTY INDUSTRIAL FINISHING
550 SUFFOLK AVENUE

APPROX.

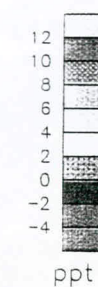
METAL & WOOD
DEBRIS PILE

FENCE

LONG ISLAND RAILROAD

LEGEND

- x DATA STATION
- ⊕ CATCH BASIN
- ⊙ MANHOLE COVER
- ⊠ TRANSFORMER



NOTES:

1. Data were recorded with EM31 in vertical dipole mode with boom perpendicular to traverse line where possible.
2. Sketch plan developed from plans provided by Dvirka & Bartilucci Consulting Engineers and field notes.

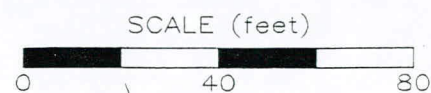


Figure 4
In-Phase Component
550 Suffolk Avenue
Brentwood, New York

File 97D40

February, 1998

HAGER-RICHTER GEOSCIENCE, INC.
Salem, New Hampshire



APPROX.

LIBERTY INDUSTRIAL FINISHING
550 SUFFOLK AVENUE

LONG ISLAND RAILROAD

NOTES:

1. Data were recorded with EM31 in vertical dipole mode with boom perpendicular to traverse line where possible.
2. Sketch plan developed from plans provided by Dvirka & Bartilucci Consulting Engineers and field notes.



LEGEND

* DATA STATION

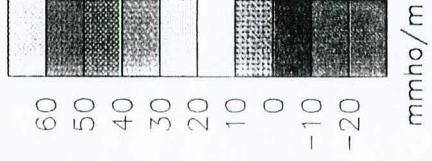
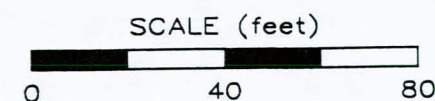
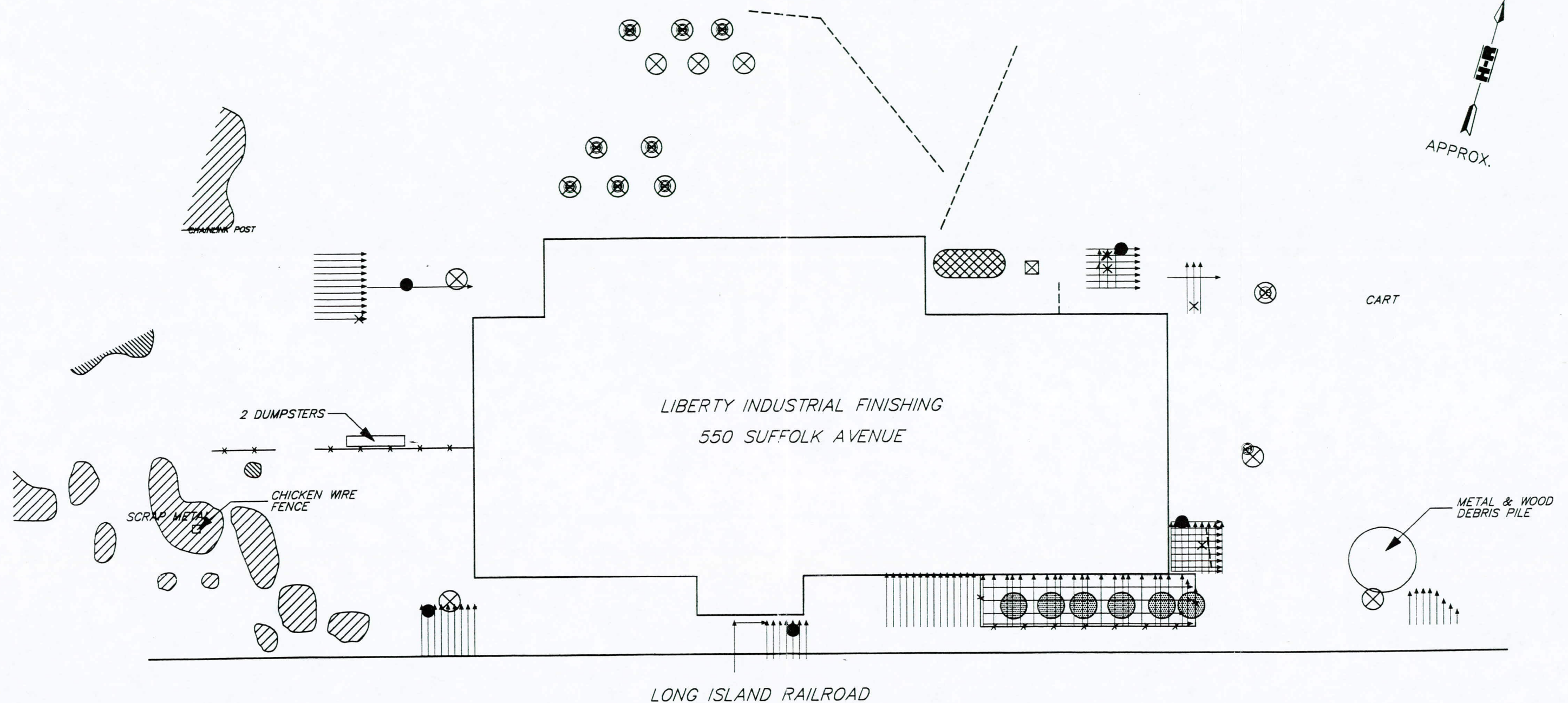
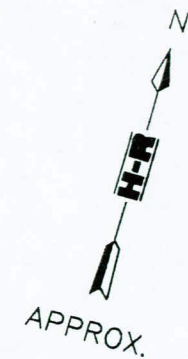


Figure 5 Apparent Conductivity-SW Corner 550 Suffolk Avenue Brentwood, New York	
File 97D40	February, 1998
HAGER-RICHTER GEOSCIENCE, INC. Salem, New Hampshire	

SUFFOLK AVENUE



LEGEND

→	GPR TRAVERSE	⊗	POSSIBLE DRY WELL IN THIS AREA	⊙	MANHOLE COVER
▨	POSSIBLE METAL IN SOIL IN THIS AREA	●	POSSIBLE DRY WELL	⊖	CATCH BASIN
▩	POSSIBLE BURIED METAL	---	POSSIBLE UTILITY	⊠	TRANSFORMER
●	KNOWN UST	x	UNIDENTIFIED BURIED OBJECT	—x—	FENCE
▩	POSSIBLE UST IN THIS AREA				

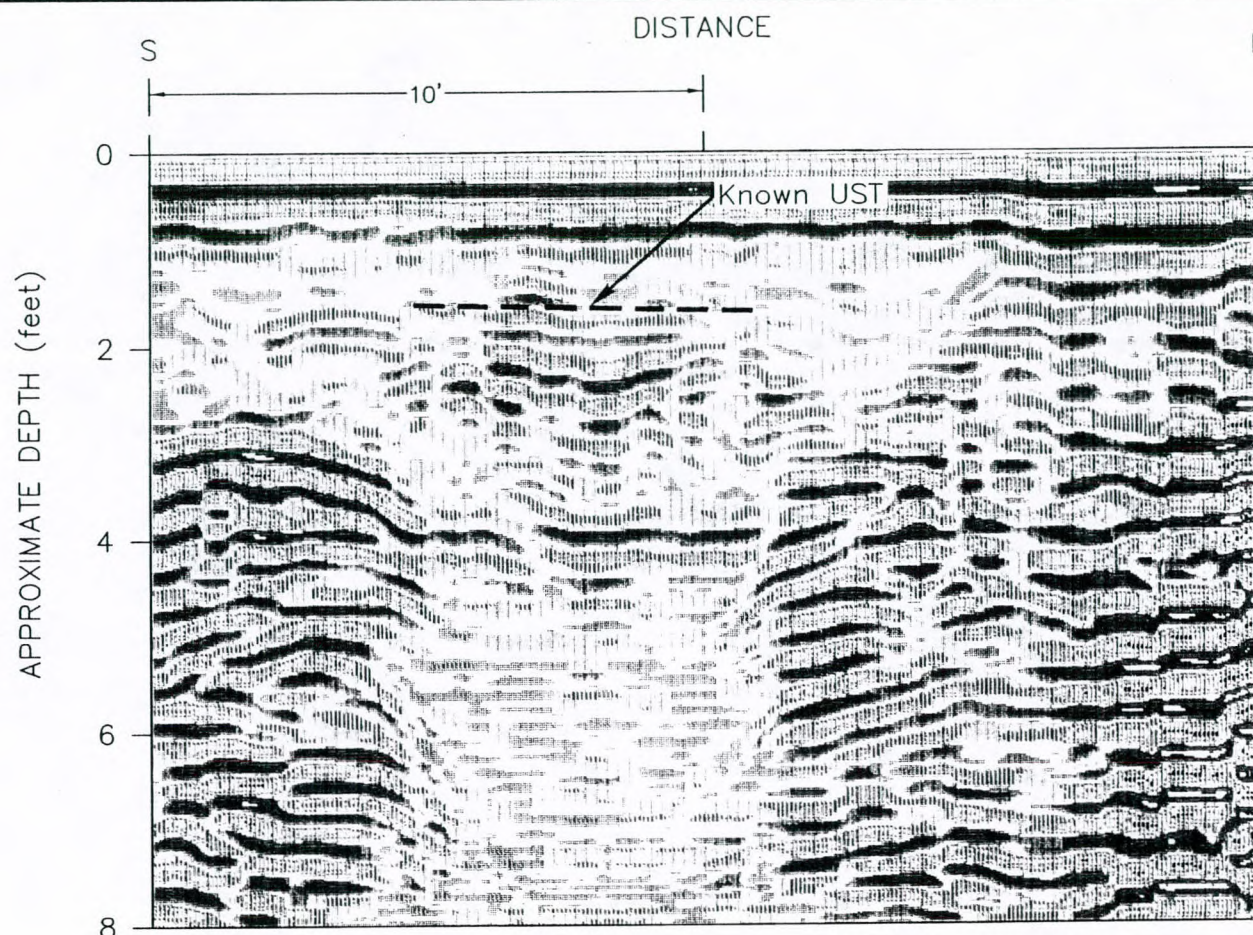
NOTE:

1. Sketch plan developed from plans provided by Dvirka & Bartilucci Consulting Engineers and field notes.
2. See text for further discussion of interpretation.

Figure 6
Interpretation
550 Suffolk Avenue
Brentwood, New York

File 97D40 February, 1998

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Salem, New Hampshire



NOTES:

1. Depth scale is approximate only. The actual time-to-depth conversion for the GPR signal varies with the dielectric properties of the materials in the subsurface and is not necessarily uniform. Colors represent relative amplitude of reflected signals. Grey and white are lowest amplitude; brightest colors are highest amplitude. Accuracy of distances along GPR record is approximately ± 1 foot.

Figure 7
GPR Record of Known UST
550 Suffolk Avenue
Brentwood, New York

File 97D40

February, 1998

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Salem, New Hampshire

APPENDIX

TERRAIN CONDUCTIVITY (EM) SURVEYS

Field Work. We used a Geonics EM31-DL Terrain Conductivity Meter for the survey. This unit is an induction type instrument and provides measurement of both the quadrature-phase and in-phase components of terrain conductivity without ground electrodes or contact. The data for both components are recorded on a digital data logger. The EM31-DL is calibrated to read ground conductivity directly in millimhos per meter with a resolution of 2% of full scale and an accuracy of 1 mmho/meter.

The EM31-DL has coils mounted with a fixed separation of 12 feet in a rigid boom. In normal operation, it is used with a vertical dipole, and the nominal depth of earth sampled by the EM31-DL is about 18 feet. In the horizontal dipole mode, the nominal depth of earth sampled by the EM31-DL is about 9 feet.

Two components of the induced magnetic field measured by the EM31-DL are recorded: (1) the quadrature-phase component and (2) the in-phase component. The quadrature-phase component is a measure of the average terrain conductivity of the subsurface materials located between the receiver and transmitter of the EM31-DL. The in-phase component is a sensitive indicator of the presence of conductive metal objects; however, the exact identification of the object cannot be determined from the terrain conductivity data alone.

Data Analysis and Interpretation. Terrain conductivity data are most commonly plotted in either profile format or as contour maps, depending on the density of the data. At sites free of metal objects and other cultural interference, the terrain conductivity measured at a particular location is controlled by the subsurface fluid. The instrument response is more affected by near-surface material than by deeper material, particularly horizontal dipole data. In cases where the terrain conductivity meter coil is directly over a buried metal target, the apparent conductivity reading may be a negative number.

Terrain conductivity surveys are commonly included in environmental investigations because they can be used to determine the lateral extent of disposal areas and/or landfills, to detect buried metal objects, and to detect the presence of conductive leachate plumes. Typically, terrain conductivity values measured in disposal areas are irregular and highly variable over short distances due to the heterogeneous materials in the subsurface. The edges of disposal areas can be determined, then, where there is a change to smoothly varying values of terrain conductivity. In areas of buried metal objects, terrain conductivity meters commonly yield apparently negative values. Leachate plumes are generally recognized on the basis of terrain conductivity data as relatively smoothly varying, but anomalously elevated, values compared to the background values for a given site.

Limitations of the Method. As with any of the electrical geophysical methods, terrain conductivity data are subject to interference from such cultural features as buildings, fencing, and underground and overhead power lines. Thus, for certain sensitive geologic applications, the use of the terrain conductivity method in urban settings might be inappropriate.

The usefulness of terrain conductivity soundings for delineating stratigraphic changes with depth is limited by the relatively small combination of coil separations and dipole orientations available with Geonics' equipment. The instruments were not designed for detailed vertical soundings but, according to the manufacturer's literature (Geonics Technical Note TN-8, rev. 1983), give the most accurate results where the earth can be approximated by a two-layer model. Models of the earth calculated from terrain conductivity data are non-unique; in most cases, multiple models can satisfy the observed data.

The terrain conductivity meter instrument response varies with the orientation of the dipoles. In the horizontal dipole mode (coils vertical and co-planar), the instrument is more sensitive to near-surface conductive layers than it is in the vertical dipole mode (coils horizontal and co-planar). In the horizontal dipole mode, the high sensitivity to near-surface conductivity might mask the effects of changes at depth.

APPENDIX

GROUND PENETRATING RADAR SURVEYS

Field Work. A Geophysical Survey Systems, Inc. Model SIR-2 ground penetrating radar system was used for this survey. The SIR-2 is a fully digital system and includes a color monitor, grey-scale thermal printer, and 10-Gbyte digital tape backup system. The transmit/receive antenna is housed in a box that is moved across the surface. The antenna transmits electromagnetic signals into the subsurface and then detects, amplifies, and displays reflections of the signals in real-time on the color monitor. The result is a radar record of the subsurface.

The maximum depth of penetration of the GPR signal and the resolution of the reflections are controlled in part by the frequency of the antenna used and in part by the electrical properties of the subsurface. Hager-Richter owns antennas with the following center frequencies: 120 MHz, 300 MHz, 500 MHz, and 1000 MHz. The total time during which radar signals are recorded can be varied from a few to 1,000 nanoseconds (nsec). However, there is a trade-off between total time, corresponding to depth range, and resolution. As the total time of recording is increased, the resolution of the GPR records decreases. For a given site, the total time window is set to detect features located somewhat below the maximum expected target depths.

Interpretation. The horizontal axis of a GPR record represents distance across the surface and the vertical axis represents round-trip travel time of the radar signal. The round-trip travel time can be converted to approximate depth by correlating with reflections from targets of known depth or by using handbook values of velocities for materials in the subsurface. For those sites where the subsurface is electrically heterogeneous, the travel times of the radar signal may be different in the various materials, and the vertical scale for the radar records is not necessarily uniform with depth.

The reflections in a GPR record are produced by spatial changes in the physical properties (e.g., type of material, subsurface fluids, porosity, etc.) and related changes in the electrical properties (dielectric constant) of the subsurface materials in the path of the signals. The greater the difference in electrical properties between two materials in the subsurface, the stronger the reflection observed in the GPR record.

The size, shape, and amplitude of the GPR reflections are the characteristics that are considered in the interpretation of the data from any site. Because the electrical properties of metal USTs, utilities, and conduits differ significantly from those of the soils in which they are buried, such objects produce GPR reflections with high amplitude and distinctive shapes that permit identification with a high degree of reliability. Most other objects, although readily detectable, require "ground truth" for identification. Only excavations provide positive identification for most objects identified in GPR surveys.

For GPR profiles oriented perpendicular to the long axis of a tank, the signature is similar to a hyperbola, the shape of which is a function of the diameter and depth of burial of the tank. For GPR profiles oriented parallel to the long axis of a tank, the signature is a set of parallel, high amplitude reflections that terminate sharply at the ends of the tank. GPR, then, is useful for determining the exact location and dimensions of USTs.

Limitations of the Method. The maximum depth to which GPR signals can penetrate depends on the electrical properties of the subsurface materials. The higher the electrical conductivity of the subsurface materials, the lower the radar signal penetration. Clay minerals and/or brackish water in the subsurface, for example, attenuate the GPR signal, so reflections are not received from materials at greater depths.

There are limitations of the GPR technique as used to detect and/or locate particular targets: (1) surface conditions, (2) electrical conductivity of the ground, (3) contrast of the electrical conductivities of the targets and the ground, and (4) spacing between lines. Of these limitations, only the fourth, line spacing, is controlled by the operator.

The condition of the ground surface can affect the quality of the GPR data and the depth of penetration of the GPR signal. Sites covered with high grass, bushes, landscape structures, debris, obstacles, soil mounds, etc. limit the survey access and the coupling of the GPR antenna with the ground. In many cases, the GPR signal will not penetrate below concrete pavement, and a target may not be detectable.

The electrical conductivity of the ground determines the attenuation of the GPR signals, and thereby limits the maximum depth of exploration. The GPR signal does not penetrate clay-rich soils, and targets buried in clay can be missed.

A contrast in the electrical conductivities of the ground and the target is required to obtain a reflection of the GPR signal. If the contrast is too small, possibly due to extremely corroded conditions of a metal target, then the reflection may be too weak to recognize, and the target can be missed.

The spacing between lines is under control of the GPR operator, and the design of the survey is based on the dimensions of the smallest target of interest. Targets with dimensions smaller than the spacing between GPR survey lines can be missed.

Accurate determination of the depth to any interface requires calibration of the site specific GPR signal velocity. Where targets of a known depth are not available at a site, the time-to-depth conversion of the GPR signal can be estimated from handbook values, but such depth estimations might contain significant error.

Interpretation of GPR data is subjective. As noted above, "ground truth" through correlation with borings and excavations is required for positive identification of most objects detected on the basis of GPR data.



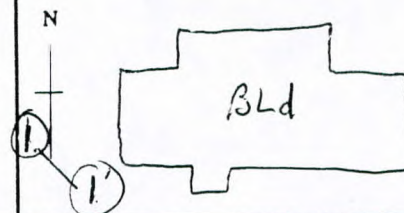
APPENDIX B

TEST TRENCH LOGS



DVIRKA
AND
BARTILUCCI

TEST PIT LOCATION SKETCH MAP



TEST PIT LOG

TEST PIT NO

TP-1-

PROJECT NO./NAME

Liberty Industrial Finishing Site

LOCATION

In area of surficial scrap metal and chicken wire fence

EXCAVATOR/EQUIPMENT/OPERATOR

Trade Winds / Bob

INSPECTOR/OFFICE

Keith Robins / Dvirka and Bartilucci

START/FINISH DATE

6/11/98

ELEVATION OF: GROUND SURFACE/BOTTOM OF PIT
(FT. ABOVE MSL)

NA

CONDITION OF PIT

Stable

REMARKS:

DEPTH	SAMPLE INTERVAL	PID OVA SCREEN	DESCRIPTION OF MATERIALS	REMARKS
0		0-2 ppm	(0-1') Trace plastic, car jack metal, trace glass bottles, brick, concrete, tree roots, stumps mixed with dark brown dry soil	noted 2x2' chicken wire fence at surface
1				
2				
3				
4				
5				
6			(1-3') Gray Brown silt, some gravel, cobbles mixed with Brown-Orange Sand	
7				
8				
9				
10				
11			(3'-5') Tan-Light Brown coarse Sand and gravel	
12				
13				
14			End of Test Trench at 5 FT below grade	
15				

TEST PIT LOG



TEST PIT NO.

IT-2

PROJECT NO./NAME

Liberty Industrial Finishing

LOCATION

In area of surficial metal scraps.

EXCAVATOR/EQUIPMENT/OPERATOR

Trade Winds / Bob

INSPECTOR/OFFICE

Keith Robins / Dvirka and Bartilucci

START/FINISH DATE

6/11/98

ELEVATION OF: GROUND SURFACE/BOTTOM OF PIT
(FT. ABOVE MSL) NA

CONDITION OF PIT

stable

REMARKS:

DEPTH	SAMPLE INTERVAL	PID OVA SCREEN	DESCRIPTION OF MATERIALS	REMARKS
0	(0-1')	0.10 ppm	(0-1') Trace amount of Scrap metal, plastic, wood metal ring top scrap	Soil sample collected at 0-1 FT. for lab analysis
1				
2				
3			(1-5') Brown-Gray clayey sand, mixed with gravel, trace cobbles, and reddish-orange sand	
4				
5				
6				
7				
8				
9			End of Test Trench at 5' below grade	
10				
11				
12				
13				
14				
15				



DVIRKA
AND
BARTILUCCI

TEST PIT LOCATION SKETCH MAP

N

Bld.

TEST PIT LOG

TEST PIT NO.

77-3

PROJECT NO./NAME

Liberty Industrial Finishing

LOCATION

In area of possible buried metal

EXCAVATOR/EQUIPMENT/OPERATOR

Trade Winds / Bob

INSPECTOR/OFFICE

Keith Robins / Dvirka and Bartilucci

START/FINISH DATE

6/11/98

ELEVATION OF: GROUND SURFACE/BOTTOM OF PIT
(FT. ABOVE MSL)

NA

CONDITION OF PIT

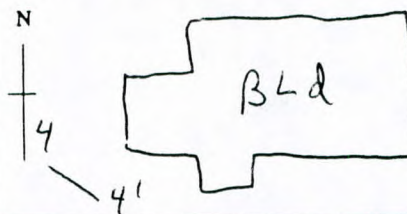
Stable

REMARKS:

Along overhead wire trench 80 x Long

DEPTH	SAMPLE INTERVAL	PID OVA SCREEN	DESCRIPTION OF MATERIALS	REMARKS
0	(1-2')	0.0 ppm	(0-1') Brown-Orange Silty Sand, some roots, twigs and gravel, trace scrap metal	noted a couple of 5 gallon rusted cans distorted metal collected soil sample beneath metal at 1-2 feet below grade. for laboratory analysis
1			(1'-2') Brown-Orange Silty Sand	
2			(2'-3') Gray silty clay	
3			(3'-5') Tan Brown-Orange Sand and gravel.	
4				
5				
6				
7				
8				
9				
10				
11			End of Test Trench at 5 feet below grade.	
12				
13				
14				
15				

TEST PIT LOG



TEST PIT NO.

It-4

PROJECT NO./NAME

Liberty Industrial Finishing

LOCATION

In an area of possible buried metal

EXCAVATOR/EQUIPMENT/OPERATOR

Trade Winds / Bob

INSPECTOR/OFFICE

Keith Robins / Dvirka and Bartilucci

START/FINISH DATE

6/11/98

ELEVATION OF: GROUND SURFACE/BOTTOM OF PIT
(FT. ABOVE MSL)

NA

CONDITION OF PIT

stable

REMARKS:

PID				
DEPTH	SAMPLE INTERVAL	OVA SCREEN	DESCRIPTION OF MATERIALS	REMARKS
0		0.0 ppm	(0-1') Dark Brown - Brown sand, gravel, cobbles, trace scrap metal and plastic	
1				
2				
3				
4			(1'-5') Tan - Light Brown coarse to medium sand, gravel, trace cobbles, trace gray clayey sand	
5				
6				
7				
8				
9				
10			End of Test Trench at 5 Ft deep	
11				
12				
13				
14				
15				



TEST PIT LOG

TEST PIT NO.

17-5

PROJECT NO./NAME

Liberty Industrial Finishing

LOCATION

In area of visible scrap metal at surface

EXCAVATOR/EQUIPMENT/OPERATOR

Trade Winds / Bob

INSPECTOR/OFFICE

Keith Robins / Dvirka and Bartilucci

START/FINISH DATE

6/11/18

ELEVATION OF: GROUND SURFACE/BOTTOM OF PIT
(FT. ABOVE MSL)

NA

CONDITION OF PIT

stable

REMARKS:

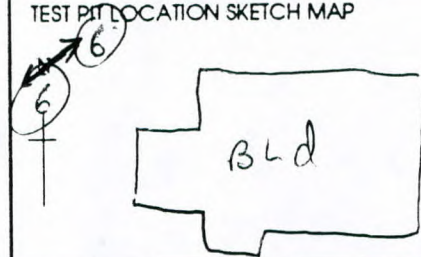
DEPTH	SAMPLE INTERVAL	PID OVA SCREEN	DESCRIPTION OF MATERIALS	REMARKS
0		0.0 ppm	(0-1') Dark Brown Top Soil,	Surface metal
1			roots, sand and gravel.	consisting of scrap
2				metal, pipes, aluminum
3			(1-3') Orange-Brown silty	siding, metal grate
4			sand, gravel, some	
5			brown clay.	
6				
7				
8			End of Test Trench	
9			Three feet below grade.	
10				
11				
12				
13				
14				
15				



DVIRKA
AND
BARTILUCCI

TEST PIT LOG

TEST PIT LOCATION SKETCH MAP



TEST PIT NO.

II-6

PROJECT NO./NAME

Liberty Industrial Finishing

LOCATION

Northern western tree lined portion of property

EXCAVATOR/EQUIPMENT/OPERATOR

Trade Winds / Bob

INSPECTOR/OFFICE

Keith Robins / Dvirka + Bartilucci

START/FINISH DATE

6/11/98

ELEVATION OF: GROUND SURFACE/BOTTOM OF PIT
(FT. ABOVE MSL)

NA

CONDITION OF PIT

stable

REMARKS:

In an area of visible chicken wire post at surface.

DEPTH	SAMPLE INTERVAL	OVA SCREEN	DESCRIPTION OF MATERIALS	REMARKS
0		PID	(0-1') Dark Brown Top Soil	In Tree area
1		0.100mm	with roots, leaves, sand	off parking Lot.
2			and small gravel.	Scrap metal at surface
3				(Fence post and concrete post).
4			(1-3') Orange Brown silty	
5			sand, gravel, some brown	
6			clay	Native soil (0-3')
7				
8				
9				
10			End of Test Trench	
11			at 3 Feet below grade	
12				
13				
14				
15				



APPENDIX C

BORING LOGS



OVERKA
AND
BARTILUCCI

DRILLING CONTRACTOR				DRILLING LOG		BORING NUMBER	
Driller <u>Vinny / Gene</u>				PROJECT NAME <u>Liberty</u>		Sheet <u>1</u> of <u>2</u>	
Inspector <u>Keith Robins</u>				PROJECT # <u>1482</u>		Boring Location <u>In rear of facility</u>	
Rig Type <u>Ford Geoprobe</u>				Location/Address <u>550 Suffolk Avenue</u>		behind back of Bld in area of	
Drilling Method <u>Geoprobe</u>				<u>Brentwood NY</u>		(possible) Roof drain / dry well	
Drive Hammer Weight <u>NA</u>				Weather <u>Mild, mid 40F</u>		Plot Plan	
GROUNDWATER OBSERVATIONS				Date/Time Start <u>3/5/98 11:00 am</u>			
Water Level <u>~44"</u>				Date/Time Finish <u>3/5/98 1:30 pm</u>			
Time							
Date							
Casing Depth							
Sample Depth	Sample Number	SPT	PID/FID Reading	FIELD IDENTIFICATION OF MATERIAL		WELL SCHEMATIC	COMMENTS
0-4	SS-1		0.0	0-6" Light Tan - Orange m-c Sand, trace plastic			11 days in air did not take (12-14) not representative Hole not open used discrete 2' samplers.
REC 48"				6"-4' Dark Brown m-f Sand, some concrete, gravel, stones, fill			
4-8	SS-2		0.0	4'-6' Gray - Brown silt, trace organics, compacted, trace iron streaks.			
REC 48"				6'-8' Brown - Light Orange coarse-fine Sand, some gravel, little silt, poorly sorted, damp.			
8-12	SS-3		0.0	8'-12' Light Tan - coarse Sand and medium - large size gravel, little cobbles, poorly sorted, damp.			
REC 40"				12-14' Back Fill from above			
12-16	SS-4		0.0	14-16' Light Tan coarse to medium Sand and subrounded fine to medium gravel			
REC 40"				16'-18' Light Tan coarse to medium gtz Sand, some subrounded white pink gravel, poorly sorted, trace fine sand, silt, damp.			
18-20	SS-6		0.0	18'-20' Light Tan coarse to fine gtz and Sand, some fine-medium gravel, trace silt, damp			
REC 15"				20'-22' Possible Fall back Sand and gravel - not representative			
20-22	SS-7		0.0	24'-26' Light Tan coarse to fine gtz Sand, some large fine subround white-brown gravel trace fines.			
REC 12"				29'-31' Tan - Light Brown coarse-fine subround Sand, well sorted, some little fine-medium white-brown gravel, damp.			
24-26	SS-8		0.0				
REC 12"							
29-31	SS-9		0.0				
REC 12"							
SPT = STANDARD PENETRATION TEST				Soil Stratigraphy Summary			



DVIRKA
AND
BARTILUCCI

DRILLING CONTRACTOR

Driller Vincent / Gene
Inspector Keith Robins
Rig Type Ford Geoprobe
Drilling Method Geoprobe
Drive Hammer Weight NA

DRILLING LOG

PROJECT NAME Liberty
PROJECT # 1482
Location/Address 550 Suffolk Avenue
Bethwood, NY

BORING NUMBER B-01D
Sheet 2 of 2
Boring Location In rear of building
in area of dry well from
roof drain. (possible)

GROUNDWATER OBSERVATIONS

Water Level 244'

Time

Date

Casing Depth

Weather Mild, mid 40's

Date/Time Start

Date/Time Finish

3/5/98

3/5/98

Plot Plan



Sample Depth Sample Number SPT PLO/FID Reading

FIELD IDENTIFICATION OF MATERIAL

WELL SCHEMATIC

COMMENTS

34-36 SS-10 0.0
rec = 12"

34-36' Tan-medium fine gtz Sand,
little coarse Sand, trace fine
gravel, silt, well sorted, damp.

38-41 SS-11 0.0
rec = 15"

38-41' Tan coarse to fine gtz Sand
well sorted, some fine-medium
subrounded gravel, trace silt,
damp.

44-46 SS-12 0.0
rec = 13"

44-46' Tan medium to fine well
sorted Sand, little coarse
Sand fine gravel, wet at 44'

WT at 44 FT

END OF Boring at 46 FT

SPT = STANDARD PENETRATION TEST

Soil Stratigraphy Summary



DYRKA
AND
BARTILUCCI

DRILLING CONTRACTOR

Driller Vincenzo
Inspector Keith Robins
Rig Type Track Geoprobe
Drilling Method Geoprobe
Drive Hammer Weight —

DRILLING LOG

PROJECT NAME Liberty
PROJECT # #1482
Location/Address 550 Suffolk Ave
Brookwood, NY

BORING NUMBER

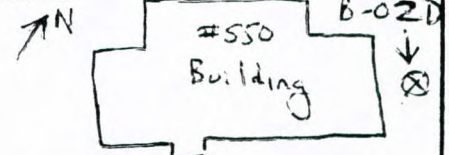
B-02D
Sheet 1 of 2
Boring Location Located in driveway
on east side of Bldg.

GROUNDWATER OBSERVATIONS

Water Level 240'
Time —
Date —
Casing Depth —

Weather Overcast
cool, 40°F
Date/Time Start 10:50 am
Date/Time Finish 2:00 pm

Plot Plan



Sample Depth	Sample Number	SPT	PID/FID Reading	FIELD IDENTIFICATION OF MATERIAL	WELL SCHEMATIC	COMMENTS
				no sampling 0-14' (Void) Bottom of dry well at 14' from grade.		
14-18'	SS-1	0.0		14'-18' Dark Brown coarse Sand, gravel, trace cobbles, trace organics, black silt, fine-medium sand, loose saturated		Soil sample collected at (14'-18') inside dry-well
18-20'	SS-2	0.0		18'-20' Brown medium fine Sand, well sorted, little gravel at 19'-20', Tan coarse sand moist		soil samples collected on outside of dry well on down gradient side from (18-42')
20-22'	SS-3	0.0		20'-22' Brown-Tan medium-fine Qtz Sand, some little coarse Sand, fine gravel, well sorted, damp		
22-24'	SS-4	0.0		22'-24' Brown-Dark Brown medium-coarse Sand, little fine gravel, fine sand, moist- damp		
24-27'	SS-5	0.0				
SPT = STANDARD PENETRATION TEST				Soil Stratigraphy Summary		



DYRKA
AND
BARTILUCCI

DRILLING CONTRACTOR

Driller VicorTex
Inspector Keith Roberts
Rig Type Geoprobe Tools
Drilling Method Geoprobe
Drive Hammer Weight

DRILLING LOG

PROJECT NAME Liberty
PROJECT # Industrial / Finishing
Location/Address #1482
550 Suffolk Avenue
Brentwood NY

BORING NUMBER B-02D

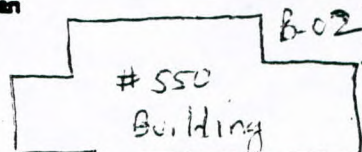
Sheet 2 of 2

Boring Location
Located at dry well
on east-side of Bld.

GROUNDWATER OBSERVATIONS

Water Level 540'
Time
Date
Casing Depth

Weather Overcast
cool, 40°F
Date/Time Start 10:50 am
Date/Time Finish 2:00 pm

Plot Plan
N  B-02D
#550
Building

Sample Depth	Sample Number	SPT	PID/FID Reading
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FIELD IDENTIFICATION OF MATERIAL

WELL SCHEMATIC

COMMENTS

30'-32'	SS-6		0.0
rec =	15"		

30'-32' Tan - Light Brown
coarse - medium Sand, little fine
gravel, trace fine Sand,
damp - Moist

35'-37'	SS-7		0.0
rec =	18"		

35'-37' Tan - Light Brown
medium - fine Sand, little
coarse Sand, fine gravel,
well sorted.

40'-42'	SS-8		0.0
rec =	18"		

40'-42' Tan - Brown coarse -
medium Sand, little fine -
medium size gravel, trace
fine Sand, silt. (saturated)

lab sample
at (35'-37')

water table
~ 40 FT

END OF Boring AT 42 FT

SPT = STANDARD PENETRATION TEST

Soil Stratigraphy Summary



DYIRKA
AND
BARTILUCCI

DRILLING CONTRACTOR

Driller Vironex / Gene
Inspector Keith Robins
Rig Type Ford Geoprobe
Drilling Method Geoprobe
Drive Hammer Weight NA

DRILLING LOG

PROJECT NAME Liberty
PROJECT # 1482
Location/Address 550 Suffolk Avenue
Brentwood NY

BORING NUMBER B-03D

Sheet 1 of 2
Boring Location In area of suspected
pipe Gully dry well on
N/E corner of Bld.

GROUNDWATER OBSERVATIONS

Water Level 24.5'

Time

Date

Casing Depth

Weather Sunny / clear 50° F

Date/Time Start 3/6/98 8:00 am

Date/Time Finish 3/6/98 11:00 am

Plot Plan



Sample Depth Sample Number SPT PID/FID Reading

FIELD IDENTIFICATION OF MATERIAL

WELL SCHEMATIC

COMMENTS

0-4' SS-1
rec = 48" 0.0

0-6" Asphalt and stones
6"-2' Tan-Grey silty clay, some
coarse sand, fine gravel.

As hydrogen cyanide
and no hydrogen to be
detected in soil

4-8' SS-2
rec = 48" 0.0

2'-4' Orange coarse-fine gtz sand,
some fine-medium gravel, damp.

8-12' SS-3
rec = 36" 0.0

4-5' Orange coarse-fine sand,
some gravel
5'-8' Tan coarse-medium gtz
sand, some subrounded gravel,

12-16' SS-4
rec = 48" 0.0

8-9' Fall Back from above damp
9'-12' Light Tan coarse sand and
subrounded gtz white-brown
gravel, poorly sorted, very
damp-moist.

16-18' SS-5
rec = 18" 0.0

12'-14' - Fall Back not representative
14-16' Light Tan coarse to medium
qty sand, some fine to med.
size subrounded gravel, damp-

Not used
in sample

selected lab
soil sample
from (12-16')

18-20' SS-6
rec = 14" 0.0

16'-18' Light Tan coarse-medium gtz
sand, poorly sorted, some fine
gravel, damp.

Not staying
open, used
discrete soil samples

20-22' SS-7
rec = 15" 0.0

18'-20' Light Tan coarse to medium
gtz sand, some fine gravel,
trace fine sand, damp.

20'-22' Light Tan medium-coarse
sand, little fine white subrd
gravel, little fine sand, well
sorted, damp.

SPT = STANDARD PENETRATION TEST

Soil Stratigraphy Summary



DVIRKA
AND
BARTILUCCI

DRILLING CONTRACTOR

Driller Vincent/Gene
Inspector Keith Roberts
Rig Type Ford/Geoprobe
Drilling Method Geoprobe
Drive Hammer Weight —

DRILLING LOG

PROJECT NAME Liberty
PROJECT # Finishing Industry
Location/Address 1482 O
550 Suffolk Avenue
Brentwood, NY

BORING NUMBER B-03D

Sheet 2 of 2

Boring Location In area of suspected pipe
Gully dry well on N/E
corner of Bld.

GROUNDWATER OBSERVATIONS

Water Level

Time

Date

Casing Depth

Weather Sunny/clear 50°F
Date/Time Start 3/6/98 8:00 am
Date/Time Finish 3/6/98 11:00 am

Plot Plan



Sample Depth	Sample Number	SPT	PID/FID Reading
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FIELD IDENTIFICATION OF MATERIAL

WELL SCHEMATIC

COMMENTS

22-24	SS-8		0.0
rec	15"		

22'-24' Light Tan medium to fine sand, little coarse sand, little fine to medium size gravel, damp.

27-29	SS-9		0.0
rec	15"		

27'-29' Light Tan medium to (+) fine sand, little fine gravel, trace coarse sand, silt. well sorted, damp.

32-34	SS-10		0.0
rec	15"		

32'-34' Light Tan coarse to medium fine gtz sand, little fine gravel, well sorted, damp

37-39	SS-11		0.0
rec	15"		

37'-39' Light Tan coarse-fine gtz sand, little-trace fine gravel, well sorted, trace silt. damp

40-42	SS-12		0.0
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40'-42' Tan-Light Brown coarse-medium sand, some fine to medium subrounded gravel, well sorted, damp (dense)

45-47	SS-13		0.0
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45'-47' Light Brown coarse-medium gtz sand, some medium-large size gravel, loose saturated/wet

selected soil sample at (40-42') for lab sample

possible gravel zone above WT zone.

WT at 45 FT

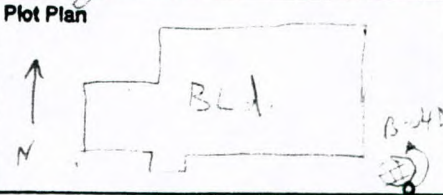
END OF Boring at 47 FT

SPT - STANDARD PENETRATION TEST

Soil Stratigraphy Summary



DVIRKA
AND
BARTILUCCI

DRILLING CONTRACTOR				DRILLING LOG		BORING NUMBER	
Driller <u>VIRDAPX</u>				PROJECT NAME <u>Liberty Industrial</u>		Sheet <u>1</u> of <u>2</u>	
Inspector <u>Keith Robins</u>				PROJECT # <u>1422</u>		Boring Location <u>collected outside</u>	
Rig Type <u>Geopac</u>				Location/Address <u>550 Suffolk Ave</u>		<u>collapsing emergency pool</u>	
Drilling Method <u>Geopac</u>				<u>Brentwood NY</u>		<u>dry well</u>	
Drive Hammer Weight							
GROUNDWATER OBSERVATIONS				Weather <u>Sunny clear</u>		Plot Plan	
Water Level <u>24.5</u>				<u>60-70°F</u>			
Time				Date/Time Start <u>3/31/98</u>			
Date				Date/Time Finish <u>3/31/98</u>			
Casing Depth							
Sample Depth	Sample Number	SPT	PID/FID Reading	FIELD IDENTIFICATION OF MATERIAL	WELL SCHEMATIC	COMMENTS	
				0-18' void - no sampling		Bottom of dry well is 18' below grade.	
				18' Brown coarse-medium Sand, some gravel, trace fine sand, moist		18' Grab sample inside pool with Ponar-grab sampler	
18-20	24.5	-	0.0	18-20' Tan-Brown medium-fine Sand some coarse Sand, fine gravel, moist-damp		13' to complete collection outside Pool.	
20-22	25.2	-	0.0	20-22' Tan-Light Brown medium Sand, little fine gravel, moist			
22-24	25.3	-	0.0	22-24' Tan-Brown medium-fine Well sorted Sand, trace fine gravel, damp-moist			
24-26	25.5	-	0.0	24-26' Light Tan-Brown medium to fine Sand, little coarse sand, trace fine gravel, damp-moist			
26-28	25.5	-	0.0	26-28' Tan Light Brown medium-fine quartz Sand trace-little coarse sand, trace fine gravel, well sorted, damp.			
SPT = STANDARD PENETRATION TEST				Soil Stratigraphy Summary			

no hydrogen sulfide
and no hydrogen sulfide
detected in soil

[illegible]



NRILLCON, PM44



DI VIRKA
AND
BARTILUCCI

DRILLING CONTRACTOR

Driller Vironix
Inspector Karl H. Adams
Rig Type Geoprobe Truck
Drilling Method Geoprobe
Drive Hammer Weight

DRILLING LOG

PROJECT NAME Liberty
PROJECT # 1482
Location/Address 550 Suffolk Avenue
Brentwood NY

BORING NUMBER

B-050
Sheet 1 of 2
Boring Location In dry well in
front parking lot of
building

GROUNDWATER OBSERVATIONS

Water Level

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Time

--	--	--

Date

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Casing Depth

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Weather Sunny, warm
Date/Time Start 3/27/98 740 am
Date/Time Finish 3/27/98 930 am

Plot Plan

(X) B-050
↑ N

Sample Depth	Sample Number	SPT	PIG/FID Reading
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FIELD IDENTIFICATION OF MATERIAL

WELL SCHEMATIC

COMMENTS

23-25	SS-5		0.0
rec	18"		

23-25 Tan medium-fine sand some very fine sand and silt, trace fine gravel, coarse sand.

25-27	SS-6		0.0
rec	15"		

25-27 Tan medium-fine sand little trace fine gravel, well sorted damp-moist.

30-32	SS-7		0.0
rec	15"		

30-32 Tan medium gtz sand, little some coarse sand, trace fine gravel, damp

35-37	SS-8		0.0
rec	18"		

35-37 Tan medium-coarse sand, some fine subangular white gravel, little fine sand-moist

40-42	SS-9		0.0
rec	15"		

40-42 Tan coarse to medium sand, some fine gravel, trace fine sand, wet-saturated

Lab sample selected at 35-37'

WT at 40'

End of Boring at 42'

SPT = STANDARD PENETRATION TEST

Soil Stratigraphy Summary



DRILLING CONTRACTOR				DRILLING LOG		BORING NUMBER	
Driller <u>V. Jones</u>				PROJECT NAME <u>Liberia</u>		Sheet <u>1</u> of <u>2</u>	
Inspector <u>Keth Robins</u>				<u>Industrial Finishing</u>		Boring Location <u>In Loading dock</u>	
Rig Type <u>Geopole Jack</u>				PROJECT # <u>1482-2A</u>		<u>dry well</u>	
Drilling Method <u>Geopole</u>				Location/Address <u>SSO Suffolk Avenue</u> <u>Brentwood NY</u>			
Drive Hammer Weight _____							
GROUNDWATER OBSERVATIONS				Weather		Plot Plan	
Water Level				<u>Oversight cool</u>		<u>N</u>	
Time				<u>40°F</u>		<u>To dug hole</u>	
Date				Date/Time Start <u>8:30 am</u>		<u>B-06P</u> <u>BLD.</u>	
Casing Depth				Date/Time Finish <u>10:30 am</u>			
Sample Depth	Sample Number	SPT	PID/FID Reading	FIELD IDENTIFICATION OF MATERIAL		WELL SCHEMATIC	COMMENTS
3'-9"	SS-1 rec = 36"		0.0	0-3' Void		{ Lab soil sample }	located inside dry well (13-7)
				3'-5' Dark Black coarse to Medium Sand, some silt, organics, twigs, leaves, grass (SATURATED)			Fan (7'-42') located outside dry well, on down gradient side
7'-11"	SS-2 rec = 40		0.0	5'-7' Tan coarse-medium Sand, and gravel			
11'-15"	SS-3 rec = 36"		0.0	7'-11' Brown-Tan coarse-medium Gtz Sand, some fine-medium size gravel, trace sand,			
5'-14"	SS-4 rec = 24"		0.0	damp 11'-15' Light Tan coarse-fine Gtz Sand, well sorted, some fine to medium subrounded-subangular gravel, trace silt, damp			
9'-21"	SS-5 rec = 20'		0.0	15'-19' Light Tan coarse-medium Sand, abundant fine-coarse gravel, trace cobbles, trace fine sand, damp			
				19'-21' Tan coarse-fine Sand, some fine-medium size gravel, trace silt, well sorted, damp			
							NO hydrogen cyanide and no hydrophobic detection in soil
STANDARD PENETRATION TEST				Soil Stratigraphy Summary			

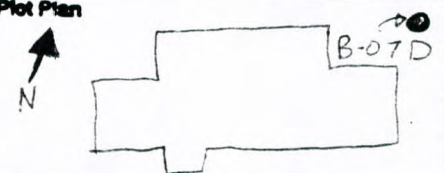


DYERKA
AND
BARTILUCCI

DRILLING CONTRACTOR				DRILLING LOG		BORING NUMBER	
Driller <u>V. Dwyer</u>				PROJECT NAME <u>Liberty</u>		Sheet <u>2</u> of <u>2</u>	
Inspector <u>Keith Roberts</u>				PROJECT # <u>1982-2A</u>		Boring Location <u>In landing dock</u>	
Rig Type <u>Geoprobe Track</u>				Location/Address <u>550 Suffolk Ave</u>		<u>Brentwood NY</u>	
Drilling Method <u>Geoprobe</u>							
Drive Hammer Weight <u> </u>							
GROUNDWATER OBSERVATIONS				Weather <u>Overcast, cool</u>		Plot Plan	
Water Level				Date/Time Start <u>8:30 am</u>			
Time				Date/Time Finish <u>10:30 am</u>			
Date							
Casing Depth							
Sample Depth	Sample Number	SPT	PID/FID Reading	FIELD IDENTIFICATION OF MATERIAL	WELL SCHEMATIC	COMMENTS	
21'-23'	SS-6		0.0	21'-23' Dark Brown fine to medium gtz sand, little gravel, damp.			
25'-27'	SS-7		0.0	25'-27' Tan medium to fine well sorted gtz sand, little fine gravel, trace dark Brown-Red silty damp			
30'-32'	SS-8		0.0	30'-32' Tan medium-fine sand, little coarse sand, trace fine-medium subrounded gravel, well sorted sand,			
35'-37'	SS-9		0.0	35'-37' Tan-Light Brown medium fine sand, trace coarse sand, fine gravel, trace silt, damp-moist		Collected soil sample for laboratory analysis	
40'-42'	SS-10		0.0	40'-42' Tan coarse-fine sand, little gravel, well (Saturated-wet)		WATER TABLE at 40'	
				END of Boring at 42 FT			
SPT = STANDARD PENETRATION TEST				Soil Stratigraphy Summary			



OVERKA
AND
BARTILUCCI

DRILLING CONTRACTOR				DRILLING LOG		BORING NUMBER	
Driller <u>Vidner</u>				PROJECT NAME <u>Liberty</u>		Sheet <u>1</u> of <u>2</u>	
Inspector <u>Keith Robins</u>				PROJECT # <u>1482</u>		Boring Location <u>located in storm</u>	
Rig Type <u>Geoprobe Tack</u>				Location/Address <u>550 Suffolk Ave.</u>		<u>drain/dry well</u>	
Drilling Method <u>Geoprobe</u>				<u>Brentwood NY</u>			
Drive Hammer Weight							
GROUNDWATER OBSERVATIONS				Weather <u>Overcast Cool, 40°F</u>		Plot Plan	
Water Level				Date/Time Start <u>3/26/98</u>			
Time				Date/Time Finish <u>3/26/98</u>			
Date							
Casing Depth							
Sample Depth	Sample Number	SPT	PIV/FID Reading	FIELD IDENTIFICATION OF MATERIAL		WELL SCHEMATIC	COMMENTS
				0-14' Void, depth to bottom of drain is 14 FT below grade			No Soil sampling collected from (0-14')
14-18	SS-1		0.0	14'-15' Black sand, gravel, silt, organics, twigs, leaves, wet-saturated.			(14'-18') Soil sample collected inside dry well, sent for laboratory analysis
18-20	SS-2		0.0	15'-18' Dark Brown-Orange coarse-fine sand, trace cobbles, some silt, gravel, wet			
20-22	SS-3		0.0	18'-20' Brown coarse to medium sand, some subangular white gravel, poorly sorted, wet-moist			Soil samples collected outside dry well from (18'-42')
22-27	SS-4		0.0	20'-22' Brown medium to fine Qtz sand, some coarse sand, fine-medium gravel, damp			
				25'-27' Brown-Tan coarse-fine sand, some fine-medium trace large gravel, trace cobbles, damp-moist			no hydrocarbon detected

SPT = STANDARD PENETRATION TEST

Soil Stratigraphy Summary



DVIRKA
AND
BARTILUCCI

DRILLING CONTRACTOR

Driller V. D. N. E. X
Inspector Kent Roberts
Rig Type Geoprobe Truck
Drilling Method Geoprobe
Drive Hammer Weight _____

DRILLING LOG

PROJECT NAME Liberty Firehouse
PROJECT # # 1482
Location/Address 550 Suffolk Avenue
Brentwood, NC

BORING NUMBER B-07D

Sheet 2 of 2

Boring Location located in storm
drain/dry well

GROUNDWATER OBSERVATIONS

Water Level _____
Time _____
Date _____
Casing Depth _____

Weather overcast cool, 40°F
Date/Time Start 3/26/98 3:30 pm
Date/Time Finish 3/26/98 5:45 pm

Plot Plan



Sample Depth	Sample Number	SPT	PIV/FID Reading
--------------	---------------	-----	-----------------

FIELD IDENTIFICATION OF MATERIAL

WELL SCHEMATIC

COMMENTS

30'-32'	20-6		2.0
rec-	18		

30'-32' Light Tan fine-medium
subrounded gty sand, well
sorted, trace coarse sand,
silt, damp.

35'-37'	55-7		2.0
rec-	20		

35'-37' Tan very fine-medium
gty sand, Htg. - trace coarse
sand, trace fine-medium gravel,
silt, well sorted, damp-moist
subangular gravel

Lub sample
collected
at
(35'-37')

40'-42'	55-8		2.0
rec-	16"		

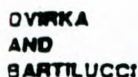
40'-42' Brown coarse-fine
gty sand, little fine gravel
wet

WATER TABLE
wet at 42'

END OF Boring AT 42'

SPT - STANDARD PENETRATION TEST

Soil Stratigraphy Summary



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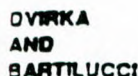


DYRKA
AND
BARTILUCCI

DRILLING CONTRACTOR				DRILLING LOG		BORING NUMBER		
Driller <u>VIRNEX / Gene</u>				PROJECT NAME <u>Liberty</u>		Sheet <u>1</u> of <u>2</u>		
Inspector <u>Keith Robins</u>				PROJECT # <u>1482</u>		Boring Location <u>Adjacent on down gradient side</u>		
Rig Type <u>250 Ford Geoprobe</u>				Location/Address <u>550 Suffolk Avenue</u>		<u>To 657 Tank #1, TD=14 FT</u>		
Drilling Method <u>Geoprobe</u>				Brentwood NY				
Drive Hammer Weight <u>NA</u>								
GROUNDWATER OBSERVATIONS				Weather		Plot Plan		
Water Level <u>45'</u>				<u>Cold, 30-35°F</u>				
Time				<u>Sunny</u>				
Date				Date/Time Start <u>3/11/98 9:00 am</u>				
Casing Depth				Date/Time Finish <u>3/11/98 11:40 am</u>				
Sample Depth	Sample Number	SPT	PID/FID Reading	FIELD IDENTIFICATION OF MATERIAL		WELL SCHEMATIC	COMMENTS	
0-4'	SS-1		0.0	0-4' Dark Brown coarse to fine Sand, gravel, cobbles, trace fines, poorly sorted, Fill, wet			No hydrogen cyanide or hydrogen sulfide detected in soil	
4-8'	SS-2		0.0	4-8' Dark Brown coarse to medium Sand, some medium subrounded gravel, little silt, fine sand. Fill wet.				
8-12'	SS-3		0.0	8-12' Dark Brown coarse to medium Sand, some gravel, medium to fine silt, poorly sorted, wet. Fill				
12-16'	SS-4		0.0	12-16' Dark Brown coarse to medium Sand, some gravel, poorly sorted, trace fines, loose, wet. Fill			soft ground (12-16')	
16-20'	SS-5		0.0	(16-20') Light Tan-Brown coarse to medium well sorted subrounded gtz Sand, some medium gravel (very moist to wet).		LOOKS native		
20-24'	SS-6		0.0	20-24' Light Tan well sorted medium to fine gtz Sand, some coarse Sand fine gravel, well sorted - moist			collected soil sample for lab analysis (16-20')	
24-28'	SS-7		0.0	25-27' Light Tan medium-fine well sorted gtz Sand, little trace coarse sand, fine gravel, damp				
28-32'	SS-8		0.0	30-32' Light medium Sand, little coarse to fine gravel, well sorted, damp.				

SPT = STANDARD PENETRATION TEST

Soil Stratigraphy Summary



NY 100-10444



NTWILLCON.PM44



NYELL CON. PM44



NR0111 CONL PM44



DI VIRKA
AND
BARTILUCCI

DRILLING CONTRACTOR

Driller Vinny / Gene
Inspector Keith Robins
Rig Type Ford 250 Truck Geoprobe
Drilling Method Geoprobe
Drive Hammer Weight NA

DRILLING LOG

PROJECT NAME Liberty
Industrial Finishing
PROJECT # 1482
Location/Address 550 Suffolk Avenue
Brentwood, NY

BORING NUMBER B-145

Sheet 1 of 1

Boring Location In Tank Farm Area
downgradient of US7 No 2 and No. 3

GROUNDWATER OBSERVATIONS

Water Level
Time
Date
Casing Depth

Weather Sunny / Cold
30°F
Date/Time Start 3/12/98 8:30 am
Date/Time Finish 3/12/98 9:30 am

Plot Plan



Sample Depth Sample Number SPT PROFILO Reading

FIELD IDENTIFICATION OF MATERIAL

WELL SCHEMATIC

COMMENTS

0-4 SS-1 0.0
rec = 24"

0-3" Asphalt
3"-4.0' Dark Brown coarse to medium
Sand, some gravel medium
to small size, some silt, fine
Sand, trace concrete, wet
Fill

No hydrogen cyanide
No hydrogen sulfide
detected in soil

4-8 SS-2 0.0
rec = 12"

4-8' Dark Brown coarse to medium
Sand, gravel, trace cobbles,
silt, Fill, very soft
{compaction}

Low recovery
very soft ground
at 4-8' sampler
push through
sampler not filled
with soil

8-12 SS-3 0.0
rec = 24"

8-12' Light Tan medium gtz Sand,
little fine to medium size
gravel, damp

soft ground
uncompacted soil

12-16 SS-4 0.0
rec = 40"

12-16' Light Tan - Light Brown
Coarse to medium gtz Sand,
some fine to medium gravel,
trace fine Sand and silt,
damp - moist

selected soil
Sample 12-16'
for lab sample

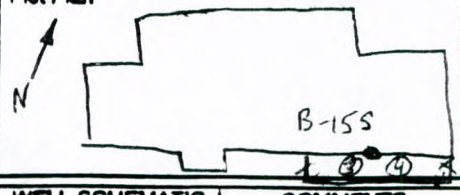
US7 Tank No 2 TD=12
US7 Tank No 3 TD=14

SPT = STANDARD PENETRATION TEST

Soil Stratigraphy Summary



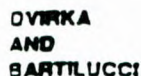
DYRKA
AND
BARTILUCCI

DRILLING CONTRACTOR				DRILLING LOG		BORING NUMBER <u>B-155</u>	
Driller <u>Vincent/Gene</u>				PROJECT NAME <u>Liberty</u>		Sheet <u>1</u> of <u>1</u>	
Inspector <u>Keith Robins</u>				PROJECT # <u>1482</u>		Boring Location <u>Located in Trench North side</u>	
Rig Type <u>Ford 250 Truck Geoprobe</u>				Location/Address <u>550 Suffolk Avenue</u>		<u>of USTs No. 3, located</u>	
Drilling Method <u>Geoprobe</u>				<u>Brentwood NY</u>		<u>in Tank Farm area</u>	
Drive Hammer Weight <u>NA</u>							
GROUNDWATER OBSERVATIONS				Weather <u>Sunny, Cold 30°F</u>		Plot Plan	
Water Level				Date/Time Start <u>3/12/98 10:00am</u>			
Time				Date/Time Finish <u>3/12/98 10:20am</u>			
Date							
Casing Depth							
Sample Depth	Sample Number	SPT	PID/FID Reading	FIELD IDENTIFICATION OF MATERIAL		WELL SCHEMATIC	COMMENTS
				0-2' void - bottom of trench			No soil sampling
2-6	SS-1		0.0	2' Ft below grade.			0-2'
rec =	45"			2'-0" Concrete bottom			
				2'-0" to 2'-6" Grayish-Brown clayey silt			selected soil
				wet - very moist			sample from
				5'-6" Light Brown-Orange			2-6' for
6-10	SS-2		0.0	medium to fine Sand, trace			lab sample -
rec =	45"			gravel, damp			directly beneath
				6'-10" Tan - light Brown coarse to			bottom of trench
10-14	SS-3		0.0	fine Sand and fine to medium			
rec =	36"			gravel, poorly sorted, some			
				cobbles, damp			
				10'-14" Light Brown coarse to			
				medium qtz Sand and			
				fine to medium size			
				subrounded to subangular			
				gravel, trace fine Sand and silt			
				damp - moist			
				14'-18" Light Tan - coarse medium			
				subrounded qtz Sand,			
				Some subrounded fine			
				size gravel, moist-damp			
				END OF Boring at 18FT			
SPT = STANDARD PENETRATION TEST				Soil Stratigraphy Summary			No hydrogen Sulfide No hydrogen Cyanide detected in the soil



DVIRKA
AND
BARTILUCCI

DRILLING CONTRACTOR				DRILLING LOG		BORING NUMBER	
Driller <u>Vernon / Gene</u>				PROJECT NAME <u>Liberty</u>		Sheet <u>1</u> of <u>1</u>	
Inspector <u>Keith Robins</u>				PROJECT # <u>1482</u>		Boring Location <u>In Tank Farm area between</u>	
Rig Type <u>Forl Geoprobe Tool</u>				Location/Address <u>550 Suffolk Avenue</u>		<u>downgradient side of UST No. 3</u>	
Drilling Method <u>Geoprobe</u>				<u>Brentwood NY</u>		<u>and UST No. 4</u>	
Drive Hammer Weight <u>NA</u>							
GROUNDWATER OBSERVATIONS				Weather <u>Cold, Sunny 30-35°F</u>		Plot Plan	
Water Level <u>~45</u>				Date/Time Start <u>3/12/98 1230 pm</u>			
Time				Date/Time Finish <u>3/12/98 300 pm</u>			
Date							
Casing Depth							
Sample Depth	Sample Number	SPT	PIV/FID Reading	FIELD IDENTIFICATION OF MATERIAL		WELL SCHEMATIC	
0-4	SS-1		0.0	0-3" asphalt			
rec	36"			3"-4.0' Dark Brown silty fine to coarse sand, some medium to small pea size gravel, wet, Fill		No hydrogen cyanide detected in soil	
4-8	SS-2		0.0	4'-8' Brown coarse to fine sand some subrounded gravel, trace silt, Fill, moist			
rec	36"			8'-12' Brown coarse to medium sand, some fine gravel, trace silt.			
8-12	SS-3		0.0	12'-16' Light Brown-Tan coarse to medium subrounded Qtz Sand, some fine-medium subrounded to subangular gravel, trace fine sand, well sorted		selected soil sample at (12-16) for lab analysis	
rec	24"			16-20' Light Tan medium-coarse well sorted subrounded sand, little-some fine gravel, damp		UST Tank No. 14' Deep	
12-16	SS-4		0.0	20'-24' Light Tan coarse to fine well sorted sand, little coarse-medium gravel, trace silt, damp		UST Tank No. 12' Deep	
rec	24"			25'-27' Tan fine to medium well sorted Qtz sand, trace fine gravel, trace black silt damp			
16-20	SS-5		0.0				
rec	36"						
20-24	SS-6		0.0				
rec	12"						
25-27	SS-7		0.0				
rec	15"						
SPT = STANDARD PENETRATION TEST				Soil Stratigraphy Summary			



GROUNDWATER OBSERVATIONS				Weather <u>Sunny, cold 30°F</u>		Plot Plan	
Water Level	<u>~45'</u>			Date/Time Start	<u>3/12/98</u>		
Time				Date/Time Finish	<u>3/12/98</u>		
Date							
Casing Depth							

SPT = STANDARD PENETRATION TEST

Soil Stratigraphy Summary



NRILLCON.PMAA



DIVIRKA
AND
BARTILUCCI

DRILLING CONTRACTOR				DRILLING LOG		BORING NUMBER	
Driller <u>Vidnax/Gene</u>				PROJECT NAME <u>Liberty</u>		Sheet <u>1</u> of <u>1</u>	
Inspector <u>Keith Rubins</u>				PROJECT # <u>1482</u>		Boring Location <u>In Tank Farm area</u>	
Rig Type <u>Ford 250 Tank Bore</u>				Location/Address <u>550 Suffolk Avenue</u>		down gradient side of UST No. 4	
Drilling Method <u>Geoprobe</u>				<u>Brentwood NY</u>		and UST No. 5	
Drive Hammer Weight <u>NA</u>							
GROUNDWATER OBSERVATIONS				Weather <u>Sunny / Cold 30</u>		Plot Plan	
Water Level				Date/Time Start <u>3/12/98 1125 am</u>			
Time				Date/Time Finish <u>3/12/98 1145 am</u>			
Date							
Casing Depth							
Sample Depth	Sample Number	SPT	PID/FID Reading	FIELD IDENTIFICATION OF MATERIAL		WELL SCHEMATIC	COMMENTS
0-4'	SS-1		2.0	0-3" Asphalt			No hydrogen cyanide no hydrogen sulfide detected in soil
				3"-2.0' Dark Brown coarse to medium sand, gravel			
4-8	SS-2		0.0	2.0'-4.0' Brown-Light Brown coarse sand and abundant subrounded fine-medium pea size gravel, loose fill			Not representative as a sample
rec=24"				4'-8' Dark Brown coarse to medium sand, some clayey silt, gravel, cobbles, trace asphalt, fill			
8-12	SS-3		0.0	8-12' Loose gravel and dark Brown sand (looks like FALL back from 2-4 FT zone), not stable			collect soil sample at 12-16 for 146 sample
rec=				12'-16' Light Tan coarse to fine @ 1/2" sand, and medium to small size subrounded gravel, trace silt,			
12-16	SS-4		0.0				UST Tank 4 = 12' depth UST Tank 5 = 7' depth
rec=40"				END OF Boring at 16 FT			
SPT = STANDARD PENETRATION TEST				Soil Stratigraphy Summary			



NY 100-108144



PHILLIP M. M.



OVERKA
AND
BARTILUCCI

DRILLING CONTRACTOR

Driller Vincent/Gene
Inspector Keith Robins
Rig Type Ford 250 Geopac
Drilling Method Geopac
Drive Hammer Weight NA

DRILLING LOG

PROJECT NAME Liberty
PROJECT # 1482
Location/Address 550 Suffolk Avenue
Brentwood, NY

BORING NUMBER B-20D

Sheet 2 of 2

Boring Location

located in Tank Farm
area down gradient of UST
Tanks 5/6

GROUNDWATER OBSERVATIONS

Water Level 45'
Time
Date
Casing Depth

Weather Sunny/clear 50°F

Date/Time Start 3/6/98 11:45 AM

Date/Time Finish 3/6/98 2:30 PM

Plot Plan



Sample Depth Sample Number SPT PIV/PID Reading

FIELD IDENTIFICATION OF MATERIAL

WELL SCHEMATIC

COMMENTS

20-22 SS-9 0.0
rec 15"

20-22' Light Tan coarse to fine
gtz subrounded Sand,
well sorted, little - some fine
to medium size gravel, trace fines.

22-24 SS-10 0.0
rec 15"

22-24' Light Tan medium-fine
damp
Sand, well sorted, little - some
fine gravel, coarse sand.

25-27 SS-11 0.0
rec 15"

25-27' Light Tan medium-fine
well sorted subrounded gtz
Sand, trace little coarse Sand,
fine gravel, well sorted.

30-32 SS-12 0.0
rec 15"

30-32' Light Tan medium to fine
Sand, little coarse Sand,
fine gravel, well sorted.
damp.

35-37 SS-13 0.0
rec 15"

35-37' Tan - Light Brown
coarse - medium - fine
gtz well srt sand, little
fine - medium size gravel, damp.

40-42 SS-14 0.0
rec 15"

40-42' Light Brown medium to
fine gtz Sand, little fine
gravel, coarse Sand, trace
silt, damp - moist.

45-47 SS-15 0.0
rec 15"

45-47' Light Tan medium to
fine Sand, little fine
gravel, well-saturated

END OF Boring at 47 FT

selected soil sample
(40-42') for
lab analysis

WT at 45'

SPT - STANDARD PENETRATION TEST

Soil Stratigraphy Summary



PHILLIPSON, PMA



DYRKA
AND
BARTILUCCI

DRILLING CONTRACTOR

Driller Vincent/Cone
Inspector Keith Robins
Rig Type Port Geoprobe
Drilling Method Geoprobe
Drive Hammer Weight NA

DRILLING LOG

PROJECT NAME Liberty
PROJECT # 1482
Location/Address 550 Suffolk Avenue
Brentwood, NY

BORING NUMBER B-225

Sheet 1 of 1

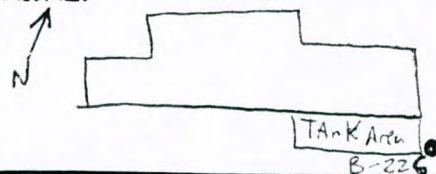
Boring Location
located outside Tank Farm
area, next to Tank #6

GROUNDWATER OBSERVATIONS

Water Level
Time
Date
Casing Depth

Weather mild 40°F
Date/Time Start 3/5/98 2:00 pm
Date/Time Finish 3/5/98 2:30 pm

Plot Plan



Sample Depth Sample Number SPT PID/FID Reading

FIELD IDENTIFICATION OF MATERIAL

WELL SCHEMATIC

COMMENTS

0-4' SS-1
rec 45'

0-4' Dark Brown coarse to medium sand, trace slag, silt, some gravel, stones, trace brick, concrete - Fill

4-8' SS-2
rec 12"

4-8' Brown - Light Orange medium to fine gty sand, some gravel, trace silt, very damp

8-12' SS-3
rec 40"

8-12' Light Brown to Tan coarse to fine subrounded sand, some fine to coarse gravel, pebbles, poorly sorted

12-16' SS-4
rec 40"

12-16' Tan - Light Brown coarse to fine subrounded sand, some fine - coarse gravel, poorly sorted, trace silt, damp

END OF Boring at 16 FT

No hydrogen cyanide,
No hydrogen sulfide,
detected in soil

low recovery
soft ground, washed
out in this zone

Soil sample
selected at
8-12' FT.
for lab analysis

Adjacent to
UST Tank # 6
which is 7 FT
(deep).

SPT = STANDARD PENETRATION TEST

Soil Stratigraphy Summary



DIYRKA
AND
BARTILUCCI

DRILLING CONTRACTOR Driller <u>Vincent</u> Inspector <u>Keith Roberts</u> Rig Type <u>Geoprobe</u> Drilling Method <u>Geoprobe</u> Drive Hammer Weight <u> </u>				DRILLING LOG PROJECT NAME <u>Liberty</u> <u>Industrial Finishing</u> PROJECT # <u>1482</u> Location/Address <u>550 Suffolk Avenue</u> <u>Brentwood NY</u>		BORING NUMBER <u>B-230</u> Sheet <u>1</u> of <u>2</u> Boring Location <u>In area of suspected</u> <u>dry well.</u>	
GROUNDWATER OBSERVATIONS Water Level <u>240'</u> Time <u> </u> Date <u> </u> Casing Depth <u> </u>				Weather <u>3/27/98 10:25 am</u> <u>3/27/98 12:00 pm</u> Date/Time Start <u>Sunny 60-70</u> Date/Time Finish <u>Sunny 60-70</u>		Plot Plan  B-230	
Sample Depth	Sample Number	SPT	PIV/FID Reading	FIELD IDENTIFICATION OF MATERIAL	WELL SCHEMATIC	COMMENTS	
0-4'	SS-1		0	0-2' Dark Brown Top Soil		no hydrogen cyanide no hydrogen sulfide detected in soils 296 sample at 12-16	
Rec= 40"				2-3' Dark brown compacted fine sand and silt, trace organics, twigs.			
4-8'	SS-2		0	3'-4' Brown-orange compacted silt and fine sand, trace gravel, damp			
Rec= 48"				4-8' Tan coarse-medium gravelly subround sand, trace cobbles, poorly sorted, damp			
8-12'	SS-3		0	4-5' Dark Orange fine-medium sand			
Rec= 36"				5-8' Tan coarse-medium sand some subrounded gravel, moist-wet			
12-16'	SS-4		0	12-16' Tan medium to coarse sand, some fine-medium size subrounded gravel, little-trace fine sand; very-damp.			
Rec= 36"				16-20' Tan medium-coarse sand, some gravel small-medium size, trace fine sand, damp			
20-24'	SS-6		0	20-24' Tan coarse-medium sand and gravel, some little cobbles, poorly sorted, damp			
25-27'	SS-7		0	25-27' Tan medium-coarse sand, little some fine gravel, trace fine sand, damp - well sorted			
Rec= 18"				30-32' Tan coarse-medium well sorted Qtz sand, little fine gravel, damp			
30-32'	SS-8		0				
Rec= 12"							

SPT = STANDARD PENETRATION TEST

Soil Stratigraphy Summary



THILLCON.PMA



OVIRKA
AND
BARTILUCCI

DRILLING CONTRACTOR				DRILLING LOG		BORING NUMBER	
Driller <u>Gene / Vignex</u>				PROJECT NAME <u>Liberty</u>		Sheet <u>1</u> of <u>2</u>	
Inspector <u>Keith Roberts</u>				PROJECT # <u>1482</u>		Boring Location <u>In Front of discharge pipe</u>	
Rig Type <u>Geoprobe Ford 250</u>				Location/Address <u>550 Suffolk Avenue</u>		(Boiler Blow Down Area)	
Drilling Method <u>Geoprobe</u>				<u>Brentwood, Long Island</u>			
Drive Hammer Weight <u>NA</u>							
GROUNDWATER OBSERVATIONS				Weather		Plot Plan	
Water Level <u>~ 47'</u>				<u>Cloudy</u>		<u>AN</u>	
Time				<u>mid 40"'</u>		<u>B-24D</u>	
Date				Date/Time Start <u>3/4/98 825 am</u>			
Casing Depth				Date/Time Finish <u>3/4/98 1200 pm</u>			
Sample Depth	Sample Number	SPT	PID/FID Reading	FIELD IDENTIFICATION OF MATERIAL	WELL SCHEMATIC	COMMENTS	
0-4'	SS-1		0.0	0-4' Dark Brown silt, some medium sand, fine-medium gravel, trace rubber, roots, damp-moist		collected Lab sample at 0-4 FT	
4-8'	SS-2		0.0	4-8' Dark Brown clayey sand, little silt, damp-moist			
8-12'	SS-3		0.0	6-8' Brown-Orange medium-coarse sand, some gravel, damp-dry			
12-16'	SS-4		0.0	8-12' Light Tan-Light Brown coarse-fine gtz sand, little-some gravel, damp.			
16-20'	SS-5		0.0	12-14' Brown-Light Brown coarse-medium sand and gravel			
20-25'	SS-6		0.0	14-15' Orange-Light Brown fine-medium sand			
25-30'	SS-7		0.0	15-16' Tan coarse sand, gravel, cobbles, loose.			
30-35'	SS-8		0.0	16-18' Dark Brown-Brown coarse sand, little silt, rounded gravel			
35-40'	SS-9		0.0	18-20' Light Tan coarse gtz sand and subangular-subrounded gravel, damp			
40-45'	SS-10		0.0	25-27' Tan-Light Brown medium gtz sand, little gravel, dry			
45-50'	SS-11		0.0	30-32' Tan-Light Brown medium gtz sand, little fine gravel, dry			
50-55'	SS-12		0.0	35-37' Tan-Light Brown medium gtz sand, little fine white gravel, trace reddish iron, damp.		No hydrogen cyanide No hydrogen sulfide detected in soils	
SPT = STANDARD PENETRATION TEST				Soil Stratigraphy Summary			



OVIRKA
AND
BARTILUCCI

DRILLING CONTRACTOR

Driller Vincent / Gene
Inspector Keith Robins
Rig Type Geoprobe Ford 250
Drilling Method Geoprobe
Drive Hammer Weight NA

DRILLING LOG

PROJECT NAME Liberty
PROJECT # 1482
Location/Address 550 Suffolk Avenue
Brentwood, NY

BORING NUMBER B-24D

Sheet 2 of 2
Boring Location In front of discharge
pipe (Boiler Blow down area)

GROUNDWATER OBSERVATIONS

Water Level 647'

Time

Date

Casing Depth

Weather cloudy
mid 40's

Date/Time Start 3/4/98 825am

Date/Time Finish 3/4/98 1200pm

Plot Plan



Sample Depth Sample Number SPT PID/FID Reading

FIELD IDENTIFICATION OF MATERIAL

WELL SCHEMATIC

COMMENTS

40-42' SS-9 0-0
RCF 12"

(40-42') Tan - Light Brown
coarse - fine sand, trace
subrounded gravel, dry

45-47' SS-10 0-0
RCF 15"

45'-47' Brown coarse to fine sand,
HR to trace silt, gravel.

collected Lab sample
at (45-47')

50-52' SS-11 NA
RCF 0

50-52' No Recovery sample
washed out, inside tube
saturated/wet.

WT at 47'

END OF Boring at 50 FT

SPT = STANDARD PENETRATION TEST

Soil Stratigraphy Summary

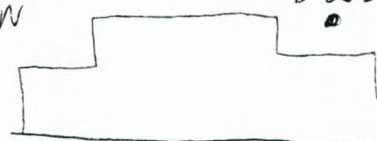


DI VIRKA
AND
BARTILUCCI

DRILLING CONTRACTOR				DRILLING LOG		BORING NUMBER	
Driller <u>Vivarex/Geac</u>				PROJECT NAME <u>Liberty</u>		Sheet <u>1</u> of <u>1</u>	
Inspector <u>Kerth Robbins</u>				PROJECT # <u>1482</u>		Boring Location <u>located inside dry well</u>	
Rig Type <u>Forcl 250 Geoprobe</u>				Location/Address <u>550 Suffolk Ave</u>		in <u>N/E</u> side of property	
Drilling Method <u>Geoprobe</u>				Location/Address <u>Brentwood, NY</u>			
Drive Hammer Weight <u>NA</u>							
GROUNDWATER OBSERVATIONS				Weather <u>Rainy 40-50°F</u>		Plot Plan	
Water Level				Date/Time Start <u>3/9/98 8:15am</u>			
Time				Date/Time Finish <u>3/9/98 9:30am</u>			
Date							
Casing Depth							
Sample Depth	Sample Number	SPT	PID/FID Reading	FIELD IDENTIFICATION OF MATERIAL		WELL SCHEMATIC	COMMENTS
				0-14' Void (inside dry well)			no sampling collecting at (0-14 FT)
14-18	SS-1	0.0		14'-15' Brown to Dark Brown coarse sand and gravel, wet			no hydrogen cyanide no hydrogen sulfide detected in soil sample
rec =	48"			15'-18' Tan coarse - fine sand and gravel, well sorted, very moist - wet			lab sample collected at (14'-18')
18-22	SS-2	0.0		18'-22' Light Tan coarse sand and medium sand, subrounded gty gravel, wet			
rec =	36"			22'-25' Light tan medium - coarse sand, little gravel, trace cobbles, fine sand and silt, wet			PID readings elevated due to high humidity background (1-4 ppm)
22-26	SS-3	4.0		25'-26' Brown coarse - medium sand and gravel wet			
rec =	36"			30'-32' Dark Brown coarse to medium sand, some gravel, poorly sorted.			Not representative possible full back from above
30-32	SS-4	2.5-3		35'-37' Light Tan fine - coarse sand, well sorted, little fine - medium gravel, trace silt, damp.			
rec =	15"			40'-42' Light Tan coarse - fine sand and gravel, well sorted			Collected soil sample at 40-42'
35-37	SS-5	2.0		unable to collect soil sample at 45-47'			- WTA at 45'
rec =	15"			Soil Stratigraphy Summary <u>GW In area is 45'</u>			
SPT = STANDARD PENETRATION TEST							



OVERKA
AND
BARTILUCCI

DRILLING CONTRACTOR				DRILLING LOG		BORING NUMBER	
Driller <u>VICORTEX / Gene</u>				PROJECT NAME <u>Liberty</u>		Sheet <u>1</u> of <u>2</u>	
Inspector <u>Keith Roberts</u>				PROJECT # <u>Industrial Finishing</u>		Boring Location <u>In area of suspected</u>	
Rig Type <u>Ford 250 / Geoprobe</u>				Location/Address <u>550 Suffolk Avenue</u>		<u>dry well</u>	
Drilling Method <u>Geoprobe</u>				Location/Address <u>Brentwood, NY</u>			
Drive Hammer Weight <u>NA</u>							
GROUNDWATER OBSERVATIONS				Weather		Plot Plan	
Water Level <u>~45'</u>				<u>Cloudy</u>		<u>B-26D</u>	
Time				<u>mid 40's</u>			
Date				Date/Time Start <u>3/4/98 1245 pm</u>			
Casing Depth				Date/Time Finish <u>3/4/98 300 pm</u>			
Sample Depth	Sample Number	SPT	PIV/FID Reading	FIELD IDENTIFICATION OF MATERIAL		WELL SCHEMATIC	COMMENTS
0-4'	SS-1		0.0	0-1' Black Top Soil, silt, some sand, roots and gravel			No hydrogen cyanide
rec = 48"				1-4' Brown-Red fine Sand, some silt, trace clay, crushed gtz stones.			No hydrogen sulfide detected in soil samples
4-8'	SS-2		0.0	Dark Brown fine Sand at 4.0'			
rec = 48"				4-6' Light Brown-Tan silt with orange fine-medium Sand, damp			
8-12'	SS-3		0.0	6-8' Orange-Light Brown coarse-medium gtz Sand, some small-medium rounded gravel, poorly sorted.			
rec = 48"				Abundant gravel at (7-8')			selected lab sample at 8'-12'
12-16'	SS-4		0.0	8-9' Brown-Orange coarse-medium Sand/gravel with dark brown moist silt at 8.5'			
rec = 48"				9-10' Light Tan-Brown coarse-medium Sand, some gravel			
				10-12' Light Tan medium-fine well sorted Sand, at (10.5') DK Brown Sand and silt, damp			
16-20'	SS-5		0.0	12-13.5' Brown-Orange coarse to fine Sand, little silt, some fine gravel, greenish fine sand			
rec = 48"				13.5-16' Light TAN medium gtz Sand, some coarse-fine Sand, silt, white subangular gravel, well sorted, damp.			
20-24'	SS-6		0.0	16-17' Dark Brown to Brown coarse-medium coarse to medium sand, trace silt, some gravel.			
rec = 48"				17-20' Tan-Light Brown coarse-medium sand, some-little fine-medium subrounded gravel, trace iron reddish sand, damp.			
				20-23' Brown Sand c-f, fine-medium gravel, trace silt, damp			
				23'-24' Very light Tan-off white medium-coarse well sorted sand, little flat subround small gravel-damp.			
SPT = STANDARD PENETRATION TEST				Soil Stratigraphy Summary			



DYERKA
AND
BARTILUCCI

DRILLING CONTRACTOR

Driller Vignex/Gene
Inspector Keith Roberts
Rig Type Forst Geoprobe
Drilling Method Geoprobe
Drive Hammer Weight NA

DRILLING LOG

PROJECT NAME Liberty
PROJECT # 1482
Location/Address 550 Suffolk Avenue
Brentwood, NY

BORING NUMBER B-26D

Sheet 2 of 2

Boring Location In area of suspected
dry well

GROUNDWATER OBSERVATIONS

Water Level ~45'
Time
Date
Casing Depth

Weather Cloudy
mid 40's
Date/Time Start 3/4/98 1245 pm
Date/Time Finish 3/4/98 300 pm

Plot Plan



Sample Depth Sample Number SPT PID/FID Reading

FIELD IDENTIFICATION OF MATERIAL

WELL SCHEMATIC

COMMENTS

25'-27' SS-7
rec = 15" 0.0

25'-27' Light Tan coarse to fine well sorted gty Sand, little small gravel, damp

30'-32' SS-8
rec = 18" 0.0

30'-32' Light Tan medium to fine well sorted gty Sand, little - some coarse Sand, fine subrounded gravel, trace silt, damp.

35'-37' SS-9
rec = 18" 0.0

35'-37' Light Tan medium to fine gty Sand, well sorted, trace silt, trace fine gravel, damp

40'-42' SS-10
rec = 18" 0.0

40'-42' Light Tan coarse to fine Sand, trace silt, little - medium fine subrounded gravel, damp.

collected lab sample at 40'-42'.

45'-47' SS-11
rec = 18" 0.0

45'-47' Light Tan coarse to fine Sand, trace silt, little fine - medium white gty gravel, well sorted - wet

WT at 45'

END OF Boring at 47 FT

SPT = STANDARD PENETRATION TEST

Soil Stratigraphy Summary



DVIRKA
AND
BARTILUCCI

DRILLING CONTRACTOR			DRILLING LOG		BORING NUMBER			
Driller	V. Drexler / Gene		PROJECT NAME	Liberty		BORING NUMBER	B-27D	
Inspector	Kevin Robins		PROJECT #	Industrial Finishing		Sheet	1 of 2	
Rig Type	Ford Geoprobe		Location/Address	550 Suffolk Avenue Brentwood, NY		Boring Location	In area of suspected dry well, depression in pavement	
Drilling Method	Geoprobe							
Drive Hammer Weight	NA							
GROUNDWATER OBSERVATIONS			Weather		Mild, mid 40's			
Water Level			Date/Time Start		3/5/98 8:00 am			
Time			Date/Time Finish		3/5/98 10:30 am			
Date								
Casing Depth					Plot Plan			
								
Sample Depth	Sample Number	SPT	PIV/FID Reading	FIELD IDENTIFICATION OF MATERIAL		WELL SCHEMATIC		COMMENTS
0-4'	SS-1		0.0	0-4' Dark Brown - Black medium to coarse sand, some silt, gravel, stones, trace asphalt (Fill)				No hydrogen cyanide No hydrogen sulfide detected in soil samples
4-8'	SS-2		0.0	4-8' Dark Brown medium to fine sand, some subrounded large-medium size gravel, trace roots, twigs, silt (Fill)				
8-12'	SS-3		0.0	8-10' Dark Brown moist-wet silty sand, stones, gravel, trace brick fragments				selected soil sample at 8-12' for lab analysis. looks native at (10-12')
12-16'	SS-4		0.0	10-12' Tan - Light Brown coarse to fine sand, little - some fine white gravel				
16-20'	SS-5		10.0	12-16' Light Tan medium-fine well sorted gty subrounded sand, little fine gravel, damp.				
20-23'	SS-6		0.0	16-18' FAIL BACK from above not representative				
23-25'	SS-7		0.0	18-20' Light Tan - Light Brown medium sand, well sorted, little fine - coarse sand, trace fine gravel.				
25-27'	SS-8		0.0	21-23' Light Tan medium-fine gty sand, little fine gravel, trace silt				
27-30'	SS-9		0.0	25-27' 0-8" FAIL BACK not representative				
30-32'	SS-10		0.0	8-15" Light Tan medium gty subrounded sand, trace - little fine gravel, coarse sand, trace silt, damp				
				30-32' Light Tan - Light Brown coarse to fine gty sand, little - subrounded white gty gravel, trace silt, damp				
SPT = STANDARD PENETRATION TEST				Soil Stratigraphy Summary				



DVIRKA
AND
BARTILUCCI

DRILLING CONTRACTOR

Driller Vinny/Gene
Inspector Keith Robins
Rig Type Ford Geoprobe
Drilling Method Geoprobe
Drive Hammer Weight NA

DRILLING LOG

PROJECT NAME Liberty
PROJECT # 1482
Location/Address 550 Suffolk Avenue
Brentwood, NY

BORING NUMBER B-27D

Sheet 2 of 2
Boring Location In area of suspected
dry well, depression in
pavement

GROUNDWATER OBSERVATIONS

Water Level 45'

Time

Date

Casing Depth

Weather Mild, mid 40's

Date/Time Start 3/5/98 8:00 am

Date/Time Finish 3/5/98 10:30 am

Plot Plan

B-27D



Sample Depth Sample Number SPT P/B/F/D Reading

FIELD IDENTIFICATION OF MATERIAL

WELL SCHEMATIC

COMMENTS

35'-37' SS-9
rec = 18' D.O.

35'-37' Light Tan coarse to fine
Sand, little fine gravel,
damp

40'-42' SS-10
rec = 18' D.O.

40'-42' Light Tan coarse to fine gty
Sand, little subrounded
white-pink gravel, trace
silt.

Collected lab
sample at
40'-42'

45'-47' SS-11
rec = 18' D.O.

45'-47' Light Tan fine to medium
Sand, little gravel,
wet

WT at 45 FT

END OF BORING at 47 FT

SPT = STANDARD PENETRATION TEST

Soil Stratigraphy Summary



DYRKA
AND
BARTILUCCI

DRILLING CONTRACTOR				DRILLING LOG		BORING NUMBER	
Driller <u>Vignex/Gee</u>				PROJECT NAME <u>Liberty</u>		Sheet <u>1</u> of <u>2</u>	
Inspector <u>Keith Robins</u>				PROJECT # <u>1482</u>		Boring Location <u>located in area of suspected</u>	
Rig Type <u>Geopie Rod/Truck</u>				Location/Address <u>550 SUFFOLK AVE.</u>		<u>dry well based on Geophysical</u>	
Drilling Method <u>Geopie</u>				<u>Brentwood NY</u>		<u>survey</u>	
Drive Hammer Weight <u>NA</u>							
GROUNDWATER OBSERVATIONS				Weather		Plot Plan 	
Water Level				<u>Sunny / cold</u>			
Time				<u>35°F</u>			
Date				Date/Time Start <u>3/13/98 9:00 am</u>			
Casing Depth				Date/Time Finish <u>3/13/98 11:30 am</u>			
Sample Depth	Sample Number	SPT	PID/FID Reading	FIELD IDENTIFICATION OF MATERIAL		WELL SCHEMATIC	
0-4	SS-1		0.0	0-3" asphalt		No hydrogen cyanide No hydrogen sulfide detected in soil samples	
rec	48"			3"-3.0' Dark Brown Black Topsoil,			
				stones, gravel, silt, Fill			
4-8	SS-2		0.0	3'-4' Light Brown coarse-medium			
rec	24"			Sand and gravel.			
8-12	SS-3		0.0	4'-8' Light Tan coarse-medium		selected soil sample at 12-16' FT below grade for 146 sample	
rec	24"			Sand, some fine to medium			
				gravel, subrounded shape, trace			
12-16	SS-4		0.0	8'-12' Light Tan coarse to medium			
rec	36"			subrounded sand, some sub-			
16-20	SS-5			12'-16' Light Tan fine-medium			
rec				subrounded Sand, some coarse			
				Sand f-m gravel, trace cobbles,			
20-24	SS-6		0.0	16'-20' NO Recovery - soft -			
rec	36"			sampler push through area, unable			
				to retrieve sample -			
				20'-24' Brown - Light Tan coarse			
				to fine subrounded clay			
				Sand, some fine-medium			
				size subangular gravel, trace			
				silt, damp.			

SPT = STANDARD PENETRATION TEST

Soil Stratigraphy Summary



DVIRKA
AND
BARTILUCCI

DRILLING CONTRACTOR				DRILLING LOG		BORING NUMBER	
Driller <u>Vinny / Gene</u>				PROJECT NAME <u>Liberty</u>		Sheet <u>2</u> of <u>2</u>	
Inspector <u>Keith Robins</u>				PROJECT # <u>1482</u>		Boring Location <u>located in area of suspected</u>	
Rig Type <u>Track / Geoprobe</u>				Location/Address <u>550 Suffolk Avenue</u>		<u>dry well identified by Geophysical</u>	
Drilling Method <u>Geoprobe</u>				<u>Brentwood, NY</u>		<u>Survey</u>	
Drive Hammer Weight _____							
GROUNDWATER OBSERVATIONS				Weather		Plot Plan	
Water Level _____				Sunny / cold			
Time _____				35°F			
Date _____				Date/Time Start <u>3/13/98</u> <u>9:00 am</u>			
Casing Depth _____				Date/Time Finish <u>3/13/98</u> <u>11:30 am</u>			
Sample Depth	Sample Number	SPT	PID/FID Reading	FIELD IDENTIFICATION OF MATERIAL		WELL SCHEMATIC	
25-27	SS-7		0.0	25'-27' Light Brown coarse to medium well sorted qtz sand, some - little fine to medium gravel, trace sand.			
30-32	SS-8		0.0	30'-32' Light Brown - Tan coarse to medium qtz sand, some - little fine gravel, trace fine sand, well sorted damp.			
35-37	SS-9		0.0	35'-37' Very light Tan well sorted fine - medium and sand, trace silt, damp.			
40-42	SS-10		A.O	40'-42' Tan coarse to medium well sorted sand, little gravel, some fine sand moist at tip		selected soil sample at (40'-42') for lab analysis	
45-47	Not collected		—	45-47 unable to collect sample rods and sampler broke off in ground		at 45' based on G.W. In vicinity	
END of Boring at 42 FT							
SPT = STANDARD PENETRATION TEST				Soil Stratigraphy Summary _____			



NR011CON.PM4



DVIRKA
AND
BARTILUCCI

DRILLING CONTRACTOR				DRILLING LOG		BORING NUMBER		
Driller <u>Vironex/Gene</u>				PROJECT NAME <u>Liberty</u>		Sheet <u>2</u> of <u>2</u>		
Inspector <u>Keith Robins</u>				PROJECT # <u>1482</u>		Boring Location <u>Inside Trench, stained</u>		
Rig Type <u>Ford 250/Geoprobe</u>				Location/Address <u>550 Suffolk Avenue</u>		<u>Subsurface Soil area.</u>		
Drilling Method <u>Geoprobe</u>				<u>Brentwood NY</u>				
Drive Hammer Weight <u>NA</u>								
GROUNDWATER OBSERVATIONS				Weather		Plot Plan		
Water Level <u>±45'</u>				<u>Cloudy / cool</u>				
Time				<u>low 30-40°F</u>				
Date				Date/Time Start <u>3/10/98 130 pm</u>				
Casing Depth				Date/Time Finish <u>3/10/98 415 pm</u>				
Sample Depth	Sample Number	SPT	PID/FID Reading	FIELD IDENTIFICATION OF MATERIAL		WELL SCHEMATIC		COMMENTS
21-23'	SS-8		0.0	21-23' Light Tan- medium-fine qtz sand, little - trace coarse sand, subangular medium-fine gravel, damp				
25-27'	SS-9		0.0	25-27' Light Tan medium-fine Sand, some coarse sand, some little fine subrounded gravel, well sorted, damp.				
30-32'	SS-10		0.0	30-32' Light Tan medium-fine qtz sand, little-coarse sand, trace medium to fine gravel, well sorted, damp.				
35-37'	SS-11		0.0	35-37' Light Tan fine-medium qtz sand, some-little coarse sand, fine subangular gravel, well sorted; damp.				
40-42'	SS-12		0.0	40-42' Light tan fine to medium sand, well sorted, crushed gravel, stone at tip blocking soil from entering tube				
45-47'	SS-13		0.0	45-47' Tanish-Gray fine Sand, trace silt, saturated, wet				WT at 45 FT
				END OF Boring at 47 FT				
SPT = STANDARD PENETRATION TEST				Soil Stratigraphy Summary				

[illegible]

Soil Stratigraphy Summary



DVIRKA
AND
BARTILUCCI

DRILLING CONTRACTOR				DRILLING LOG		BORING NUMBER	
Driller <u>Vironex</u>				PROJECT NAME <u>Liberty Industrial</u>		Sheet <u>1</u> of <u>1</u>	
Inspector <u>Keith Robins</u>				PROJECT # <u>1482</u>		Boring Location <u>Inside Septic System</u>	
Rig Type <u>Geoprobe</u>				Location/Address <u>550 Suffolk</u>		<u>dry well #1</u>	
Drilling Method <u>Geoprobe</u>				<u>Avenue Brentwood</u>			
Drive Hammer Weight <u>—</u>							
GROUNDWATER OBSERVATIONS				Weather <u>Sunny</u>		Plot Plan	
Water Level				Date/Time Start <u>3/31/98</u> <td colspan="2" rowspan="3"></td>			
Time				Date/Time Finish <u>3/31/98</u>			
Date							
Casing Depth							
Sample Depth	Sample Number	SPT	PID/FID Reading	FIELD IDENTIFICATION OF MATERIAL		WELL SCHEMATIC	
				0-16' void inside dry well (16-20') 0-6" Black organic clayey silt, soft-damp-moist 6"-40" Tan-Light Brown coarse-medium Sand, some gravel, trace cobble, trace fine Sand, poorly sorted End of boring at 20'		collected inside dry well Lab sample selected at (16-20') below grade	
16-20	SS-1	0.0					
rec.	40"						
SPT = STANDARD PENETRATION TEST				Soil Stratigraphy Summary			



DVIRKA
AND
BARTILUCCI

DRILLING CONTRACTOR

Driller Vironex
Inspector Keith Robins
Rig Type Geoprobe
Drilling Method Geoprobe
Drive Hammer Weight

DRILLING LOG

PROJECT NAME Liberty Industrial
Finishing
PROJECT # 1482-2A
Location/Address 550 Suffolk Avenue
Brentwood NY

BORING NUMBER B-32

Sheet 1 of 1

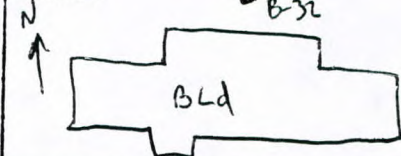
Boring Location
collected inside dry well
located in front parking lot

GROUNDWATER OBSERVATIONS

Water Level NA
Time
Date
Casing Depth

Weather Sunny
Date/Time Start 3/31/98
Date/Time Finish 3/31/98

Plot Plan



Sample Depth | Sample Number | SPT | PID/FID Reading

FIELD IDENTIFICATION OF MATERIAL

WELL SCHEMATIC

COMMENTS

0-12' void inside dry well

Bottom of
dry well 12'
below grade

12-16 55-1
rec 36"

(12-16')

0-24" Black-Gray sandy silt,
saturated - trace clay, trace organics
24"-36" Tan-orange Sand and
gravel, most-dump

collected inside
dry well
Lab sample
collected for
(12-16')

End of Boring at 16 FT

SPT = STANDARD PENETRATION TEST

Soil Stratigraphy Summary



DYIRKA
AND
BARTILUCCI

DRILLING CONTRACTOR

Driller VINCE
Inspector Keith Robins
Rig Type Geoprobe
Drilling Method Geoprobe Track
Drive Hammer Weight

DRILLING LOG

PROJECT NAME Liberty
PROJECT # 1482
Location/Address 550 Suffolk Avenue
Brentwood NY

BORING NUMBER B-33

Sheet 1 of 1

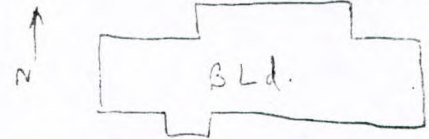
Boring Location Inside Front parking
Lot dry well.

GROUNDWATER OBSERVATIONS

Water Level -
Time
Date
Casing Depth

Weather Sunny, clear
60 - 70°F
Date/Time Start 3/31/98
Date/Time Finish 3/31/98

Plot Plan B-33



Sample Depth | Sample Number | SPT | PID/FID Reading

FIELD IDENTIFICATION OF MATERIAL

WELL SCHEMATIC

COMMENTS

0-12' void - no dirt

Filled with water

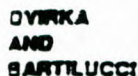
12-16' 55-140" - (12-16') Black coarse sand and gravel, trace silt, organics, twigs, leaves, loose

collected inside dry well
Lab sample collected at (12'-16')

End of Boring 16 FT below grade

SPT - STANDARD PENETRATION TEST

Soil Stratigraphy Summary



WELLCON, PMA



No hydrogen cyanide
No hydrogen sulfide
detected in soil sample.



DVIRKA
AND
BARTILUCCI

DRILLING CONTRACTOR

Driller Vincex
Inspector Keith Robin
Rig Type Geoprobe
Drilling Method Geoprobe Tr
Drive Hammer Weight 1

DRILLING LOG

PROJECT NAME Liberty Industrial
PROJECT # 1482
Location/Address 550 Suffolk Ave
Brentwood TN

BORING NUMBER B-35D

Sheet 2 of 2

Boring Location FW area of cleared trees

GROUNDWATER OBSERVATIONS

Water Level ~41'
Time
Date
Casing Depth

Weather Sunny clear
70°
Date/Time Start 3/31/98
Date/Time Finish 3/31/98

Plot Plan



Sample Depth Sample Number SPT PID/FID Reading

FIELD IDENTIFICATION OF MATERIAL

WELL SCHEMATIC

COMMENTS

30-32 SS-8
rec 15"

(30-32') Light Tan - Tan fine to medium Sand, trace silt, trace coarse sand, little subrounded gravel; damp-moist

35-37 SS-4
rec 15"

(35-37') Tan - Light Brown medium - coarse Sand, little to some fine - medium subrounded gravel, trace fine sand, damp

40-42 SS-10
rec 12"

(40-42') Brown coarse to medium Sand, some fine - medium subrounded gravel, trace fine sand

Lab sample collected at (35-37')

WATER TABLE AT 41 FT

END OF Boring at 42 FT.

SPT = STANDARD PENETRATION TEST

Soil Stratigraphy Summary



DVIRKA
AND
BARTILUCCI

DRILLING CONTRACTOR				DRILLING LOG		BORING NUMBER	
Driller <u>Parrott Wolf</u>				PROJECT NAME <u>Liberty Industrial Finishing</u>		Sheet <u>1</u> of <u>2</u>	
Inspector <u>Keith Robins</u>				PROJECT # <u>1402</u>		Boring Location <u>American Legion Western</u>	
Rig Type <u>Mobile</u>				Location/Address <u>550 Suffolk Avenue</u>		<u>Side of parking Lot.</u>	
Drilling Method <u>4 1/4 HSA</u>				<u>Brentwood NY</u>			
Drive Hammer Weight <u>140 lbs.</u>							
GROUNDWATER OBSERVATIONS				Weather <u>Sunny clear 70°F</u>		Plot Plan <u>Suffolk Avenue</u>	
Water Level <u>40'</u>				Date/Time Start <u>5/14/98</u>			
Time				Date/Time Finish <u>5/14/98</u>			
Date							
Casing Depth							
Sample Depth	Sample Number	SPT Blows	FID/FID Reading	FIELD IDENTIFICATION OF MATERIAL		WELL SCHEMATIC	COMMENTS
				(0-2') Dark Brown clayey Soil, roots, gravel, cobbles			Visual Log (0-5)
5-7	SS-1	12	0.0	(2'-5') Brown-Orange coarse to medium Sand, gravel.			
rec =	15"	27		(5'-7') Light Brown coarse to medium sand and fine to medium subrounded gravel, dump.			
		34		(10'-12') Tan fine-course Sand, some medium - large gravel, poorly sorted, dump			
		36		(15-17) No recovery, cobble stuck in tip of split spoon			
10-12	SS-2	8	0.0	(20-22) Brown-Tan coarse to medium Sand, some fine-medium subrounded gravel, cobble stuck in tip of split spoon sampler.			
rec =	14"	15		(25'-27') White-Tan fine to coarse Sand, some white quartz gravel, dump			
		19		(30-32') Tan-white fine-medium Sand, some medium-fine gravel well sorted - moist			
		21		(35'-37') Tan-Brown fine-medium Sand, some fine gravel, trace horizontal dark banding, well sorted, moist			
15-17	SS-3	7					
rec =	0	16					
		17					
		19					
20-22	SS-4	9	0.0				
rec =	6"	13					
		14					
		16					
25-27	SS-5	10	0.0				
rec =	10"	11					
		13					
		15					
30-32	SS-6	6	0.0				
rec =	18"	12					
		18					
		24					
35-37	SS-7	9	0.0				
rec =	18"	11					
		14					
		15					
SPT - STANDARD PENETRATION TEST				Soil Stratigraphy Summary		No hydrogen cyanide NO Hydrogen sulfide detected in soil samples	



SPT - STANDARD PENETRATION TEST



OVERKA
AND
BARTILUCCI

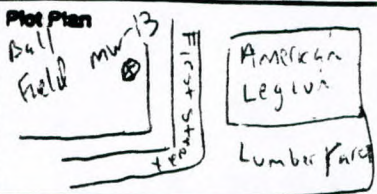
DRILLING CONTRACTOR				DRILLING LOG		BORING NUMBER	
Driller <u>Parratt Wolf</u>				PROJECT NAME <u>Liberty Industrial</u>		Sheet <u>1</u> of <u>2</u>	
Inspector <u>Keith Robins</u>				PROJECT # <u>Finishing</u>		Boring Location _____	
Rig Type <u>Mobil</u>				Location/Address <u>550 Suffolk Avenue</u>			
Drilling Method <u>4 1/4 HSA</u>							
Drive Hammer Weight <u>140 Lbs</u>							
GROUNDWATER OBSERVATIONS				Weather <u>Overcast, Cool</u>		Plot Plan	
Water Level <u>40'</u>				<u>50-26</u>		<u>Bullfield</u> <u>MW-13</u>	
Time _____				Date/Time Start <u>5/2/98</u>		<u>Amherst</u> <u>Legion</u>	
Date _____				Date/Time Finish <u>5/8/98</u>			
Casing Depth _____							
Sample Depth	Sample Number	SPT	PIV/FID Reading	FIELD IDENTIFICATION OF MATERIAL	WELL SCHEMATIC	COMMENTS	
5-7	1	3	0.0	(0-5) visual log - Dark Brown Orange		No hydrogen cyanide No hydrogen sulfide detected in soil samples.	
rec	12"	4		coarse - medium sand, gravel, little			
		4		cobbles, trace silt, damp.			
		4		(5-7) Gray clayey sand, little medium			
				gravel, some silt (moist-wet)			
10-12	2	6	0.0	(10-12) No Recovery			
rec	0	12					
		14					
		20					
15-17	3	6	0.0	(15-17) Light Tan medium fine sand			
rec	6"	14		Some fine - medium gravel,			
		18		Coarse sand, very moist.			
		20					
20-22	4	4	0.0	(20-22) white - Light Tan			
rec	12"	6		Coarse - medium subrounded Qtz			
		8		Sand and white subrounded f-			
		15		medium size gravel.			
25-27	5	11	0.0	(25-27) Light Tan fine-medium			
rec	15"	8		well sorted sand, little fine			
		15		gravel, 6" Dark Brown fine			
		20		Sand, trace silt. moist.			

SPT = STANDARD PENETRATION TEST

Soil Stratigraphy Summary _____



DYERKA
AND
BARTILUCCI

DRILLING CONTRACTOR				DRILLING LOG		BORING NUMBER	
Driller <u>Parratt w/f</u>				PROJECT NAME <u>Liberty Industrial</u>		Sheet <u>2</u> of <u>2</u>	
Inspector <u>Kerth Robin</u>				PROJECT # <u>Finishing</u>		Boring Location _____	
Rig Type <u>Mobile</u>				Location/Address <u>550 Suffolk Avenue</u>			
Drilling Method <u>4 1/4 HSA</u>							
Drive Hammer Weight <u>140 Lbs</u>							
GROUNDWATER OBSERVATIONS				Weather <u>Overcast, Cool</u> <th colspan="2">Plot Plan</th>		Plot Plan	
Water Level <u>40</u>				<u>50.26</u>			
Time _____				Date/Time Start <u>5/7/98</u>			
Date _____				Date/Time Finish <u>5/8/98</u>			
Casing Depth _____							
Sample Depth	Sample Number	SPT	PID/FID Reading	FIELD IDENTIFICATION OF MATERIAL	WELL SCHEMATIC	COMMENTS	
30-32'	6	3	0.0	(30'-32') Light Tan medium-fine sand well sorted, 1" gravel wet zone, some very coarse sand, dark horizontal banding			
rec	12"	8					
		12					
		16					
35-37'	7	9	0.0	(35'-37') Rock fragments, broken quartz, hard compacted in type of spoon			
rec	2"	22					
		34					
		37					
40-42'	8	3	0.0	(40'-42') Brown - Tan coarse - medium qty sand, some subrounded white-brown gravel (saturated)			---v--- WT at 40'
rec	12"	8					
		9					
45-47'	9	10	0.0	(45'-47') Brown coarse - medium qty sand, some fine - medium gravel, trace fines			
rec	15"	12					
		12					
		12					
49-51'	10	3	0.0	(49'-51') Brown coarse - medium Qtz sand, some fine - medium subrounded gravel, fine sand, little silt.			
rec	10"	10					
		9					
		13					
				End of Boring at 50 Ft.			
SPT - STANDARD PENETRATION TEST				Soil Stratigraphy Summary _____			



DVIRKA
AND
BARTILUCCI

DRILLING CONTRACTOR				DRILLING LOG		BORING NUMBER <u>MW-14</u>	
Driller <u>Parrott Wolf</u>				PROJECT NAME <u>Liberty Industrial</u>		Sheet <u>1</u> of <u>3</u>	
Inspector <u>Keith Robins</u>				PROJECT # <u>1482</u>		Boring Location <u>American Legion parking</u>	
Rig Type <u>Mobil</u>				Location/Address <u>550 Suffolk Avenue</u>		<u>Cott. off road.</u>	
Drilling Method <u>4 1/4 HSA</u>				<u>Brentwood, NY</u>			
Drive Hammer Weight <u>140 lbs</u>							
GROUNDWATER OBSERVATIONS				Weather <u>Overcast, showers in AM</u>		Plot Plan <u>Suffolk Avenue</u>	
Water Level <u>40</u>				Date/Time Start <u>5/12/98</u>			
Time				Date/Time Finish <u>5/12/98</u>			
Date							
Casing Depth							
Sample Depth	Sample Number	SPT Blows	PID/FID Reading	FIELD IDENTIFICATION OF MATERIAL		WELL SCHEMATIC	COMMENTS
				0-5' asphalt 0-3"			Visual Log 0-5'
				3'-6.5' Brown clay, moist			
5-7	SS-1	24	0-0	1.5-5.0' Orange-coarse sand, gravel, cobbles, damp			No hydrogen cyanide No hydrogen sulfide detected in soil samples
rec =	6"	31		(5'-7') Tanish-Brown medium to coarse sand, some white-gray gravel, rock fragments, trace fine sand.			
		42					Probably pushing cobble in front of split spoon opening
		44					
10-12	SS-2	19	0-0	(10'-12') No recovery			
rec =	—	21		Abundant cobbles noted in soil cuttings			
		26					
		32					
15-17	SS-3	8	—	(15'-17') No recovery			
rec =	0	9		noted soil cuttings Brown coarse to medium sand, with a lot of gravel			
		10					
		14					
20-22	SS-4	8	0-0	(20-22') White coarse to medium			
rec =	22"	10		Qtz subrounded sand, some fine-medium gravel, trace brown horizontal banding, damp.			
		14					
		16					
25-27	SS-5	8	0-0	(25'-27') Tan-white fine sand, trace mica, coarse sand and fine gravel, dry			
rec =	15"	10		(30-32) No recovery			
		14					
		19					
30-32	SS-6	18	0-0	(35'-37') White-Tan fine-coarse sand, little trace fine gravel, brown horizontal banding, dry			most likely coarse gravel and cobbles stuck in front of split spoon sampler opening.
rec =	0	24					
		31					
		32					
35-37	SS-7	11	0-0				
rec =	6"	17					
		27					
		31					
SPT = STANDARD PENETRATION TEST				Soil Stratigraphy Summary			



DVRKA
AND
BARTILUCCI

DRILLING CONTRACTOR Driller <u>Parrott Wolf</u> Inspector <u>Keith Robbins</u> Rig Type <u>MD61</u> Drilling Method <u>4 1/4 HSA</u> Drive Hammer Weight <u>140 lbs</u>				DRILLING LOG PROJECT NAME <u>Liberty Industrial Finishing</u> Job # <u>1482</u> PROJECT # <u>550 Suffolk Avenue</u> Location/Address <u>Brentwood, NY</u>		BORING NUMBER <u>MW-14</u> Sheet <u>2</u> of <u>3</u> Boring Location <u>American Legion parking lot, off road</u>	
GROUNDWATER OBSERVATIONS Water Level <u>40'</u> Time Date Casing Depth 				Weather <u>Overcast, Showers</u> Date/Time Start <u>5/12/98</u> Date/Time Finish <u>5/12/98</u>		Plot Plan 	
Sample Depth	Sample Number	SPT Blows	PID/FID Reading	FIELD IDENTIFICATION OF MATERIAL	WELL SCHEMATIC	COMMENTS	
40-42	SS-8	11	0.0	(40-42') Brown-medium-course sand, some fine-medium white-black gravel, trace fines, wet		Water Table - 40' approx. at 40'	
rec	6"	13					
		14					
		15					
45-47	SS-9	16	0.0	(45-47') Brown coarse sand and fine-medium gravel (subrounded), little medium-fine sand, wet			
rec	18"	21					
		27					
		30					
50-52	SS-10	3	0.0	(50-52') Brown coarse sand and medium to large gravel subrounded			
rec	18"	4					
		6					
		10					
55-57	SS-11	7	0.0	(55-57') Brown coarse to medium subrounded sand, some fine gravel, yellow-white, some medium sand, poorly sorted, wet			
rec	15"	8					
		12					
		16					
60-62	SS-12	7	0.0	(60-62') Brown coarse to medium subrounded sand, some fine gravel, wet			
rec	24"	9					
		10					
		13					
65-67	SS-13	3	0.0	(65-67') Brown medium sand, fine gravel, little fine sand, wet.			
rec	15"	5					
		8					
		11					
70-72	SS-14	7	0.0	(70-72') 0-18" Fine medium Brown sand, 18"-20" Brown medium to coarse sand, some fine gravel, wet.			
rec	20"	10					
		13					
		20					
75-77	SS-15	3	0.0	(75-77') Brown medium sand, fine gravel, wet.			
rec	15"	5					
		8					
		10					
SPT - STANDARD PENETRATION TEST				Soil Stratigraphy Summary			

Running Sands entering inside augers

Running Sands inside augers



DWIRKA
AND
BARTILUCCI

DRILLING CONTRACTOR Driller <u>Parrott Wolf</u> Inspector <u>Keith Robins</u> Rig Type <u>Mobil</u> Drilling Method <u>4 1/4 HSA</u> Drive Hammer Weight <u>140 Lbs</u>				DRILLING LOG PROJECT NAME <u>Liberty Industrial</u> <u>Finishing</u> PROJECT # <u>1482</u> Location/Address <u>550 Suffolk Avenue</u> <u>Brentwood NY</u>				BORING NUMBER <u>MW-14</u> Sheet <u>3</u> of <u>3</u> Boring Location <u>American Legion</u> <u>parking lot, off road</u>			
GROUNDWATER OBSERVATIONS Water Level <u>40'</u> Time Date Casing Depth				Weather <u>Overcast, Showers in AM</u> Date/Time Start <u>5/12/98</u> Date/Time Finish <u>5/12/98</u>				Plot Plan 			
Sample Depth	Sample Number	SPT Blows	PID/FID Reading	FIELD IDENTIFICATION OF MATERIAL				WELL SCHEMATIC		COMMENTS	
80-82	SS-16	3	0.0	(80-82') Brown medium sand, some little fine gravel, coarse sand							
REC	18'	5									
		7									
		8									
85-87	SS-17	3	0.0	(85-87') Brown medium coarse sand, some some fine gravel, wet							
REC	18'	4									
		5									
		8									
90-92	SS-18	4	0.0	(90-92') Brown medium sand, some to little fine sand, trace fines trace coarse sand, wet							
REC	18'	8									
		16									
		20									
95-97	SS-19	5	—	(95-97') NO Recovery						sample washed out of spoon	
REC	0	6									
		7									
		10									
100-102	SS-20	5	0.0	(100-102') Brown coarse-medium sand, some fine-medium gravel, wet fine sand.							
REC	15'	6									
		7									
		11									
				END of Boring at 100 FT							

SPT = STANDARD PENETRATION TEST

Soil Stratigraphy Summary



OVERKA
AND
BARTILUCCI

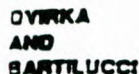
DRILLING CONTRACTOR		DRILLING LOG		BORING NUMBER MW-15	
Driller <u>Parrott Wolf</u>		PROJECT NAME <u>Liberty Industrial</u>		Sheet <u>1</u> of <u>1</u>	
Inspector <u>Keith Robins</u>		PROJECT # <u>1482</u>		Boring Location _____	
Rig Type <u>Mobile</u>		Location/Address <u>550 Suffolk Avenue</u>		_____	
Drilling Method <u>4 7/4 HSA</u>		<u>Brentwood NY 11716</u>		_____	
Drive Hammer Weight <u>140</u>		_____		_____	

GROUNDWATER OBSERVATIONS			Weather <u>overcast, cloudy</u>		Plot Plan
Water Level <u>40'</u>			<u>50'</u>		
Time _____			Date/Time Start <u>5/7/98</u>		
Date _____			Date/Time Finish <u>5/7/98</u>		
Casing Depth _____			_____		

Sample Depth	Sample Number	SPT	PID/PO Reading	FIELD IDENTIFICATION OF MATERIAL	WELL SCHEMATIC	COMMENTS
				Visual Log		
			6.0	(0-5') Dark Brown - Light orange clayey sand, with little gravel		No soil samples collected 0-40'
			2.2	(5-10') Orange coarse-medium sand, some f-c gravel, some to little cobbles		No hydrogen cyanide no hydrogen sulfide in soil cuttings and soil samples.
			0.0	(10-25') Light Brown - Orange coarse to medium sand, some gravel, pebbles, trace cobbles		
			0.0	(25-30') Light Brown - Orange coarse to medium sand, little fine gravel		
			0.0	(30-40') Light Tan medium-coarse qtz sand, some fine-medium gravel.		
40-42	SS-1	9	0.0			
recs	12"	11				
		15				
		18		(40-42) Brown - Tan coarse to medium qtz sand some fm white, grey gravel, trace fine sand, wet		----- 0 ----- wt at 40' collect split spurs in screen zone
45-47	SS-2	5	0.0			
recs	12"	7		(45-47) Brown medium-fine-coarse sand, some fine gravel, trace silt, saturated.		
		9				
		12				
49-51	SS-3	10	0.0			
recs	12"	10		(49-51) Brown medium-coarse sand some fine white, brown, gray subrounded gravel, trace fine sand, silt, wet		E.O.B. at 53'
		13, 14				

SPT = STANDARD PENETRATION TEST

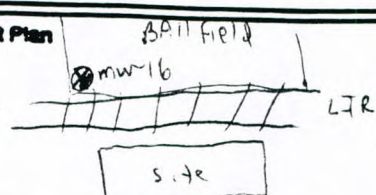
Soil Stratigraphy Summary



070111CONLPM44



OVIKA
AND
BARTILUCCI

DRILLING CONTRACTOR				DRILLING LOG		BORING NUMBER	
Driller <u>Parratt Wolf</u>				PROJECT NAME <u>Liberty Industrial</u>		Sheet <u>2</u> of <u>4</u>	
Inspector <u>Keith Robins</u>				PROJECT # <u>1482</u>		Boring Location _____	
Rig Type <u>4" 61</u>				Location/Address <u>550 Suffolk Avenue</u>			
Drilling Method <u>1 1/4 HSA</u>				<u>Brentwood NY</u>			
Drive Hammer Weight <u>140 Lbs.</u>							
GROUNDWATER OBSERVATIONS				Weather <u>(Am) Rainy, showers - sunny (Pm)</u>		Plot Plan	
Water Level <u>240'</u>				Date/Time Start <u>5/5/98</u>			
Time _____				Date/Time Finish <u>5/6/98</u>			
Date _____							
Casing Depth _____							
Sample Depth	Sample Number	SPT Blows	PIV/FID Reading	FIELD IDENTIFICATION OF MATERIAL		WELL SCHEMATIC	
30-32	SS-6	7	0.0	(30'-32') Tan - Light Brown fine to medium Qtz Sand, little - some fine gravel, coarse sand well sorted.			
rec	15"	8					
		13					
		13		(35'-37') Tan coarse-medium Sand, some fine-medium subrounded gravel, damp, poorly sorted.			
35-37	SS-7	11	0.0				
rec	18"	4					
		12		(40'-42') Brown - Tan coarse Sand and gravel, turning into Dark Brown - Orange Sand, Black-white subangular gravel, trace silt, saturated.		---v--- ~40.00' WT	
		17					
		14					
40-42	SS-8	12	0.0	(45'-47') Brown coarse-medium Sand, gravel, loose, poorly sorted - wet			
rec	15"	13					
		17					
		14		(50'-52') Brown coarse to medium Sand, trace fine Sand, saturable		wash from above, low recovery in split spoon	
45-47	SS-9	3	0.0				
rec	15"	4					
		7					
		11					
50-52	SS-10	3	0.0				
rec	4"	6					
		9					
		12					

SPT = STANDARD PENETRATION TEST

Soil Stratigraphy Summary _____



DYRKA
AND
BARTILUCCI

DRILLING CONTRACTOR

Driller Parratt Wolf
Inspector Keith Harris
Rig Type Mobil
Drilling Method 4 1/4 HSD
Drive Hammer Weight 140

DRILLING LOG

PROJECT NAME Liberty
PROJECT # Industrial Finishing
Location/Address 550 Suffolk Avenue
Brentwood NY

BORING NUMBER MW-16

Sheet 3 of 4

Boring Location _____

GROUNDWATER OBSERVATIONS

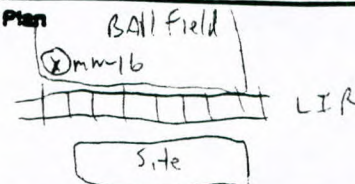
Water Level 4.2
Time _____
Date _____
Casing Depth _____

Weather (Am) Rainy / Overcast (Pm) Sunny

Date/Time Start 5/5/98

Date/Time Finish 5/6/98

Plot Plan



Sample Depth | Sample Number | SPT Blows | PID/FID Reading

FIELD IDENTIFICATION OF MATERIAL

WELL SCHEMATIC

COMMENTS

55-57 | SS-11 | 5 | 0.0

rec. | 18" | 7

| | 9

| | 11

(55'-57') Brown coarse-medium Sand
Some fine-medium gravel, subrounded
trace silt, poorly sorted, saturated.

60-62 | SS-12 | 20 | 0.0

rec. | 18" | 25

| | 25

| | 29

(60'-62') Brown coarse-medium
Sand, subrounded and white-pink
Black medium-large subrounded-flat
gravel, trace fine Sand.

65-67 | SS-13 | 9 | 0.0

rec. | 20" | 9

| | 10

| | 12

(65'-67') Brown fine-medium
qtz Sand, trace mica, very
well sorted, trace silt - saturated

70-72 | SS-14 | 13 | -

rec. | 0 | 13

| | 25

| | 25

(70'-72) No Recovery

75-77 | SS-15 | 8 | 0.0

rec. | 20" | 13

| | 34

| | 63

(75'-77') Brown fine-medium Sand,
trace mica, trace silt, well sorted,
wet

80-82 | SS-16 | 10 | 0.0

rec. | 24" | 17

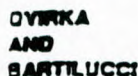
| | 24

| | 24

(80'-82') Running sands fine Brown
Sand
at tip Brown medium sand,
trace fine gravel

SPT = STANDARD PENETRATION TEST

Soil Stratigraphy Summary



GROUNDWATER OBSERVATIONS				Weather	Plot Plan
Water Level	~40'			cloudy - Rainy - Sun in PM	Bull #218
Time					MW-16
Date				Date/Time Start 5/5/98	
Casing Depth				Date/Time Finish 5/6/98	Bld

HWILLCON.PM44



SPT - STANDARD PENETRATION TEST



DVIRKA
AND
BARTILUCCI

DRILLING CONTRACTOR				DRILLING LOG		BORING NUMBER	
Driller <u>Parratt Wolf</u>				PROJECT NAME <u>Liberty Industrial</u>		Sheet <u>2</u> of <u>3</u>	
Inspector <u>Keith Robins</u>				PROJECT # <u>1482</u>		Boring Location _____	
Rig Type <u>Mobil</u>				Location/Address <u>550 Suffolk Avenue</u>		_____	
Drilling Method <u>4 1/4 HSA</u>				_____		_____	
Drive Hammer Weight <u>140 Lbs</u>				_____		_____	
GROUNDWATER OBSERVATIONS				Weather		Plot Plan	
Water Level <u>40'</u>				<u>overcast</u>		_____	
Time _____				<u>showers mid 60°F</u>		_____	
Date _____				Date/Time Start <u>5/8/98</u>		_____	
Casing Depth _____				Date/Time Finish <u>5/11/98</u>		_____	
Sample Depth	Sample Number	SPT Blows	RID/FID Reading	FIELD IDENTIFICATION OF MATERIAL		WELL SCHEMATIC	COMMENTS
40-42	SS-8	10	0.0	(40-42) Light Tan-Brown medium to coarse sand, some fine-medium subrounded white-black gravel, poorly sorted			water table at 40.0 FT
rec=	15"	10		(45-47) Tan-Brown coarse sand, some subrounded medium-coarse gravel, some fine-medium sand, saturated			
		10		(50-52) No recovery, cobble stuck inside tip of split spoon.			
		12		(55-57) Brown-Tan coarse-medium sand, some fine-coarse gravel 1/8"-2" in size, wet			
45-47	SS-9	10	0.0	(60-62) Brown-Tan coarse-medium sand, some fine-medium gravel, white-pink, trace fines, wet.			
rec=	18"	10		(65-67) Brown coarse-medium subrounded sand, some white-yellow brown fine-medium gravel wet			
		14		(70-72) Brown medium sand, little - some fine white gravel, trace silt wet			
		17		(75-77) Brown medium-fine gtz sand, trace fine gravel wet			
		19					
		11					
50-52	SS-10	8	-				
rec=	0.0	8					
		11					
		11					
55-57	SS-11	7	0.0				
rec=	6"	7					
		7					
		10					
60-62	SS-12	13	0.0				
rec=	6"	16					
		22					
		19					
65-67	SS-13	14	0.0				
rec=	13"	14					
		14					
		18					
70-72	SS-14	8	0.0				
rec=	10"	12					
		17					
		21					
75-77	SS-15	4	0.0				
rec=	12"	6					
		5					
		12					
SPT = STANDARD PENETRATION TEST				Soil Stratigraphy Summary _____			



Soil Stratigraphy Summary



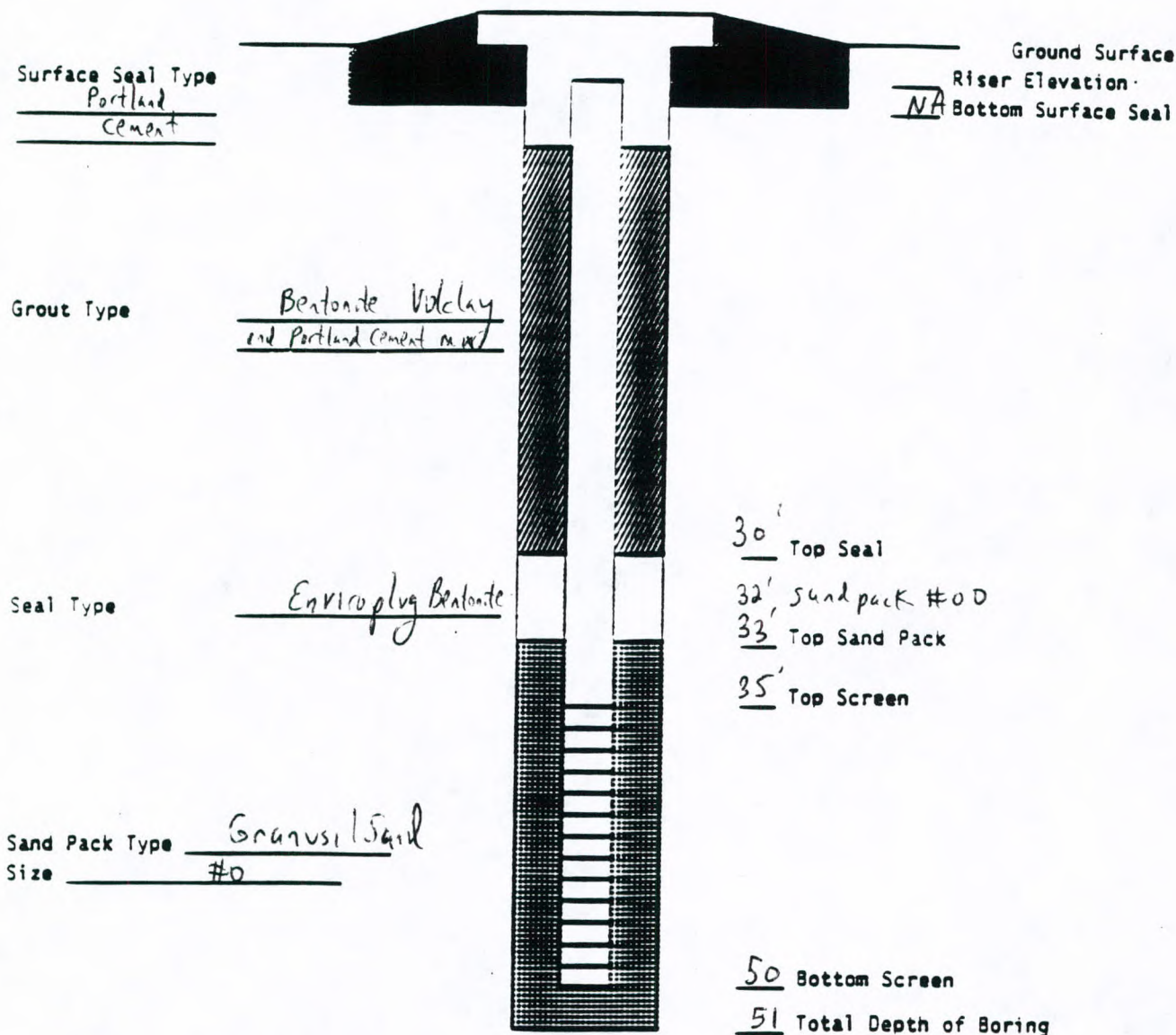
APPENDIX D

MONITORING WELL CONSTRUCTION DIAGRAMS

WELL CONSTRUCTION LOG

SITE Liberty JOB NO. 1482 WELL NO. MW-11
TOTAL DEPTH 50' SURFACE ELEV. 92.00 TOP RISER ELEV. 91.75'
WATER LEVELS (DEPTH, DATE, TIME) 40.0' 5/14/98 DATE INSTALLED 5/14/98
RISER DIA 2" MATERIAL PVC LENGTH 35'
SCREEN DIA 2" MATERIAL PVC LENGTH 15' SLOT SIZE 10

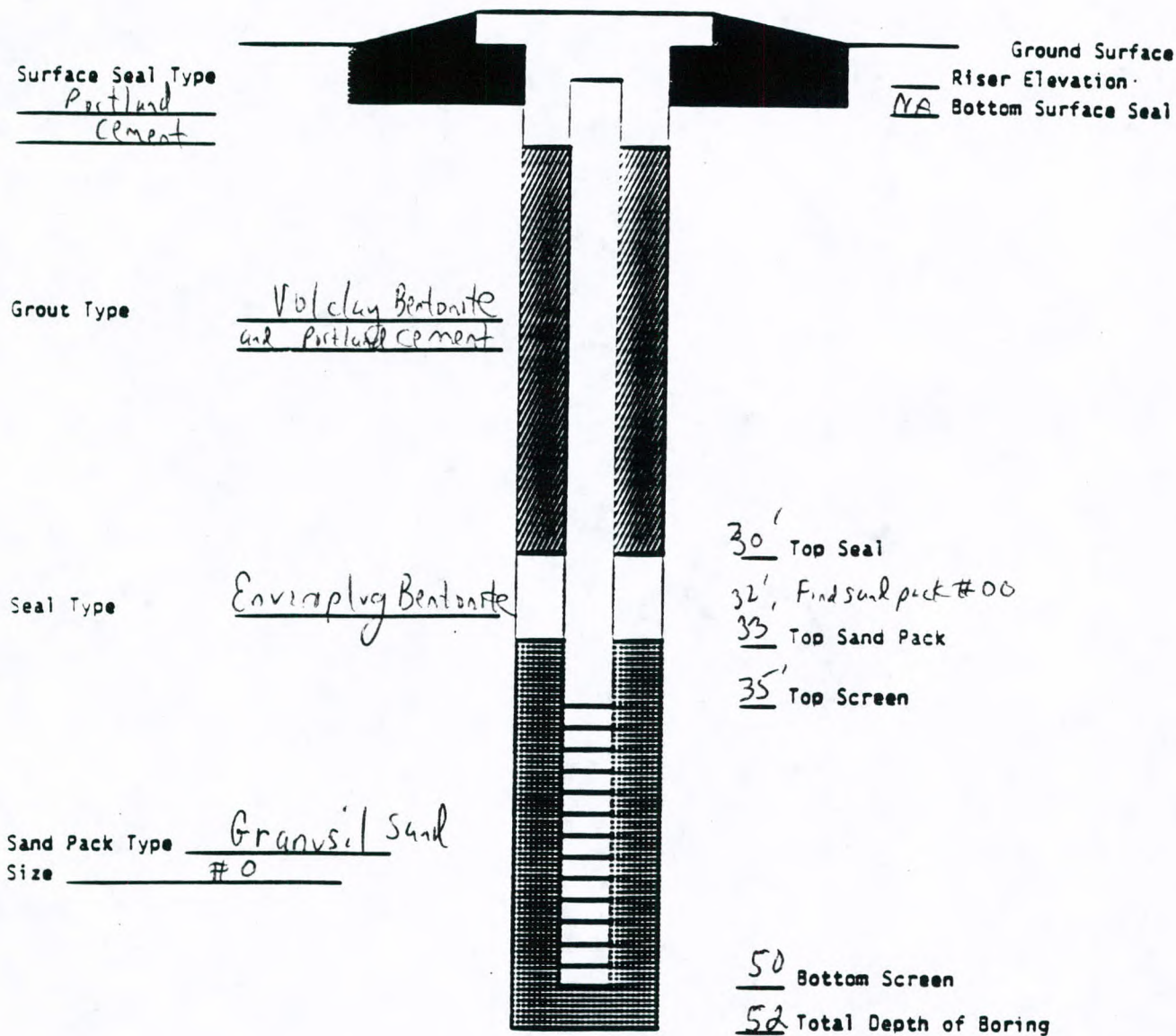
SCHEMATIC



WELL CONSTRUCTION LOG

SITE Liberty JOB NO. 1482 WELL NO. MW-12
 TOTAL DEPTH 50' SURFACE ELEV. 91.08 TOP RISER ELEV. 90.81
 WATER LEVELS (DEPTH, DATE, TIME) 40.0' 5/14/98 DATE INSTALLED 5/14/98
 RISER DIA 2" MATERIAL PVC LENGTH 15
 SCREEN DIA 2" MATERIAL PVC LENGTH 35 SLOT SIZE 10

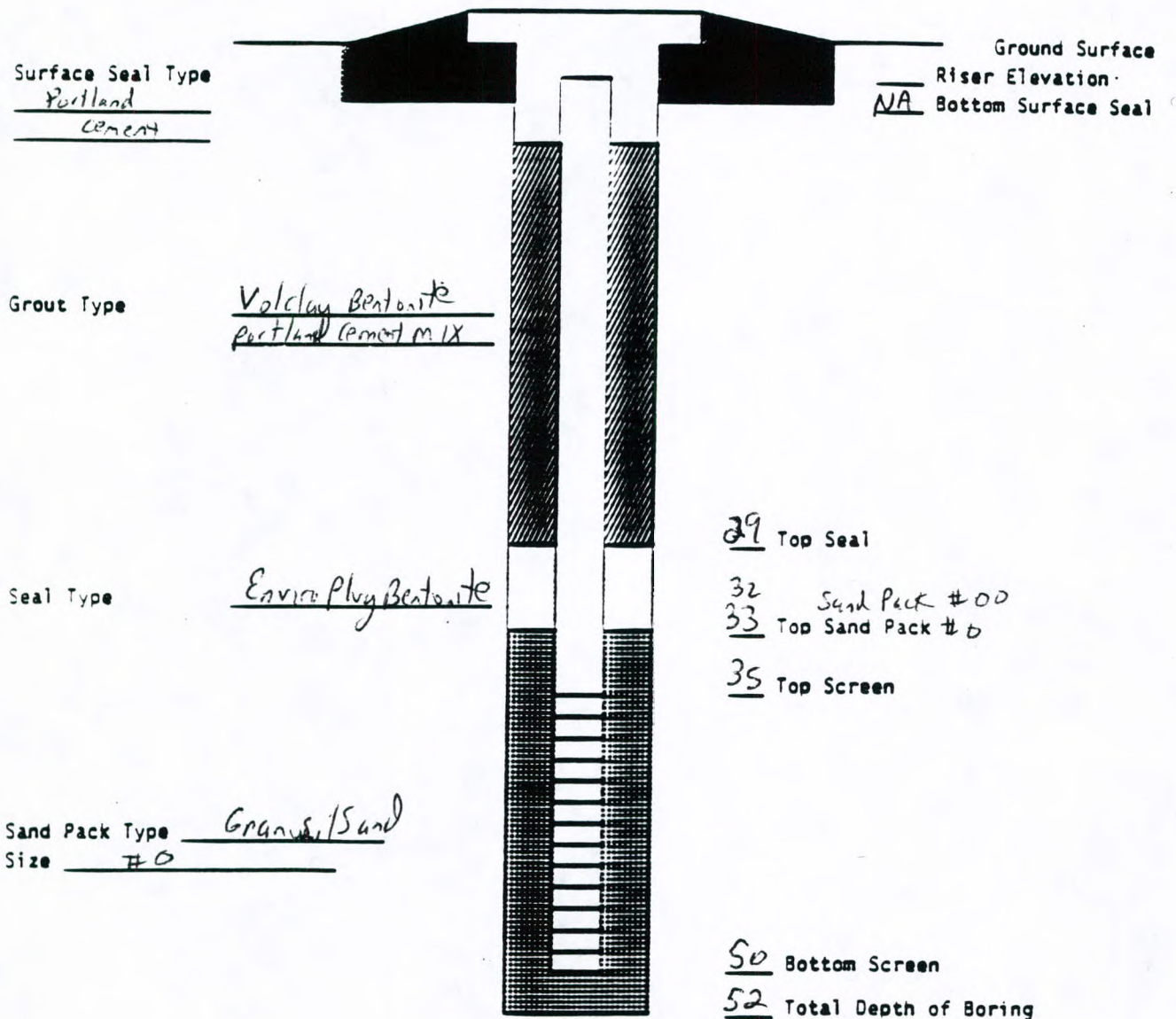
SCHEMATIC



WELL CONSTRUCTION LOG

SITE Liberty JOB NO. 1482 WELL NO. MW-13
TOTAL DEPTH 50' SURFACE ELEV. 90.84 TOP RISER ELEV. 90.64
WATER LEVELS (DEPTH, DATE, TIME) 40' 5/8/98 DATE INSTALLED 5/8/98
RISER DIA 2" MATERIAL PVC LENGTH 35'
SCREEN DIA 2" MATERIAL PVC LENGTH 15' SLOT SIZE 10

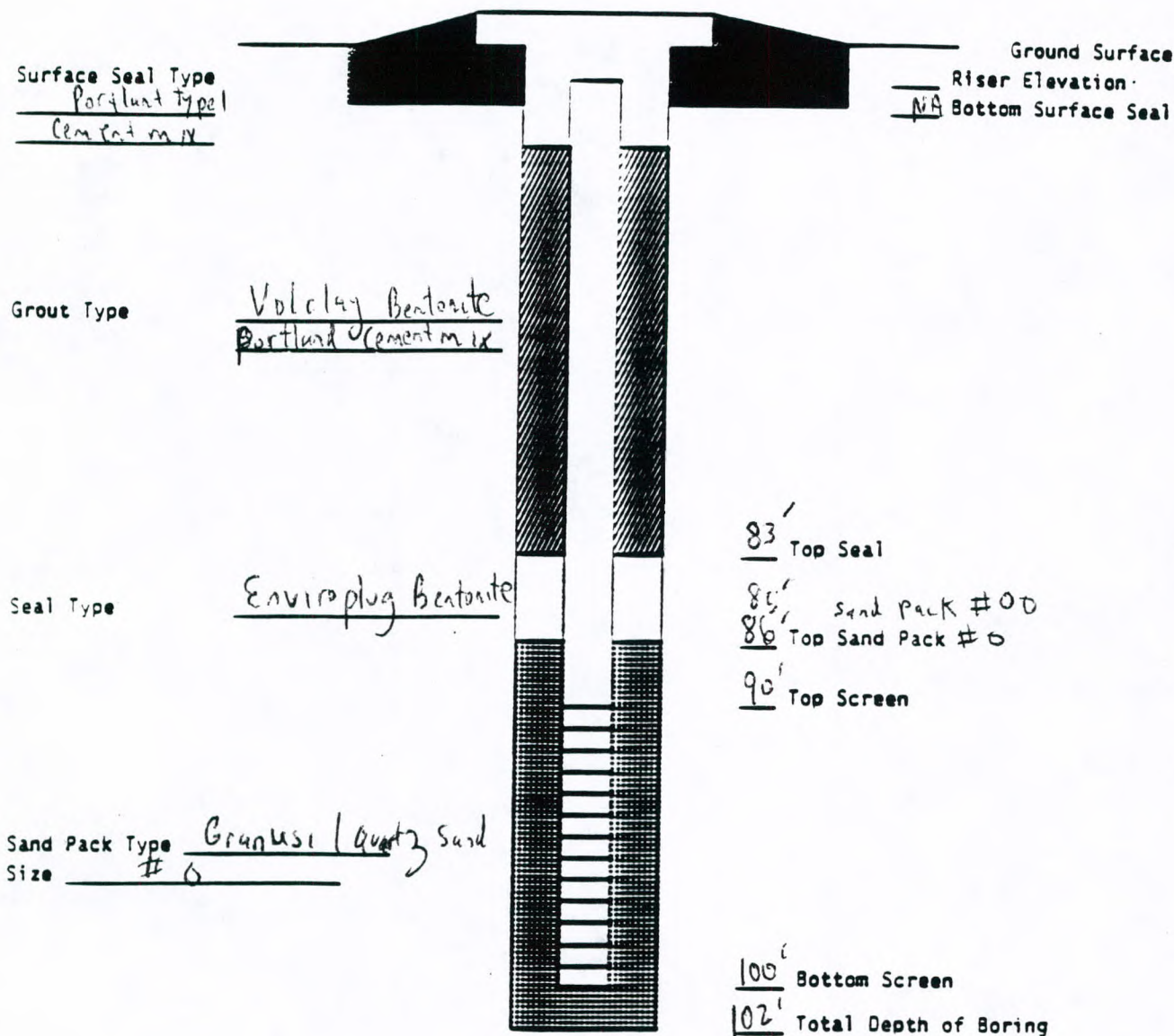
SCHEMATIC



WELL CONSTRUCTION LOG

SITE Liberty JOB NO. 1482 WELL NO. MW-14
 TOTAL DEPTH 100' SURFACE ELEV. 91.12' TOP RISER ELEV. 90.81
 WATER LEVELS (DEPTH, DATE, TIME) 40 / 5 / 12 / 96 DATE INSTALLED 5 / 13 / 98
 RISER DIA 2" MATERIAL PVC LENGTH 90'
 SCREEN DIA 2" MATERIAL PVC LENGTH 10' SLOT SIZE 10 slot

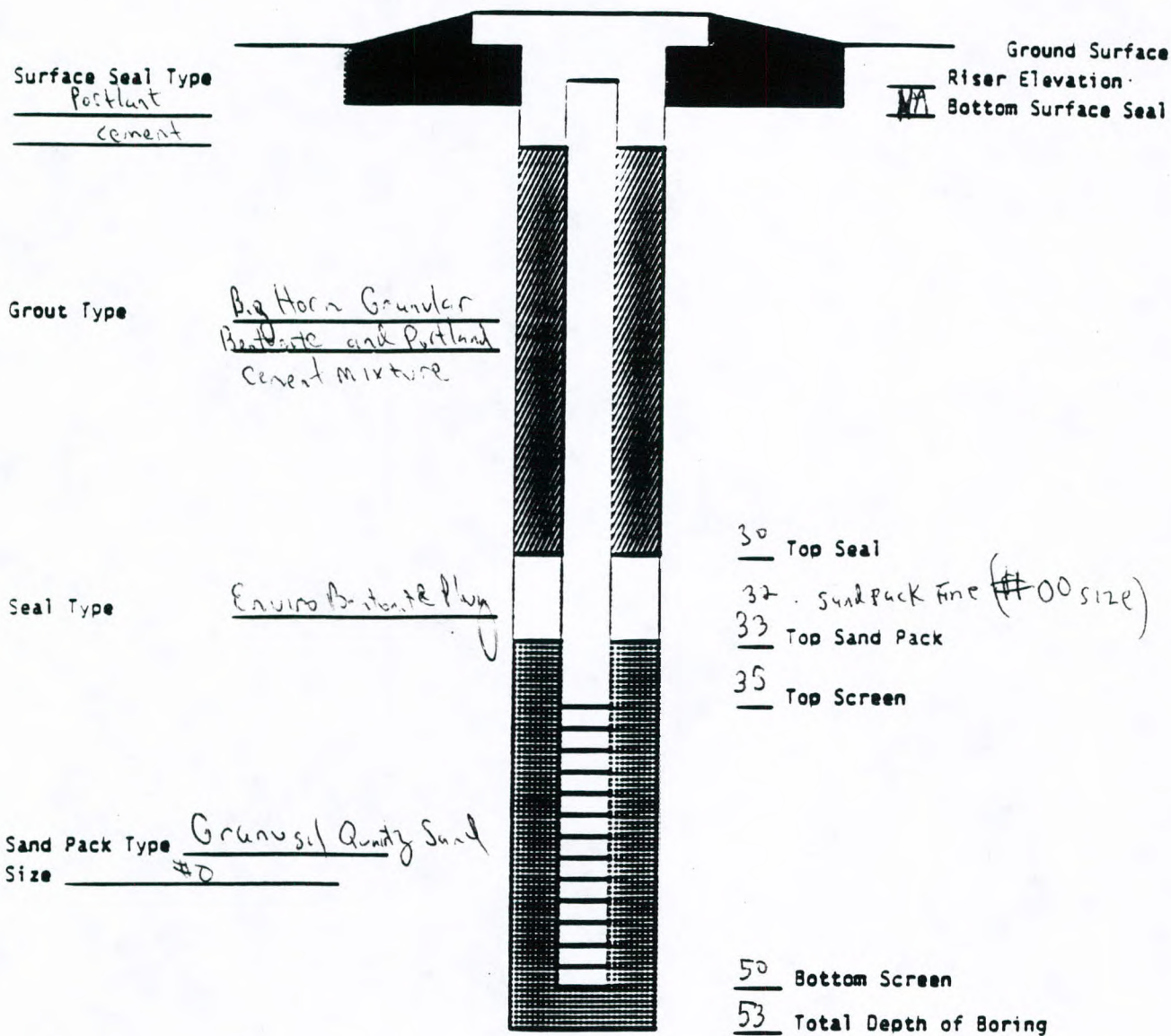
SCHEMATIC



WELL CONSTRUCTION LOG

SITE Liberty JOB NO. 1482 WELL NO. MW-15
 TOTAL DEPTH 50 FT SURFACE ELEV. 91.92' TOP RISER ELEV. 91.55'
 WATER LEVELS (DEPTH, DATE, TIME) 40' 5/7/98 DATE INSTALLED 5/7/98
 RISER DIA 2" MATERIAL PVC LENGTH 35'
 SCREEN DIA 2" MATERIAL PVC LENGTH 15' SLOT SIZE 10

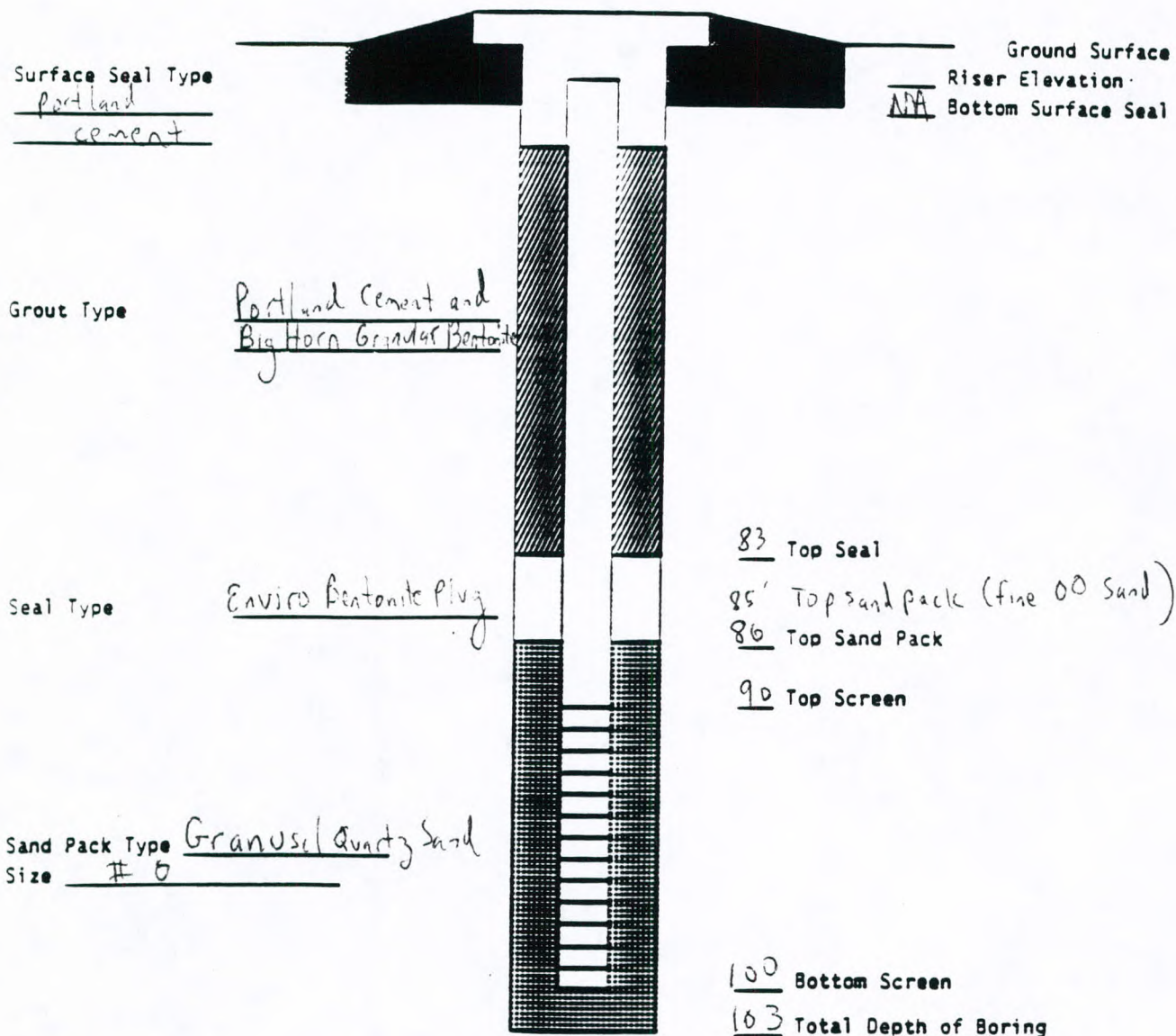
SCHEMATIC



WELL CONSTRUCTION LOG

SITE Liberty Industrial Finishing JOB NO. 1482 WELL NO. MW-16
TOTAL DEPTH 100 SURFACE ELEV. 91.97 TOP RISER ELEV. 91.61
WATER LEVELS (DEPTH, DATE, TIME) 40.00' DATE INSTALLED 5/6/98
RISER DIA 2" MATERIAL PVC LENGTH 90'
SCREEN DIA 2" MATERIAL PVC LENGTH 10' SLOT SIZE 10

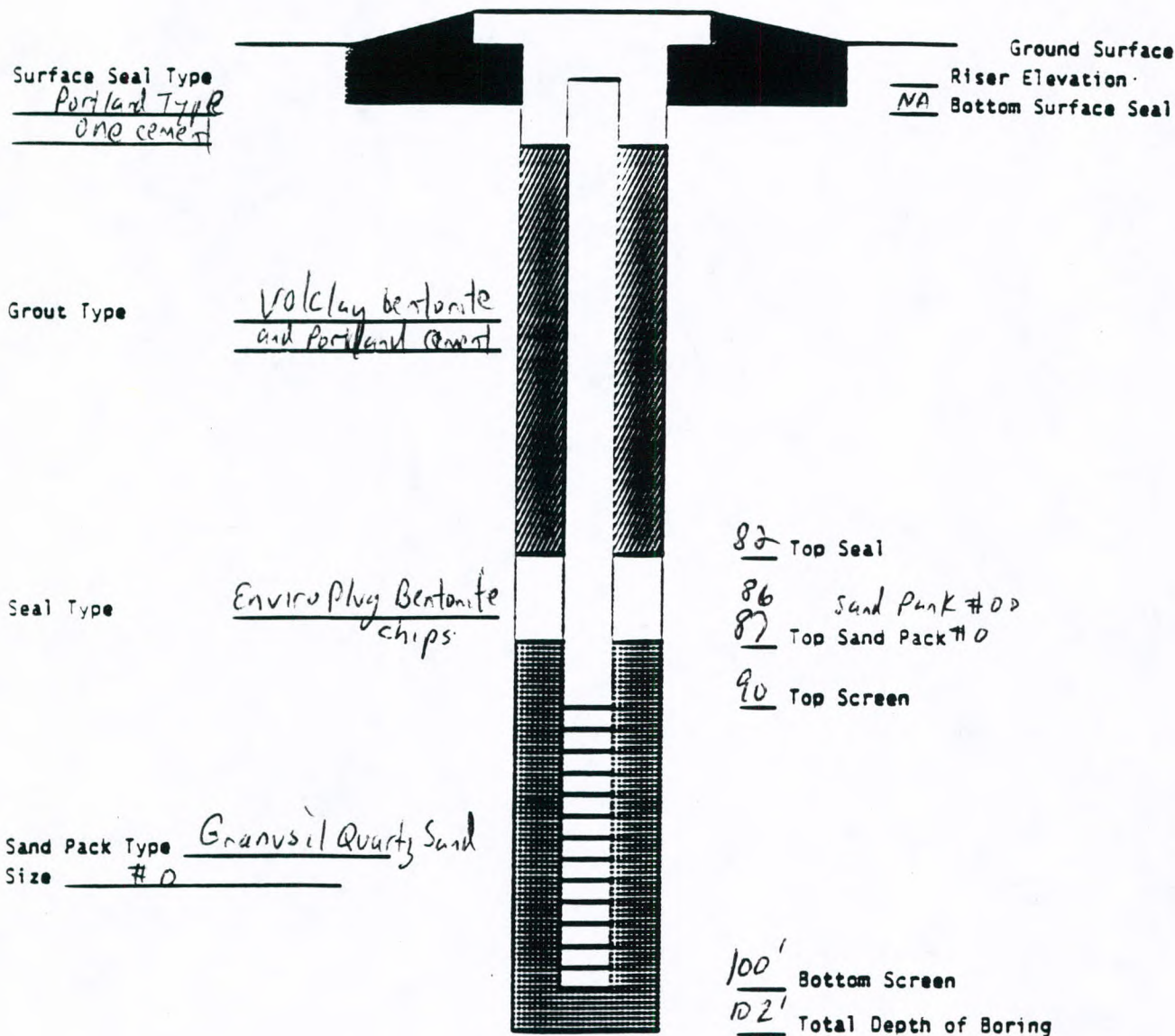
SCHEMATIC



WELL CONSTRUCTION LOG

SITE Liberty JOB NO. 1482 WELL NO. MW-17
 TOTAL DEPTH 100' SURFACE ELEV. 93.35 TOP RISER ELEV. 93.04
 WATER LEVELS (DEPTH, DATE, TIME) 40' 5/12/98 DATE INSTALLED 5/12/98
 RISER DIA 2" MATERIAL PVC LENGTH 90'
 SCREEN DIA 2" MATERIAL PVC LENGTH 10' SLOT SIZE 10

SCHEMATIC



Appendix E



APPENDIX E

SURVEYING REPORT

YEC, INC.
Clarkstown Executive Park
612 Corporate Way
Suite 4M
Valley Cottage, NY 10989
(914) 268-3203



October 27, 1998

S U R V E Y R E P O R T

Liberty Industrial Finishing
Brentwood, N.Y.

The Field Survey was completed on June 5, 1998. The survey was performed using a Topcon GTS-304 Total Station and a Topcon ATF1 Autolevel.

Coordinates are in the New York State Plane Coordinate System, Long Island Zone, NAD 1927. These were established by tying into the Sonia Landfill Site Survey which is based on a Suffolk County Control Monument 5-431.

Vertical Datum is NGVD 1929 established from U.S.C. & G.S. Benchmark Disk "D333 1950" located at the Brentwood Water Tank.

The survey was performed meeting New York State Association of Professional Land Surveyors Standards.

Field Notes and coordinate list are on following pages.

DONALD R. STEDGE, L.S., N.Y.S. Lic. No. 49759

No.	Code	North	East	Elevation	Desc.
1		202430.5539	2206182.1449		SPIKE
2		202245.2087	2206258.8516		SPIKE
3		202350.6480	2206593.3615		SPIKE
4		201813.4395	2206535.0676		SPIKE
5		202039.4946	2206869.7008		PK
10		202541.0992	2206292.0357		MW-17
11		202543.6795	2206296.4809		MW-07
12		202481.5250	2206426.0860		BLDG COR
13		202439.9421	2206291.4205		BLDG COR
14		202401.4824	2206275.0265		BLDG COR
15		202308.8669	2206350.9932		MW-05
16		202306.6942	2206341.0721		MW-06
17		202305.9439	2206304.5623		BLDG COR
18		202315.1771	2206389.4524		BLDG COR
19		202206.8421	2206403.0790		MW-01A
20		202189.9218	2206406.5102		MW-08
21		202187.4062	2206315.3860		MW-02A
22		202146.0823	2206222.5559		MW-03A
23		202386.0867	2206644.2498		MW-01
24		202372.5995	2206601.8867		MW-02
25		202361.5828	2206569.1553		MW-03
26		202344.6915	2206518.5470		MW-04
27		202327.3973	2206429.0367		BLDG COR
28		202382.5031	2206552.9887		BLDG COR
29		202478.1351	2206523.5222		BLDG COR
30		202249.4100	2206568.5076		MW-15
31		202259.7945	2206638.2652		MW-10
32		202254.7989	2206642.8297		MW-16
33		201965.2656	2206669.8526		MW-11
34		201973.3261	2206863.8471		MW-12
35		201966.1750	2206865.9278		MW-14
36		202117.3337	2206922.7383		MW-13
101		202430.5821	2206182.1263		SPIKE
102		202245.2252	2206258.8404		SPIKE
103		202350.6480	2206593.3615		SPIKE
104		201813.4395	2206535.0676		SPIKE
105		202039.5045	2206869.7153		PK
106		201724.8200	2205589.0001		SPIKE
107		201464.3734	2204533.9503		PK
108		201126.7800	2203619.4768		SPIKE
109		200880.6304	2202673.4579		SPIKE
110		200639.3525	2201890.7911		SPIKE
111		200325.0363	2201013.9103		SPIKE
112		200009.8733	2199864.2754		SPIKE
113		199759.9727	2199222.6463		PK
114		199675.3059	2198963.0430		SPIKE
115		199066.1790	2198926.9206		SPIKE
116		198205.8983	2198936.5864		PK
117		197399.6053	2198976.7355		SPIKE
118		196650.2307	2198981.5400		PK
119		195882.3010	2198956.1300		AXLE(STA#24/JOB#
120		195857.7254	2197769.1374		SPIKE(STA#1.JOB#
201		195857.7243	2197769.0827		SPIKE 1/SONIA LF
224		195882.3010	2198956.1300		SPIKE 24/SONIA LF

JOB: 98014

Crew: FD,HS

Material: FIELD DATA

Notes:

YEC/LIBERTY INDUSTRIAL SITE,V/O BRENTWOOD,T/O ISLIP,L.I.,N.Y.

DATE BEGUN: 06-04-98 08:38:14

DATE ENDED: 06-05-98 10:55:47

UNIT:

Distance unit: FEET

Angle unit: D.M.S.

Azimuth system: NORTH

Angle direction: RIGHT

Vertical system: ZENITH

ACTIVITY	POINT	HEIGHT	HORIZONTAL	VERTICAL	DISTANCE	CREATED TIME/DESC
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C. STA.	1	0.00				06-04-98 08:38:53 SPIKE
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REF. DIR.:

Occupy station: 1

Backsight: 2

Azimuth: 171.00000

BACKSIGHT	2		0.00000	90.07050	200.6051	SPIKE
TRAVERSE	2	0.00	0.00000	90.07000	200.6051	SPIKE
SIDESHOT	10	0.00	247.18450	89.51250	155.8800	MW-17
SIDESHOT	11	0.00	247.47150	89.47550	160.8500	MW-07
SIDESHOT	12	0.00	280.40500	88.41450	249.2851	BLDG COR

NOTE:

OVERHANG

SIDESHOT	13	0.00	287.34200	87.28100	109.7901	BLDG COR
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NOTE:

OVERHANG

SIDESHOT	14	0.00	309.51450	90.12493	97.3299	BLDG COR
C. STA.	2	0.00				06-04-98 08:57:27 SPIKE

BACKSIGHT	1		0.00000	90.00500	200.5951	SPIKE
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TRAVERSE	3	0.00	94.59150	90.01450	350.7500	SPIKE
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TRAVERSE	3	0.00	274.59200	269.58450	350.7551	SPIKE
----------	---	------	-----------	-----------	----------	-------

BACKSIGHT	1		180.00050	269.59250	200.5900	SPIKE
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SIDESHOT	15	0.00	77.50350	91.34000	112.0400	MW-05
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SIDESHOT	16	0.00	75.41350	89.18150	102.6800	MW-06
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SIDESHOT	17	0.00	59.26550	91.22347	76.0400	BLDG COR
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SIDESHOT	18	0.00	84.18100	89.48453	148.1700	BLDG COR
----------	----	------	----------	----------	----------	----------

C. STA.	2	0.00				06-04-98 10:21:58 SPIKE
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BACKSIGHT	1		0.00000	90.00500	200.5900	SPIKE
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SIDESHOT	19	0.00	127.22450	89.57450	149.2500	MW-01A
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SIDESHOT	20	0.00	133.00350	89.15200	157.6900	MW-08
----------	----	------	-----------	----------	----------	-------

SIDESHOT	21	0.00	158.07050	88.38100	80.8800	MW-02A
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SIDESHOT	22	0.00	222.35350	88.56500	105.5851	MW-03A
----------	----	------	-----------	----------	----------	--------

ACTIVITY	POINT	HEIGHT	HORIZONTAL	VERTICAL	DISTANCE	CREATED TIME/DESC
TRAVERSE	3	0.00	0.00000	0.00000	0.0000	SPIKE
OCC. STA.	3	0.00				06-04-98 10:56:38
BACKSIGHT	2		0.00000	90.03150	350.7500	SPIKE
SIDESHOT	23	0.00	162.38300	90.00000	62.0151	MW-01
SIDESHOT	24	0.00	128.43100	89.53200	23.5500	MW-02
SIDESHOT	25	0.00	41.48200	90.46300	26.5651	MW-03
SIDESHOT	26	0.00	12.56350	89.47500	75.0551	MW-04
SIDESHOT	27	0.00	9.26300	89.48150	165.9700	BLDG COR
SIDESHOT	28	0.00	55.46100	85.24256	51.5948	BLDG COR
SIDESHOT	29	0.00	78.46500	89.54300	145.3700	BLDG COR
OCC. STA.	3	0.00				06-04-98 11:17:39
BACKSIGHT	2		0.00000	90.03150	350.7451	SPIKE
TRAVERSE	4	0.00	293.41200	90.10300	540.3900	SPIKE
TRAVERSE	4	0.00	113.41200	269.49450	540.3900	SPIKE
BACKSIGHT	2		180.00050	269.57050	350.7500	SPIKE
OCC. STA.	4	0.00				06-04-98 11:31:34
BACKSIGHT	3		0.00000	89.52550	540.3851	SPIKE
TRAVERSE	5	0.00	49.46000	90.05200	403.8500	PK
TRAVERSE	5	0.00	229.46050	269.54450	403.8551	PK
BACKSIGHT	3		180.00050	270.07350	540.3851	SPIKE
SIDESHOT	30	0.00	358.11350	89.37350	437.2800	MW-15
SIDESHOT	31	0.00	6.49300	89.57150	458.1500	MW-10
SIDESHOT	32	0.00	7.31400	89.56150	454.3451	MW-16
OCC. STA.	5	0.00				06-04-98 12:40:23
BACKSIGHT	4		0.00000	89.58500	403.8500	SPIKE
SIDESHOT	33	0.00	13.39500	89.44300	213.2000	MW-11
SIDESHOT	34	0.00	309.05450	89.57400	66.4300	MW-12
SIDESHOT	35	0.00	306.59100	89.55400	73.4200	MW-14
SIDESHOT	36	0.00	158.18350	90.06400	94.1951	MW-13
OCC. STA.	104	0.00				06-05-98 06:51:30
BACKSIGHT	103		0.00000	89.54500	540.3751	SPIKE
NOTE:						
CORDS 101-105(INCLUSIVESN=STA#'S 1-5(JOB#98014)/STATIONS 106-120 ARE TRAV T						
IES TO JOB#96046						
TRAVERSE	106	0.00	258.27200	89.57150	950.2551	SPIKE
TRAVERSE	106	0.00	78.27250	270.03100	950.2500	SPIKE
BACKSIGHT	103		180.00050	270.05350	540.3751	SPIKE
OCC. STA.	106	0.00				06-05-98 07:22:08
BACKSIGHT	104		0.00000	90.05050	950.2500	SPIKE
TRAVERSE	107	0.00	171.29050	90.01100	1086.7700	PK
TRAVERSE	107	0.00	351.29100	269.59000	1086.7651	PK
BACKSIGHT	104		180.00050	269.55000	950.2500	SPIKE
OCC. STA.	107	0.00				06-05-98 07:44:21

ACTIVITY	POINT	HEIGHT	HORIZONTAL	VERTICAL	DISTANCE	CREATED TIME/DESC
						PK
BACKSIGHT	106		0.00000	90.01000	1086.7700	SPIKE
TRAVERSE	108	0.00	173.36150	90.10300	974.8451	SPIKE
TRAVERSE	108	0.00	353.36200	269.49450	974.8551	SPIKE
BACKSIGHT	106		180.00050	269.59200	1086.7700	SPIKE
OCC. STA.	108	0.00				06-05-98 08:00:45
						SPIKE
BACKSIGHT	107		0.00000	89.51450	974.8451	PK
TRAVERSE	109	0.00	185.40400	89.49350	977.5700	SPIKE
TRAVERSE	109	0.00	5.40450	270.10500	977.5700	SPIKE
BACKSIGHT	107		180.00050	270.08300	974.8500	PK
OCC. STA.	109	0.00				06-05-98 08:13:28
						SPIKE
BACKSIGHT	108		0.00000	90.12500	977.5651	SPIKE
TRAVERSE	110	0.00	177.27050	89.58350	819.0500	SPIKE
TRAVERSE	110	0.00	357.27050	270.01450	819.0451	SPIKE
BACKSIGHT	108		180.00000	269.47300	977.5751	SPIKE
OCC. STA.	110	0.00				06-05-98 08:26:18
						SPIKE
BACKSIGHT	109		0.00000	90.04050	819.0500	SPIKE
TRAVERSE	111	0.00	177.24500	90.05350	931.5600	SPIKE
TRAVERSE	111	0.00	357.24450	269.54350	931.5551	SPIKE
BACKSIGHT	109		180.00000	269.56050	819.0500	SPIKE
OCC. STA.	111	0.00				06-05-98 08:40:09
						SPIKE
BACKSIGHT	110		0.00000	89.56500	931.5500	SPIKE
TRAVERSE	112	0.00	184.23200	90.00550	1192.1051	SPIKE
TRAVERSE	112	0.00	4.23250	269.59050	1192.1000	SPIKE
BACKSIGHT	110		180.00000	270.03200	931.5500	SPIKE
OCC. STA.	112	0.00				06-05-98 08:55:25
						SPIKE
BACKSIGHT	111		0.00000	90.01150	1192.1051	SPIKE
TRAVERSE	113	0.00	174.03050	90.01100	688.6051	PK
TRAVERSE	113	0.00	354.03050	269.59150	688.6051	PK
BACKSIGHT	111		180.00050	269.59050	1192.1100	SPIKE
OCC. STA.	113	0.00				06-05-98 09:20:01
						PK
BACKSIGHT	112		0.00000	90.02000	688.6100	SPIKE
TRAVERSE	114	0.00	183.13000	90.21400	273.0751	SPIKE
TRAVERSE	114	0.00	3.13000	269.38300	273.0751	SPIKE
BACKSIGHT	112		180.00000	269.58200	688.6100	SPIKE
OCC. STA.	114	0.00				06-05-98 09:34:28
						SPIKE
BACKSIGHT	113		0.00000	89.44400	273.0800	PK
TRAVERSE	115	0.00	111.27250	90.12400	610.2200	SPIKE
TRAVERSE	115	0.00	291.27250	269.47550	610.2251	SPIKE
BACKSIGHT	113		180.00000	270.15450	273.0800	PK
OCC. STA.	115	0.00				06-05-98 09:44:04
						SPIKE

ACTIVITY	POINT	HEIGHT	HORIZONTAL	VERTICAL	DISTANCE	CREATED TIME/DESC
BACKSIGHT	114		0.00000	89.50300	610.2351	SPIKE
TRAVERSE	116	0.00	175.57450	90.20450	860.3900	PK
TRAVERSE	116	0.00	355.57500	269.39400	860.3951	PK
BACKSIGHT	114		180.00050	270.09400	610.2351	SPIKE
OCC. STA.	116	0.00				06-05-98 09:59:43 PK
BACKSIGHT	115		0.00000	89.41400	860.3851	SPIKE
TRAVERSE	117	0.00	177.47350	90.15250	807.3300	SPIKE
TRAVERSE	117	0.00	357.47400	269.45050	807.3351	SPIKE
BACKSIGHT	115		180.00050	270.18400	860.3800	SPIKE
OCC. STA.	117	0.00				06-05-98 10:12:45 SPIKE
BACKSIGHT	116		0.00000	89.47150	807.3400	PK
TRAVERSE	118	0.00	182.29000	90.08350	749.4300	PK
SIDESHOT	118	0.00	2.29000	269.51350	746.4251	<RECORD DELETED>
TRAVERSE	118	0.00	2.29000	269.51350	749.4251	PK
BACKSIGHT	116		180.00000	270.13000	807.3351	PK
OCC. STA.	118	0.00				06-05-98 10:28:42 PK
BACKSIGHT	117		0.00000	89.54250	749.4200	SPIKE
TRAVERSE	119	0.00	182.15450	90.14550	768.3900	AXLE(STA#24/JOB#9604 6)
TRAVERSE	119	0.00	2.15450	269.45400	768.3900	AXLE(STA#24/JOB#9604 6)
BACKSIGHT	117		180.00000	270.06150	749.4151	SPIKE
OCC. STA.	119	0.00				06-05-98 10:45:47 AXLE(STA#24/JOB#9604 6)
BACKSIGHT	118		0.00000	89.48000	768.3900	PK
SIDESHOT	120	0.00	266.55100	89.58100	1187.3000	SPIKE(STA#1.JOB#9604 6)
SIDESHOT	120	0.00	86.55100	270.02250	1187.3000	SPIKE(STA#1.JOB#9604 6)
BACKSIGHT	118		180.00050	270.12150	768.3900	PK

98014

VEC/LIBERTY INDUSTRIAL SITE 06/04/98
MW ELEVS FB, HS

+	H.I.	-	ELEV	REMARKS
			94.36	USCGS DISK D333 1950 @ BRENTWOOD WATER TANK
4.75	99.11			
		2.55	96.56	T. PVC (NO CASING) MW-03A
		4.21	94.90	GRND "
		4.70	94.41	T.P. #1
4.78	99.19			
		4.55	94.64	GRND MW-02H
		3.73	95.46	T. PVC (NO CASING) "
3.65	99.11			
		5.44	93.67	GRND MW-01A
		4.695	94.415	T. PVC (NO CASING) "
		5.38	93.23	GRND MW-08
		4.57	94.54	T. CASING "
		5.07	94.04	T. PVC "
		4.07	95.04	T.P. #3
2.62	97.64			
		4.45	93.19	GRND MW-06
		3.745	93.895	T. CASING "
		3.825	93.815	T. PVC "
		4.42	93.22	GRND MW-05
		2.945	94.695	T. CASING
		3.22	94.42	T. PVC
		4.83	92.91	STA #2 SPIKE

(1)

78014

VEC/LIBERTY INDUSTRIAL SITE 06/04/98
MW ELEVS FB, HS

+	H.I.	-	ELEV	REMARKS
4.94	97.75			
		4.72	93.03	STA #1 SPIKE
4.46	97.49			
		4.14	93.35	T. CASING (FLASH MOUNT) MW-17
		4.45	93.04	T. PVC "
		4.13	93.36	GRND (FLASH MOUNT) MW-07
		4.00	93.49	T. CASING "
		4.18	93.31	T. PVC "
		4.41	93.08	T.P. #6
4.30	97.98			
		4.79	93.09	T. CASING (FM) MW-04
		5.14	92.74	T. PVC "
* FM = FLASH MOUNT				
		4.805	93.075	T. CASING (FM) MW-03
		5.53	92.38	T. PVC "
		5.01	92.87	T. CASING (FM) MW-02
		5.475	92.405	T. PVC "
		4.96	92.92	T. CASING (FM) MW-01
		5.175	92.705	T. PVC "
		5.29	92.59	STA #3 SPIKE
		6.14	91.74	T.P. #7
4.63	96.37			
		7.45	91.92	T. CASING (FM) MW-15
		4.82	91.55	T. PVC "

(2)

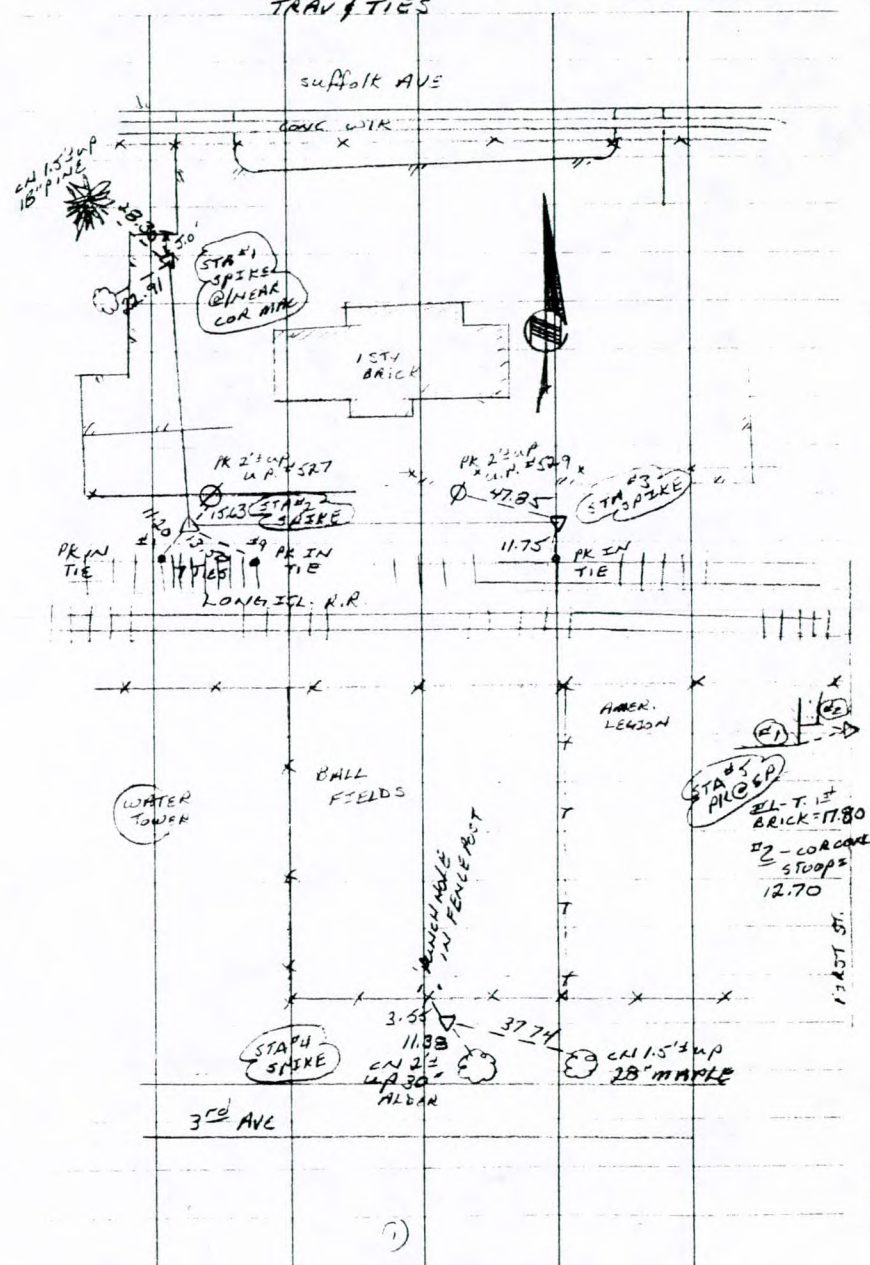
98014

YEC/LIBERTY INDUSTRIAL SITE
MW ELEV'S06/04/98
FD, HS

	H.I.	-	ELEV	REMARKS
		4.53	91.84	T. CASING (FM) MW-10
		4.84	91.53	T. PVC "
		4.40	91.97	T. CASING (FM) MW-10
		4.76	91.61	T. PVC "
		4.12	92.25	T. P. #8
4.68	96.93			
		4.93	92.00	T. CASING (FM) MW-11
		5.18	91.75	T. PVC "
		5.805	91.125	T. CASING (FM) MW-14
		6.17	90.76	T. PVC "
		5.85	91.08	T. CASING (FM) MW-12
		6.12	90.91	T. PVC "
		6.085	90.845	T. CASING (FM) MW-13
		6.29	90.64	T. PVC "
		5.90	91.03	STA #5 P.R.
5.34	96.37			
		4.86	91.51	STA #4 SPIKE
5.82	97.33			
		5.09	92.24	T. P. #11
5.60	97.84			
		3.46	94.38	USC/65 disk D333
			<94.36>	1950 (S/A BEG.)

(3)

98014

YEC/LIBERTY INDUSTRIAL SITE
1/0 BRENTWOOD T/O ISLIP, L.I.
TRAVEL TIES06/04/98
FD, HS

YEC, INC./YEC ENGINEERING, P.C.

Clarkstown Executive Park
612 Corporate Way, Suite 4M
Valley Cottage, NY 10989
Tel: (914) 268-3203 Fax: (914) 268-5313

October 29, 1998

Keith Robins
Dvirka and Bartilucci
330 Crossways Park Drive
Woodbury, NY 11797-2015

RE: Liberty Industrial Finishing Survey

Dear Mr. Robins:

Enclosed please find the well elevation table requested to go with the survey report. Please let me know if you need anything further.

Sincerely,



Y.S. Ed Chen, Ph.D., P.E.
President, YEC, Inc.



YEC, INC./YEC ENGINEERING, P.C.

Clarkstown Executive Park
612 Corporate Way, Suite 4M
Valley Cottage, NY 10989
Tel: (914) 268-3203 Fax: (914) 268-5313

LIBERTY INDUSTRIAL FINISHING
Brentwood, New York

WELL ELEVATION TABLE			
WELL I.D.	GROUND	TOP CASING	TOP PVC
MW-1	92.92	92.92	92.70
MW-1A	93.67	-	94.42
MW-2	92.87	92.87	92.40
MW-2A	94.64	-	95.46
MW-3	93.08	93.08	92.38
MW-3A	94.90	-	96.56
MW-4	93.09	93.09	92.74
MW-5	93.22	94.70	94.42
MW-6	93.19	93.90	93.82
MW-7	93.36	93.49	93.31
MW-8	93.23	94.54	94.04
MW-10	91.84	91.84	91.53
MW-11	92.00	92.00	91.75
MW-12	91.08	91.08	90.81
MW-13	90.84	90.84	90.64
MW-14	91.12	91.12	90.76
MW-15	91.92	91.92	91.55
MW-16	91.97	91.97	91.61
MW-17	93.35	93.35	93.04
Date of survey: June 5, 1998			
Vertical Datum: NGVD 1929 from U.S.C. & G.S. monument			
Horizontal Datum: New York State Plane Coordinate System, Long Island Zone, Lambert Projection, NAD 1927			



APPENDIX F

SURFACE SOIL SAMPLE RESULTS

Page: 1A of 1N

CONSTITUENT	(Units in mg/kg)	SITE		SS-01	SS-01	SS-02	SS-02	SS-03
		SAMPLE ID	NYSDEC SOIL	SS-1(0-2)	SS-1(2-6)	SS-2(0-2)	SS-2(2-6)	SS-3(0-2)
		DATE	CLEANUP	04/22/97	04/22/97	04/22/97	04/22/97	04/22/97
		DEPTH (ft)	OBJECTIVES	0.08	0.33	0.08	0.33	0.08
Aluminum				8510	11900	12000	12200	11800
Antimony				12.2	5.5 B	0.77 U	0.77 U	0.56 U
Arsenic		7.5		[381.]	[967.]	6.3	6.3	5.2
Barium		300		43.2	28.4 B	92.7	35.8 B	31.4 B
Beryllium		0.16		[0.40] B	0.23 U	[1.5]	0.26 U	[0.24] B
Cadmium		10		0.50 B	0.23 U	0.64 B	0.43 B	0.18 U
Calcium				2040	720. B	2570	1580	1060
Chromium		50		26.2	13.2	[74.6]	23.3	23.8
Cobalt		30		10.9	2.6 B	[35.9]	7.2 B	6.1 B
Copper		25		[61.9]	9.7	[208.]	[34.3]	[26.7]
Iron		2000		[12800]	[14400]	[22400]	[14400]	[14500]
Lead		400		151.	43.2	193.	79.1	35.4
Magnesium				1060	953. B	1510	1260 B	1240
Manganese				93.8	71.8	160.	73.7	82.2
Mercury		0.10		[0.26]	[0.22]	[0.20]	[0.21]	0.12 U
Nickel		13		[27.5]	5.8 B	[77.1]	[18.8]	12.3
Potassium				364. B	337. B	550. B	472. B	342. B
Selenium		2		[2.0]	1.6	[4.5]	[2.5]	1.6
Silver				0.20 U	0.23 U	0.26 U	0.26 U	0.18 U
Sodium				125. B	62.2 B	394. B	197. B	70.5 B
Thallium				0.59 U	0.70 U	0.77 U	0.77 U	0.56 U
Vanadium		150		21.7	24.9	29.5	28.0	23.1
Zinc		20		[362.]	[37.2]	[728.]	[159.]	[122.]

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CONSTITUENT	(Units in mg/kg)	SITE		SS-03	SS-04	SS-04	SS-05	SS-05
		SAMPLE ID	NYSDEC SOIL	SS-3(2-6)	SS-4(0-2)	SS-4(2-6)	SS-05(0-2)	SS-05(2-6)
		DATE	CLEANUP	04/22/97	04/22/97	04/22/97	04/22/97	04/22/97
		DEPTH (ft)	OBJECTIVES	0.33	0.08	0.33	0.08	0.33
Aluminum				13800	8690	8530	8360	8540
Antimony				0.61 U	0.65 U	0.56 U	0.67 U	0.68 U
Arsenic		7.5		5.7	4.3	4.4	4.9	5.0
Barium		300		38.6 B	29.8 B	23.8 B	29.8 B	22.7 B
Beryllium		0.16		[0.35] B	[0.26] B	0.18 U	[0.30] B	[0.32] B
Cadmium		10		0.20 U	0.28 B	0.21 B	0.52 B	0.32 B
Calcium				1390	1100	895. B	11700	9480
Chromium		50		25.8	17.4	13.9	12.0	11.5
Cobalt		30		6.9 B	5.5 B	4.3 B	3.3 B	2.7 B
Copper		25		[27.8]	[28.9]	19.2	11.8	9.2
Iron		2000		[15800]	[10900]	[10700]	[10800]	[10700]
Lead		400		31.6	42.8	33.1	35.8	30.4
Magnesium				1500	795. B	720. B	2580	2030
Manganese				97.2	68.4	59.0	88.3	75.2
Mercury		0.10		[0.18]	[0.32]	[0.24]	[0.26]	[0.17]
Nickel		13		[13.6]	[13.1]	10.	8.4 B	6.6 B
Potassium				404. B	243. B	228. B	336. B	321. B
Selenium		2		1.8	1.5	1.4	1.3	0.93 B
Silver				0.20 U	0.22 U	0.18 U	0.22 U	0.23 U
Sodium				95.7 B	66.4 B	43.9 B	56.3 B	84.3 B
Thallium				0.61 U	0.65 U	0.56 U	0.67 U	0.68 U
Vanadium		150		24.7	17.0	16.8	17.2	17.4
Zinc		20		[108.]	[122.]	[78.5]	[79.3]	[62.4]

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CONSTITUENT	(Units in mg/kg)	SITE		SS-06	SS-06	SS-07	SS-07	SS-08
		SAMPLE ID	NYSDEC SOIL	SS-6(0-2)	SS-6(2-6)	SS-7(0-2)	SS-7(2-6)	SS-8(0-2)
		DATE	CLEANUP	04/22/97	04/22/97	04/22/97	04/22/97	04/22/97
		DEPTH (ft)	OBJECTIVES	0.08	0.33	0.08	0.33	0.08
Aluminum				7540	7790	6810	5670	6460
Antimony				0.59 U	0.72 B	0.66 U	0.53 U	0.62 U
Arsenic		7.5		4.3	4.3	3.9	3.5	4.3
Barium		300		22.4 B	20.9 B	24.5 B	16.2 B	20.0 B
Beryllium		0.16		0.20 U	0.22 U	0.22 U	0.18 U	0.21 U
Cadmium		10		0.34 B	0.29 B	0.49 B	0.40 B	0.32 B
Calcium				2420	2570	1390	863. B	870. B
Chromium		50		11.2	11.1	13.3	8.1	10.7
Cobalt		30		3.2 B	2.4 B	4.2 B	1.5 B	2.4 B
Copper		25		13.2	10.1	22.4	8.1	12.6
Iron		2000		[9580]	[9370]	[8820]	[6820]	[8680]
Lead		400		48.8	42.4	122.	83.4	65.9
Magnesium				979. B	1200	741. B	540. B	568. B
Manganese				63.5	56.2	77.4	41.8	54.6
Mercury		0.10		[0.21]	[0.14]	[0.16]	[0.14]	[0.43]
Nickel		13		6.8 B	5.8 B	[15.0]	4.7 B	6.6 B
Potassium				200. B	227. B	279. B	173. B	175. B
Selenium		2		1.2	1.1	1.4	0.99	1.3
Silver				0.20 U	0.22 U	0.22 U	0.72 B	0.21 U
Sodium				44.5 B	79.3 B	125. B	50.9 B	38.3 B
Thallium				0.59 U	0.66 U	0.66 U	0.53 U	0.62 U
Vanadium		150		16.5	16.3	17.6	13.9	15.1
Zinc		20		[65.5]	[49.4]	[183.]	[98.4]	[156.]

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CONSTITUENT	(Units in mg/kg)	SITE	SS-08	SS-09	SS-09	SS-10	SS-10
		SAMPLE ID	SS-8(2-6)	SS-9(0-2)	SS-9(2-6)	SS-10(0-2)	SS-10(2-6)
		DATE	04/22/97	04/22/97	04/22/97	04/22/97	04/22/97
		DEPTH (ft)	0.33	0.08	0.33	0.08	0.33
Aluminum			8590	8720	7450	6290	5530
Antimony			0.54 U	0.50 U	0.60 U	0.49 U	0.50 U
Arsenic	7.5		5.3	5.2	4.4	3.6	2.9
Barium	300		24.9 B	26.4 B	21.5 B	23.6 B	17.6 B
Beryllium	0.16		0.18 U	0.17 U	0.20 U	0.16 U	0.17 U
Cadmium	10		0.35 B	0.23 B	0.20 U	0.16 U	0.17 U
Calcium			990.	1030	878. B	546. B	575. B
Chromium	50		13.3	12.7	10.8	10.4	10.0
Cobalt	30		2.7 B	3.5 B	2.9 B	5.3 B	4.4 B
Copper	25		14.0	15.3	12.1	15.7	14.9
Iron	2000		[10700]	[10400]	[9050]	[8780]	[7940]
Lead	400		72.5	42.1	31.4	15.2	15.0
Magnesium			764. B	865.	702. B	1040	880.
Manganese			65.8	96.4	70.8	565.	110.
Mercury	0.10		[0.36]	[0.21]	[0.27]	0.081 U	0.094 U
Nickel	13		7.0 B	8.0	6.8 B	9.7	8.5
Potassium			246. B	327. B	268. B	332. B	286. B
Selenium	2		1.3	1.1	1.0	0.87	0.89
Silver			0.18 U	0.17 U	0.20 U	0.16 U	0.17 U
Sodium			56.3 B	45.4 B	64.5 B	85.6 B	49.3 B
Thallium			0.54 U	0.50 U	0.60 U	0.49 U	0.50 U
Vanadium	150		18.9	17.9	15.4	13.0	11.3
Zinc	20		[169.]	[55.7]	[48.8]	[48.4]	[50.2]

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CONSTITUENT	(Units in mg/kg)	SITE		SS-11	SS-11	SS-12	SS-12	SS-13
		SAMPLE ID	NYSDEC SOIL	SS-11(0-2)	SS-11(2-6)	SS-12(0-2)	SS-12(2-6)	SS-13(0-2)
		DATE	CLEANUP	04/22/97	04/22/97	04/22/97	04/22/97	04/22/97
		DEPTH (ft)	OBJECTIVES	0.08	0.33	0.08	0.33	0.08
Aluminum				5360	4720	3800	7610	12700
Antimony				0.49 U	0.56 U	0.53 U	0.53 U	0.57 U
Arsenic		7.5		2.1	2.6	1.8	3.7	5.9
Barium		300		22.4 B	23.3 B	19.9 B	30.7 B	75.7
Beryllium		0.16		0.16 U	0.18 U	[0.28] B	[0.39] B	[1.5]
Cadmium		10		0.16 U	0.18 U	0.18 U	0.18 U	0.27 B
Calcium				751. B	887. B	7000	4070	2480
Chromium		50		8.5	8.1	7.4	11.2	49.6
Cobalt		30		2.8 B	2.9 B	3.3 B	5.4 B	23.6
Copper		25		5.4	5.7	11.8	19.8	[150.]
Iron		2000		[7680]	[7300]	[5240]	[10500]	[19500]
Lead		400		6.4	7.0	13.2	19.6	93.3
Magnesium				1060	1080	2080	1830	1590
Manganese				127.	160.	102.	260.	146.
Mercury		0.10		0.11 U	0.076 U	0.079 U	0.10 U	[0.22]
Nickel		13		5.3 B	4.9 B	7.2	10.2	[64.5]
Potassium				444. B	433. B	299. B	524. B	480. B
Selenium		2		0.81 B	0.92 B	0.58 B	0.63 B	[3.8]
Silver				0.16 U	0.18 U	0.18 U	0.18 U	0.19 U
Sodium				46.0 B	49.0 B	57.8 B	82.4 B	218. B
Thallium				0.49 U	0.56 U	0.53 U	0.53 U	0.57 U
Vanadium		150		12.5	12.1	8.2 B	14.9	24.2
Zinc		20		16.4	18.3	[76.0]	[75.3]	[494.]

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CONSTITUENT	(Units in mg/kg)	SITE		SS-16	SS-16	SS-17	SS-17	SS-18
		SAMPLE ID	NYSDEC SOIL	SS-16(0-2)	SS-16(2-6)	SS-17(0-2)	SS-17(2-6)	SS-18(0-2)
		DATE	CLEANUP	04/22/97	04/22/97	04/22/97	04/22/97	04/22/97
		DEPTH (ft)	OBJECTIVES	0.08	0.33	0.08	0.33	0.08
Aluminum				6130	5960	6930	7750	9720
Antimony				0.60 U	0.47 U	0.54 U	0.63 U	0.58 U
Arsenic		7.5		3.2	2.7	3.9	3.6	4.2
Barium		300		16.6 B	13.2 B	18.9 B	19.2 B	21.9 B
Beryllium		0.16		[0.27] B	[0.22] B	[0.39] B	[0.29] B	[0.38] B
Cadmium		10		1.4	0.40 B	0.19 B	0.21 U	0.20 B
Calcium				530. B	396. B	1420	1350	967. B
Chromium		50		11.3	7.4	9.7	9.2	11.3
Cobalt		30		2.3 B	1.3 B	3.8 B	2.2 B	3.1 B
Copper		25		12.4	6.2	12.1	7.4	6.8
Iron		2000		[7700]	[6500]	[8960]	[8320]	[11600]
Lead		400		27.4	15.6	12.2	16.1	20.2
Magnesium				490. B	410. B	1000	759. B	956. B
Manganese				47.6	33.6	108.	59.8	71.5
Mercury		0.10		[0.22]	[0.19]	0.11 U	[0.15]	[0.21]
Nickel		13		5.8 B	3.9 B	7.0 B	4.8 B	5.2 B
Potassium				196. B	176. B	271. B	233. B	281. B
Selenium		2		0.94 B	0.65 B	0.76 B	0.79 B	0.86 B
Silver				0.20 U	0.16 U	0.18 U	0.21 U	0.19 U
Sodium				41.8 B	36.8 B	47.8 B	49.7 B	54.3 B
Thallium				0.60 U	0.47 U	0.54 U	0.63 U	0.58 U
Vanadium		150		12.6	10.8	13.1	13.6	17.6
Zinc		20		[59.5]	[29.0]	[35.6]	[25.6]	[24.6]

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CONSTITUENT	(Units in mg/kg)	SITE SAMPLE ID DATE DEPTH (ft)	NYSDEC SOIL CLEANUP OBJECTIVES	SS-18	SS-19	SS-19	SS-20	SS-20
				SS-18(2-6)	SS-19(0-2)	SS-19(2-6)	SS-20(0-2)	SS-20(2-6)
				04/22/97	04/22/97	04/22/97	04/22/97	04/22/97
				0.33	0.08	0.33	0.08	0.33
Aluminum				9250	7630	8090	5950	9330
Antimony				0.63 U	0.51 U	0.56 U	0.62 U	0.59 U
Arsenic		7.5		3.8	3.1	4.2	3.2	3.6
Barium		300		23.0 B	25.6 B	33.3 B	26.8 B	23.8 B
Beryllium		0.16		[0.40] B	[0.50] B	[0.42] B	[0.36] B	[0.32] B
Cadmium		10		0.26 B	0.31 B	0.19 U	0.21 U	0.20 U
Calcium				990. B	1070	1360	6320	2960
Chromium		50		12.4	12.4	11.4	9.7	10.
Cobalt		30		3.6 B	6.6 B	5.4 B	4.4 B	3.3 B
Copper		25		9.4	18.7	15.3	15.1	6.6
Iron		2000		[11100]	[10200]	[12400]	[9180]	[11600]
Lead		400		23.7	14.8	17.5	15.6	16.0
Magnesium				1020 B	1370	1770	1910	1200
Manganese				79.0	173.	294.	218.	94.0
Mercury		0.10		[0.19]	0.086 U	0.10 U	0.11 U	[0.17]
Nickel		13		6.4 B	11.4	9.3	8.5	5.5 B
Potassium				324. B	450. B	678. B	538. B	322. B
Selenium		2		1.0 B	0.97	0.76 B	0.62 U	0.59 U
Silver				0.21 U	0.17 U	0.19 U	0.21 U	0.20 U
Sodium				61.1 B	83.1 B	96.1 B	80.1 B	58.0 B
Thallium				0.63 U	0.51 U	0.56 U	0.62 U	0.59 U
Vanadium		150		17.2	15.3	17.5	13.6	15.9
Zinc		20		[35.4]	[76.2]	[29.4]	[41.4]	[23.6]

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CONSTITUENT	(Units in mg/kg)	SITE	NYSDEC SOIL CLEANUP OBJECTIVES	SS-21	SS-21	SS-22	SS-22	SS-23
		SAMPLE ID		SS-21(0-2)	SS-21(2-6)	SS-22(0-2)	SS-22(2-6)	SS-23(0-2)
		DATE		04/22/97	04/22/97	04/22/97	04/22/97	04/22/97
		DEPTH (ft)		0.08	0.33	0.08	0.33	0.08
Aluminum				4980	7990	4280	3380	4720
Antimony				0.60 U	0.54 U	0.56 U	0.58 U	0.61 U
Arsenic		7.5		2.4	3.0	2.6	2.1	3.6
Barium		300		19.2 B	37.8	29.4 B	13.0 B	40.3 B
Beryllium		0.16		[0.36] B	[0.84] B	[0.72] B	[0.24] B	[0.74] B
Cadmium		10		0.20 U	0.26 B	0.32 B	0.19 U	0.39 B
Calcium				1900	4050	482. B	163. B	2050
Chromium		50		10.0	14.7	17.0	10.2	32.8
Cobalt		30		4.1 B	8.2 B	10.2	3.6 B	14.4
Copper		25		14.7	[34.5]	[107.]	14.8	[117.]
Iron		2000		[7020]	[11600]	[10500]	[7300]	[12500]
Lead		400		12.8	22.6	220.	22.8	113.
Magnesium				1260	1500	668. B	521. B	837. B
Manganese				106.	170.	130.	96.9	99.7
Mercury		0.10		0.093 U	0.083 U	0.091 U	0.11 U	0.11 U
Nickel		13		7.4 B	[14.0]	[53.4]	11.7	[50.3]
Potassium				351. B	362. B	191. B	158. B	184. B
Selenium		2		0.68 B	1.4	1.4	0.60 B	1.6
Silver				0.20 U	0.18 U	0.19 U	0.19 U	0.20 U
Sodium				82.0 B	88.8 B	111. B	33.7 B	104. B
Thallium				0.60 U	0.54 U	0.56 U	0.58 U	0.61 U
Vanadium		150		10.9	14.1	10.5	9.5 B	11.6
Zinc		20		[87.2]	[159.]	[434.]	[66.8]	[408.]

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CONSTITUENT	(Units in mg/kg)	SITE	SS-26	SS-26	SS-27	SS-27	SS-28
		SAMPLE ID	SS-26(0-2)	SS-26(2-6)	SS-27(0-2)	SS-27(2-6)	SS-28(0-2)
		DATE	04/22/97	04/22/97	04/22/97	04/22/97	04/22/97
		DEPTH (ft)	OBJECTIVES	0.08	0.33	0.08	0.33
Aluminum			9460	8590	2470	2710	3770
Antimony			0.63 U	0.62 U	0.56 U	0.58 U	0.55 U
Arsenic	7.5		3.0	3.3	3.8	1.3 B	2.4
Barium	300		22.1 B	20.4 B	29.4 B	26.9 B	32.2 B
Beryllium	0.16		[0.26] B	0.20 U	[0.42] B	[0.34] B	[0.47] B
Cadmium	10		0.41 B	0.39 B	[26.1]	[35.4]	[24.0]
Calcium			1610	1310	9860	6090	1840
Chromium	50		11.7	10.8	[55.6]	[80.5]	[82.9]
Cobalt	30		2.6 B	2.3 B	8.9 B	7.3 B	9.1 B
Copper	25		11.8	8.7	[61.8]	[48.3]	[61.3]
Iron	2000		[10800]	[11200]	[7610]	[7330]	[9020]
Lead	400		27.5	25.6	52.4	60.0	75.0
Magnesium			1230	906. B	3430	2630	1210
Manganese			67.8	60.3	76.6	91.5	80.2
Mercury	0.10		0.082 U	0.098 U	0.077 U	0.093 U	0.10 U
Nickel	13		6.7 B	5.6 B	[49.4]	[63.0]	[42.9]
Potassium			314. B	216. B	180. B	161. B	224. B
Selenium	2		0.95 B	1.0 B	1.4	1.1	0.78 B
Silver			0.21 U	0.20 U	0.19 U	0.45 B	0.18 U
Sodium			44.9 B	40.0 B	120. B	84.6 B	73.9 B
Thallium			0.63 U	0.62 U	0.56 U	0.58 U	0.55 U
Vanadium	150		18.9	17.7	9.1 B	8.2 B	10.1
Zinc	20		[61.8]	[46.4]	[208.]	[180.]	[229.]

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CONSTITUENT	(Units in mg/kg)	SITE	SS-28	SS-29	SS-29	SS-30	SS-30
		SAMPLE ID	SS-28(2-6)	SS-29(0-2)	SS-29(2-6)	SS-30(0-2)	SS-30(2-6)
		DATE	04/22/97	04/22/97	04/22/97	04/22/97	04/22/97
		DEPTH (ft)	0.33	0.08	0.33	0.08	0.33
Aluminum			3240	2320	4190	5720	5640
Antimony			0.47 U	0.58 U	0.59 U	0.57 U	0.60 U
Arsenic	7.5		1.4 B	1.7 B	3.4	2.7	2.8
Barium	300		21.8 B	24.0 B	24.9 B	15.1 B	14.9 B
Beryllium	0.16		[0.30] B	[0.25] B	[0.21] B	0.19 U	0.20 U
Cadmium	10		[12.8]	[21.6]	[10.6]	0.19 U	0.20 U
Calcium			895.	7040	3100	489. B	519. B
Chromium	50		40.5	[67.9]	[51.8]	8.0	7.1
Cobalt	30		5.6 B	5.0 B	3.0 B	1.9 B	1.8 B
Copper	25		[35.7]	[37.2]	22.5	5.6	6.2
Iron	2000		[5900]	[6430]	[8470]	[7240]	[6970]
Lead	400		38.4	44.3	49.3	19.1	20.0
Magnesium			756. B	4060	1710	735. B	708. B
Manganese			52.0	60.7	85.2	65.9	63.3
Mercury	0.10		0.074 U	0.074 U	0.088	0.077 U	0.10 U
Nickel	13		[30.8]	[27.4]	[13.9]	4.7 B	4.2 B
Potassium			222. B	168. B	196. B	262. B	236. B
Selenium	2		0.76 B	0.77 B	0.59 U	0.57 U	0.96 B
Silver			0.16 U	0.19 U	0.20 U	0.19 U	0.20 U
Sodium			44.8 B	71.9 B	48.3 B	37.3 B	31.6 B
Thallium			0.47 U	0.58 U	0.59 U	0.57 U	0.60 U
Vanadium	150		7.8 B	8.0 B	10.8	11.7	11.2
Zinc	20		[127.]	[137.]	[89.8]	[23.0]	[24.4]

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed
 [] = Greater than Action Level
 B: Result > IDL but < CRDI RCL 1482_95-M U: Analyzed for but not detected

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CONSTITUENT	(Units in mg/kg)	SITE	SS-31	SS-32	SS-32	SS-33	SS-33
		SAMPLE ID	SS-31(0-2)	SS-32(0-2)	SS-32(2-6)	SS-33(0-2)	SS-33(2-6)
		DATE	04/22/97	04/22/97	04/22/97	04/22/97	04/22/97
		DEPTH (ft)	0.08	0.08	0.33	0.08	0.33
Aluminum			1590	8930	4100	11600	11600
Antimony			1.2 B	0.68 U	0.46 U	0.64 U	0.62 U
Arsenic	7.5		5.5	3.8	1.9	5.0	5.1
Barium	300		62.7	21.1 B	10.8 B	36.0 B	34.9 B
Beryllium	0.16		[0.50] B	[0.27] B	0.15 U	[0.31] B	[0.34] B
Cadmium	10		[277.]	0.23 U	0.15 U	0.31 B	0.21 U
Calcium			1270	757. B	319. B	667. B	692. B
Chromium	50		[412.]	10.5	5.0	13.9	13.2
Cobalt	30		10.8	2.6 B	1.8 B	3.8 B	3.4 B
Copper	25		[145.]	6.6	4.2	11.2	6.6
Iron	2000		[43000]	[10400]	[5610]	[16400]	[13300]
Lead	400		77.6	30.9	12.0	132.	126.
Magnesium			660. B	936. B	518. B	1170	1160
Manganese			239.	69.5	92.2	98.6	62.7
Mercury	0.10		[1.5]	0.11 U	0.087 U	0.083 U	0.083 U
Nickel	13		[146.]	5.9 B	3.4 B	8.4 B	7.5 B
Potassium			120. B	313. B	175. B	334. B	353. B
Selenium	2		1.8	1.1 B	0.85	1.5	1.2
Silver			2.6	0.23 U	0.15 U	0.21 U	0.21 U
Sodium			107. B	42.2 B	41.3 B	122. B	125. B
Thallium			0.55 U	0.68 U	0.46 U	0.64 U	0.62 U
Vanadium	150		14.6	17.6	8.3	22.0	21.5
Zinc	20		[607.]	[25.7]	17.7	[127.]	[62.3]

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed
 [] = Greater than Action Level
 B: Result > IDL but < CRDI RCL 1482_95-M U: Analyzed for but not detected

LIBERTY INDUSTRIAL FINISHING SITE
 REMEDIAL INVESTIGATION/FEASIBILITY STUDY
 SURFACE SOIL SAMPLE RESULTS
 TAL METALS, CYANIDE and pH

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CONSTITUENT (Units in mg/kg)	SITE		SS-35	SS-36
	SAMPLE ID	NYSDEC SOIL	SS-35(1')	SS-36(1-2')
	DATE	CLEANUP	06/11/98	06/11/98
	DEPTH (ft)	OBJECTIVES	1.00	1.00
Aluminum			3460	6460
Antimony			<0.86	<0.89
Arsenic	7.5		2.0 B	1.9 B
Barium	300		11.0 B	15.5 B
Beryllium	0.16		[0.35] B	[0.41] B
Cadmium	10		1.7	<0.22
Calcium			289. B	402. B
Chromium	50		20.3	6.9
Cobalt	30		2.8 B	2.3 B
Copper	25		10.8	13.2
Iron	2000		[7920]	[7550]
Lead	400		14.5	21.8
Magnesium			435. B	321. B
Manganese			59.5	80.3
Mercury	0.10		[0.11]	<0.086
Nickel	13		6.8 B	3.9 B
Potassium			136. B	87.2 B
Selenium	2		1.4	1.3
Silver			<0.22	<0.22
Sodium			15.3 B	25.2 B
Thallium			<0.65	<0.67
Vanadium	150		7.9 B	10.9 B
Zinc	20		[52.9]	[63.8]
Cyanide			<0.520	<0.550
pH			6.23	5.58
Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed [] = Greater than Action Level The following qualifier(s) exist: B B: Result > IDL but < CRDL For RCL 1482_95-M				



APPENDIX G

SEDIMENT/SLUDGE SAMPLE RESULTS

LIBERTY INDUSTRIAL FINISHING SITE
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
SEDIMENT/SLUDGE SAMPLE RESULTS
VOLATILE ORGANIC COMPOUNDS

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CONSTITUENT	(Units in ug/kg)	SITE		B-02D	B-04D	B-05D	B-06D	B-07D
		SAMPLE ID	NYSDEC SOIL	B-02D(14-18')	B-04D(18')	B-05D(13-17')	B-06D(3-7')	B-07D(14-18')
		DATE	CLEANUP	03/26/98	03/31/98	03/27/98	03/26/98	03/26/98
		DEPTH (ft)	OBJECTIVES	18.00	18.00	17.00	7.00	18.00
Chloromethane				11 U	11 U	12 U	11 U	12 U
Bromomethane				11 U	11 U	12 U	11 U	12 U
Vinyl Chloride		200		11 U	11 U	12 U	11 U	12 U
Chloroethane		1900		11 U	11 U	12 U	11 U	12 U
Methylene Chloride		100		11 U	2 J	12 U	11 U	12 U
Acetone		200		11 U	32 B	48	91	90
Carbon Disulfide		2700		11 U	11 U	12 U	11 U	12 U
1,1-Dichloroethene		400		11 U	11 U	12 U	11 U	12 U
1,1-Dichloroethane		200		11 U	11 U	12 U	11 U	12 U
1,2-Dichloroethene (total)		300		11 U	11 U	12 U	11 U	12 U
Chloroform		300		11 U	11 U	12 U	11 U	12 U
1,2-Dichloroethane		100		11 U	11 U	12 U	11 U	12 U
2-Butanone		300		11 U	11 U	12 U	26	12 U
1,1,1-Trichloroethane		800		11 U	11 U	12 U	11 U	12 U
Carbon Tetrachloride		600		11 U	11 U	12 U	11 U	12 U
Bromodichloromethane				11 U	11 U	12 U	11 U	12 U
1,2-Dichloropropane				11 U	11 U	12 U	11 U	12 U
cis-1,3-Dichloropropene				11 U	11 U	12 U	11 U	12 U
Trichloroethene		700		11 U	11 U	12 U	11 U	12 U
Dibromochloromethane				11 U	11 U	12 U	11 U	12 U
1,1,2-Trichloroethane				11 U	11 U	12 U	11 U	12 U
Benzene		60		11 U	11 U	12 U	11 U	12 U
trans-1,3-Dichloropropene				11 U	11 U	12 U	11 U	12 U
Bromoform				11 U	11 U	12 U	11 U	12 U
4-Methyl-2-pentanone		1000		11 U	11 U	12 U	11 U	12 U
2-Hexanone				11 U	11 U	12 U	11 U	12 U
Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed								
B:Compound found in the method blank as well as the sample				U:Analyzed for but not detected		RCL 1482_95-1		

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CONSTITUENT	(Units in ug/kg)	SITE	B-02D	B-04D	B-05D	B-06D	B-07D
		SAMPLE ID	B-02D(14-18')	B-04D(18')	B-05D(13-17')	B-06D(3-7')	B-07D(14-18')
		DATE	03/26/98	03/31/98	03/27/98	03/26/98	03/26/98
		DEPTH (ft)	18.00	18.00	17.00	7.00	18.00
Tetrachloroethene		1400	11 U	11 U	12 U	11 U	12 U
1,1,2,2-Tetrachloroethane		600	11 U	11 U	12 U	11 U	12 U
Toluene		1500	11 U	11 U	12 U	11 U	12 U
Chlorobenzene		1700	11 U	11 U	12 U	11 U	12 U
Ethylbenzene		5500	11 U	11 U	12 U	11 U	12 U
Styrene			11 U	11 U	12 U	11 U	12 U
Xylene (total)		1200	11 U	11 U	0.6 J	11 U	12 U

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

B:Compound found in the method blank as well as the sample U:Analyzed for but not detected RCL 1482_95-1

LIBERTY INDUSTRIAL FINISHING SITE
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CONSTITUENT	(Units in ug/kg)	SITE	NYSDEC SOIL CLEANUP OBJECTIVES	B-25D	B-30S	B-31S	B-32S	B-33S
		SAMPLE ID		B-25(14-18')	B-30(17-21')	B-31(16-20')	B-32(12-16')	B-33(12-16')
		DATE		03/31/98	03/31/98	03/31/98	03/31/98	03/31/98
		DEPTH (ft)		18.00	21.00	20.00	16.00	16.00
Chloromethane				10 U	10 U	11 U	12 U	13 U
Bromomethane				10 U	10 U	11 U	12 U	13 U
Vinyl Chloride		200		10 U	10 U	11 U	12 U	13 U
Chloroethane		1900		10 U	10 U	11 U	12 U	13 U
Methylene Chloride		100		10 U	10 U	11 U	12 U	13 U
Acetone		200		23 B	35 B	37 B	5 JB	20 B
Carbon Disulfide		2700		10 U	10 U	11 U	12 U	13 U
1,1-Dichloroethene		400		10 U	10 U	11 U	12 U	13 U
1,1-Dichloroethane		200		10 U	10 U	11 U	12 U	13 U
1,2-Dichloroethene (total)		300		10 U	10 U	11 U	12 U	13 U
Chloroform		300		10 U	10 U	11 U	12 U	13 U
1,2-Dichloroethane		100		10 U	10 U	11 U	12 U	13 U
2-Butanone		300		10 U	10 U	11 U	12 U	6 J
1,1,1-Trichloroethane		800		10 U	0.5 J	11 U	12 U	13 U
Carbon Tetrachloride		600		10 U	10 U	11 U	12 U	13 U
Bromodichloromethane				10 U	10 U	11 U	12 U	13 U
1,2-Dichloropropane				10 U	10 U	11 U	12 U	13 U
cis-1,3-Dichloropropene				10 U	10 U	11 U	12 U	13 U
Trichloroethene		700		10 U	10 U	11 U	12 U	13 U
Dibromochloromethane				10 U	10 U	11 U	12 U	13 U
1,1,2-Trichloroethane				10 U	10 U	11 U	12 U	13 U
Benzene		60		10 U	10 U	11 U	12 U	13 U
trans-1,3-Dichloropropene				10 U	10 U	11 U	12 U	13 U
Bromoform				10 U	10 U	11 U	12 U	13 U
4-Methyl-2-pentanone		1000		10 U	10 U	11 U	12 U	13 U
2-Hexanone				10 U	10 U	11 U	12 U	13 U
Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed								
B:Compound found in the method blank as well as the sample				U:Analyzed for but not detected		RCL 1482_95-1		

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CONSTITUENT	(Units in ug/kg)	SITE	B-25D	B-30S	B-31S	B-32S	B-33S
		SAMPLE ID	B-25(14-18')	B-30(17-21')	B-31(16-20')	B-32(12-16')	B-33(12-16')
		DATE	03/31/98	03/31/98	03/31/98	03/31/98	03/31/98
		DEPTH (ft)	18.00	21.00	20.00	16.00	16.00
		NYSDEC SOIL					
		CLEANUP					
		OBJECTIVES					
Tetrachloroethene		1400	10 U	10 U	11 U	12 U	13 U
1,1,2,2-Tetrachloroethane		600	10 U	10 U	11 U	12 U	13 U
Toluene		1500	10 U	10 U	11 U	12 U	13 U
Chlorobenzene		1700	10 U	10 U	11 U	12 U	13 U
Ethylbenzene		5500	10 U	10 U	11 U	12 U	13 U
Styrene			10 U	10 U	11 U	12 U	13 U
Xylene (total)		1200	10 U	10 U	11 U	12 U	13 U

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

B:Compound found in the method blank as well as the sample U:Analyzed for but not detected RCL 1482_95-1

LIBERTY INDUSTRIAL FINISHING SITE
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
SEDIMENT/SLUDGE SAMPLE RESULTS
VOLATILE ORGANIC COMPOUNDS

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CONSTITUENT	(Units in ug/kg)	SITE		S-03	S-05	S-07	S-09	S-13
		SAMPLE ID	NYSDEC SOIL	S-03	S-05	S-07	S-09	S-13
		DATE	CLEANUP	12/19/97	12/19/97	12/19/97	12/19/97	12/19/97
		DEPTH (ft)	OBJECTIVES	0.00	0.00	0.00	0.00	0.00
Chloromethane				18 U	11 U	20 U	18 U	14 U
Bromomethane				18 U	11 U	20 U	18 U	14 U
Vinyl Chloride		200		18 U	11 U	20 U	18 U	14 U
Chloroethane		1900		18 U	11 U	20 U	18 U	14 U
Methylene Chloride		100		4 J	2 J	4 JB	3 J	2 JB
Acetone		200		95	37	22 B	33	12 JB
Carbon Disulfide		2700		2 J	11 U	20 U	0.6 J	14 U
1,1-Dichloroethene		400		18 U	11 U	20 U	18 U	14 U
1,1-Dichloroethane		200		18 U	11 U	20 U	18 U	14 U
1,2-Dichloroethene (total)		300		18 U	11 U	20 U	18 U	14 U
Chloroform		300		18 U	11 U	20 U	18 U	14 U
1,2-Dichloroethane		100		18 U	11 U	20 U	18 U	14 U
2-Butanone		300		11 J	11 U	20 U	4 J	14 U
1,1,1-Trichloroethane		800		18 U	11 U	20 U	18 U	14 U
Carbon Tetrachloride		600		18 U	11 U	20 U	18 U	14 U
Bromodichloromethane				18 U	11 U	20 U	18 U	14 U
1,2-Dichloropropane				18 U	11 U	20 U	18 U	14 U
cis-1,3-Dichloropropene				18 U	11 U	20 U	18 U	14 U
Trichloroethene		700		18 U	11 U	20 U	18 U	14 U
Dibromochloromethane				18 U	11 U	20 U	18 U	14 U
1,1,2-Trichloroethane				18 U	11 U	20 U	18 U	14 U
Benzene		60		18 U	11 U	20 U	18 U	14 U
trans-1,3-Dichloropropene				18 U	11 U	20 U	18 U	14 U
Bromoform				18 U	11 U	20 U	18 U	14 U
4-Methyl-2-pentanone		1000		18 U	11 U	20 U	18 U	14 U
2-Hexanone				18 U	11 U	20 U	18 U	14 U
Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed								
B:Compound found in the method blank as well as the sample				U:Analyzed for but not detected		RCL 1482_95-1		

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CONSTITUENT	(Units in ug/kg)	SITE	S-03	S-05	S-07	S-09	S-13
		SAMPLE ID	S-03	S-05	S-07	S-09	S-13
		DATE	12/19/97	12/19/97	12/19/97	12/19/97	12/19/97
		DEPTH (ft)	0.00	0.00	0.00	0.00	0.00
		NYSDEC SOIL					
		CLEANUP					
		OBJECTIVES					
Tetrachloroethene	1400		18 U	11 U	1 J	18 U	14 U
1,1,2,2-Tetrachloroethane	600		18 U	11 U	20 U	18 U	14 U
Toluene	1500		18 U	11 U	20 U	12 J	14 U
Chlorobenzene	1700		18 U	11 U	20 U	18 U	14 U
Ethylbenzene	5500		18 U	11 U	20 U	18 U	14 U
Styrene			18 U	11 U	20 U	18 U	14 U
Xylene (total)	1200		18 U	11 U	20 U	18 U	14 U

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

B:Compound found in the method blank as well as the sample U:Analyzed for but not detected RCL 1482_95-1

LIBERTY INDUSTRIAL FINISHING SITE
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SEDIMENT/SLUDGE SAMPLE RESULTS
VOLATILE ORGANIC COMPOUNDS

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CONSTITUENT	(Units in ug/kg)	SITE	NYSDEC SOIL	S-14	S-15
		SAMPLE ID		S-14	S-15
		DATE	CLEANUP	12/19/97	12/19/97
		DEPTH (ft)	OBJECTIVES	0.00	0.00
Chloromethane				21 U	12 U
Bromomethane				21 U	12 U
Vinyl Chloride		200		21 U	12 U
Chloroethane		1900		21 U	12 U
Methylene Chloride		100		2 JB	1 JB
Acetone		200		31 B	3 JB
Carbon Disulfide		2700		3 J	12 U
1,1-Dichloroethene		400		21 U	12 U
1,1-Dichloroethane		200		21 U	12 U
1,2-Dichloroethene (total)		300		21 U	12 U
Chloroform		300		21 U	12 U
1,2-Dichloroethane		100		21 U	12 U
2-Butanone		300		21 U	12 U
1,1,1-Trichloroethane		800		21 U	12 U
Carbon Tetrachloride		600		21 U	12 U
Bromodichloromethane				21 U	12 U
1,2-Dichloropropane				21 U	12 U
cis-1,3-Dichloropropene				21 U	12 U
Trichloroethene		700		21 U	12 U
Dibromochloromethane				21 U	12 U
1,1,2-Trichloroethane				21 U	12 U
Benzene		60		21 U	12 U
trans-1,3-Dichloropropene				21 U	12 U
Bromoform				21 U	12 U
4-Methyl-2-pentanone		1000		21 U	12 U
2-Hexanone				21 U	12 U
Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed					
B:Compound found in the method blank as well as the sample				U:Analyzed for but not detected	RCL 1482_95-1

LIBERTY INDUSTRIAL FINISHING SITE
 REMEDIAL INVESTIGATION/FEASIBILITY STUDY
 SEDIMENT/SLUDGE SAMPLE RESULTS
 VOLATILE ORGANIC COMPOUNDS

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CONSTITUENT	(Units in ug/kg)	SITE		S-14	S-15
		SAMPLE ID	NYSDEC SOIL	S-14	S-15
		DATE	CLEANUP	12/19/97	12/19/97
		DEPTH (ft)	OBJECTIVES	0.00	0.00
Tetrachloroethene			1400	21 U	12 U
1,1,2,2-Tetrachloroethane			600	21 U	12 U
Toluene			1500	2 J	12 U
Chlorobenzene			1700	21 U	12 U
Ethylbenzene			5500	21 U	12 U
Styrene				21 U	12 U
Xylene (total)			1200	21 U	12 U
Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed The following qualifier(s) exist: U, J, B B:Compound found in the method blank as well as the sample U:Analyzed for but not detected RCL 1482_95-1					

LIBERTY INDUSTRIAL FINISHING SITE
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
SEDIMENT/SLUDGE SAMPLE RESULTS
SEMIVOLATILE ORGANIC COMPOUNDS

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CONSTITUENT (Units in ug/kg)	SITE	NYSDEC SOIL CLEANUP OBJECTIVES	B-02D	B-04D	B-05D	B-06D	B-07D
	SAMPLE ID		B-02D(14-18')	B-04D(18')	B-05D(13-17')	B-06D(3-7')	B-07D(14-18')
	DATE		03/26/98	03/31/98	03/27/98	03/26/98	03/26/98
	DEPTH (ft)		18.00	18.00	17.00	7.00	18.00
Phenol		30	380 U	360 U	820 U	370 U	1500 U
Bis(2-chloroethyl)ether			380 U	360 U	820 U	370 U	1500 U
2-Chlorophenol		800	380 U	360 U	820 U	370 U	1500 U
1,3-Dichlorobenzene		1600	380 U	360 U	820 U	370 U	1500 U
1,4-Dichlorobenzene		8500	380 U	360 U	820 U	370 U	1500 U
1,2-Dichlorobenzene		7900	380 U	360 U	820 U	370 U	1500 U
2-Methylphenol		100	380 U	360 U	820 U	370 U	1500 U
2,2'-oxybis(1-chloropropane)			380 U	360 U	820 U	370 U	1500 U
4-Methylphenol		900	380 U	360 U	820 U	370 U	1500 U
N-Nitrosodipropylamine			380 U	360 U	820 U	370 U	1500 U
Hexachloroethane			380 U	360 U	820 U	370 U	1500 U
Nitrobenzene		200	380 U	360 U	820 U	370 U	1500 U
Isophorone		4400	380 U	360 U	820 U	370 U	1500 U
2-Nitrophenol		330	380 U	360 U	820 U	370 U	1500 U
2,4-Dimethylphenol			380 U	360 U	820 U	370 U	1500 U
Bis(2-chloroethoxy)methane			380 U	360 U	820 U	370 U	1500 U
2,4-Dichlorophenol		400	380 U	360 U	820 U	370 U	1500 U
1,2,4-Trichlorobenzene		3400	380 U	360 U	820 U	370 U	1500 U
Naphthalene		13000	380 U	360 U	820 U	370 U	39 J
4-Chloroaniline		220	380 U	360 U	820 U	370 U	1500 U
Hexachlorobutadiene			380 U	360 U	820 U	370 U	1500 U
4-Chloro-3-methylphenol		240	380 U	360 U	820 U	370 U	1500 U
2-Methylnaphthalene		36400	380 U	360 U	820 U	370 U	1500 U
Hexachlorocyclopentadiene			380 U	360 U	820 U	370 U	1500 U
2,4,6-Trichlorophenol			380 U	360 U	820 U	370 U	1500 U
2,4,5-Trichlorophenol		100	960 U	900 U	2100 U	930 U	3800 U
Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed							
B:Compound found in the method blank as well as the sample			U:Analyzed for but not detected		RCL 1482_95-1		

LIBERTY INDUSTRIAL FINISHING SITE
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
SEDIMENT/SLUDGE SAMPLE RESULTS
SEMIVOLATILE ORGANIC COMPOUNDS

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CONSTITUENT	(Units in ug/kg)	SITE		B-02D	B-04D	B-05D	B-06D	B-07D
		SAMPLE ID	NYSDEC SOIL	B-02D(14-18')	B-04D(18')	B-05D(13-17')	B-06D(3-7')	B-07D(14-18')
		DATE	CLEANUP	03/26/98	03/31/98	03/27/98	03/26/98	03/26/98
		DEPTH (ft)	OBJECTIVES	18.00	18.00	17.00	7.00	18.00
2-Chloronaphthalene				380 U	360 U	820 U	370 U	1500 U
2-Nitroaniline		430		960 U	900 U	2100 U	930 U	3800 U
Dimethyl Phthalate		2000		380 U	360 U	820 U	31 J	1500 U
Acenaphthylene		41000		380 U	360 U	820 U	370 U	1500 U
2,6-Dinitrotoluene		1000		380 U	360 U	820 U	370 U	1500 U
3-Nitroaniline		500		960 U	900 U	2100 U	930 U	3800 U
Acenaphthene		50000		380 U	360 U	89 J	370 U	410 J
2,4-Dinitrophenol		200		960 U	900 U	2100 U	930 U	3800 U
4-Nitrophenol		100		960 U	900 U	2100 U	930 U	3800 U
Dibenzofuran		6200		380 U	360 U	65 J	370 U	200 J
2,4-Dinitrotoluene				380 U	360 U	820 U	370 U	1500 U
Diethyl Phthalate		7100		380 U	12 J	820 U	370 U	1500 U
Fluorene		50000		380 U	360 U	160 J	370 U	440 J
4-Chlorophenylphenyl Ether				380 U	360 U	820 U	370 U	1500 U
4-Nitroaniline				960 U	900 U	2100 U	930 U	3800 U
4,6-Dinitro-2-methylphenol				960 U	900 U	2100 U	930 U	3800 U
N-Nitrosodiphenylamine				380 U	360 U	820 U	370 U	1500 U
Hexachlorobenzene		410		380 U	360 U	820 U	370 U	1500 U
Pentachlorophenol		1000		960 U	900 U	2100 U	930 U	3800 U
Phenanthrene		50000		56 J	47 J	2000	110 J	4900
Anthracene		50000		9 J	4 J	390 J	15 J	620 J
Carbazole				380 U	360 U	820 U	370 U	520 J
Di-n-butylphthalate		8100		380 U	14 JB	32 J	55 J	1500 U
Fluoranthene		50000		87 J	69 J	3200	190 J	6400
Pyrene		50000		78 J	58 J	2400	120 J	5800
Butylbenzylphthalate		50000		380 U	360 U	230 J	56 J	1500 U

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

B:Compound found in the method blank as well as the sample

U:Analyzed for but not detected

RCL 1482_95-1

LIBERTY INDUSTRIAL FINISHING SITE
 REMEDIAL INVESTIGATION/FEASIBILITY STUDY
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CONSTITUENT	(Units in ug/kg)	SITE	NYSDEC SOIL	B-02D	B-04D	B-05D	B-06D	B-07D
		SAMPLE ID	CLEANUP	B-02D(14-18')	B-04D(18')	B-05D(13-17')	B-06D(3-7')	B-07D(14-18')
		DATE	OBJECTIVES	03/26/98	03/31/98	03/27/98	03/26/98	03/26/98
		DEPTH (ft)		18.00	18.00	17.00	7.00	18.00
Benzo(a)anthracene			224	45 J	30 J	[1400]	81 J	[2500]
3,3-Dichlorobenzidine				380 U	360 U	820 U	370 U	1500 U
Chrysene			400	62 J	45 J	[1700]	160 J	[3300]
Bis(2-ethylhexyl)phthalate			50000	81 JB	140 J	2700 B	620 B	210 JB
Di-n-octyl Phthalate			50000	380 U	360 U	120 J	370 U	1500 U
Benzo(b)fluoranthene			1100	36 J	30 J	[1200]	160 J	[2000]
Benzo(k)fluoranthene			1100	34 J	33 J	[1200]	96 J	[2100]
Benzo(a)pyrene			61	46 J	37 J	[1400]	[110] J	[2400]
Indeno(1,2,3-cd)pyrene			3200	26 J	26 J	360 J	12 J	1400 J
Dibenzo(a,h)anthracene			14	380 U	360 U	[130] J	370 U	[540] J
Benzo(ghi)perylene			50000	33 J	29 J	130 J	8 J	510 J
Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed [] = Greater than Action Level B:Compound found in the method blank as well as the sample								
				U:Analyzed for but not detected		RCL 1482_95-1		

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CONSTITUENT (Units in ug/kg)	SITE SAMPLE ID DATE DEPTH (ft)	NYSDEC SOIL CLEANUP OBJECTIVES	B-25D	B-30S	B-31S	B-32S	B-33S
			B-25(14-18')	B-30(17-21')	B-31(16-20')	B-32(12-16')	B-33(12-16')
			03/31/98	03/31/98	03/31/98	03/31/98	03/31/98
			18.00	21.00	20.00	16.00	16.00
Phenol		30	340 U	380 U	360 U	380 U	380 U
Bis(2-chloroethyl)ether			340 U	380 U	360 U	380 U	380 U
2-Chlorophenol		800	340 U	380 U	360 U	380 U	380 U
1,3-Dichlorobenzene		1600	340 U	380 U	360 U	380 U	380 U
1,4-Dichlorobenzene		8500	340 U	380 U	360 U	380 U	380 U
1,2-Dichlorobenzene		7900	340 U	380 U	360 U	380 U	380 U
2-Methylphenol		100	340 U	380 U	360 U	380 U	380 U
2,2'-oxybis(1-chloropropane)			340 U	380 U	360 U	380 U	380 U
4-Methylphenol		900	340 U	380 U	360 U	380 U	380 U
N-Nitrosodipropylamine			340 U	380 U	360 U	380 U	380 U
Hexachloroethane			340 U	380 U	360 U	380 U	380 U
Nitrobenzene		200	340 U	380 U	360 U	380 U	380 U
Isophorone		4400	340 U	380 U	360 U	380 U	380 U
2-Nitrophenol		330	340 U	380 U	360 U	380 U	380 U
2,4-Dimethylphenol			340 U	380 U	360 U	380 U	380 U
Bis(2-chloroethoxy)methane			340 U	380 U	360 U	380 U	380 U
2,4-Dichlorophenol		400	340 U	380 U	360 U	380 U	380 U
1,2,4-Trichlorobenzene		3400	340 U	380 U	360 U	380 U	380 U
Naphthalene		13000	340 U	380 U	360 U	380 U	380 U
4-Chloroaniline		220	340 U	380 U	360 U	380 U	380 U
Hexachlorobutadiene			340 U	380 U	360 U	380 U	380 U
4-Chloro-3-methylphenol		240	340 U	380 U	360 U	380 U	380 U
2-Methylnaphthalene		36400	340 U	380 U	360 U	380 U	380 U
Hexachlorocyclopentadiene			340 U	380 U	360 U	380 U	380 U
2,4,6-Trichlorophenol			340 U	380 U	360 U	380 U	380 U
2,4,5-Trichlorophenol		100	860 U	940 U	910 U	950 U	950 U
Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed							
B:Compound found in the method blank as well as the sample			U:Analyzed for but not detected		RCL 1482_95-1		

LIBERTY INDUSTRIAL FINISHING SITE
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SEMIVOLATILE ORGANIC COMPOUNDS

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CONSTITUENT (Units in ug/kg)	SITE SAMPLE ID DATE DEPTH (ft)	NYSDEC SOIL CLEANUP OBJECTIVES	B-25D	B-30S	B-31S	B-32S	B-33S
			B-25(14-18')	B-30(17-21')	B-31(16-20')	B-32(12-16')	B-33(12-16')
			03/31/98	03/31/98	03/31/98	03/31/98	03/31/98
			18.00	21.00	20.00	16.00	16.00
2-Chloronaphthalene			340 U	380 U	360 U	380 U	380 U
2-Nitroaniline		430	860 U	940 U	910 U	950 U	950 U
Dimethyl Phthalate		2000	340 U	380 U	360 U	380 U	380 U
Acenaphthylene		41000	340 U	380 U	360 U	380 U	380 U
2,6-Dinitrotoluene		1000	340 U	380 U	360 U	380 U	380 U
3-Nitroaniline		500	860 U	940 U	910 U	950 U	950 U
Acenaphthene		50000	340 U	380 U	360 U	380 U	380 U
2,4-Dinitrophenol		200	860 U	940 U	910 U	950 U	950 U
4-Nitrophenol		100	860 U	940 U	910 U	950 U	950 U
Dibenzofuran		6200	340 U	380 U	360 U	380 U	380 U
2,4-Dinitrotoluene			340 U	380 U	360 U	380 U	380 U
Diethyl Phthalate		7100	340 U	34 J	360 U	380 U	380 U
Fluorene		50000	340 U	380 U	360 U	380 U	380 U
4-Chlorophenylphenyl Ether			340 U	380 U	360 U	380 U	380 U
4-Nitroaniline			860 U	940 U	910 U	950 U	950 U
4,6-Dinitro-2-methylphenol			860 U	940 U	910 U	950 U	950 U
N-Nitrosodiphenylamine			340 U	380 U	360 U	380 U	380 U
Hexachlorobenzene		410	340 U	380 U	360 U	380 U	380 U
Pentachlorophenol		1000	860 U	940 U	910 U	950 U	950 U
Phenanthrene		50000	340 U	20 J	360 U	100 J	84 J
Anthracene		50000	340 U	3 J	360 U	16 J	12 J
Carbazole			340 U	380 U	360 U	19 J	380 U
Di-n-butylphthalate		8100	11 JB	15 JB	360 U	24 JB	20 JB
Fluoranthene		50000	340 U	47 J	360 U	240 J	220 J
Pyrene		50000	16 J	62 J	360 U	130 J	130 J
Butylbenzylphthalate		50000	340 U	380 U	360 U	44 J	380 U
Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed							
B:Compound found in the method blank as well as the sample			U:Analyzed for but not detected		RCL 1482_95-1		

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CONSTITUENT	(Units in ug/kg)	SITE	B-25D	B-30S	B-31S	B-32S	B-33S
		SAMPLE ID	B-25(14-18')	B-30(17-21')	B-31(16-20')	B-32(12-16')	B-33(12-16')
		DATE	03/31/98	03/31/98	03/31/98	03/31/98	03/31/98
		DEPTH (ft)	18.00	21.00	20.00	16.00	16.00
Benzo(a)anthracene		224	340 U	36 J	360 U	86 J	76 J
3,3-Dichlorobenzidine			340 U	380 U	360 U	380 U	380 U
Chrysene		400	340 U	54 J	360 U	200 J	180 J
Bis(2-ethylhexyl)phthalate		50000	35 J	72 J	37 J	900	800
Di-n-octyl Phthalate		50000	340 U	380 U	360 U	61 J	41 J
Benzo(b)fluoranthene		1100	340 U	37 J	360 U	170 J	150 J
Benzo(k)fluoranthene		1100	340 U	22 J	360 U	140 J	110 J
Benzo(a)pyrene		61	340 U	41 J	360 U	[120] J	[92] J
Indeno(1,2,3-cd)pyrene		3200	340 U	24 J	360 U	15 J	15 J
Dibenzo(a,h)anthracene		14	340 U	380 U	360 U	380 U	380 U
Benzo(ghi)perylene		50000	340 U	40 J	360 U	380 U	380 U

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed
 [] = Greater than Action Level
 B:Compound found in the method blank as well as the sample U:Analyzed for but not detected RCL 1482_95-1

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CONSTITUENT	(Units in ug/kg)	SITE	S-03	S-05	S-07	S-09	S-13
		SAMPLE ID	S-03	S-05	S-07	S-09	S-13
		DATE	12/19/97	12/19/97	12/19/97	12/19/97	12/19/97
		DEPTH (ft)	0.00	0.00	0.00	0.00	0.00
NYSDEC SOIL CLEANUP OBJECTIVES							
Phenol		30	[77] J	360 U	670 U	1000 U	900 U
Bis(2-chloroethyl)ether			620 U	360 U	670 U	1000 U	900 U
2-Chlorophenol		800	620 U	360 U	670 U	1000 U	900 U
1,3-Dichlorobenzene		1600	620 U	360 U	670 U	1000 U	900 U
1,4-Dichlorobenzene		8500	620 U	360 U	670 U	1000 U	900 U
1,2-Dichlorobenzene		7900	620 U	360 U	670 U	1000 U	900 U
2-Methylphenol		100	22 J	360 U	670 U	1000 U	900 U
2,2'-oxybis(1-chloropropane)			620 U	360 U	670 U	1000 U	900 U
4-Methylphenol		900	96 J	360 U	670 U	170 J	900 U
N-Nitrosodipropylamine			620 U	360 U	670 U	1000 U	900 U
Hexachloroethane			620 U	360 U	670 U	1000 U	900 U
Nitrobenzene		200	620 U	360 U	670 U	1000 U	900 U
Isophorone		4400	620 U	360 U	670 U	1000 U	900 U
2-Nitrophenol		330	620 U	360 U	670 U	1000 U	900 U
2,4-Dimethylphenol			620 U	360 U	670 U	1000 U	900 U
Bis(2-chloroethoxy)methane			620 U	360 U	670 U	1000 U	900 U
2,4-Dichlorophenol		400	620 U	360 U	670 U	1000 U	900 U
1,2,4-Trichlorobenzene		3400	620 U	360 U	670 U	1000 U	900 U
Naphthalene		13000	620 U	360 U	670 U	1000 U	900 U
4-Chloroaniline		220	620 U	360 U	670 U	1000 U	900 U
Hexachlorobutadiene			620 U	360 U	670 U	1000 U	900 U
4-Chloro-3-methylphenol		240	620 U	360 U	670 U	1000 U	900 U
2-Methylnaphthalene		36400	620 U	360 U	670 U	1000 U	900 U
Hexachlorocyclopentadiene			620 U	360 U	670 U	1000 U	900 U
2,4,6-Trichlorophenol			620 U	360 U	670 U	1000 U	900 U
2,4,5-Trichlorophenol		100	1600 U	910 U	1700 U	2600 U	2300 U

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed
 [] = Greater than Action Level
 B:Compound found in the method blank as well as the sample

U:Analyzed for but not detected RCL 1482_95-1

LIBERTY INDUSTRIAL FINISHING SITE
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CONSTITUENT	(Units in ug/kg)	SITE		S-03	S-05	S-07	S-09	S-13
		SAMPLE ID	NYSDEC SOIL	S-03	S-05	S-07	S-09	S-13
		DATE	CLEANUP	12/19/97	12/19/97	12/19/97	12/19/97	12/19/97
		DEPTH (ft)	OBJECTIVES	0.00	0.00	0.00	0.00	0.00
2-Chloronaphthalene				620 U	360 U	670 U	1000 U	900 U
2-Nitroaniline		430		1600 U	910 U	1700 U	2600 U	2300 U
Dimethyl Phthalate		2000		140 J	360 U	670 U	1000 U	[2300]
Acenaphthylene		41000		620 U	360 U	670 U	1000 U	900 U
2,6-Dinitrotoluene		1000		620 U	360 U	670 U	1000 U	900 U
3-Nitroaniline		500		1600 U	910 U	1700 U	2600 U	2300 U
Acenaphthene		50000		620 U	360 U	670 U	1000 U	120 J
2,4-Dinitrophenol		200		1600 U	910 U	1700 U	2600 U	2300 U
4-Nitrophenol		100		1600 U	910 U	1700 U	2600 U	2300 U
Dibenzofuran		6200		620 U	360 U	670 U	1000 U	61 J
2,4-Dinitrotoluene				620 U	360 U	670 U	1000 U	900 U
Diethyl Phthalate		7100		620 U	16 J	670 U	1000 U	900 U
Fluorene		50000		620 U	360 U	670 U	1000 U	110 J
4-Chlorophenylphenyl Ether				620 U	360 U	670 U	1000 U	900 U
4-Nitroaniline				1600 U	910 U	1700 U	2600 U	2300 U
4,6-Dinitro-2-methylphenol				1600 U	910 U	1700 U	2600 U	2300 U
N-Nitrosodiphenylamine				620 U	360 U	670 U	1000 U	900 U
Hexachlorobenzene		410		620 U	360 U	670 U	1000 U	900 U
Pentachlorophenol		1000		1600 U	910 U	1700 U	2600 U	2300 U
Phenanthrene		50000		940	360 U	670 U	760 J	1400
Anthracene		50000		140 J	360 U	670 U	110 J	170 J
Carbazole				110 J	360 U	670 U	100 J	220 J
Di-n-butylphthalate		8100		150 J	12 J	310 J	1000 U	44 J
Fluoranthene		50000		1800	28 J	120 J	1300	2100
Pyrene		50000		1700	32 J	180 J	960 J	1900
Butylbenzylphthalate		50000		430 J	55 J	1100	1000 U	150 J
Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed								
[J] = Greater than Action Level								
B:Compound found in the method blank as well as the sample				U:Analyzed for but not detected		RCL 1482_95-1		

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CONSTITUENT	(Units in ug/kg)	SITE	S-03	S-05	S-07	S-09	S-13
		SAMPLE ID	S-03	S-05	S-07	S-09	S-13
		DATE	12/19/97	12/19/97	12/19/97	12/19/97	12/19/97
		DEPTH (ft)	0.00	0.00	0.00	0.00	0.00
		NYSDEC SOIL	CLEANUP	OBJECTIVES			
Benzo(a)anthracene		224	[790]	19 J	130 J	[530] J	[860] J
3,3-Dichlorobenzidine			620 U	360 U	670 U	1000 U	900 U
Chrysene		400	[2000]	27 J	240 J	[1300]	[1300]
Bis(2-ethylhexyl)phthalate		50000	8900 E	140 J	1600	6100	3700
Di-n-octyl Phthalate		50000	1000	360 U	670 U	1000 U	900 U
Benzo(b)fluoranthene		1100	[1200]	20 J	75 J	930 J	920
Benzo(k)fluoranthene		1100	[1300]	26 J	72 J	810 J	[1100]
Benzo(a)pyrene		61	[760]	31 J	[120] J	[600] J	[1000]
Indeno(1,2,3-cd)pyrene		3200	180 J	28 J	670 U	210 J	810 J
Dibenzo(a,h)anthracene		14	620 U	360 U	670 U	1000 U	900 U
Benzo(ghi)perylene		50000	620 U	39 J	670 U	1000 U	350 J

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed
[] = Greater than Action Level
B: Compound found in the method blank as well as the sample

U: Analyzed for but not detected RCL 1482_95-1

LIBERTY INDUSTRIAL FINISHING SITE
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CONSTITUENT (Units in ug/kg)	SITE	NYSDEC SOIL	S-14	S-15
	SAMPLE ID		S-14	S-15
	DATE		12/19/97	12/19/97
	DEPTH (ft)		0.00	0.00
Phenol		30	[120] J	[1300]
Bis(2-chloroethyl)ether			750 U	820 U
2-Chlorophenol		800	750 U	820 U
1,3-Dichlorobenzene		1600	750 U	820 U
1,4-Dichlorobenzene		8500	750 U	820 U
1,2-Dichlorobenzene		7900	750 U	820 U
2-Methylphenol		100	750 U	820 U
2,2'-oxybis(1-chloropropane)			750 U	820 U
4-Methylphenol		900	440 J	820 U
N-Nitrosodipropylamine			750 U	820 U
Hexachloroethane			750 U	820 U
Nitrobenzene		200	750 U	820 U
Isophorone		4400	750 U	820 U
2-Nitrophenol		330	750 U	820 U
2,4-Dimethylphenol			750 U	820 U
Bis(2-chloroethoxy)methane			750 U	820 U
2,4-Dichlorophenol		400	750 U	820 U
1,2,4-Trichlorobenzene		3400	750 U	820 U
Naphthalene		13000	26 J	38 J
4-Chloroaniline		220	750 U	820 U
Hexachlorobutadiene			750 U	820 U
4-Chloro-3-methylphenol		240	750 U	820 U
2-Methylnaphthalene		36400	750 U	36 J
Hexachlorocyclopentadiene			750 U	820 U
2,4,6-Trichlorophenol			750 U	820 U
2,4,5-Trichlorophenol		100	1900 U	2100 U
Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed				
[] = Greater than Action Level				
B:Compound found in the method blank as well as the sample			U:Analyzed for but not detected	RCL 1482_95-1

LIBERTY INDUSTRIAL FINISHING SITE
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
SEDIMENT/SLUDGE SAMPLE RESULTS
SEMIVOLATILE ORGANIC COMPOUNDS

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CONSTITUENT	(Units in ug/kg)	SITE SAMPLE ID DATE DEPTH (ft)	NYSDEC SOIL CLEANUP OBJECTIVES	S-14 S-14 12/19/97 0.00	S-15 S-15 12/19/97 0.00
2-Chloronaphthalene				750 U	820 U
2-Nitroaniline			430	1900 U	2100 U
Dimethyl Phthalate			2000	[3500]	[2300]
Acenaphthylene			41000	27 J	820 U
2,6-Dinitrotoluene			1000	150 J	820 U
3-Nitroaniline			500	1900 U	2100 U
Acenaphthene			50000	83 J	320 J
2,4-Dinitrophenol			200	1900 U	2100 U
4-Nitrophenol			100	1900 U	2100 U
Dibenzofuran			6200	44 J	190 J
2,4-Dinitrotoluene				750 U	820 U
Diethyl Phthalate			7100	750 U	820 U
Fluorene			50000	74 J	320 J
4-Chlorophenylphenyl Ether				750 U	820 U
4-Nitroaniline				1900 U	2100 U
4,6-Dinitro-2-methylphenol				1900 U	2100 U
N-Nitrosodiphenylamine				750 U	820 U
Hexachlorobenzene			410	750 U	820 U
Pentachlorophenol			1000	1900 U	2100 U
Phenanthrene			50000	1400	3400
Anthracene			50000	160 J	440 J
Carbazole				180 J	500 J
Di-n-butylphthalate			8100	98 J	56 J
Fluoranthene			50000	2100	4100
Pyrene			50000	1800	3900
Butylbenzylphthalate			50000	170 J	820 U
Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed					
[] = Greater than Action Level					
B:Compound found in the method blank as well as the sample				U:Analyzed for but not detected	RCL 1482_95-1

LIBERTY INDUSTRIAL FINISHING SITE
 REMEDIAL INVESTIGATION/FEASIBILITY STUDY
 SEDIMENT/SLUDGE SAMPLE RESULTS
 SEMIVOLATILE ORGANIC COMPOUNDS

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CONSTITUENT (Units in ug/kg)	SITE	NYSDEC SOIL CLEANUP OBJECTIVES	S-14	S-15
	SAMPLE ID		S-14	S-15
	DATE		12/19/97	12/19/97
	DEPTH (ft)		0.00	0.00
Benzo(a)anthracene		224	[920]	[1900]
3,3-Dichlorobenzidine			750 U	820 U
Chrysene		400	[1600]	[2600]
Bis(2-ethylhexyl)phthalate		50000	4000	2000
Di-n-octyl Phthalate		50000	85 J	820 U
Benzo(b)fluoranthene		1100	[1300]	[2000]
Benzo(k)fluoranthene		1100	[1200]	[1600]
Benzo(a)pyrene		61	[1100]	[2000]
Indeno(1,2,3-cd)pyrene		3200	490 J	1400
Dibenzo(a,h)anthracene		14	[170] J	820 U
Benzo(ghi)perylene		50000	200 J	690 J
Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed [] = Greater than Action Level The following qualifier(s) exist: U, J, B, E B:Compound found in the method blank as well as the sample U:Analyzed for but not detected RCL 1482_95-1				

LIBERTY INDUSTRIAL FINISHING SITE
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
SEDIMENT/SLUDGE SAMPLE RESULTS
PESTICIDE/PCBs

Page: 1A of 2D

CONSTITUENT	(Units in ug/kg)	SITE	NYSDEC SOIL CLEANUP OBJECTIVES	B-02D	B-04D	B-05D	B-06D	B-07D
		SAMPLE ID		B-02D(14-18')	B-04D(18')	B-05D(13-17')	B-06D(3-7')	B-07D(14-18')
		DATE		03/26/98	03/31/98	03/27/98	03/26/98	03/26/98
		DEPTH (ft)		18.00	18.00	17.00	7.00	18.00
alpha-BHC			110	2.0 U	1.8 U	2.1 U	1.9 U	2.0 U
beta-BHC			200	2.0 U	1.8 U	2.1 U	1.9 U	2.0 U
delta-BHC			300	2.0 U	1.8 U	2.1 U	1.9 U	2.0 U
gamma-BHC (Lindane)			540	2.0 U	0.50 JP	2.1 U	1.9 U	2.0 U
Heptachlor			100	2.0 U	1.8 U	2.1 U	1.9 U	2.0 U
Aldrin			41	2.0 U	1.8 U	2.1 U	3.6 P	2.0 U
Heptachlor Epoxide			20	2.0 U	1.8 U	2.1 U	1.9 U	2.0 U
Endosulfan I			900	2.0 U	1.8 U	2.1 U	1.9 U	2.0 U
Dieldrin			44	3.8 U	3.6 U	4.1 U	3.7 U	3.8 U
4,4'-DDE			2100	3.8 U	3.6 U	4.1 U	3.7 U	3.8 U
Endrin			100	3.8 U	3.6 U	2.9 JP	3.0 JP	3.8 U
Endosulfan II			900	0.82 JP	3.6 U	4.1 U	3.7 U	3.8 U
4,4'-DDD			2900	0.89 JP	3.6 U	4.1 U	3.7 U	3.8 U
Endosulfan Sulfate			1000	3.8 U	3.6 U	4.1 U	3.7 U	10. P
4,4'-DDT			2100	0.93 JP	3.6 U	4.1 U	3.7 U	3.8 U
Methoxychlor				20. U	18. U	21. U	19. U	20. U
Endrin Ketone				3.8 U	3.6 U	4.1 U	3.7 U	3.8 U
Endrin Aldehyde				3.8 U	3.6 U	4.1 U	3.7 U	3.8 U
alpha-Chlordane				2.0 U	0.98 J	7.0 P	1.9 U	2.0 U
gamma-Chlordane				2.0 U	0.38 JP	5.0	1.9 U	2.0 U
Toxaphene				200 U	180 U	210 U	190 U	200 U
Aroclor 1016				38. U	36. U	41. U	37. U	38. U
Aroclor 1221				78. U	73. U	84. U	75. U	77. U
Aroclor 1232				38. U	36. U	41. U	37. U	38. U
Aroclor 1242				38. U	36. U	23. JP	51. P	38. U
Aroclor 1248				38. U	36. U	41. U	37. U	38. U
Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed								
P: > 25% difference between two columns, lower value reported				U: Analyzed for but not detected		RCL 1482_95-3		

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CONSTITUENT	(Units in ug/kg)	SITE		B-02D	B-04D	B-05D	B-06D	B-07D
		SAMPLE ID	NYSDEC SOIL	B-02D(14-18')	B-04D(18')	B-05D(13-17')	B-06D(3-7')	B-07D(14-18')
		DATE	CLEANUP	03/26/98	03/31/98	03/27/98	03/26/98	03/26/98
		DEPTH (ft)	OBJECTIVES	18.00	18.00	17.00	7.00	18.00
Aroclor 1254				38. U	16. JP	150	170	38. U
Aroclor 1260				38. U	36. U	200	59. P	38. U
Values represent total concentrations unless noted < = Not detected at indicated reporting limit ---= Not analyzed P: > 25% difference between two columns, lower value reported U: Analyzed for but not detected RCL 1482_95-3								

LIBERTY INDUSTRIAL FINISHING SITE
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
SEDIMENT/SLUDGE SAMPLE RESULTS
PESTICIDE/PCBs

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CONSTITUENT	(Units in ug/kg)	SITE	NYSDEC SOIL CLEANUP OBJECTIVES	B-25D	B-30S	B-31S	B-32S	B-33S
		SAMPLE ID		B-25(14-18')	B-30(17-21')	B-31(16-20')	B-32(12-16')	B-33(12-16')
		DATE		03/31/98	03/31/98	03/31/98	03/31/98	03/31/98
		DEPTH (ft)		18.00	21.00	20.00	16.00	16.00
alpha-BHC			110	1.8 U	1.9 U	1.9 U	2.0 U	2.0 U
beta-BHC			200	1.8 U	1.9 U	0.51 J	2.0 U	2.0 U
delta-BHC			300	1.8 U	0.17 JP	1.9 U	2.0 U	2.0 U
gamma-BHC (Lindane)			540	1.8 U	1.9 U	1.9 U	2.0 U	2.0 U
Heptachlor			100	1.8 U	1.9 U	1.9 U	2.0 U	2.0 U
Aldrin			41	1.8 U	1.9 U	1.9 U	2.0 U	2.0 U
Heptachlor Epoxide			20	1.8 U	1.9 U	1.9 U	2.0 U	2.0 U
Endosulfan I			900	1.8 U	1.9 U	1.9 U	2.0 U	2.0 U
Dieldrin			44	3.4 U	3.8 U	3.6 U	0.30 J	0.29 J
4,4'-DDE			2100	3.4 U	3.8 U	0.96 JP	3.8 U	0.88 JP
Endrin			100	3.4 U	3.8 U	3.6 U	3.8 U	3.8 U
Endosulfan II			900	3.4 U	3.8 U	3.6 U	3.8 U	3.8 U
4,4'-DDD			2900	3.4 U	3.8 U	3.6 U	0.80 JP	0.76 JP
Endosulfan Sulfate			1000	3.4 U	3.8 U	3.6 U	3.8 U	1.2 J
4,4'-DDT			2100	3.4 U	0.41 JP	0.23 JP	0.47 JP	0.68 JP
Methoxychlor				18. U	19. U	19. U	1.9 J	20. U
Endrin Ketone				3.4 U	3.8 U	3.6 U	3.8 U	3.8 U
Endrin Aldehyde				3.4 U	3.8 U	3.6 U	3.8 U	3.8 U
alpha-Chlordane				1.8 U	1.9 U	1.9 U	1.8 J	1.5 JP
gamma-Chlordane				1.8 U	1.9 U	1.9 U	1.0 JP	1.1 JP
Toxaphene				180 U	190 U	190 U	200 U	200 U
Aroclor 1016				34. U	38. U	36. U	38. U	38. U
Aroclor 1221				70. U	76. U	74. U	77. U	77. U
Aroclor 1232				34. U	38. U	36. U	38. U	38. U
Aroclor 1242				34. U	38. U	36. U	38. U	38. U
Aroclor 1248				34. U	38. U	36. U	38. U	38. U
Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed								
P: > 25% difference between two columns, lower value reported				U: Analyzed for but not detected		RCL 1482_95-3		

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CONSTITUENT	(Units in ug/kg)	SITE	B-25D	B-30S	B-31S	B-32S	B-33S
		SAMPLE ID	B-25(14-18')	B-30(17-21')	B-31(16-20')	B-32(12-16')	B-33(12-16')
		DATE	03/31/98	03/31/98	03/31/98	03/31/98	03/31/98
		DEPTH (ft)	18.00	21.00	20.00	16.00	16.00
Aroclor 1254			11. J	38. U	36. U	38. U	38. U
Aroclor 1260			34. U	38. U	16. J	38. U	38. U
Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed P: > 25% difference between two columns, lower value reported U: Analyzed for but not detected RCL 1482_95-3							

LIBERTY INDUSTRIAL FINISHING SITE
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
SEDIMENT/SLUDGE SAMPLE RESULTS
PESTICIDE/PCBs

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CONSTITUENT	(Units in ug/kg)	SITE	NYSDEC SOIL CLEANUP OBJECTIVES	S-03	S-05	S-07	S-09	S-13
		SAMPLE ID		S-03	S-05	S-07	S-09	S-13
		DATE		12/19/97	12/19/97	12/19/97	12/19/97	12/19/97
		DEPTH (ft)		0.00	0.00	0.00	0.00	0.00
alpha-BHC			110	2.4 J	1.9 U	3.3 JP	0.74 JP	2.3 U
beta-BHC			200	3.2 U	1.9 U	3.5 U	2.6 U	2.3 U
delta-BHC			300	3.2 U	1.9 U	3.5 U	1.1 JP	0.90 JP
gamma-BHC (Lindane)			540	3.2 U	1.9 U	3.5 U	2.6 U	2.3 U
Heptachlor			100	3.2 U	1.9 U	3.5 U	2.6 U	2.3 U
Aldrin			41	3.2 U	1.9 U	3.5 U	2.6 U	2.3 U
Heptachlor Epoxide			20	1.9 JP	1.9 U	3.5 U	1.2 JP	2.3 U
Endosulfan I			900	3.2 U	1.9 U	3.5 U	2.6 U	2.3 U
Dieldrin			44	4.3 JP	3.6 U	6.7 U	2.5 JP	4.5 U
4,4'-DDE			2100	16. P	0.93 J	5.7 JP	9.3 P	8.2
Endrin			100	12. P	3.6 U	6.7 U	5.2 U	4.5 U
Endosulfan II			900	6.2 U	3.6 U	6.7 U	5.2 U	2.5 JP
4,4'-DDD			2900	7.6 P	0.70 JP	6.7 U	4.0 JP	4.5 U
Endosulfan Sulfate			1000	6.2 U	3.6 U	6.7 U	5.2 U	4.5 U
4,4'-DDT			2100	5.5 JP	3.2 JP	3.2 JP	4.7 JP	2.1 JP
Methoxychlor				16. JP	19. U	12. JP	26. U	23. U
Endrin Ketone				12. P	3.6 U	6.7 U	5.2 U	4.5 U
Endrin Aldehyde				9.0 P	3.6 U	6.7 U	5.2 U	3.1 JP
alpha-Chlordane				20.	0.81 JP	3.5 U	19.	2.3 P
gamma-Chlordane				11. P	0.45 JP	3.5 U	13.	1.0 J
Toxaphene				320 U	190 U	350 U	260 U	230 U
Aroclor 1016				62. U	36. U	67. U	52. U	45. U
Aroclor 1221				130 U	74. U	140 U	100 U	92. U
Aroclor 1232				62. U	36. U	67. U	52. U	45. U
Aroclor 1242				94.	36. U	67. U	36. J	45. U
Aroclor 1248				62. U	36. U	67. U	52. U	45. U
Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed								
P: > 25% difference between two columns, lower value reported				U: Analyzed for but not detected		RCL 1482_95-3		

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CONSTITUENT	(Units in ug/kg)	SITE		S-03	S-05	S-07	S-09	S-13
		SAMPLE ID	NYSDEC SOIL	S-03	S-05	S-07	S-09	S-13
		DATE	CLEANUP	12/19/97	12/19/97	12/19/97	12/19/97	12/19/97
		DEPTH (ft)	OBJECTIVES	0.00	0.00	0.00	0.00	0.00
Aroclor 1254				290 P	36. U	67. U	24. J	45. U
Aroclor 1260				400	36. U	67. U	52. U	45. U
Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed P: > 25% difference between two columns, lower value reported U: Analyzed for but not detected RCL 1482_95-3								

LIBERTY INDUSTRIAL FINISHING SITE
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
SEDIMENT/SLUDGE SAMPLE RESULTS
PESTICIDE/PCBs

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CONSTITUENT (Units in ug/kg)	SITE	NYSDEC SOIL CLEANUP OBJECTIVES	S-14	S-15
	SAMPLE ID		S-14	S-15
	DATE		12/19/97	12/19/97
	DEPTH (ft)		0.00	0.00
alpha-BHC		110	3.9 U	4.2 U
beta-BHC		200	3.9 U	4.2 U
delta-BHC		300	3.9 U	2.0 JP
gamma-BHC (Lindane)		540	3.9 U	4.2 U
Heptachlor		100	3.9 U	4.2 U
Aldrin		41	3.9 U	4.2 U
Heptachlor Epoxide		20	3.9 U	4.2 U
Endosulfan I		900	3.9 U	4.2 U
Dieldrin		44	7.5 U	8.2 U
4,4'-DDE		2100	12.	8.2 U
Endrin		100	7.5 U	8.2 U
Endosulfan II		900	7.5 U	2.9 JP
4,4'-DDD		2900	7.5 U	8.2 U
Endosulfan Sulfate		1000	7.5 U	8.2 U
4,4'-DDT		2100	8.1 P	3.3 JP
Methoxychlor			32. JP	33. JP
Endrin Ketone			4.6 JP	8.2 U
Endrin Aldehyde			7.3 JP	7.0 JP
alpha-Chlordane			5.3 P	3.0 JP
gamma-Chlordane			2.6 JP	2.5 J
Toxaphene			390 U	420 U
Aroclor 1016			75. U	82. U
Aroclor 1221			150 U	170 U
Aroclor 1232			75. U	82. U
Aroclor 1242			75. U	82. U
Aroclor 1248			75. U	82. U
Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed				
P: > 25% difference between two columns, lower value reported			U: Analyzed for but not detected	RCL 1482_95-3

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RCL 1482 95-M

LIBERTY INDUSTRIAL FINISHING SITE
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
SEDIMENT/SLUDGE SAMPLE RESULTS
TAL METALS, CYANIDE and pH

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CONSTITUENT	(Units in mg/kg)	SITE		B-25D	B-30S	B-31S	B-32S	B-33S
		SAMPLE ID	NYSDEC SOIL	B-25D(14-18')	B-30(17-21')	B-31(16-20')	B-32(12-16')	B-33(12-16')
		DATE	CLEANUP	03/09/98	03/31/98	03/31/98	03/31/98	03/31/98
		DEPTH (ft)	OBJECTIVES	14.00	21.00	20.00	16.00	16.00
Aluminum				634.	714.	674.	1910	1200
Antimony				0.94 B	1.0 B	1.5 B	1.5 B	1.5 B
Arsenic		7.5		0.58 B	0.79 B	<0.44	1.3 B	0.92 B
Barium		300		3.7 B	4.3 B	7.0 B	13.7 B	9.4 B
Beryllium		0.16		<0.22	<0.23	<0.22	<0.23	<0.27
Cadmium		10		0.82 B	0.88 B	[42.0]	5.9	5.4
Calcium				159. B	197. B	209. B	680. B	706. B
Chromium		50		3.6	2.0 B	20.9	17.7	15.2
Cobalt		30		0.38 B	0.31 B	<0.22	1.0 B	0.92 B
Copper		25		6.9	3.1 B	[90.5]	12.4	10.4
Iron		2000		1260	1950	1000	[3590]	[2430]
Lead		400		95.4	6.6	9.6	33.2	25.6
Magnesium				130. B	129. B	117. B	612. B	461. B
Manganese				25.7	34.5	5.1	25.7	35.5
Mercury		0.10		<0.098	<0.084	<0.092	<0.10	<0.12
Nickel		13		2.2 B	2.1 B	3.6 B	6.1 B	4.9 B
Potassium				51.3 B	40.1 B	58.1 B	127. B	84.9 B
Selenium		2		<0.43	0.71 B	1.3	0.68 B	<0.54
Silver				<0.22	<0.23	<0.22	<0.23	<0.27
Sodium				13.7 B	117. B	128. B	197. B	190. B
Thallium				<0.43	<0.68	<0.66	<0.68	<0.81
Vanadium		150		2.8 B	2.0 B	2.4 B	10.8 B	6.5 B
Zinc		20		19.4	[21.6]	[115.]	[66.7]	[44.5]
Cyanide				<0.540	<0.570	<0.560	<0.580	<0.680
pH				6.66	6.41	4.61	6.09	6.30

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

[] = Greater than Action Level

B: Result > IDL but < CRDL

RCL 1482_95-M

LIBERTY INDUSTRIAL FINISHING SITE
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
SEDIMENT/SLUDGE SAMPLE RESULTS
TAL METALS, CYANIDE and pH

Page: 1C of 1D

CONSTITUENT	(Units in mg/kg)	SITE	S-03	S-05	S-07	S-09	S-13
		SAMPLE ID	S-03	S-05	S-07	S-09	S-13
		DATE	12/19/97	12/19/97	12/19/97	12/19/97	12/19/97
		DEPTH (ft)	0.00	0.00	0.00	0.00	0.00
		NYSDEC SOIL					
		CLEANUP					
		OBJECTIVES					
Aluminum			6250	3460	2890	5320	1660
Antimony			9.3 B	< 1.8	3.6 B	< 2.8	2.4 B
Arsenic	7.5		4.6	2.7	2.8 B	2.9 B	1.8 B
Barium	300		93.4	12.5 B	27.1 B	40.7 B	34.7 B
Beryllium	0.16		[0.42] B	< 0.22	< 0.40	< 0.36	[0.54] B
Cadmium	10		[303.]	3.8	[89.8]	[18.9]	[52.8]
Calcium			6670	441. B	816. B	18700	3530
Chromium	50		[579.]	9.2	[148.]	49.8	[330.]
Cobalt	30		7.8 B	1.7 B	0.90 B	3.6 B	3.2 B
Copper	25		[131.]	11.8	[519.]	[36.2]	[172.]
Iron	2000		[10700]	[6400]	[6380]	[8670]	[7980]
Lead	400		132.	23.8	103.	70.0	52.0
Magnesium			3730	461. B	354. B	11300	1670
Manganese			79.2	71.1	24.5	83.0	87.0
Mercury	0.10		< 0.16	< 0.094	[0.96]	< 0.17	< 0.10
Nickel	13		[102.]	5.8 B	11.5 B	[15.1]	[51.7]
Potassium			440. B	201. B	127. B	450. B	136. B
Selenium	2		[2.0]	< 0.90	[3.8]	< 1.4	1.1 B
Silver			1.9 B	< 0.22	2.3 B	< 0.36	1.3 B
Sodium			636. B	54.6 B	90.4 B	390. B	112. B
Thallium			< 1.8	< 1.1	< 2.0	< 1.8	< 1.4
Vanadium	150		31.6	7.5 B	7.6 B	22.7	12.0 B
Zinc	20		[528.]	[31.6]	[127.]	[152.]	[554.]
Cyanide			< 0.870	< 0.560	2.60	< 0.900	6.69
pH			---	---	---	---	---

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

[] = Greater than Action Level

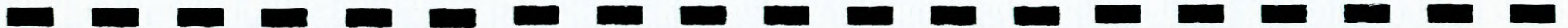
B: Result > IDL but < CRDL

RCL 1482_95-M

LIBERTY INDUSTRIAL FINISHING SITE
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
SEDIMENT/SLUDGE SAMPLE RESULTS
TAL METALS, CYANIDE and pH

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CONSTITUENT	(Units in mg/kg)	SITE	NYSDEC SOIL CLEANUP OBJECTIVES	S-14	S-15
		SAMPLE ID		S-14	S-15
		DATE		12/19/97	12/19/97
		DEPTH (ft)		0.00	0.00
Aluminum				2490	1390
Antimony				4.0 B	< 1.9
Arsenic		7.5		2.7 B	2.0 B
Barium		300		29.8 B	21.9 B
Beryllium		0.16		< 0.42	[0.40] B
Cadmium		10		[186.]	[34.9]
Calcium				2170	6640
Chromium		50		[314.]	[191.]
Cobalt		30		4.0 B	2.8 B
Copper		25		[208.]	[62.5]
Iron		2000		[9630]	[12800]
Lead		400		62.1	22.6
Magnesium				1020 B	3650
Manganese				73.4	101.
Mercury		0.10		< 0.17	< 0.090
Nickel		13		[67.0]	[31.9]
Potassium				190. B	122. B
Selenium		2		[2.0] B	1.2
Silver				0.84 B	< 0.24
Sodium				141. B	99.0 B
Thallium				< 2.1	< 1.2
Vanadium		150		17.9 B	9.8 B
Zinc		20		[866.]	[248.]
Cyanide				< 1.050	4.34
pH				---	---
Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed [] = Greater than Action Level The following qualifier(s) exist: B B: Result > IDL but < CRDL					
RCL 1482_95-M					



APPENDIX H

GEOPROBE GROUNDWATER SAMPLE RESULTS

LIBERTY INDUSTRIAL FINISHING SITE
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
GEOPROBE GROUNDWATER SAMPLE RESULTS
TAL METALS AND CYANIDE - TOTAL

Page: 1A of 1G

Date: 11/10/98

CONSTITUENT	(Units in ug/l)	SITE		NYSDEC CLASS GA TW-01S		TW-02S	TW-03D	TW-03D	TW-04S
		SAMPLE ID		GROUNDWATER	TW-01S(55')	TW-02S(55')	TW-03D(100')	TW-03S(55')	TW-04S(55')
		DATE		STDS/GUIDANCE	03/26/98	03/10/98	03/25/98	03/25/98	02/26/98
Aluminum					40700	4880	72000	26400	41900
Antimony				3	[5.7] B	[8.8]	[6.1] B	[6.2] B	[6.2] B
Arsenic				25	[33.9]	4.6	[60.9]	[26.3]	[34.7]
Barium				1000	384.	22.9	657.	272.	377.
Beryllium				3	[3.9] B	< 1.0	[6.8]	2.5 B	[5.2]
Cadmium				10	< 1.0	< 1.0	< 1.0	< 1.0	[12.1]
Calcium					18500	5930	14100	13100	15800
Chromium				50	[1460]	[430]	[2680]	[1510]	[1670]
Cobalt					61.6	7.8	145.	67.3	51.5
Copper				200	[235.]	31.8	[503.]	172.	147.
Iron				300	[199000]	[23400]	[424000]	[178000]	[191000]
Lead				25	[111.]	23.1	[194.]	[63.3]	[121.]
Magnesium				35000	10700	2540	16600	6130	10200
Manganese				300	[4030]	169	[10600]	[5860]	[4650]
Mercury				2	< 0.20	< 0.2	< 0.20	< 0.20	< 0.20
Nickel					453.	202	572.	400.	639.
Potassium					10100	1240	13300	4980 B	8770
Selenium				10	[16.4]	(2.2)	[28.4]	[14.9]	9.3
Silver				50	1.6 B	< 1.0	6.8 B	1.6 B	< 1.0
Sodium				20000	[24500]	5130	[20900]	5830	17800
Thallium				4	3.1 B	< 5.0	[14.5]	< 3.0	[5.8] B
Vanadium					101.	17.6	213.	73.1	114.
Zinc				300	[627.]	170	[993.]	[679.]	[675.]
Cyanide				100	< 10.000	< 10	< 10.000	< 10.000	< 10.0

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

() = Less than Reporting Limit [] = Greater than Action Level

B: Result is > IDL but < CRDL For RCL 1482_95-M

LIBERTY INDUSTRIAL FINISHING SITE
 REMEDIAL INVESTIGATION/FEASIBILITY STUDY
 GEOPROBE GROUNDWATER SAMPLE RESULTS
 TAL METALS AND CYANIDE - TOTAL

Page: 1B of 1G

Date: 11/10/98

CONSTITUENT	(Units in ug/l)	SITE	NYSDEC CLASS GA TW-05S		TW-06S	TW-07S	TW-08S	TW-09S
		SAMPLE ID	GROUNDWATER	TW-05S(55')	TW-06S(55')	TW-07S(55')	TW-08S(50')	TW-09S(55')
		DATE	STDS/GUIDANCE	03/03/98	02/26/98	03/09/98	03/26/98	03/09/98
Aluminum				12500	26300	35000	17000	18800
Antimony			3	[3.9] B	[4.4] B	[10.7] B	[5.3] B	[10.6] B
Arsenic			25	10.7	21.1	17.1	21.4	11.2
Barium			1000	234.	203.	454.	155. B	216.
Beryllium			3	1.3 B	2.3 B	[3.0] B	2.6 B	2.0 B
Cadmium			10	< 1.0	3.5 B	[22.0]	[15.7]	[22.8]
Calcium				5090	19600	28300	10100	7460
Chromium			50	[444.]	[1170]	[1360]	[846.]	[720.]
Cobalt				32.2 B	36.9 B	53.6	27.1 B	59.7
Copper			200	92.8	88.5	[342.]	129.	178.
Iron			300	[74000]	[97100]	[152000]	[100000]	[87700]
Lead			25	[34.2]	[49.6]	[571.]	[59.2]	[63.6]
Magnesium			35000	3220 B	9100	11100	4660 B	3490 B
Manganese			300	[2620]	[2870]	[4600]	[2220]	[5070]
Mercury			2	< 0.20	0.24	< 0.20	< 0.20	< 0.20
Nickel				145.	540.	354.	258.	306.
Potassium				3490 B	6460	6630	3650 B	2620 B
Selenium			10	5.1	6.6	[10.3]	9.6	6.7
Silver			50	1.4 B	< 1.0	< 1.0	46.6	4.9 B
Sodium			20000	13400	[51000]	[48100]	7140	4100 B
Thallium			4	< 2.0	< 2.0	3.5 B	< 3.0	< 2.0
Vanadium				29.1 B	67.4	75.0	58.7	36.0 B
Zinc			300	[742.]	209.	[1940]	[523.]	[819.]
Cyanide			100	< 10.0	< 10.0	< 10.0	< 10.000	< 10.0

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

[] = Greater than Action Level

B:Result is > IDL but < CRDL For RCL 1482_95-M

LIBERTY INDUSTRIAL FINISHING SITE
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
GEOPROBE GROUNDWATER SAMPLE RESULTS
TAL METALS AND CYANIDE - TOTAL

Page: 1C of 1G

Date: 11/10/98

CONSTITUENT	(Units in ug/l)	SITE SAMPLE ID DATE	NYSDEC CLASS GA GROUNDWATER STDS/GUIDANCE	TW-10D TW-10D(100') 03/10/98	TW-10D TW-10D(55') 03/10/98	TW-11S TW-11S(55') 02/26/98	TW-12D TW-12D(100') 02/27/98	TW-12D TW-12S(55') 02/27/98
Aluminum				28900	26200	1390	14000	24600
Antimony			3	[8.9]	[(5.5)]	[8.7] B	[4.1] B	[35.7] B
Arsenic			25	[26.6]	24.3	2.9 B	12.3	[28.4]
Barium			1000	343	457	28.6 B	219.	287.
Beryllium			3	[3.2]	2.8	< 1.0	1.8 B	2.2 B
Cadmium			10	< 1.0	< 1.0	< 2.0	7.0	[22.5]
Calcium				12400	10100	12800	16900	25400
Chromium			50	[1170]	[1110]	[1530]	[941.]	[9070]
Cobalt				50.3	55	2.2 B	22.3 B	51.2
Copper			200	[248]	170	7.2 B	78.0	[203.]
Iron			300	[198000]	[155000]	[14800]	[112000]	[338000]
Lead			25	[76.6]	[72.5]	3.9	[27.2]	[63.8]
Magnesium			35000	8100	6430	1940 B	6100	7620
Manganese			300	[3180]	[4070]	[352.]	[2660]	[3690]
Mercury			2	< 0.2	< 0.2	< 0.20	< 0.20	0.24
Nickel				224	232	46.8	200.	588.
Potassium				7340	6070	2050 B	5670	9210
Selenium			10	[19.1]	[11.8]	< 2.0	6.6	[12.4]
Silver			50	1.5	< 1.0	< 1.0	< 1.0	< 1.0
Sodium			20000	14200	[22700]	[27100]	[22200]	[85500]
Thallium			4	[8.2]	[6.2]	< 2.0	< 2.0	[15.4]
Vanadium				79.8	67.2	4.0 B	40.8 B	71.0
Zinc			300	[467]	[561]	77.5	277.	[1430]
Cyanide			100	91.5	< 10	< 10.0	< 10.0	< 10.0

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

() = Less than Reporting Limit [] = Greater than Action Level

B: Result is > IDL but < CRDL For RCL 1482_95-M

LIBERTY INDUSTRIAL FINISHING SITE
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
GEOPROBE GROUNDWATER SAMPLE RESULTS
TAL METALS AND CYANIDE - TOTAL

Page: 1D of 1G

Date: 11/10/98

CONSTITUENT (Units in ug/l)	SITE SAMPLE ID DATE	NYSDEC CLASS GA TW-13S		TW-14S	TW-15S	TW-16S	TW-17S
		GROUNDWATER	TW-13S(55')	TW-14S(55')	TW-15S(55')	TW-16S(55')	TW-17S(55')
		STDS/GUIDANCE	02/27/98	03/02/98	03/02/98	03/02/98	03/02/98
Aluminum			15500	7330	5780	19100	17000
Antimony		3	[4.8] B	[6.2] B	[5.0] B	[3.1] B	[7.5] B
Arsenic		25	11.9	7.0 B	5.4 B	16.0	13.4
Barium		1000	197. B	150. B	165. B	290.	271.
Beryllium		3	1.2 B	< 1.0	< 1.0	1.6 B	1.7 B
Cadmium		10	[12.8]	5.2	2.6 B	3.7 B	4.2 B
Calcium			21700	17200	22800	14800	15300
Chromium		50	[974.]	[302.]	[544.]	[673.]	[604.]
Cobalt			25.4 B	14.4 B	12.6 B	24.1 B	24.4 B
Copper		200	73.5	30.5	42.8	115.	123.
Iron		300	[123000]	[46700]	[57500]	[120000]	[70800]
Lead		25	[35.4]	14.8	16.7	[41.8]	[32.7]
Magnesium		35000	6010	5130	5490	6340	7260
Manganese		300	[2110]	[1420]	[1780]	[1820]	[3890]
Mercury		2	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Nickel			132.	80.2	257.	214.	298.
Potassium			4850 B	4560 B	3800 B	6090	4720 B
Selenium		10	7.5	3.6 B	3.4 B	5.8	3.3 B
Silver		50	< 1.0	< 1.0	1.4 B	2.8 B	2.6 B
Sodium		20000	[45000]	[42400]	[33300]	[34400]	16000
Thallium		4	3.3 B	< 2.0	< 2.0	[4.5] B	< 2.0
Vanadium			46.3 B	22.4 B	16.2 B	49.8 B	43.9 B
Zinc		300	[312.]	163.	[472.]	[1000]	[386.]
Cyanide		100	24	19	< 10.0	< 10.0	< 10.0

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

[] = Greater than Action Level

B: Result is > IDL but < CRDL For RCL 1482_95-M

LIBERTY INDUSTRIAL FINISHING SITE
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
GEOPROBE GROUNDWATER SAMPLE RESULTS
TAL METALS AND CYANIDE - TOTAL

Page: 1E of 1G

Date: 11/10/98

CONSTITUENT	(Units in ug/l)	SITE SAMPLE ID DATE	NYSDEC CLASS GA TW-18S		TW-19D	TW-19D	TW-20D	TW-20D
			GROUNDWATER	TW-18S(55')	TW-19D(100')	TW-19S(55')	TW-20D(100')	TW-20S(55')
			STDS/GUIDANCE	02/23/98	02/24/98	02/24/98	02/25/98	02/25/98
Aluminum				16700	82700	22200	59100	17300
Antimony			3	[4.8] B	[8.5] B	[3.2] B	[8.6] B	[7.4] B
Arsenic			25	14.4	[70.6]	19.0	[55.1]	17.3
Barium			1000	218.	975.	525.	821.	182. B
Beryllium			3	1.6 B	[7.7]	[3.7] B	[5.8]	1.6 B
Cadmium			10	6.4	[23.6]	[18.9]	[14.2]	2.8 B
Calcium				19500	37400	12600	18600	14400
Chromium			50	[860.]	[4290]	[643.]	[3900]	[1750]
Cobalt				48.9 B	151.	41.1 B	99.0	26.4 B
Copper			200	127.	[508.]	78.3	[549.]	81.4
Iron			300	[182000]	[676000]	[123000]	[530000]	[86400]
Lead			25	[91.6]	[231.]	[44.4]	[150.]	[29.1]
Magnesium			35000	5500	17000	5420	13100	7530
Manganese			300	[4300]	[13400]	[5000]	[8960]	[2130]
Mercury			2	<0.20	0.24	<0.20	<0.20	<0.20
Nickel				254.	757.	172.	466.	281.
Potassium				2910 B	16300	9640	15300	4820 B
Selenium			10	9.3	[27.6]	5.1	[22.0]	4.8 B
Silver			50	<1.0	<1.0	<1.0	<1.0	<1.0
Sodium			20000	6680	[23800]	[26600]	[22000]	[22900]
Thallium			4	[7.9] B	[33.0]	<2.0	[31.6]	<2.0
Vanadium				42.5 B	218.	51.5	173.	56.5
Zinc			300	[879.]	[1660]	[515.]	[869.]	140.
Cyanide			100	<10.0	13.0	<10.0	<10.0	<10.0

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

[] = Greater than Action Level

B:Result is > IDL but < CRDL For RCL 1482_95-M

LIBERTY INDUSTRIAL FINISHING SITE
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
GEOPROBE GROUNDWATER SAMPLE RESULTS
TAL METALS AND CYANIDE - TOTAL

Page: 1F of 1G

Date: 11/10/98

CONSTITUENT	(Units in ug/l)	SITE SAMPLE ID DATE	NYSDEC CLASS GA GROUNDWATER STDS/GUIDANCE	TW-21D	TW-21D	TW-22S	TW-23S	TW-24S
				TW-21D(100')	TW-21S(55')	TW-22S(55')	TW-23S(55')	TW-24S(55')
				02/25/98	02/25/98	02/23/98	02/24/98	02/26/98
Aluminum				40700	27700	19900	22400	10100
Antimony			3	[6.3] B	[7.0] B	[9.2] B	[8.4] B	[5.0] B
Arsenic			25	[34.9]	[27.2]	16.4	16.8	8.3 B
Barium			1000	583.	336.	152. B	223.	147. B
Beryllium			3	[7.1]	[3.0] B	1.2 B	1.7 B	< 1.0
Cadmium			10	5.2	9.2	4.4 B	3.5 B	< 2.0
Calcium				12200	19600	10000	5980	18300
Chromium			50	[1880]	[1930]	[986.]	[764.]	[359.]
Cobalt				45.3 B	52.6	31.8 B	48.2 B	23.0 B
Copper			200	[223.]	[200.]	94.2	107.	57.9
Iron			300	[275000]	[312000]	[206000]	[115000]	[54600]
Lead			25	[89.7]	[82.5]	[64.6]	[69.2]	[26.3]
Magnesium			35000	9380	7650	4200 B	5200	4700 B
Manganese			300	[4770]	[7600]	[2370]	[5350]	[3350]
Mercury			2	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Nickel				245.	418.	336.	222.	95.0
Potassium				9190	6930	2510 B	3650 B	2000 B
Selenium			10	[13.2]	[14.8]	[10.7]	7.0	2.7 B
Silver			50	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Sodium			20000	[27000]	[21200]	6780	3890 B	7780
Thallium			4	[14.6]	[14.7]	[10.3]	< 2.0	< 2.0
Vanadium				115.	81.7	60.7	48.3 B	20.3 B
Zinc			300	286.	[783.]	[1170]	194.	130.
Cyanide			100	13	< 10.0	< 10.0	< 10.0	< 10.0

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

[] = Greater than Action Level

B:Result is > IDL but < CRDL For RCL 1482_95-M

LIBERTY INDUSTRIAL FINISHING SITE
 REMEDIAL INVESTIGATION/FEASIBILITY STUDY
 GEOPROBE GROUNDWATER SAMPLE RESULTS
 TAL METALS AND CYANIDE - TOTAL

Page: 1G of 1G

Date: 11/10/98

CONSTITUENT	(Units in ug/l)	SITE		NYSDEC CLASS GA TW-25S	
		SAMPLE ID		GROUNDWATER	TW-25S(55')
		DATE		STDS/GUIDANCE	03/09/98
Aluminum					3810
Antimony			3		[9.2] B
Arsenic			25		3.3 B
Barium			1000		52.5 B
Beryllium			3		< 1.0
Cadmium			10		2.1 B
Calcium					9310
Chromium			50		[174.]
Cobalt					28.9 B
Copper			200		29.1
Iron			300		[24600]
Lead			25		[39.9]
Magnesium			35000		2670 B
Manganese			300		[2000]
Mercury			2		< 0.20
Nickel					66.8
Potassium					2930 B
Selenium			10		2.6 B
Silver			50		< 1.0
Sodium			20000		[24500]
Thallium			4		< 2.0
Vanadium					7.5 B
Zinc			300		[450.]
Cyanide			100		< 10.0
Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed [] = Greater than Action Level The following qualifier(s) exist: B B:Result is > IDL but < CRDL For RCL 1482_95-M					

LIBERTY INDUSTRIAL FINISHING SITE
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
GEOPROBE GROUNDWATER SAMPLE RESULTS
TAL METALS - DISSOLVED

Page: 1A of 1A

Date: 11/10/98

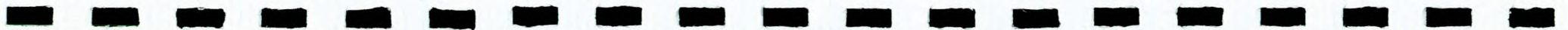
CONSTITUENT (Units in UG/L)	SITE		NYSDEC CLASS GA TW-02S		TW-09S	TW-12D	TW-16S	TW-19D
	SAMPLE ID		GROUNDWATER	TW-02S(55')	TW-09S(55')	TW-12S(55')	TW-16S(55')	TW-19D(100')
	DATE		STDs/GUIDANCE	03/10/98	03/09/98	02/27/98	03/02/98	02/24/98
Aluminum (Dissolved)				175 B	1890	217	456	977
Antimony (Dissolved)			3	< 8.0	[(6.5)] B	[30.3] B	< 8.0	< 8.0
Arsenic (Dissolved)			25	< 3.0	< 2.0	(2.1) B	< 3.0	< 3.0
Barium (Dissolved)			1000	3.4 B	36.9 B	50.0 B	106 B	34.9 B
Beryllium (Dissolved)			3	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cadmium (Dissolved)			10	1.3 B	[13.6]	< 1.0	1.5 B	< 1.0
Calcium (Dissolved)				5770	6690	22000	17900	11400
Chromium (Dissolved)			50	8.3 B	22.5	[6720]	10.1	18.3
Cobalt (Dissolved)				< 2.0	32.1 B	6.2 B	10.8 B	< 2.0
Copper (Dissolved)			200	2.0 B	7.0 B	2.5 B	4.9 B	2.8 B
Iron (Dissolved)			300	[597]	[3760]	[2410]	[1750]	[2740]
Lead (Dissolved)			25	< 2.0	3.1	< 2.0	(1.4) B	2.1 B
Magnesium (Dissolved)			35000	1440 B	1540 B	3730 B	4310 B	4160 B
Manganese (Dissolved)			300	83.3	[7210]	[335]	[1510]	[956]
Mercury (Dissolved)			2	< 0.2	< 0.2	< 0.2	< 0.2	0.35
Nickel (Dissolved)				25.8 B	66.8	17.2 B	80.8	7.1 B
Potassium (Dissolved)				546 B	1640 B	6140	4610 B	8360
Selenium (Dissolved)			10	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
Silver (Dissolved)			50	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Sodium (Dissolved)			20000	5310	4080 B	[86700]	[38500]	[22400]
Thallium (Dissolved)			4	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Vanadium (Dissolved)				< 1.0	3.1 B	< 1.0	< 1.0	1.1 B
Zinc (Dissolved)			300	128	96.2	48.2	[691]	35.7

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

() = Less than Reporting Limit [] = Greater than Action Level The following qualifier(s) exist: B

B: Result is > IDL but < CRDL For RCL 1482_95-MD

Appendix I



APPENDIX I

GEOPROBE SOIL SAMPLE RESULTS

LIBERTY INDUSTRIAL FINISHING SITE
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
GEOPROBE SOIL SAMPLE RESULTS
TAL METALS, CYANIDE and pH

Page: 1A of 11

CONSTITUENT	(Units in mg/kg)	SITE SAMPLE ID DATE DEPTH (ft)	NYSDEC SOIL CLEANUP OBJECTIVES	B-01D	B-01D	B-02D	B-03D	B-03D
				B-01D(12-16')	B-01D(39-41')	B-02D(35-37')	B-03D(12-16')	B-03D(40-42')
				03/05/98	03/05/98	03/26/98	03/06/98	03/06/98
				12.00	39.00	37.00	12.00	40.00
Aluminum				348.	574.	337.	254.	509.
Antimony				0.84 B	0.75 B	1.2 B	0.65 B	0.76 B
Arsenic	7.5			<0.41	<0.41	<0.42	<0.42	0.62 B
Barium	300			1.7 B	5.0 B	2.1 B	1.3 B	3.5 B
Beryllium	0.16			<0.20	<0.20	<0.21	<0.21	<0.21
Cadmium	10			0.22 B	<0.20	0.41 B	<0.21	<0.21
Calcium				50.5 B	24.6 B	33.2 B	24.5 B	25.1 B
Chromium	50			2.1	1.9 B	3.8	1.0 B	1.6 B
Cobalt	30			0.30 B	0.27 B	<0.21	0.31 B	0.21 B
Copper	25			1.1 B	1.9 B	2.2 B	1.0 B	1.5 B
Iron	2000			808.	1510	1110	751.	1840
Lead	400			2.2	1.4	1.3	1.2	1.8
Magnesium				71.0 B	98.5 B	69.1 B	46.0 B	91.1 B
Manganese				21.6	41.4	25.6	25.4	31.6
Mercury	0.10			<0.098	<0.089	<0.084	<0.090	<0.090
Nickel	13			1.2 B	2.0 B	7.8 B	0.98 B	2.1 B
Potassium				37.9 B	70.0 B	39.6 B	27.5 B	56.3 B
Selenium	2			<0.41	<0.41	<0.42	<0.42	<0.42
Silver				<0.20	<0.20	<0.21	<0.21	<0.21
Sodium				16.8 B	13.5 B	132. B	6.8 B	12.9 B
Thallium				<0.41	<0.41	<0.63	<0.42	<0.42
Vanadium	150			1.1 B	1.9 B	0.99 B	0.87 B	1.5 B
Zinc	20			5.6	5.7	14.7	9.0	8.3
Cyanide				<0.510	<0.510	<0.510	<0.520	<0.520
pH				6.85	5.69	5.95	6.22	6.20

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B: Result > IDL but < CRDL For RCL 1482_95-M

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CONSTITUENT	(Units in mg/kg)	SITE		B-04D	B-05D	B-06D	B-07D	B-09S
		SAMPLE ID	NYSDEC SOIL	B-04D(40-42')	B-05D(35-37')	B-06D(35-37')	B-07D(35-37')	B-09S(10-14')
		DATE	CLEANUP	03/31/98	03/27/98	03/26/98	03/26/98	03/11/98
		DEPTH (ft)	OBJECTIVES	42.00	37.00	37.00	37.00	14.00
Aluminum				382.	403.	355.	522.	1020
Antimony				1.2 B	1.2 B	1.4 B	<0.95	0.64 B
Arsenic	7.5			0.58 B	<0.42	0.52 B	<0.48	0.73 B
Barium	300			2.7 B	2.5 B	2.2 B	2.0 B	6.1 B
Beryllium	0.16			<0.22	<0.21	<0.21	<0.24	<0.21
Cadmium	10			2.7	0.29 B	0.26 B	0.38 B	5.8
Calcium				66.5 B	35.2 B	29.2 B	40.3 B	3620
Chromium	50			18.6	2.1	1.2 B	1.6 B	42.4
Cobalt	30			0.48 B	<0.21	<0.21	<0.24	0.62 B
Copper	25			8.7	1.4 B	0.99 B	3.7 B	4.2 B
Iron	2000			1700	1360	946.	1120	[2400]
Lead	400			2.2	1.2	0.94	1.9	2.5
Magnesium				70.8 B	79.3 B	55.5 B	192. B	287. B
Manganese				31.2	37.4	41.6	18.2	36.2
Mercury	0.10			<0.095	<0.078	<0.078	<0.099	<0.099
Nickel	13			[15.4]	2.1 B	1.7 B	2.8 B	7.6 B
Potassium				46.2 B	35.2 B	36.2 B	47.1 B	112. B
Selenium	2			<0.44	0.45 B	0.43 B	<0.48	<0.42
Silver				<0.22	<0.21	<0.21	<0.24	<0.21
Sodium				55.9 B	123. B	135. B	160. B	36.0 B
Thallium				<0.65	<0.63	<0.63	<0.71	<0.42
Vanadium	150			2.0 B	1.6 B	1.1 B	1.8 B	3.0 B
Zinc	20			[23.4]	7.0	7.9	[29.6]	15.2
Cyanide				<0.550	<0.530	<0.540	<0.600	2.17
pH				6.44	5.53	6.92	5.83	11.2

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CONSTITUENT	(Units in mg/kg)	SITE	NYSDEC SOIL CLEANUP OBJECTIVES	B-10D	B-10D	B-11S	B-12S	B-13S
		SAMPLE ID		B-10D(16-20')	B-10D(40-42')	B-11S(12-16')	B-12S(12-16')	B-13S(12-16')
		DATE		03/11/98	03/11/98	03/11/98	03/11/98	03/11/98
		DEPTH (ft)		20.00	42.00	16.00	16.00	16.00
Aluminum				433.	361.	401.	359.	497.
Antimony				1.0 B	1.1 B	1.3 B	1.4 B	1.3 B
Arsenic		7.5		<0.42	<0.41	<0.41	<0.42	<0.41
Barium		300		2.4 B	2.0 B	1.8 B	2.1 B	2.3 B
Beryllium		0.16		<0.21	<0.21	<0.20	<0.21	<0.21
Cadmium		10		0.65 B	<0.21	0.91 B	[126.]	4.6
Calcium				83.6 B	42.8 B	44.3 B	430. B	90.3 B
Chromium		50		7.8	3.2	3.3	12.9	42.8
Cobalt		30		<0.21	<0.21	0.26 B	0.28 B	0.31 B
Copper		25		3.6 B	0.92 B	2.8 B	3.9 B	13.1
Iron		2000		861.	807.	827.	525.	1110
Lead		400		1.3	1.9	1.2	1.4	1.4
Magnesium				66.1 B	46.5 B	80.1 B	52.6 B	113. B
Manganese				36.7	34.4	20.7	17.4	25.0
Mercury		0.10		<0.084	<0.094	<0.076	<0.10	<0.090
Nickel		13		4.2 B	1.8 B	2.1 B	8.6	11.8
Potassium				33.8 B	34.2 B	39.8 B	37.1 B	61.8 B
Selenium		2		<0.42	<0.41	<0.41	<0.42	<0.41
Silver				<0.21	<0.21	<0.20	<0.21	<0.21
Sodium				7.5 B	24.0 B	6.9 B	7.8 B	30.7 B
Thallium				<0.42	<0.41	<0.41	<0.42	<0.41
Vanadium		150		1.3 B	1.3 B	1.1 B	0.96 B	1.3 B
Zinc		20		7.3	9.4	5.9	11.0	7.1
Cyanide				<0.530	<0.520	<0.510	8.08	5.71
pH				7.88	7.52	8.44	9.00	8.75

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CONSTITUENT	(Units in mg/kg)	SITE		B-14S	B-15S	B-16D	B-16D	B-17S
		SAMPLE ID	NYSDEC SOIL	B-14S(12-16')	B-15S(2-6')	B-16D(12-16')	B-16D(40-42')	B-17S(8-12')
		DATE	CLEANUP	03/12/98	03/12/98	03/12/98	03/12/98	03/12/98
		DEPTH (ft)	OBJECTIVES	16.00	6.00	16.00	42.00	12.00
Aluminum				474.	5070	696.	460.	482.
Antimony				1.1 B	5.5 B	1.9 B	1.4 B	1.2 B
Arsenic	7.5			<0.41	1.3 B	<0.41	0.52 B	<0.42
Barium	300			2.9 B	21.0 B	2.3 B	2.0 B	1.9 B
Beryllium	0.16			<0.20	<0.23	<0.21	<0.21	<0.21
Cadmium	10			[19.0]	[118.]	7.0	1.1	[19.7]
Calcium				50.5 B	766. B	73.8 B	36.5 B	52.9 B
Chromium	50			6.4	[972.]	27.5	14.5	30.9
Cobalt	30			0.55 B	1.6 B	0.57 B	0.32 B	0.23 B
Copper	25			6.8	[87.8]	8.3	4.0 B	3.8 B
Iron	2000			1090	[6480]	1270	1040	995.
Lead	400			1.4	26.1	1.6	1.2	2.8
Magnesium				76.0 B	777. B	91.1 B	111. B	75.4 B
Manganese				35.3	44.4	30.1	19.1	18.1
Mercury	0.10			<0.074	<0.078	<0.094	<0.071	<0.090
Nickel	13			7.6 B	[139.]	[14.8]	5.8 B	9.3
Potassium				46.6 B	471. B	51.6 B	39.3 B	38.9 B
Selenium	2			<0.41	<0.47	<0.41	<0.41	<0.42
Silver				<0.20	<0.23	<0.21	<0.21	<0.21
Sodium				8.7 B	365. B	12.3 B	13.0 B	30.5 B
Thallium				<0.41	<0.47	<0.41	<0.41	<0.42
Vanadium	150			1.4 B	11.3 B	1.7 B	1.5 B	1.3 B
Zinc	20			7.6	[41.1]	11.9	4.6	9.9
Cyanide				5.58	14.6	<0.520	<0.520	17.9
pH				8.00	9.36	8.32	7.76	7.99

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CONSTITUENT	(Units in mg/kg)	SITE		B-18S	B-19S	B-20D	B-20D	B-21S
		SAMPLE ID	NYSDEC SOIL	B-18S(12-16')	B-19S(8-12')	B-20D(8-12')	B-20D(40-42')	B-21S(8-12')
		DATE	CLEANUP	03/12/98	03/06/98	03/06/98	03/06/98	03/05/98
		DEPTH (ft)	OBJECTIVES	16.00	12.00	8.00	40.00	12.00
Aluminum				422.	356.	407.	627.	578.
Antimony				1.0 B	1.1 B	1.2 B	0.77 B	0.82 B
Arsenic	7.5			<0.42	0.52 B	<0.42	0.52 B	<0.41
Barium	300			1.4 B	2.0 B	1.6 B	3.3 B	3.1 B
Beryllium	0.16			<0.21	<0.21	<0.21	<0.21	<0.21
Cadmium	10			6.7	[22.7]	0.96 B	1.3	<0.21
Calcium				49.9 B	46.4 B	60.9 B	31.2 B	55.7 B
Chromium	50			3.1	3.0	5.4	5.1	1.6 B
Cobalt	30			0.52 B	0.78 B	0.39 B	0.49 B	0.46 B
Copper	25			18.6	2.8 B	1.3 B	1.9 B	1.5 B
Iron	2000			645.	524.	814.	1930	1270
Lead	400			1.0	1.3	1.4	1.8	1.4
Magnesium				73.8 B	58.3 B	83.0 B	107. B	104. B
Manganese				19.5	27.5	15.0	40.7	24.8
Mercury	0.10			<0.10	<0.087	<0.080	<0.099	<0.099
Nickel	13			[18.7]	[17.4]	[13.2]	3.4 B	3.5 B
Potassium				37.6 B	49.2 B	48.2 B	66.3 B	60.9 B
Selenium	2			<0.42	<0.42	<0.42	<0.42	<0.41
Silver				<0.21	<0.21	<0.21	<0.21	<0.21
Sodium				6.6 B	9.3 B	20.4 B	19.8 B	11.1 B
Thallium				<0.42	<0.42	<0.42	<0.42	<0.41
Vanadium	150			0.92 B	0.78 B	1.2 B	2.1 B	1.5 B
Zinc	20			8.0	14.8	9.8	11.3	7.7
Cyanide				2.13	5.38	<0.520	<0.520	<0.520
pH				7.98	8.71	6.65	6.33	7.20

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CONSTITUENT	(Units in mg/kg)	SITE		B-22S	B-23D	B-24D	B-24D	B-25D
		SAMPLE ID	NYSDEC SOIL	B-22S(8-12')	B-23D(35-37')	B-24D(0-4')	B-24D(45-47')	B-25D(40-42')
		DATE	CLEANUP	03/05/98	03/27/98	03/04/98	03/04/98	03/09/98
		DEPTH (ft)	OBJECTIVES	12.00	37.00	4.00	45.00	40.00
Aluminum				511.	522.	5600	417.	493.
Antimony				<0.62	0.90 B	1.6 B	1.2 B	0.92 B
Arsenic	7.5			0.43 B	0.51 B	2.9	<0.45	<0.41
Barium	300			3.0 B	3.0 B	20.1 B	3.0 B	3.1 B
Beryllium	0.16			<0.20	<0.21	<0.22	<0.22	<0.20
Cadmium	10			0.27 B	0.26 B	8.1	<0.22	<0.20
Calcium				47.6 B	44.6 B	461. B	37.6 B	32.3 B
Chromium	50			6.2	2.4	23.5	1.3 B	2.9
Cobalt	30			0.53 B	0.26 B	2.8 B	<0.22	<0.20
Copper	25			1.6 B	2.0 B	15.7	1.2 B	1.6 B
Iron	2000			1170	1400	[6750]	785.	1260
Lead	400			1.9	2.2	52.6	1.3	1.6
Magnesium				129. B	97.5 B	535. B	83.0 B	132. B
Manganese				20.2	36.1	35.2	26.0	22.8
Mercury	0.10			<0.089	<0.096	<0.099	<0.11	<0.097
Nickel	13			8.6	2.5 B	9.4	1.5 B	1.7 B
Potassium				74.8 B	51.8 B	220. B	47.6 B	60.1 B
Selenium	2			<0.41	<0.42	0.64 B	<0.45	<0.41
Silver				<0.20	<0.21	<0.22	<0.22	<0.20
Sodium				18.0 B	124. B	60.1 B	15.6 B	17.7 B
Thallium				<0.41	<0.63	<0.44	<0.45	<0.41
Vanadium	150			1.8 B	2.6 B	11.4	1.1 B	1.6 B
Zinc	20			8.7	16.2	[112.]	7.7	7.6
Cyanide				<0.510	<0.520	<0.550	<0.560	<0.510
pH				6.97	5.33	6.51	8.79	6.20

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CONSTITUENT	(Units in mg/kg)	SITE SAMPLE ID DATE DEPTH (ft)	NYSDEC SOIL CLEANUP OBJECTIVES	B-26D B-26D(8-12')	B-26D B-26D(40-42')	B-27D B-27D(8-12')	B-27D B-27D(40-42')	B-28D B-28D(12-16)
				03/04/98 8.00	03/04/98 40.00	03/05/98 8.00	03/05/98 40.00	03/13/98 16.00
Aluminum				383.	361.	725.	581.	755.
Antimony				0.89 B	1.0 B	0.97 B	0.75 B	1.8 B
Arsenic		7.5		<0.42	<0.41	0.49 B	<0.42	0.50 B
Barium		300		2.8 B	2.0 B	4.1 B	3.5 B	15.1 B
Beryllium		0.16		<0.21	<0.21	<0.21	<0.21	<0.21
Cadmium		10		<0.21	<0.21	<0.21	<0.21	0.30 B
Calcium				34.8 B	27.2 B	343. B	30.1 B	95.7 B
Chromium		50		1.2 B	1.6 B	2.0 B	7.5	2.7
Cobalt		30		<0.21	0.28 B	0.32 B	0.44 B	1.3 B
Copper		25		1.1 B	1.4 B	2.2 B	3.4 B	1.6 B
Iron		2000		727.	1210	1390	1830	1520
Lead		400		1.2	1.4	5.2	1.3	43.7
Magnesium				77.1 B	75.5 B	118. B	108. B	122. B
Manganese				24.1	23.3	20.4	33.7	165.
Mercury		0.10		<0.095	<0.094	<0.097	<0.094	<0.090
Nickel		13		1.4 B	1.8 B	1.6 B	[13.8]	1.8 B
Potassium				44.1 B	47.4 B	50.3 B	73.3 B	49.3 B
Selenium		2		<0.42	<0.41	<0.43	<0.42	<0.42
Silver				<0.21	<0.21	<0.21	<0.21	<0.21
Sodium				13.5 B	16.9 B	13.0 B	14.3 B	11.5 B
Thallium				<0.42	<0.41	<0.43	<0.42	<0.42
Vanadium		150		1.0 B	1.4 B	2.2 B	1.4 B	2.6 B
Zinc		20		7.1	8.6	[41.7]	6.1	10.4
Cyanide				<0.520	<0.520	<0.530	<0.520	<0.520
pH				6.65	7.41	6.48	5.75	7.91

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CONSTITUENT	(Units in mg/kg)	SITE SAMPLE ID DATE DEPTH (ft)	NYSDEC SOIL CLEANUP OBJECTIVES	B-28D B-28D(40-42) 03/13/98 42.00	B-29D B-29D(0-4') 03/10/98 4.00	B-29D B-29D(4-8') 03/10/98 8.00	B-34S B-34S(12-16') 03/31/98 16.00	B-35D B-35D(4-8') 03/31/98 8.00
Aluminum				373.	10700	10200	717.	2290
Antimony				1.1 B	6.3 B	7.1 B	1.3 B	<0.97
Arsenic	7.5			<0.41	2.4 B	2.4 B	0.86 B	1.2 B
Barium	300			2.0 B	26.3 B	24.8 B	3.5 B	6.9 B
Beryllium	0.16			<0.21	<0.24	<0.24	<0.21	<0.24
Cadmium	10			0.22 B	1.4	0.40 B	0.22 B	<0.24
Calcium				29.7 B	665. B	181. B	273. B	49.7 B
Chromium	50			3.2	[1320]	[1530]	5.6	3.0
Cobalt	30			<0.21	4.0 B	3.4 B	0.48 B	2.1 B
Copper	25			0.88 B	[39.8]	[31.6]	2.1 B	2.9 B
Iron	2000			958.	[7770]	[7400]	[2040]	[3590]
Lead	400			1.3	7.0	7.9	2.0	3.2
Magnesium				74.2 B	1630	1770	269. B	329. B
Manganese				20.0	62.0	66.8	41.5	173.
Mercury	0.10			<0.086	<0.11	<0.094	<0.086	<0.12
Nickel	13			1.4 B	[22.0]	9.9	2.2 B	3.5 B
Potassium				40.2 B	408. B	315. B	84.8 B	89.0 B
Selenium	2			<0.41	<0.48	<0.49	0.74 B	0.82 B
Silver				<0.21	<0.24	0.32 B	<0.21	<0.24
Sodium				16.9 B	37.0 B	33.0 B	152. B	142. B
Thallium				<0.41	<0.48	<0.49	<0.64	<0.73
Vanadium	150			1.4 B	13.4	15.6	3.1 B	4.8 B
Zinc	20			6.0	[42.4]	[32.9]	12.2	16.3
Cyanide				<0.520	<0.600	<0.610	<0.540	<0.620
pH				6.94	5.42	4.75	6.69	5.67

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CONSTITUENT	(Units in mg/kg)	SITE SAMPLE ID DATE DEPTH (ft)	NYSDEC SOIL CLEANUP OBJECTIVES	B-35D B-35D(35-37') 03/31/98 37.00
Aluminum				309.
Antimony				1.1 B
Arsenic		7.5		0.54 B
Barium		300		3.0 B
Beryllium		0.16		<0.21
Cadmium		10		<0.21
Calcium				21.2 B
Chromium		50		13.0
Cobalt		30		0.22 B
Copper		25		1.3 B
Iron		2000		1170
Lead		400		1.1
Magnesium				56.3 B
Manganese				54.3
Mercury		0.10		<0.098
Nickel		13		2.4 B
Potassium				28.2 B
Selenium		2		0.56 B
Silver				<0.21
Sodium				39.7 B
Thallium				<0.62
Vanadium		150		1.9 B
Zinc		20		7.0
Cyanide				<0.510
pH				5.86
Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed The following qualifier(s) exist: B B: Result > IDL but < CRDL For RCL 1482_95-M				



APPENDIX J

MONITORING WELL GROUNDWATER SAMPLE RESULTS

Date: 11/11/98

B:Compound found in method blank as well as sample

Date: 11/11/98

B:Compound found in method blank as well as sample

LIBERTY INDUSTRIAL FINISHING SITE
 REMEDIAL INVESTIGATION/FEASIBILITY STUDY
 MONITORING WELL GROUNDWATER SAMPLE RESULTS
 VOLATILE ORGANIC COMPOUNDS

Page: 1B of 2B

Date: 11/11/98

CONSTITUENT (Units in ug/l)	SITE SAMPLE ID DATE	NYSDEC CLASS GA MW-05		MW-06	MW-07	MW-08	MW-10
		GROUNDWATER	MW-05	MW-06	MW-07	MW-08	MW-10
		STDS/GUIDANCE	12/16/97	12/16/97	12/15/97	12/17/97	12/17/97
Chloromethane		5	10 U	10 U	10 U	10 U	10 U
Bromomethane		5	10 U	10 U	10 U	10 U	10 U
Chloroethane		5	10 U	10 U	10 U	10 U	10 U
Vinyl Chloride		2	10 U	10 U	10 U	10 U	10 U
Methylene Chloride		5	10 U	10 U	10 U	10 U	10 U
Acetone		50	10 U	10 U	10 U	10 U	10 U
Carbon Disulfide		50	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethene		5	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethane		5	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethene (total)		5	10 U	10 U	10 U	10 U	10 U
Chloroform		7	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethane		5	10 U	10 U	10 U	10 U	10 U
2-Butanone			10 U	10 U	10 U	10 U	10 U
1,1,1-Trichloroethane		5	10 U	10 U	10 U	10 U	10 U
Carbon Tetrachloride		5	10 U	10 U	10 U	10 U	10 U
Bromodichloromethane		50	10 U	10 U	10 U	10 U	10 U
1,2-Dichloropropane		5	10 U	10 U	10 U	10 U	10 U
cis-1,3-Dichloropropene		5	10 U	10 U	10 U	10 U	10 U
Trichloroethene		5	10 U	10 U	10 U	10 U	10 U
Dibromochloromethane		50	10 U	10 U	10 U	10 U	10 U
1,1,2-Trichloroethane		5	10 U	10 U	10 U	10 U	10 U
Benzene		0.7	10 U	10 U	10 U	10 U	10 U
trans-1,3-Dichloropropene			10 U	10 U	10 U	10 U	10 U
Bromoform		50	10 U	10 U	10 U	10 U	10 U
4-Methyl-2-pentanone		5	10 U	10 U	10 U	10 U	10 U
2-Hexanone		50	10 U	10 U	10 U	10 U	10 U
Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed							
U: Analyzed for but not detected		For RCL 1482_95-1		B: Compound found in method blank as well as sample			

Date: 11/11/98

CONSTITUENT	(Units in ug/l)	SITE	NYSDEC CLASS GA	MW-05	MW-06	MW-07	MW-08	MW-10
		SAMPLE ID	GROUNDWATER	MW-05	MW-06	MW-07	MW-08	MW-10
		DATE	STDS/GUIDANCE	12/16/97	12/16/97	12/15/97	12/17/97	12/17/97
Tetrachloroethene			5	10 U	10 U	10 U	10 U	10 U
1,1,2,2-Tetrachloroethane			5	10 U	10 U	10 U	10 U	10 U
Toluene			5	10 U	10 U	10 U	10 U	10 U
Chlorobenzene			5	10 U	10 U	10 U	10 U	10 U
Ethylbenzene			5	10 U	10 U	10 U	10 U	10 U
Styrene			5	10 U	10 U	10 U	10 U	10 U
Xylene (total)			5	10 U	10 U	10 U	10 U	10 U

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed
The following qualifier(s) exist: U, J
U: Analyzed for but not detected For RCL 1482_95-1
B: Compound found in method blank as well as sample

LIBERTY INDUSTRIAL FINISHING SITE
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
MONITORING WELL GROUNDWATER SAMPLE RESULTS
SEMIVOLATILE ORGANIC COMPOUNDS

Page: 1A of 3B

Date: 11/11/98

CONSTITUENT (Units in ug/l)	SITE SAMPLE ID DATE	NYSDEC CLASS GA MW-01		MW-02	MW-03	MW-03A	MW-04
		GROUNDWATER	MW-01	MW-02	MW-03	MW-03A	MW-04
		STDS/GUIDANCE	12/16/97	12/16/97	12/15/97	12/17/97	12/15/97
Phenol		1	10 U	10 U	10 U	10 U	10 U
Bis(2-chloroethyl)ether		1	10 U	10 U	10 U	10 U	10 U
2-Chlorophenol		1	10 U	10 U	10 U	10 U	10 U
1,3-Dichlorobenzene		5	10 U	10 U	10 U	10 U	10 U
1,4-Dichlorobenzene		4.7	10 U	10 U	10 U	10 U	10 U
1,2-Dichlorobenzene		4.7	10 U	10 U	10 U	10 U	10 U
2-Methylphenol		1	10 U	10 U	10 U	10 U	10 U
2,2'-oxybis(1-chloropropane)			10 U	10 U	10 U	10 U	10 U
4-Methylphenol		1	10 U	10 U	10 U	10 U	10 U
N-Nitroso-di-n-propylamine			10 U	10 U	10 U	10 U	10 U
Hexachloroethane		5	10 U	10 U	10 U	10 U	10 U
Nitrobenzene		5	10 U	10 U	10 U	10 U	10 U
Isophorone		50	10 U	10 U	10 U	10 U	10 U
2-Nitrophenol		1	10 U	10 U	10 U	10 U	10 U
2,4-Dimethylphenol		1	10 U	10 U	10 U	10 U	10 U
Bis(2-chloroethoxy)methane		5	10 U	10 U	10 U	10 U	10 U
2,4-Dichlorophenol		1	10 U	10 U	10 U	10 U	10 U
1,2,4-Trichlorobenzene		5	10 U	10 U	10 U	10 U	10 U
Naphthalene		10	10 U	10 U	10 U	10 U	10 U
4-Chloroaniline		5	10 U	10 U	10 U	10 U	10 U
Hexachlorobutadiene		5	10 U	10 U	10 U	10 U	10 U
4-Chloro-3-methylphenol		1	10 U	10 U	10 U	10 U	10 U
2-Methylnaphthalene			10 U	10 U	10 U	10 U	10 U
Hexachlorocyclopentadiene		5	10 U	10 U	10 U	10 U	10 U
2,4,6-Trichlorophenol		1	10 U	10 U	10 U	10 U	10 U
2,4,5-Trichlorophenol		1	25 U	25 U	25 U	25 U	25 U
Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed							
U: Analyzed for but not detected For RCL 1482_95-2				B: Compound found in method blank as well as sample			

LIBERTY INDUSTRIAL FINISHING SITE
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
MONITORING WELL GROUNDWATER SAMPLE RESULTS
SEMIVOLATILE ORGANIC COMPOUNDS

Page: 2A of 3B

Date: 11/11/98

CONSTITUENT (Units in ug/l)	SITE SAMPLE ID DATE	NYSDEC CLASS GA GROUNDWATER STDS/GUIDANCE	MW-01 MW-01 12/16/97	MW-02 MW-02 12/16/97	MW-03 MW-03 12/15/97	MW-03A MW-03A 12/17/97	MW-04 MW-04 12/15/97
2-Chloronaphthalene		10	10 U	10 U	10 U	10 U	10 U
2-Nitroaniline		5	25 U	25 U	25 U	25 U	25 U
Dimethyl Phthalate		50	10 U	10 U	10 U	10 U	10 U
Acenaphthylene			10 U	10 U	10 U	10 U	10 U
2,6-Dinitrotoluene		5	10 U	10 U	10 U	10 U	10 U
3-Nitroaniline		5	25 U	25 U	25 U	25 U	25 U
Acenaphthene		20	10 U	10 U	10 U	10 U	10 U
2,4-Dinitrophenol		1	25 U	25 U	25 U	25 U	25 U
4-Nitrophenol		1	25 U	25 U	25 U	25 U	25 U
Dibenzofuran			10 U	10 U	10 U	10 U	10 U
2,4-Dinitrotoluene		5	10 U	10 U	10 U	10 U	10 U
Diethyl Phthalate		50	10 U	10 U	0.5 J	10 U	0.6 J
Fluorene		50	10 U	10 U	10 U	10 U	10 U
4-chlorophenyl-phenylether			10 U	10 U	10 U	10 U	10 U
4-Nitroaniline		5	25 U	25 U	25 U	25 U	25 U
4,6-Dinitro-2-methylphenol			25 U	25 U	25 U	25 U	25 U
N-Nitrosodiphenylamine		50	10 U	10 U	10 U	10 U	10 U
4-Bromophenyl Phenylether			10 U	10 U	10 U	10 U	10 U
Hexachlorobenzene		0.35	10 U	10 U	10 U	10 U	10 U
Pentachlorophenol		1	25 U	25 U	25 U	25 U	25 U
Phenanthrene		50	10 U	10 U	10 U	10 U	10 U
Anthracene		50	10 U	10 U	10 U	10 U	10 U
Carbazole			10 U	10 U	10 U	10 U	10 U
Di-n-butylphthalate		50	10 U	10 U	10 U	0.7 J	10 U
Fluoranthene		50	10 U	10 U	10 U	10 U	10 U
Pyrene		50	10 U	10 U	10 U	10 U	10 U

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

U: Analyzed for but not detected For RCL 1482_95-2

B: Compound found in method blank as well as sample

Date: 11/11/98

B:Compound found in method blank as well as sample

LIBERTY INDUSTRIAL FINISHING SITE
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
MONITORING WELL GROUNDWATER SAMPLE RESULTS
SEMIVOLATILE ORGANIC COMPOUNDS

Page: 1B of 3B

Date: 11/11/98

CONSTITUENT	(Units in ug/l)	SITE SAMPLE ID DATE	NYSDEC CLASS GA GROUNDWATER STDS/GUIDANCE	MW-05 MW-05 12/16/97	MW-06 MW-06 12/16/97	MW-07 MW-07 12/15/97	MW-08 MW-08 12/17/97	MW-10 MW-10 12/17/97
Phenol			1	10 U	10 U	10 U	10 U	10 U
Bis(2-chloroethyl)ether			1	10 U	10 U	10 U	10 U	10 U
2-Chlorophenol			1	10 U	10 U	10 U	10 U	10 U
1,3-Dichlorobenzene			5	10 U	10 U	10 U	10 U	10 U
1,4-Dichlorobenzene			4.7	10 U	10 U	10 U	10 U	10 U
1,2-Dichlorobenzene			4.7	10 U	10 U	10 U	10 U	10 U
2-Methylphenol			1	10 U	10 U	10 U	10 U	10 U
2,2'-oxybis(1-chloropropane)				10 U	10 U	10 U	10 U	10 U
4-Methylphenol			1	10 U	10 U	10 U	10 U	10 U
N-Nitroso-di-n-propylamine				10 U	10 U	10 U	10 U	10 U
Hexachloroethane			5	10 U	10 U	10 U	10 U	10 U
Nitrobenzene			5	10 U	10 U	10 U	10 U	10 U
Isophorone			50	10 U	10 U	10 U	10 U	10 U
2-Nitrophenol			1	10 U	10 U	10 U	10 U	10 U
2,4-Dimethylphenol			1	10 U	10 U	10 U	10 U	10 U
Bis(2-chloroethoxy)methane			5	10 U	10 U	10 U	10 U	10 U
2,4-Dichlorophenol			1	10 U	10 U	10 U	10 U	10 U
1,2,4-Trichlorobenzene			5	10 U	10 U	10 U	10 U	10 U
Naphthalene			10	10 U	10 U	10 U	10 U	10 U
4-Chloroaniline			5	10 U	10 U	10 U	10 U	10 U
Hexachlorobutadiene			5	10 U	10 U	10 U	10 U	10 U
4-Chloro-3-methylphenol			1	10 U	10 U	10 U	10 U	10 U
2-Methylnaphthalene				10 U	10 U	10 U	10 U	10 U
Hexachlorocyclopentadiene			5	10 U	10 U	10 U	10 U	10 U
2,4,6-Trichlorophenol			1	10 U	10 U	10 U	10 U	10 U
2,4,5-Trichlorophenol			1	25 U	25 U	25 U	25 U	25 U

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

U: Analyzed for but not detected For RCL 1482_95-2 B: Compound found in method blank as well as sample

LIBERTY INDUSTRIAL FINISHING SITE
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
MONITORING WELL GROUNDWATER SAMPLE RESULTS
SEMIVOLATILE ORGANIC COMPOUNDS

Page: 2B of 3B

Date: 11/11/98

CONSTITUENT	(Units in ug/l)	SITE SAMPLE ID DATE	NYSDEC CLASS GA GROUNDWATER STDS/GUIDANCE	MW-05 MW-05 12/16/97	MW-06 MW-06 12/16/97	MW-07 MW-07 12/15/97	MW-08 MW-08 12/17/97	MW-10 MW-10 12/17/97
2-Chloronaphthalene			10	10 U	10 U	10 U	10 U	10 U
2-Nitroaniline			5	25 U	25 U	25 U	25 U	25 U
Dimethyl Phthalate			50	10 U	10 U	10 U	10 U	10 U
Acenaphthylene				10 U	10 U	10 U	10 U	10 U
2,6-Dinitrotoluene			5	10 U	10 U	10 U	10 U	10 U
3-Nitroaniline			5	25 U	25 U	25 U	25 U	25 U
Acenaphthene			20	10 U	10 U	10 U	10 U	10 U
2,4-Dinitrophenol			1	25 U	25 U	25 U	25 U	25 U
4-Nitrophenol			1	25 U	25 U	25 U	25 U	25 U
Dibenzofuran				10 U	10 U	10 U	10 U	10 U
2,4-Dinitrotoluene			5	10 U	10 U	10 U	10 U	10 U
Diethyl Phthalate			50	10 U	10 U	0.7 J	0.8 J	0.6 J
Fluorene			50	10 U	10 U	10 U	10 U	10 U
4-chlorophenyl-phenylether				10 U	10 U	10 U	10 U	10 U
4-Nitroaniline			5	25 U	25 U	25 U	25 U	25 U
4,6-Dinitro-2-methylphenol				25 U	25 U	25 U	25 U	25 U
N-Nitrosodiphenylamine			50	10 U	10 U	10 U	10 U	10 U
4-Bromophenyl Phenylether				10 U	10 U	10 U	10 U	10 U
Hexachlorobenzene			0.35	10 U	10 U	10 U	10 U	10 U
Pentachlorophenol			1	25 U	25 U	25 U	25 U	25 U
Phenanthrene			50	10 U	10 U	10 U	10 U	10 U
Anthracene			50	10 U	10 U	10 U	10 U	10 U
Carbazole				10 U	10 U	10 U	10 U	10 U
Di-n-butylphthalate			50	10 U	0.4 JB	10 U	10 U	1 J
Fluoranthene			50	10 U	10 U	10 U	10 U	10 U
Pyrene			50	10 U	10 U	10 U	10 U	10 U

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

U: Analyzed for but not detected For RCL 1482_95-2

B: Compound found in method blank as well as sample

Date: 11/11/98

CONSTITUENT	(Units in ug/l)	SITE	NYSDEC CLASS GA MW-05		MW-06	MW-07	MW-08	MW-10
		SAMPLE ID	GROUNDWATER	MW-05	MW-06	MW-07	MW-08	MW-10
		DATE	STDS/GUIDANCE	12/16/97	12/16/97	12/15/97	12/17/97	12/17/97
Butylbenzylphthalate			50	10 U	10 U	10 U	10 U	10 U
Benzo(a)anthracene			0.002	10 U	10 U	10 U	10 U	10 U
3,3'-Dichlorobenzidine			5	10 U	10 U	10 U	10 U	10 U
Chrysene			0.002	10 U	10 U	10 U	10 U	10 U
Bis(2-ethylhexyl)phthalate			50	10 U	0.7 JB	10	10 U	0.5 JB
Di-n-octylphthalate			50	10 U	10 U	10 U	10 U	10 U
Benzo(b)fluoranthene			0.002	10 U	10 U	10 U	10 U	10 U
Benzo(k)fluoranthene			0.002	10 U	10 U	10 U	10 U	10 U
Benzo(a)pyrene			0	10 U	10 U	10 U	10 U	10 U
Indeno(1,2,3-cd)pyrene			0.002	10 U	10 U	10 U	10 U	10 U
Dibenzo(a,h)anthracene				10 U	10 U	10 U	10 U	10 U
Benzo(ghi)perylene				10 U	10 U	10 U	10 U	10 U

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed
The following qualifier(s) exist: U, J, B
U: Analyzed for but not detected For RCL 1482_95-2
B: Compound found in method blank as well as sample

LIBERTY INDUSTRIAL FINISHING SITE
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
MONITORING WELL GROUNDWATER SAMPLE RESULTS
PESTICIDE/PCBs

Page: 1A of 2B

Date: 11/11/98

CONSTITUENT	(Units in ug/l)	SITE	NYSDEC CLASS GA	MW-01	MW-02	MW-03	MW-03A	MW-04
		SAMPLE ID	GROUNDWATER	MW-01	MW-02	MW-03	MW-03A	MW-04
		DATE	STDS/GUIDANCE	12/16/97	12/16/97	12/15/97	12/17/97	12/15/97
alpha-BHC			0	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
beta-BHC			0	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
delta-BHC			0	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
gamma-BHC (Lindane)			0	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
Heptachlor			0	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
Aldrin			0	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
Heptachlor Epoxide			0	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
Endosulfan I				0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
Dieldrin			0	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
4,4'-DDE			0	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Endrin			0	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Endosulfan II				0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
4,4'-DDD			0	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Endosulfan Sulfate				0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
4,4'-DDT			0	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Methoxychlor			35	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Endrin Ketone			5	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Endrin Aldehyde			5	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
alpha-Chlordane				0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
gamma-Chlordane				0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
Toxaphene			0	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Aroclor 1016			0.1	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Aroclor 1221			0.1	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Aroclor 1232			0.1	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Aroclor 1242			0.1	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Aroclor 1248			0.1	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

U: Analyzed for but not detected For RCL 1482_95-3

Date: 11/11/98

CONSTITUENT	(Units in ug/l)	SITE	NYSDEC CLASS	GA	MW-01	MW-02	MW-03	MW-03A	MW-04
		SAMPLE ID	GROUNDWATER		MW-01	MW-02	MW-03	MW-03A	MW-04
		DATE	STDS/GUIDANCE		12/16/97	12/16/97	12/15/97	12/17/97	12/15/97
Aroclor 1254			0.1		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Aroclor 1260			0.1		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed U: Analyzed for but not detected For RCL 1482_95-3									

Date: 11/11/98

U:Analyzed for but not detected For RCL 1482_95-3

Date: 11/11/98

CONSTITUENT	(Units in ug/l)	SITE	NYSDEC CLASS GA	MW-05	MW-06	MW-07	MW-08	MW-10
		SAMPLE ID	GROUNDWATER	MW-05	MW-06	MW-07	MW-08	MW-10
		DATE	STDS/GUIDANCE	12/16/97	12/16/97	12/15/97	12/17/97	12/17/97
Aroclor 1254			0.1	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Aroclor 1260			0.1	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed The following qualifier(s) exist: U U: Analyzed for but not detected For RCL 1482_95-3								

Date: 11/11/98

B:Result is >IDL but < CRDL For RCL 1482_95-M

LIBERTY INDUSTRIAL FINISHING SITE
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
MONITORING WELL GROUNDWATER SAMPLE RESULTS
TAL METALS AND CYANIDE

Page: 1B of 1B

Date: 11/11/98

CONSTITUENT	(Units in ug/l)	SITE SAMPLE ID DATE	NYSDEC CLASS GA GROUNDWATER STDS/GUIDANCE	MW-05 MW-05 12/16/97	MW-06 MW-06 12/16/97	MW-07 MW-07 12/15/97	MW-08 MW-08 12/17/97	MW-10 MW-10 12/17/97
Aluminum				185. B	56.1 B	99.9 B	< 13.0	60.2 B
Antimony			3	< 8.0	< 8.0	< 8.0	< 8.0	[20.7] B
Arsenic			25	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
Barium			1000	80.8 B	7.3 B	37.2 B	2.4 B	45.3 B
Beryllium			3	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cadmium			10	1.0 B	< 1.0	< 1.0	< 1.0	[369.]
Calcium				19700	4400 B	9800	1820 B	13900
Chromium			50	4.5 B	1.2 B	< 1.0	3.6 B	[3070]
Cobalt				< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Copper			200	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Iron			300	< 20.0	143.	20.0 B	28.7 B	99.7 B
Lead			25	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Magnesium			35000	2670 B	1010 B	2530 B	829. B	2550 B
Manganese			300	74.6	29.5	45.8	< 4.0	19.9
Mercury			2	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Nickel				5.1 B	5.0 B	3.0 B	4.2 B	22.9 B
Potassium				4060 B	276. B	1330 B	194. B	7340
Selenium			10	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
Silver			50	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Sodium			20000	[21200]	4750 B	[27700]	4360 B	[32400]
Thallium			4	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Vanadium				< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Zinc			300	13.6 B	24.2	4.0 B	< 1.0	< 1.0
Cyanide			100	< 10.000	< 10.000	10.00	< 10.000	13.4

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

[] = Greater than Action Level The following qualifier(s) exist: B

B: Result is > IDL but < CRDL For RCL 1482_95-M

LIBERTY INDUSTRIAL FINISHING SITE
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
MONITORING WELL GROUNDWATER SAMPLE RESULTS
TAL METALS AND CYANIDE

Page: 1A of 1D

Date: 11/11/98

CONSTITUENT	(Units in ug/l)	SITE SAMPLE ID DATE	NYSDEC CLASS GA GROUNDWATER STDS/GUIDANCE	MW-01 MW-01 06/01/98	MW-02 MW-02 06/01/98	MW-03 MW-03 06/01/98	MW-03A MW-03A 06/03/98	MW-04 MW-04 06/01/98
Aluminum				< 6.0	7.1 B	6.9 B	64.4 B	21.4 B
Antimony		3		< 4.0	[6.0] B	[13.0] B	< 4.0	[9.3] B
Arsenic		25		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Barium		1000		18.1 B	26.0 B	40.9 B	33.5 B	59.3 B
Beryllium		3		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cadmium		10		7.1	5.8	6.6	1.0 B	8.3
Calcium				11200	14000	17300	14200	24000
Chromium		50		24.7	[366.]	[1960]	< 1.0	[1850]
Cobalt				< 1.0	< 1.0	< 1.0	< 1.0	5.9 B
Copper		200		< 1.0	< 1.0	1.0 B	< 1.0	4.1 B
Iron		300		15.2 B	16.3 B	100.	21.0 B	240.
Lead		25		1.6 B	< 1.0	< 1.0	< 1.0	1.7 B
Magnesium		35000		2410 B	2610 B	2780 B	2720 B	3770 B
Manganese		300		6.1 B	< 1.0	3.6 B	23.0	1.3 B
Mercury		2		< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Nickel				< 2.0	3.5 B	< 2.0	< 2.0	22.5 B
Potassium				1300 B	1620 B	2910 B	757. B	5120
Selenium		10		3.0 B	< 2.0	3.1 B	2.4 B	< 2.0
Silver		50		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Sodium		20000		12200	[23800]	[41700]	10300	[90200]
Thallium		4		< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
Vanadium				< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Zinc		300		< 1.0	< 1.0	3.5 B	29.3	36.3
Cyanide		100		< 10.0	< 10.0	< 10.0	< 10.0	[417]

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed
 [] = Greater than Action Level
 B: Result is > IDL but < CRDL For RCL 1482_95-M

LIBERTY INDUSTRIAL FINISHING SITE
 REMEDIAL INVESTIGATION/FEASIBILITY STUDY
 MONITORING WELL GROUNDWATER SAMPLE RESULTS
 TAL METALS AND CYANIDE

Page: 1B of 1D

Date: 11/11/98

CONSTITUENT	(Units in ug/l)	SITE SAMPLE ID DATE	NYSDEC CLASS GA MW-05		MW-06	MW-07	MW-08	MW-10
			GROUNDWATER	MW-05	MW-06	MW-07	MW-08	MW-10
			STDS/GUIDANCE	06/01/98	06/01/98	06/01/98	06/03/98	06/03/98
Aluminum				114. B	183. B	111. B	8.6 B	23.1 B
Antimony			3	< 4.0	[4.4] B	< 4.0	< 4.0	[16.8] B
Arsenic			25	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Barium			1000	42.2 B	8.6 B	64.4 B	3.2 B	38.1 B
Beryllium			3	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cadmium			10	< 1.0	1.0 B	1.1 B	1.0 B	[177.]
Calcium				12800	4440 B	14600	1930 B	15300
Chromium			50	33.2	2.2 B	1.6 B	< 1.0	[2930]
Cobalt				< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Copper			200	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Iron			300	< 12.0	225.	13.9 B	18.5 B	46.1 B
Lead			25	1.2 B	2.0 B	< 1.0	< 1.0	< 1.0
Magnesium			35000	2020 B	1290 B	3520 B	773. B	2950 B
Manganese			300	87.1	17.8	72.4	< 1.0	9.5 B
Mercury			2	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Nickel				< 2.0	2.5 B	< 2.0	< 2.0	9.9 B
Potassium				2540 B	361. B	4190 B	393. B	5470
Selenium			10	< 2.0	2.4 B	3.0 B	2.2 B	< 2.0
Silver			50	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Sodium			20000	9610	5280	[43200]	5550	[29500]
Thallium			4	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
Vanadium				< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Zinc			300	< 1.0	< 1.0	< 1.0	< 1.0	27.0
Cyanide			100	< 10.0	---	< 10.0	< 10.0	13.0

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

[] = Greater than Action Level

B: Result is > IDL but < CRDL For RCL 1482_95-M

LIBERTY INDUSTRIAL FINISHING SITE
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
MONITORING WELL GROUNDWATER SAMPLE RESULTS
TAL METALS AND CYANIDE

Page: 1C of 1D

Date: 11/11/98

CONSTITUENT	(Units in ug/l)	SITE SAMPLE ID DATE	NYSDEC CLASS GA MW-11		MW-12	MW-13	MW-14	MW-15
			GROUNDWATER	MW-11	MW-12	MW-13	MW-14	MW-15
			STDS/GUIDANCE	06/04/98	06/04/98	06/05/98	06/04/98	06/04/98
Aluminum				14.1 B	246.	32.2 B	39.4 B	16.7 B
Antimony			3	[4.5] B	< 4.0	< 4.0	< 4.0	< 4.0
Arsenic			25	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Barium			1000	16.3 B	69.5 B	54.3 B	47.1 B	19.0 B
Beryllium			3	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cadmium			10	< 1.0	1.3 B	1.0 B	1.5 B	2.1 B
Calcium				15300	14400	11900	18700	14900
Chromium			50	< 1.0	1.2 B	3.0 B	[53.7]	[210.]
Cobalt				< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Copper			200	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Iron			300	14.9 B	16.1 B	< 12.0	21.5 B	38.3 B
Lead			25	< 1.0	1.5 B	< 1.0	< 1.0	1.5 B
Magnesium			35000	2930 B	3800 B	3760 B	3240 B	2430 B
Manganese			300	17.1	186.	69.0	34.9	44.9
Mercury			2	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Nickel				< 2.0	4.0 B	< 2.0	< 2.0	2.6 B
Potassium				924. B	3150 B	1290 B	2200 B	1820 B
Selenium			10	< 2.0	2.4 B	3.0 B	< 2.0	2.3 B
Silver			50	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Sodium			20000	4280 B	13700	[41100]	[27200]	11300
Thallium			4	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
Vanadium				< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Zinc			300	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cyanide			100	< 10.0	< 10.0	< 10.0	< 10.0	38.0

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

[] = Greater than Action Level

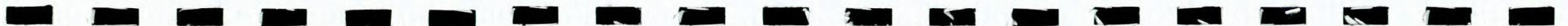
B: Result is > IDL but < CRDL For RCL 1482_95-M

LIBERTY INDUSTRIAL FINISHING SITE
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
MONITORING WELL GROUNDWATER SAMPLE RESULTS
TAL METALS AND CYANIDE

Page: 1D of 1D

Date: 11/11/98

CONSTITUENT	(Units in ug/l)	SITE SAMPLE ID DATE	NYSDEC CLASS GA GROUNDWATER STDS/GUIDANCE	MW-16 MW-16 06/03/98	MW-17 MW-17 06/01/98
Aluminum				27.4 B	46.9 B
Antimony			3	< 4.0	[4.9] B
Arsenic			25	< 2.0	< 2.0
Barium			1000	54.5 B	24.7 B
Beryllium			3	< 1.0	< 1.0
Cadmium			10	[15.2]	1.2 B
Calcium				14100	9430
Chromium			50	6.2 B	1.2 B
Cobalt				< 1.0	< 1.0
Copper			200	< 1.0	< 1.0
Iron			300	< 12.0	35.1 B
Lead			25	< 1.0	1.3 B
Magnesium			35000	6500	4160 B
Manganese			300	37.0	84.8
Mercury			2	< 0.20	< 0.20
Nickel				13.7 B	< 2.0
Potassium				3530 B	2610 B
Selenium			10	< 2.0	2.3 B
Silver			50	< 1.0	< 1.0
Sodium			20000	18900	14900
Thallium			4	< 3.0	< 3.0
Vanadium				< 1.0	< 1.0
Zinc			300	< 1.0	< 1.0
Cyanide			100	< 10.0	< 10
Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed [] = Greater than Action Level The following qualifier(s) exist: B B: Result is > IDL but < CRDL For RCL 1482_95-M					



APPENDIX K

SUMMARY DATA VALIDATION REPORT

CLP DATA ASSESSMENT

Functional Guidelines for Evaluating Organic Analysis

Case No. _____ SDG No. A3094 LABORATORY AEN SITE LIBERTY

DATA ASSESSMENT:

The current Functional Guidelines for evaluating organic data have been applied.

All data are valid and acceptable except those analytes which have been qualified with a "J" (estimated), "N" (presumptive evidence for the presence of the material), "U" (non-detects), "R" (unusable), or "JN" (presumptive evidence for the presence of the material at an estimated value). ~~All action is detailed on the attached sheets.~~

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant QC problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

Reviewer's
Signature: B. Drake Date: 2/26/1998

Verified By: [Signature] Date: 2/26/1998

CLP DATA ASSESSMENT NARRATIVE - VOLATILES

CONTRACTOR: Dvirka & Bartilucci

SITE: LIBERTY

MATRIX: Soil and Water

SDG #: A3094

LAB: American Environmental Network

REVIEWER: B. Drakontaidis, Enviroscience, Inc.

EVALUATION OF VOLATILE DATA FOR CLP

Holding Time:

All samples were analyzed within holding times. No qualifications were needed.

Blank Contamination:

VBLKGQ had 16 ppb of acetone. No qualifications were needed because none of the samples associated with this method blank had acetone.

No field or rinse blanks were submitted with this package and no contamination in the trip blanks.

Mass Spectrometer Tuning:

All performance criteria was met. No qualifications were needed.

Calibration:

All response factors were above the minimum criteria. No qualifications were required.

Percent Relative Standard Deviation (%RSD) and Percent Difference (%D):

The following qualifications were needed for %RSD above 30%:

Samples:

S-09

S-05

S-03

Acetone flagged as J

Bromomethane flagged as UJ

2-Hexanone flagged as UJ

Samples:

S-07
S-14
S-15
S-13

Bromomethane flagged as UJ
Chloroethane flagged as UJ

Samples:

TB121797
TB121697
MW-02
MW-01
MW-05
MW-06
MW-03A
MW-08
MW-10
TB121597
MW-07
MW-04
MW-03

Bromomethane flagged as UJ
Chloroethane flagged as UJ

The following qualifications were needed for %D above 25%:

Samples:

TB121797
TB121697
MW-02
MW-01
MW-05
MW-06
MW-03A
MW-08
MW-10

Bromomethane flagged as UJ

Samples:

S-07
S-14
S-15
S-13

Benzene flagged as UJ

Surrogates/System Monitoring Compounds:

All surrogates were within QC limits. No qualifications were needed.

Internal Standards Performance:

Sample S-07: IS3 (CBZ) was below lower limit

The following are flagged as (UJ)

4-Methyl-2-Pentanone
2-Hexanone
Tetrachloroethane
1,1,2,2-Tetrachloroethane
Toluene
Chlorobenzene
Ethylbenzene
Styrene
Xylenes (total)

Compound Identification for Volatile Fractions:

No qualifications were needed.

Matrix Spike/Spike Duplicate, MS/MSD:

All MS/MSD spike recoveries were within QC limits. No qualifications were needed. All other QC data met QC criteria.

System Performance and Overall Assessment:

The system performance was stable throughout the sample analysis. All sample data is useable with the qualifications given.

Contractual Non-Compliance:

None.

CLP ORGANICS DATA REVIEW

CONTRACTOR: Dvirka & Bartilucci

SITE: LIBERTY

MATRIX: Soil and Water

SDG #: A3094

LAB: American Environmental Network

REVIEWER: B. Drakontaidis, Enviroscience, Inc.

6.0 Contamination

Sample S-07:
acetone flagged as U

Sample S-14:
Acetone flagged as U

Sample S-15:
acetone flagged as U and Detection limit of 12

Sample S-13:
acetone flagged as U and Detection limit of 14

CLP DATA ASSESSMENT

Functional Guidelines for Evaluating Organic Analysis

Case No. _____ SDG No. A3094 LABORATORY AEN SITE LIBERTY

DATA ASSESSMENT:

The current Functional Guidelines for evaluating organic data have been applied.

All data are valid and acceptable except those analytes which have been qualified with a "J" (estimated), "N" (presumptive evidence for the presence of the material), "U" (non-detects), "R" (unusable), or "JN" (presumptive evidence for the presence of the material at an estimated value). ~~All action is detailed on the attached sheets.~~

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant QC problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

Reviewer's
Signature: Bill Diakontaratos Date: 2/26/1998

Verified By: JMS Date: 3/2/1998

CLP DATA ASSESSMENT NARRATIVE - VOLATILES

CONTRACTOR: Dvirka & Bartilucci

SITE: LIBERTY

MATRIX: Soil and Water

SDG #: A3094

LAB: American Environmental Network

REVIEWER: B. Drakontaidis, Enviroscience, Inc.

EVALUATION OF SEMI-VOLATILE DATA FOR CLP

Holding Time:

All samples were analyzed within holding times. No qualifications were needed.

Blank Contamination:

Blank SBLKAI - 7 ppb Bis(2-Ethylhexyl)phthalate

MW-02 - Bis(2-Ethylhexyl)phthalate flagged as U with D.L. of 10
TIC at RT of 12.71 flagged as U

MW-01 - TIC at RT of 12.71 flagged as R

MW-05 - TIC at RT of 12.71 flagged as R

MW-06 - Bis(2-Ethylhexyl)phthalate flagged as U with D.L. of 10
Di-n-butylphthalate flagged as U with D.L. of 10

MW-08 - TIC at RT of 12.71 flagged as R

Blank SBLKOI - TIC's at RT of 9.73 and 12.69

S-05 - TIC at RT of 9.71 is flagged as R

S-09 - TIC at RT of 24.30 flagged as U

No field, rinse, or trip blanks were submitted with this package.

Mass Spectrometer Tuning:

All QC criteria passed for the instrument tuning. However, the continuing calibration standard was used in each daily calibration as the tuning standard. The SOP states that DFTPP should be run first before any standard or sample is analyzed. In each case the criteria was met, therefore, I feel the data is valid.

Calibration:

All response factors were above the minimum criteria. No qualifications were required.

Percent Relative Standard Deviation (%RSD) and Percent Difference (%D):

The initial calibration curve met all QC criteria for %RSD.

The daily continuing calibration standards had compounds above the maximum 25%D criteria.

Sample MW-02

Flag undetects as J

2,4-Dinitrophenol
4,6-Dinitro-2-methylphenol

Sample MW-01

Flag undetects as J

2,4-Dinitrophenol
4,6-Dinitro-2-methylphenol

Sample MW-05

Flag undetects as J

2,4-Dinitrophenol
4,6-Dinitro-2-methylphenol

Sample MW-07

Flag undetects as J

2,4-Dinitrophenol
4,6-Dinitro-2-methylphenol
Pentachlorophenol

Sample MW-04

Flag undetects as J

2,4-Dinitrophenol
4,6-Dinitro-2-methylphenol
Pentachlorophenol

Sample MW-06

Flag undetects as J

2,4-Dinitrophenol
4,6-Dinitro-2-methylphenol

Sample MW-03A

Flag undetects as J

2,4-Dinitrophenol
4,6-Dinitro-2-methylphenol

Sample S-05

Flag undetects as J

2,4-Dinitrophenol
Hexachlorocyclobutadiene

Sample S-09

Flag undetects as J

2,4-Dinitrophenol
Hexachlorocyclobutadiene

Sample S-07

Flag undetects as J

2,4-Dinitrophenol
Hexachlorocyclobutadiene

Sample MW-03

Flag undetects as J

2,4-Dinitrophenol
4,6-Dinitro-2-methylphenol
Pentachlorophenol

Sample MW-08

Flag undetects as J

2,4-Dinitrophenol
4,6-Dinitro-2-methylphenol
Pentachlorophenol

Sample MW-10

Flag undetects as J

2,4-Dinitrophenol
4,6-Dinitro-2-methylphenol
Pentachlorophenol

Sample S-03

Flag undetects as J

2,4-Dinitrophenol
Hexachlorocyclobutadiene

Sample S-14

Flag undetects as J

2,4-Dinitrophenol
Hexachlorocyclobutadiene

Surrogates/System Monitoring Compounds:

All surrogate spike recoveries were within QC limits except one. No qualifications were needed because the SOP states that 2 surrogates may be outside of QC limits.

Internal Standards Performance:

Sample S-03: IS6 area below lower limit

The following positive results are flagged as J

Di-n-octylphthalate
Benzo (b) fluoranthene
Benzo (k) fluoranthene
Benzo (a) pyrene
Indo (1,2,3-cd) pyrene

The following undetects are flagged as J

Dibenzo (a,h) anthracene
Benzo (g,h,i) perylene

Sample S-03DL

The following positive results are flagged as J

Phenanthrene
Anthracene
Carbazole
Di-n-butylphthalate
Fluoranthene

The following undetects are flagged as J

4,6-Dinitro-2-methylphenol
n-Nitrosodiphenylamine
4-Bromophenyl-phenylether
Pentachlorophenol
Hexachlorobenzene

Compound Identification for Volatile Fractions:

No qualifications were needed.

Matrix Spike/Spike Duplicate, MS/MSD:

All MS/MSD spike recoveries were within QC limits. No qualifications were needed. All other QC data was in specification.

System Performance and Overall Assessment:

The system performance was stable throughout the sample analysis. All sample data is useable with the qualifications given.

Contractual Non-Compliance:

The continuing calibration standard was used as the tuning standard. The data is still valid because DFTPP in the standard passed in each standard.

There was one dilution of sample S-03. The detection limit should be used from the undiluted sample and the result for Bis (2-ethylhexyl) phthalate should be used from the diluted sample.

CLP ORGANICS DATA REVIEW

CONTRACTOR: Dvirka & Bartilucci

SITE: LIBERTY

MATRIX: Soil and Water

SDG #: A3094

LAB: American Environmental Network

REVIEWER: B. Drakontaidis, Enviroscience, Inc.

6.0 Contamination

Blank SBLKAI - 7 ppb Bis(2-Ethylhexyl)phthalate

MW-02 - Bis(2-Ethylhexyl)phthalate flagged as U with D.L. of 10
TIC at RT of 12.71 flagged as U

MW-01 - TIC at RT of 12.71 flagged as R

MW-05 - TIC at RT of 12.71 flagged as R

MW-06 - Bis(2-Ethylhexyl)phthalate flagged as U with D.L. of 10
Di-n-butylphthalate flagged as U with D.L. of 10

MW-08 - TIC at RT of 12.71 flagged as R

Blank SBLKOI - TIC's at RT of 9.73 and 12.69

S-05 - TIC at RT of 9.71 is flagged as R

S-09 - TIC at RT of 24.30 flagged as U

No field, rinse, or trip blanks were submitted with this package.

13.0 GC/MS Continuing Calibration (Form VII):

All response factors were above the minimum criteria. No qualifications were required.

Percent Relative Standard Deviation (%RSD) and Percent Difference (%D):

The initial calibration curve met all QC criteria for %RSD.

The daily continuing calibration standards had compounds above the maximum 25%D criteria.

Sample MW-02

Flag undetects as J

2,4-Dinitrophenol
4,6-Dinitro-2-methylphenol

Sample MW-01

Flag undetects as J

2,4-Dinitrophenol
4,6-Dinitro-2-methylphenol

Sample MW-05

Flag undetects as J

2,4-Dinitrophenol
4,6-Dinitro-2-methylphenol

Sample MW-07

Flag undetects as J

2,4-Dinitrophenol
4,6-Dinitro-2-methylphenol
Pentachlorophenol

Sample MW-04

Flag undetects as J

2,4-Dinitrophenol
4,6-Dinitro-2-methylphenol
Pentachlorophenol

Sample MW-03

Flag undetects as J

2,4-Dinitrophenol
4,6-Dinitro-2-methylphenol
Pentachlorophenol

Sample MW-06

Flag undetects as J

2,4-Dinitrophenol
4,6-Dinitro-2-methylphenol

Sample MW-03A

Flag undetects as J

2,4-Dinitrophenol
4,6-Dinitro-2-methylphenol

Sample S-05

Flag undetects as J

2,4-Dinitrophenol
Hexachlorocyclobutadiene

Sample S-09

Flag undetects as J

2,4-Dinitrophenol
Hexachlorocyclobutadiene

Sample S-07

Flag undetects as J

2,4-Dinitrophenol
Hexachlorocyclobutadiene

Sample S-03

Flag undetects as J

2,4-Dinitrophenol
Hexachlorocyclobutadiene

Sample MW-08

Flag undetects as J

2,4-Dinitrophenol
4,6-Dinitro-2-methylphenol
Pentachlorophenol

Sample MW-10

Flag undetects as J

2,4-Dinitrophenol
4,6-Dinitro-2-methylphenol
Pentachlorophenol

Sample S-14

Flag undetects as J

2,4-Dinitrophenol
Hexachlorocyclobutadiene

14.0 Internal Standard (Form VIII):

Sample S-03: IS6 area below lower limit

The following positive results are flagged as J

Di-n-octylphthalate
Benzo (b) fluoranthene
Benzo (k) fluoranthene
Benzo (a) pyrene
Indo (1,2,3-cd) pyrene

The following undetects are flagged as J

Dibenzo (a,h) anthracene
Benzo (g,h,i) perylene

Sample S-03DL

The following positive results are flagged as J

Phenanthrene
Anthracene
Carbazole
Di-n-butylphthalate
Fluoranthene

Enviroscience, Inc. to Robbin Petrella, Dvirka & Bartilucci

CLP Organics Data Review

LIBERTY

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The following undetects are flagged as J

4,6-Dinitro-2-methylphenol

n-Nitrosodiphenylamine

4-Bromophenyl-phenylether

Pentachlorophenol

Hexachlorobenzene

CLP DATA ASSESSMENT

Functional Guidelines for Evaluating Organic Analysis

Case No. _____ SDG No. A3094 LABORATORY AEN SITE LIBERTY

DATA ASSESSMENT:

The current Functional Guidelines for evaluating organic data have been applied.

All data are valid and acceptable except those analytes which have been qualified with a "J" (estimated), "N" (presumptive evidence for the presence of the material), "U" (non-detects), "R" (unusable), or "JN" (presumptive evidence for the presence of the material at an estimated value). ~~All action is detailed on the attached sheets.~~

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant QC problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

Reviewer's
Signature: Brian Drake Date: 2/26/1998

Verified By: Jue Sh Date: 2/26/1998

CLP DATA ASSESSMENT NARRATIVE - VOLATILES

CONTRACTOR: Dvirka & Bartilucci

SITE: LIBERTY

MATRIX: Soil and Water

SDG #: A3094

LAB: American Environmental Network

REVIEWER: B. Drakontaidis, Enviroscience, Inc.

EVALUATION OF PESTICIDES/PCB DATA FOR CLP

Holding Time:

All samples were extracted and analyzed within holding times. No qualifications were needed.

Blank Contamination:

No contamination in method blanks, nor field or rinse blank contamination.

No trip blanks were submitted with this package.

Calibration:

Percent Relative Standard Deviation (%RSD) and Percent Difference (%D):

All initial and continuing calibration standards were within QC limits. No qualifications were needed.

Surrogates/System Monitoring Compounds:

Only one surrogate was outside of QC limits. No qualifications were needed because the limits for Pesticide/PCB analysis are only advisory.

Compound Identification for Pesticide Fraction:

Sample S-09

detta-BHC flagged as R - %D >90%

Heptachlor Epoxide flagged as R - %D >90%
Alpha-BHC flagged as J - %D 25-50%
Dielchin flagged as JN - %D 50-90%
4,4-DDE flagged as J - %D 25-50%
4,4-DDD flagged as R - %D >200%
4,4-DDT flagged as JN - %D 50-90%

Sample S-05

4,4-DDD flagged as R - %D >90%
4,4-DDT flagged as J - %D 25-50%
alpha-chlordane flagged as R - %D >90%
gamma-chlordane flagged as R - %D >90%

Sample S-07

Alpha-BHC flagged as R - %D >90%
4,4-DDE flagged as R - %D >90%
4,4-DDT flagged as R - %D >90%
Methoxychlor flagged as R - %D > 90%

Sample S-03

Aroclor 1254 flagged as J - %D 25-50%
Heptachlor Epoxide flagged as R - %D >90%
Alpha-BHC flagged as J - %D 25-50%
Dieldrin flagged as JN - %D 50-90%
4,4-DDE flagged as JN - %D 50-90%
Endrin flagged as R - %D >90%
4,4-DDD flagged as R - %D >90%
4,4-DDT flagged as R - %D >90%
Methoxychlor flagged as R - %D >90%
Endrin Ketone flagged as JN - %D 50-90%
alpha-chlordane flagged as J - %D 25-50%
gamma-chlordane flagged as JN - %D 50-90%
Endrin Aldehyde flagged as R - %D >90%

Sample S-14

4,4-DDT flagged as J - %D 25-50%
Methoxychlor flagged as J - %D 25-50%
Endrin Ketone flagged as R - %D >90%
alpha-chlordane flagged as R - %D >90%
gamma-chlordane flagged as J - %D 25-50%
Endrin Aldehyde flagged as R - %D >90%

Sample S-15

detta-BHC flagged as R - %D >90%
Endosulfan II flagged as R - %D >90%
4,4-DDT flagged as R - %D >90%
Methoxychlor flagged as R - %D >90%
alpha-chlordane flagged as R - %D >90%
Endrin Aldehyde flagged as R - %D >90%

Sample S-13

detta-BHC flagged as R - %D >90%
Endosulfan II flagged as JN - %D 50-90%
4,4-DDT flagged as J - %D 25-50%
alpha-chlordane flagged as R - %D >90%
Endrin Aldehyde flagged as R - %D >90%

Matrix Spike/Spike Duplicate, MS/MSD:

The MS/MSD for water samples had 3 compounds below the QC limits. These limits are advisory, thus, no qualifications were needed. The MS/MSD for the soil samples had all spike recoveries within QC limits.

The matrix spike blank had 3 compounds outside of QC limits. However, a sample was used as the matrix spike blank instead of organic free water, thus it may have been sample interferences.

System Performance and Overall Assessment:

The overall system performance was stable throughout the sample analysis. All sample data is useable with the qualifications given.

Contractual Non-Compliance:

None.

CLP ORGANICS DATA REVIEW

CONTRACTOR: Dvirka & Bartilucci

SITE: LIBERTY

MATRIX: Soil and Water

SDG #: A3094

LAB: American Environmental Network

REVIEWER: B. Drakontaidis, Enviroscience, Inc.

10.0 Pesticide/PCB Identification

Sample S-09

detta-BHC flagged as R - %D >90%
Heptachlor Epoxide flagged as R - %D >90%
Alpha-BHC flagged as J - %D 25-50%
Dielchin flagged as JN - %D 50-90%
4,4-DDE flagged as J - %D 25-50%
4,4-DDD flagged as R - %D >200%
4,4-DDT flagged as JN - %D 50-90%

Sample S-05

4,4-DDD flagged as R - %D >90%
4,4-DDT flagged as J - %D 25-50%
alpha-chlordane flagged as R - %D >90%
gamma-chlordane flagged as R - %D >90%

Sample S-07

Alpha-BHC flagged as R - %D >90%
4,4-DDE flagged as R - %D >90%
4,4-DDT flagged as R - %D >90%
Methoxychlor flagged as R - %D > 90%

Sample S-03

Aroclor 1254 flagged as J - %D 25-50%
Heptachlor Epoxide flagged as R - %D >90%
Alpha-BHC flagged as J - %D 25-50%
Dieldrin flagged as JN - %D 50-90%
4,4-DDE flagged as JN - %D 50-90%
Endrin flagged as R - %D >90%
4,4-DDD flagged as R - %D >90%
4,4-DDT flagged as R - %D >90%
Methoxychlor flagged as R - %D >90%
Endrin Ketone flagged as JN - %D 50-90%
alpha-chlordane flagged as J - %D 25-50%
gamma-chlordane flagged as JN - %D 50-90%
Endrin Aldehyde flagged as R - %D >90%

Sample S-14

4,4-DDT flagged as J - %D 25-50%
Methoxychlor flagged as J - %D 25-50%
Endrin Ketone flagged as R - %D >90%
alpha-chlordane flagged as R - %D >90%
gamma-chlordane flagged as J - %D 25-50%
Endrin Aldehyde flagged as R - %D >90%

Sample S-15

detta-BHC flagged as R - %D >90%
Endosulfan II flagged as R - %D >90%
4,4-DDT flagged as R - %D >90%
Methoxychlor flagged as R - %D >90%
alpha-chlordane flagged as R - %D >90%
Endrin Aldehyde flagged as R - %D >90%

Sample S-13

detta-BHC flagged as R - %D >90%
Endosulfan II flagged as JN - %D 50-90%
4,4-DDT flagged as J - %D 25-50%
alpha-chlordane flagged as R - %D >90%
Endrin Aldehyde flagged as R - %D >90%

