REMEDIAL INVESTIGATION/ FEASIBILITY STUDY WORK PLAN

PALL CORPORATION
(SITE NO. 1-30-53B)
PHOTOCIRCUITS CORPORATION
(SITE NO. 1-30-009)
CITY OF GLEN COVE
NASSAU COUNTY, NEW YORK

WORK ASSIGNMENT NO. D003600-49

Prepared For

New York State Department of Environmental Conservation

MARCH 2006

DVIRKA AND BARTILUCCI
CONSULTING ENGINEERS
A DIVISION OF WILLIAM F. COSULICH ASSOCIATES, P.C.

REMEDIAL INVESTIGATION AND FEASIBILITY STUDY
WORK PLAN

PALL CORPORATION (SITE NO. 1-30-053B)
and
PHOTOCIRCUITS CORPORATION (SITE NO. 1-30-009)
GLEN COVE, NEW YORK

Prepared for:

NEW YORK STATE DEPARTMENT OF
ENVIRONMENTAL CONSERVATION
ALBANY, NEW YORK

Prepared by:

DVIRKA AND BARTILUCCI CONSULTING ENGINEERS
WOODBURY, NEW YORK

MARCH 2006

REMEDIAL INVESTIGATION AND FEASIBILITY STUDY WORK PLAN
PALL CORPORATION (SITE NO. 1-30-053B)
and
PHOTOCIRCUITS CORPORATION (SITE NO. 1-30-009)
GLEN COVE, NEW YORK

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Section 1

1.0 INTRODUCTION

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 (D&B) of Woodbury, New York, under its Superfund Standby Contract to conduct a Remedial Investigation/Feasibility Study (RI/FS) for the Pall Corporation and Photocircuits Corporation properties (the Site) located in Glen Cove, northern Nassau County, New York (Figure 1-1). The RI/FS for this site is being performed with funds allocated under the New York State Superfund Program.

1.1 Purpose

The goals of the RI/FS program are to:

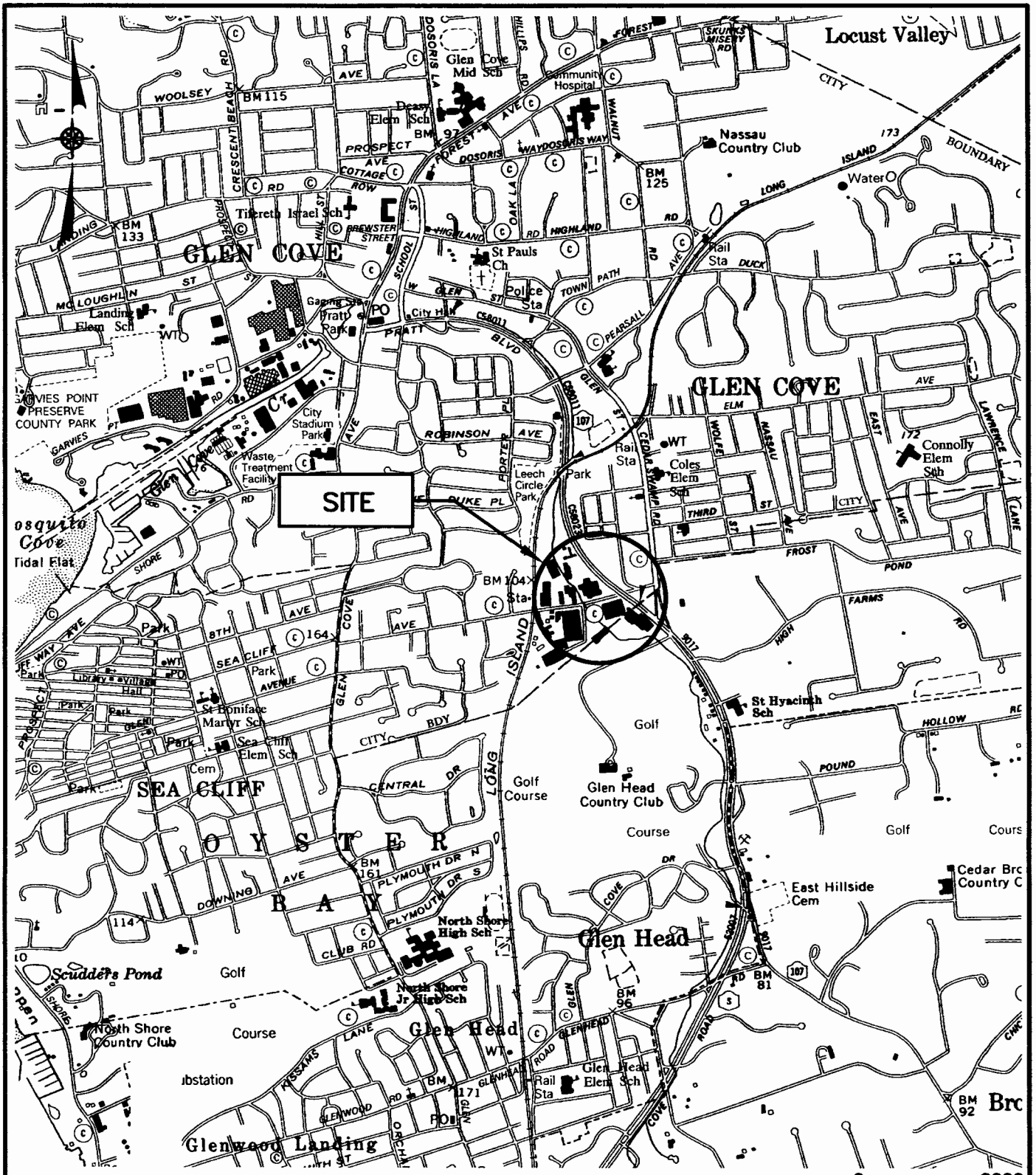
- Determine the sources of contamination within each property;
- Determine if the nearby downgradient supply well, which is currently inactive, can potentially capture or control plumes emanating from the Site;
- Protect the groundwater supply of the area; and
- Determine what groundwater contamination is attributable to Photocircuits Corporation (Photocircuits) and to what degree the current interim remedial measure of hydraulic control is effective in containing contamination emanating from a drum storage area located on the site.

1.2 Report Preparation

This document has been prepared in accordance with NYSDEC Technical and Administrative Guidance Memoranda and contains site-specific information for conducting the RI/FS at the site.

This work plan presents the RI/FS scope of work and related information as follows:

- Section 2 - Summarizes existing information for the Site,



SOURCE: USGS SEA CLIFF AND HICKVILLE QUADRANGLES

PALL AND PHOTOCIRCUITS CORPORATIONS RI/FS
GLEN COVE, NEW YORK

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SITE LOCATION MAP

FIGURE 1-1

F:\2453\2453-7.dwg, FIG 1-1, 03/22/06 03:19:12 PM, KRBrower

- Section 3 - Presents the scope of the RI/FS program,
- Section 4 - Presents the organization of the project,
- Section 5 - Describes the site-specific Quality Assurance/Quality Control (QA/QC) Plan,
- Section 6 - Describes the site-specific Health and Safety Plan,
- Section 7 - Presents a generic Citizens Participation Plan, and
- Section 8 - Presents the estimated project budget (Schedule 2.11 forms).

Section 2

2.0 SUMMARY OF EXISTING INFORMATION

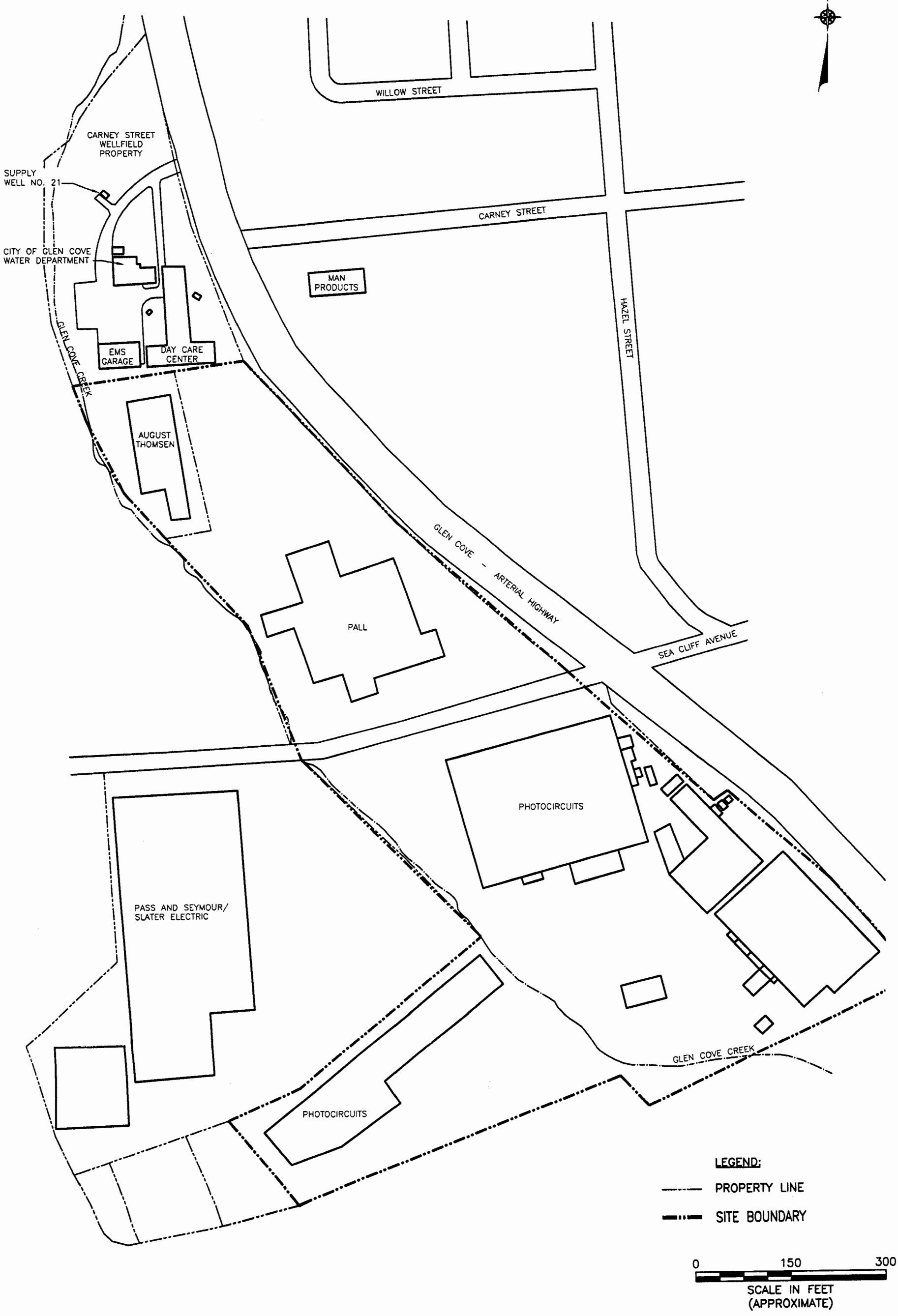
2.1 Site Location, Description and Usage

The Pall Corporation (Pall) and Photocircuits Corporation (Photocircuits) Site is located within the Sea Cliff Avenue Industrial Area (SCIA) in Glen Cove, Nassau County, New York (see Figure 1-1). The two industrial sites are separated by Sea Cliff Avenue as depicted on Figure 2-1.

The Pall property is located to the north of Sea Cliff Avenue and is 4.6 acres in size. It is bound by the Glen Cove Arterial Highway to the east, Sea Cliff Avenue to the south, Glen Cove Creek to the west, and a day care center and Emergency Medical Service (EMS) garage to the north. Further to the north is the Carney Street Well Field. The Pall property is a Class 2 site on the Registry of Hazardous Waste Sites and is comprised of two industrial buildings. The northern building (30 Sea Cliff Avenue) is currently occupied by August Thomsen, a pastry bag manufacturer, and the southern building (36 Sea Cliff Avenue) is currently unoccupied. The remainder of the property is paved with asphalt.

The Photocircuits property is 10.8 acres in size and is bound by the Glen Cove Arterial Highway to the east, the Glen Head Country Club to the south, the Pass and Seymour property (Registry No. 1-30-053A) to the west and Sea Cliff Avenue to the north. The Photocircuits property is a Class 2 site on the Registry and the property is currently active. The facility is comprised of several buildings consisting of approximately 158,000 square feet of manufacturing and office space.

The following summary of historical site development and usage information was derived from a review of available files, including historical Sanborn fire insurance maps, topographic maps and aerial photographs. Detailed findings of these reviews are presented in Table 2-1 and the maps and photographs are provided in Appendix A.



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PALL AND PHOTOCIRCUITS CORPORATIONS RI/FS
GLEN COVE, NEW YORK

SITE PLAN

FIGURE 2-1

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Table 2-1

PALL AND PHOTOCIRCUITS CORPORATIONS RI/FS
GLEN COVE, NEW YORK
SUMMARY OF SITE DEVELOPMENT

Sanborn Fire Insurance Maps

1931	• One building on Pall property, operated by Knickerbocker Ice Co.
1947	• The operation of the building is by F.R. Hormann Co., noted as a manufacturer of metal tanks.
1972	• The Photocircuits facility main building is present. Current site buildings are present and include the Photocircuits and Slater Electric Manufacturing Co. buildings. The current August Thomsen building is labeled as Glen Components Corp (electronics manufacturer). East of the Pall building on the east side of the Glen Cove Arterial Highway is a building labeled Auto Wash, and Utensils Mfg. (The 1990 Contaminated Segment Investigation Report identified this building as Photocircuits).

Topographic Maps

1900	• No discernable buildings in site vicinity.
1918	• No discernable industrial-sized buildings in site vicinity. Possible small building near Pall property.
1947	• Small building on Pall property with residential neighborhood to the east.
1967	• Photocircuits, August Thomsen and Pall buildings present. Two small buildings to north of the Pall property. Water tower present north of Carney Street.
1976	• Similar to 1967 with the addition of two more small buildings just north of August Thomsen facility.

Table 2-1 (continued)

PALL AND PHOTOCIRCUITS CORPORATIONS RI/FS
GLEN COVE, NEW YORK
SUMMARY OF SITE DEVELOPMENT

Aerial Photographs

1953	• The building on the Pall site is present. The land to the east appears to be undergoing clearing for subsequent development. The Carney Street Well Field No. 21 well house may be present.
1966	• The Pall, August Thomsen, Photocircuits and Slater Electric buildings are present. The Glen Cove Arterial Highway is present.
1976	• The current EMS garage, the Glen Cove Water Control building and the southeastern Photocircuits buildings are now present.
1980	• No significant building changes on the Site since 1976. Southeastern Slater Electric building now present.
1994	• Day care center building is now present.

The Pall property was initially developed prior to 1931 with the construction a single building. This building was operated by the Knickerbocker Ice Company. The 1947 fire insurance map indicates that the building was operated by F.R Hormann Company, noted as a manufacturer of metal tanks. The current August Thomsen and Pall buildings were present at the Site, and the Carney Street Well Field building appears to have been constructed by 1947. The Photocircuits buildings were constructed by 1967. In 1972, the August Thomsen building was part of Pall Corporation and labeled on the fire insurance map as Glen Components Corporation.

2.2 Background

In 1977, the public supply wells of the Carney Street Well Field located approximately 200 feet north of the Site were removed from service due to the detected concentrations of chlorinated volatile organic compounds (VOCs). The well field had comprised three wells screened in the Upper Glacial aquifer, at deep depths of between 115 and 173 feet below grade. Only one of the three wells, Well No. 21, has not been permanently closed.

The chlorinated VOCs that caused the wells to be shut down were also subsequently detected in Well No. 21 from 1997 through 2000, the only period for which monitoring data was available from the Nassau County Department of Health. The detected VOCs primarily included tetrachloroethene (PCE), trichloroethene (TCE), 1,2-dichloroethene (DCE), 1,1-DCE, 1,1,1-trichloroethane (TCA) and 1,2-dichloroethane. The specific VOCs detected in Well No. 21 and their concentrations are presented in Table 2-2.

Since 1977, several regional investigations and evaluations have been conducted by governmental agencies and private industries with the SCIA to characterize the nature and extent of soil and groundwater contamination, and identify known or suspected sources. The findings of these studies have resulted in the design and implementation of several interim remedial measures. The investigations found that at least the upper approximate 150 feet of the Upper Glacial aquifer at the site has been contaminated by VOCs. Localized industrial pumping within the SCIA had caused contaminants to move vertically downward into deep industrial supply

Table 2-2

PALL AND PHOTOCIRCUITS CORPORATIONS RI/FS
GLEN COVE, NEW YORK
SUMMARY OF HISTORICAL RESULTS FOR WELL NO. 21

Date Collected	1,1,1-TRICHLOROETHANE	1,1,2-TRICHLOROETHANE	1,1-DICHLOROETHENE	1,2-DICHLOROETHANE	1,2-DICHLOROETHENE	CHLOROMETHANE	METHYLENE CHLORIDE	TETRACHLOROETHENE	TRICHLOROETHENE	TRICHLOROFLUOROMETHANE
06/02/83	18	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
12/08/83	18	ND	ND	ND	ND	ND	ND	ND	ND	ND	6	ND
03/08/84	17	ND	ND	ND	ND	ND	ND	ND	ND	ND	6	ND
12/17/84	12	ND	ND	ND	ND	ND	ND	ND	26	ND	380	ND
01/30/85	10	ND	ND	ND	ND	ND	2	ND	26	ND	550	ND
01/30/85	10	ND	ND	ND	ND	ND	2	ND	28	ND	690	ND
01/30/85	14	ND	ND	ND	ND	ND	ND	ND	35	ND	661	ND
03/25/86	ND	ND	1	ND	ND	ND	ND	ND	7	140	93	ND
09/25/86	2	15	ND	ND	ND	ND	ND	ND	14	ND	190	ND
12/04/86	11	6	ND	ND	ND	ND	ND	ND	20	ND	190	ND
03/10/87	2	ND	ND	ND	ND	ND	ND	ND	15	ND	310	ND
09/22/87	ND	ND	ND	ND	ND	ND	ND	ND	16	ND	ND	ND
12/08/87	3	5	ND	ND	ND	ND	ND	ND	18	ND	340	ND
12/08/87	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
03/01/88	ND	3	1	1	ND	ND	ND	ND	7	ND	220	2.00
04/22/88	3	4	ND	ND	ND	ND	ND	ND	13	ND	210	ND
06/07/88	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
09/21/88	3	4	3	ND	ND	ND	ND	ND	11	ND	220	ND
09/22/88	3	7	ND	ND	ND	ND	ND	ND	14	ND	320	ND
12/05/88	ND	ND	ND	ND	ND	ND	ND	ND	11	ND	ND	ND
03/21/89	2	3	2	ND	ND	ND	ND	150	26	ND	220	ND
10/02/90	ND	0.7	ND	ND	ND	ND	ND	19	2.5	ND	24	ND
01/20/00	ND	ND	ND	ND	ND	ND	ND	1.5	ND	ND	3	ND
01/24/00	ND	ND	ND	ND	ND	ND	ND	3.9	0.8	ND	7	ND
01/28/00	0.8	0.9	1	ND	ND	ND	ND	12	2.1	ND	23	ND
01/28/00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
03/07/00	1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

NOTES:

ND: Not Detected

Concentrations are micrograms per liter

Table 2-2

PALL AND PHOTOCIRCUITS CORPORATIONS RI/FS
GLEN COVE, NEW YORK
SUMMARY OF HISTORICAL RESULTS FOR WELL NO. 21

Date Collected	1,1,1-TRICHLORO-ETHANE	1,1-DICHLORO-ETHANE	1,1-DICHLORO-ETHENE	1,2-DICHLORO-ETHANE	1,2-DICHLORO-ETHENE	CHLORO-METHANE	CHLORO-FORM	CIS-1,2-DICHLORO-ETHENE	TETRA-CHLORO-ETHENE	TRANS-1,2-DICHLORO-ETHENE	TRICHLORO-ETHENE	TRICHLORO-FLUORO-METHANE
05/31/77	ND	ND	ND	ND	ND	ND	ND	ND	195	ND	104	ND
06/14/77	ND	ND	ND	ND	ND	ND	ND	ND	375	ND	55	ND
06/28/77	5	ND	ND	ND	ND	ND	ND	ND	19	ND	21	ND
06/28/77	ND	ND	ND	ND	ND	ND	ND	ND	33	ND	60	ND
07/12/77	ND	ND	ND	ND	ND	ND	ND	ND	8	ND	12	ND
07/26/77	ND	ND	ND	ND	ND	ND	ND	ND	160	ND	40	ND
09/09/77	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
09/19/77	ND	ND	ND	ND	ND	ND	ND	ND	8	ND	ND	ND
09/19/77	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
10/06/77	ND	ND	ND	ND	ND	ND	ND	ND	2	ND	ND	ND
10/12/77	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
10/12/77	ND	ND	ND	ND	ND	ND	ND	ND	2	ND	ND	ND
10/31/77	3	ND	ND	ND	ND	ND	ND	ND	86	ND	72	ND
11/10/77	3	ND	ND	ND	ND	ND	ND	ND	160	ND	170	ND
12/23/77	1	ND	ND	ND	7	ND	ND	ND	13	ND	10	ND
02/14/78	4	ND	ND	ND	ND	ND	4	ND	35	ND	90	ND
10/02/78	ND	ND	ND	ND	ND	ND	20	ND	ND	ND	ND	ND
10/19/78	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
10/30/78	ND	ND	ND	ND	ND	16	6	ND	ND	ND	ND	ND
11/01/78	ND	ND	ND	ND	ND	ND	1	ND	25	ND	98	ND
11/03/78	4	ND	ND	ND	ND	ND	ND	ND	27	ND	ND	ND
12/13/78	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
01/02/79	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
02/13/79	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
03/26/80	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
03/26/80	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
12/31/80	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
06/25/81	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
12/01/81	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
04/21/82	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
12/07/82	11	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
03/22/83	12	ND	1	ND	ND	ND	ND	ND	ND	ND	ND	ND
03/22/83	10	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
06/02/83	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

wells, where they were intermittently reintroduced into the water table aquifer through diffusion wells screened at various depths. The flowing pathways resulting, along with contaminant advection, have caused the contamination to diffuse throughout the aquifer. The depth and nature of contamination at local areas of the site have not been completely delineated to date.

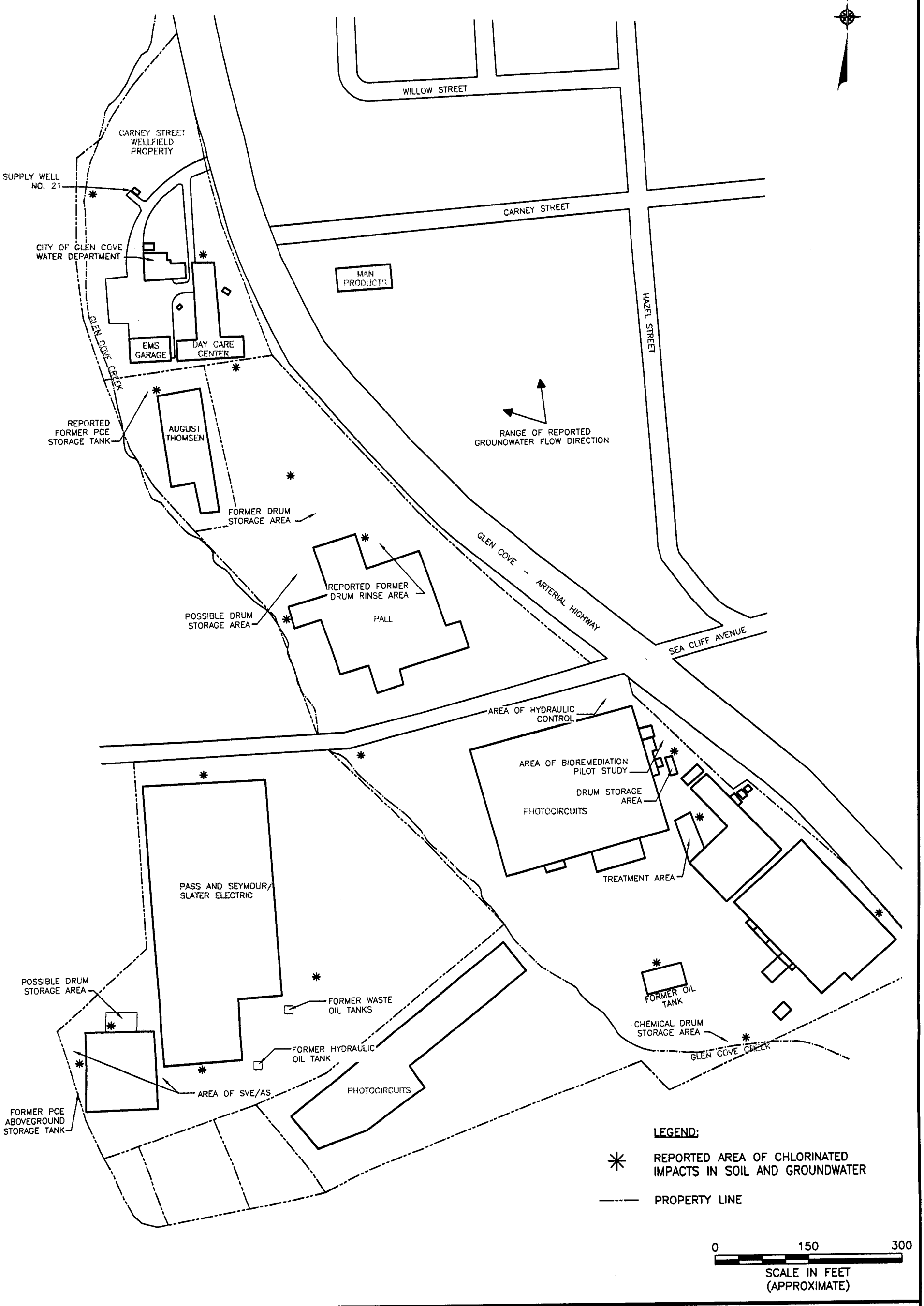
A detailed summary of the previous investigations and their findings was developed, based on available file reviews, and is presented in Appendix B. Areas of environmental concern and source areas derived from investigation reports are summarized on Figure 2-2. This information was used in the development of this work plan. It should be noted that files of the NYSDEC Region 1 and Nassau County Department of Health were not available for review prior to work plan preparation. If pertinent information is subsequently obtained from these sources that may impact the scope of this RI/FS work plan, it will be evaluated and discussed with the NYSDEC.

2.3 Review of Environmental Databases

A review of environmental databases was conducted for the site properties and also for the Pass and Seymour property (formerly Slater Electric), a hazardous waste site immediately west of the Photocircuits property. The database information was generated by Environmental Data Resources, Inc. (EDR). The local, state and federal records searched are identified in Appendix C.

The review of environmental database focused on the Pall, Photocircuits, and Pass and Seymour properties. The findings for the various records for the properties are provided in Appendix C and are summarized below.

The Pall property had one minor reported chemical spill in 1989 with a closed case. The property is characterized as significant threat to the public, with VOCs present in soil and groundwater. PCE and TCE are reported to have been stored on-site. The Photocircuits property had six reported chemical spills between 1987 and 2000. The significance of these spills varied from minor to significant threat to public health. The Photocircuits property has numerous



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PALL AND PHOTOCIRCUITS CORPORATIONS RI/FS
GLEN COVE, NEW YORK

REPORTED HISTORIC AREAS OF CONCERN AND IRMS

FIGURE 2-2

registered tanks on its property. PCE was reported in soil beneath a building at the Pass and Seymour property.

2.4 Site Geology and Hydrogeology

The site geology and hydrogeology presented below were derived from the numerous investigations conducted at the Site and in the vicinity of the SCIA.

2.4.1 Site Geology

The geologic units at the site, in descending order, are:

- Upper Glacial aquifer,
- Port Washington Confining Unit,
- Port Washington Aquifer,
- Lloyd aquifer, and
- Bedrock.

The Upper Glacial aquifer in the area of the Site is reported as approximately 200 feet thick and primarily comprised of stratified beds of fine to coarse sand and gravel with some interbedded lenses of silt and clay. The unit has also been described as predominantly comprised of silty till (silty, clayey, fine to medium sand with gravel, cobbles and occasional boulders).

The upper most unit of the Upper Glacial aquifer is glacial till with both sandy and silty zones. This upper half is predominantly fine to medium sand and extends 50 to 60 feet below grade with a thickness of up 80 feet in some areas. The lower portion of the Upper Glacial aquifer is interbedded fine to coarse sand, and sand and gravel and is approximately 110 feet thick.

The Site deposits have also been characterized within the Upper Glacial aquifer having more varied composition than described above and being comprised of three varying facies as follows:

- silty, clayey fine to medium grained sand with gravel to cobbles, occasional boulders;
- medium to coarse sand and gravel, with cobbles and occasional silt zones; and
- irregular alternating sequence of silt facies till with sandy till.

The geology under portions of the Pall property is described as the following:

- Western portion comprised of predominantly sand and silty sands with clayey sand lenses 5 to 15 feet thick at a depth of 30 feet;
- Southern portion with clay layers; and
- Northern portion comprised primarily by sand with silty layers at depth of 70 feet.

The geology at the Photocircuits property was not as well defined as at the Pall property but is described as being generally similar. At the Carney Street Well Field, no significant confining layers are reported to a depth of 173 feet, which is the deepest any of the supply wells penetrate.

The unit underlying the Upper Glacial aquifer, the Port Washington Confining Unit, is sandy clay and clay. Interbedded within the clay are some sand and gravel lenses. In the vicinity of the Site, the Port Washington Confining Unit is reported as thick as approximately 150 feet.

2.4.2 Site Hydrogeology

The depth to groundwater at the Site is relatively shallow ranging from near the surface to 10 feet below grade. The direction of groundwater flow has varied historically from northerly to northwesterly with localized variation. The shallow groundwater flow in the vicinity of the Glen Cove Creek is influenced by the creek. The gradient of the shallow groundwater increases

near the creek and ultimately discharges to it. Potentiometric surface elevation measurements of the lower portion of the Upper Glacial aquifer shows that groundwater flow in this zone is reported northwesterly.

The upper portion of the Upper Glacial aquifer is considered to have very low permeabilities and the lower unit to have moderate to high permeability. Average hydraulic conductivities for the Upper Glacial aquifer vary between 10 to 300 feet per day (ft/day). Permeabilities have been calculated to vary at the Site by a factor of three. A localized horizontal flow velocity of 1 foot per day (ft/day) has been reported but, based on the reported variable hydraulic conductivities would be expected to vary greatly in the various site geologic units.

In the area downgradient of the Pall property near the Carney Street Well Field (wells not pumping), reported vertical gradients were consistently downward with variation in magnitude presumably from localized industrial pumpage.

The wells of the Carney Street Well Field were reported with pumping capacities ranging from between 485 and 1,400 gallons per minute (gpm). The groundwater at the Site has historically been heavily used for industrial pumping. This usage had included pumping by industrial wells for cooling purposes and the subsequent reinjection back into the aquifer by diffusion wells. These activities have reportedly increased vertical gradients at wellheads, produced localized reversals of normal horizontal gradients during pumping cycles, and groundwater mounding at diffusion wells as presented in studies of the area.

Section 3

3.0 PROJECT SCOPE

3.1 Approach and Objectives

The approach to this investigation has been developed to further characterize groundwater quality, identify contaminant sources and characterize the flow regimes at the Site, and to characterize contaminant migration and flow regimes during pumping of Well No. 1.

3.2 Remedial Investigation

To accomplish the investigation objectives, the following tasks have been identified:

- Site visit to identify existing site features,
- Review of background information and reports,
- Review of agency files and environmental database search report,
- Inspection of existing monitoring wells,
- Screening of groundwater quality at localized areas,
- Installation and development of groundwater monitoring wells,
- Surveying and mapping of newly-installed monitoring wells,
- Collection of water level measurements,
- Sampling of new and existing groundwater monitoring wells,
- Pump test program for Well No. 21 at the Carney Street Well Field, and
- Data evaluation and reporting.

A detailed description of each of these tasks is provided in the following sections.

3.3 Site Visit, Database Search and File Reviews

A site visit was conducted by D&B personnel and the NYSDEC project manager on February 15, 2006. During the visit, site features including on-site and off-site monitoring well locations, reported source areas and the locations of interim remedial measures, were identified.

To develop an understanding of the site history and the areas of environmental concern, a review of existing files and databases were conducted and the acquired information was presented in Section 2.0.

The information collected from the file reviews was used in the site background in Section 2.0 and development of the project scope of work, and included the following sources:

- NYSDEC Central and Regional Office files;
- Nassau County Department of Health (NCDH) files;
- Glen Cove Building Department;
- Regulatory databases;
- Facility and regional reports including preliminary remedial investigations, site characterizations, interim remedial measures, pilot tests;
- Historical aerial photographs;
- Property use records including fire insurance maps, city directory searches and contaminant site and property-use registries; and
- Geological reports.

Due to long lead times to arrange review records, some of these files searches (NYSDEC Region 1 and the Nassau County Department of Health) are still ongoing. These files will be reviewed when they become available and any pertinent information will be incorporated into the final RI/FS report. Any identified information that would impact planned investigation activities will be discussed with the NYSDEC and incorporated in the work plan, as appropriate.

3.4 Monitoring Well Inspection

Because several existing monitoring wells have not been sampled in several years, this well inspection task will be conducted to determine the accessibility and integrity of wells identified for potential sampling. The groundwater monitoring wells on and in the vicinity of the site are identified in Table 3-1. The table also provides the date of installation, screen zone and diameter of the wells. The well survey will investigate the following:

- Security of well cover
- Condition of surface seal
- Existence of ponded water or fluids
- Diameter of well
- Depth of well
- Water level
- Other pertinent factors

The findings of the survey for each well will be documented on a Monitoring Well Inspection Checklist provided in Appendix D. The locations of existing wells are depicted on Figures 3-1 and 3-2, and include site monitoring wells as well as off-site wells installed for monitoring the Carney Street Well Field, respectively.

3.5 Monitoring Well Installation

A total of up to 29 groundwater monitoring wells will be installed at the site. These wells include four on the Carney Street Well Field property, four on the Pall property and a minimum of 18 on the Photocircuits property. The rationale for groundwater sampling points and wells installed as part of the remedial investigation are summarized in Table 3-2. The locations of these points are depicted on Figures 3-3 and 3-4. Depending on groundwater screening results

Table 3-1

PALL AND PHOTOCIRCUITS CORPORATIONS RI/FS
GLEN COVE, NEW YORK
MONITORING WELL CONSTRUCTION DETAILS

Site	Well Designation	Date Installed	Screen Zone (feet below grade)	Well Diameter (inches)
Carney Street Well Field	N-3466	NA	148-173	NA
	N-8326 (No. 21)	NA	120-165	NA
	N-8327	NA	115-165	NA
	MW-1GS	NA	TD=23.75	NA
	MW-1GI	NA	TD=113.5	NA
	MW-1GD	NA	TD=205	NA
City of Glen Cove	MW-1GS	1/17/2000	5-15	NA
	MW-1GI	1/18/2000	40-50	NA
	MW-1GD	1/18/2000	85-95	2
	MW-2GS	9/7/1999	5-15	NA
	MW-2GI	9/7/1999	40-50	2
	MW-2GD	9/7/1999	90-100	NA
August Thomsen	MW-1A	NA	1.5-11.5	NA
	MW-2A	NA	3.5-13.5	NA
	MW-2AI	3/23/1999	40-50	2
	MW-2AD	3/22/1999	80-90	2
	MW-12PS	8/23/1999	5-15	2
	MW-12-PI	8/23/1999	40-50	2
	MW-12PD	8/20/1999	85-95	2
Pall Corporation	MW-1P	1/21/1992	5-15	NA
	MW-1PI	3/10/1999	41-51	2
	MW-1PD	3/11/1999	90-100	2
	MW-2P	1/22/1992	4-14	NA
	MW-3P	1/21/1992	3-14	NA
	MW-4P	1/20/1992	13-23	NA
	MW-4PI	3/12/1999	45-55	2
	MW-4PD	3/16/1999	91-101	2
	MW-5P	1/20/1992	3-13	NA
	MW-5PI	3/17/1999	40-50	2
	MW-5PD	3/17/1999	90-100	2
	MW-6P	8/14/1992	50-60	4
	MW-6PD	3/9/1999	90-100	2
	MW-7P	11/18/1996	3-18	4
	MW-8PS	3/25/1999	5-15	2
	MW-8PI	3/25/1999	40-50	2
	MW-10PS	3/19/1999	5-15	2
	MW-10PI	3/19/1999	40-50	2
	MW-10PD	3/22/1999	90-100	2
	MW-11PS	8/17/1999	5-15	2
	MW-11PI	8/17/1999	40-50	2
	MW-11PD	8/16/1999	85-95	2

Table 3-1 (continued)

PALL AND PHOTOCIRCUITS CORPORATIONS RI/FS
GLEN COVE, NEW YORK
MONITORING WELL CONSTRUCTION DETAILS

Site	Well Designation	Date Installed	Screen Zone (feet below grade)	Well Diameter (inches)
Pall Corporation (continued)	MW-13-PS	9/19/1999	5-15	2
	MW-13PI	8/19/1999	40-50	2
	MW-13PD	8/18/1999	85-95	2
Sea Cliff Avenue	MW-14PCD	1/4/2000	85-95	2
	MW-15PCD	2/22/2000	90-100	2
	MW-16PCI	1/6/2000	40-50	2
	MW-16PCD	1/6/2000	85-95	2
MAN Products	MW-1M	NA	19-34	2
Photocircuits	MW-2	NA	10-25*	2
	MW-3	NA	5-20*	2
	MW-4	NA	10-25*	2
	MW-5	NA	85-100*	2
	MW-6	NA	5-15*	2
	MW-7	NA	8-23	4
	MW-8	NA	155-170	2
	MW-9	NA	10-25	2
	MW-10	NA	115-130	2
	MW-11	NA	155-170	2
	MW-12	NA	40-50	2
	MW-13	NA	40-50	4
	MW-14	NA	10-20	4
	NC-WELL	NA	NA	NA
Public Supply Well Field Monitoring Wells	GC-1S	NA	19-39	NA
	GC-1D	NA	175-195	NA
	GC-2S	NA	19-39	NA
	GC-2D	NA	188-208	NA
	GC-3S	NA	4-24	NA
	GC-3M	NA	94-114	NA
	GC-3D	NA	180-200	NA
	GC-4S	NA	34-54	NA
	GC-4D	NA	200-220	NA
	GC-5S	NA	85-105	NA
	GC-5D	NA	234-254	NA
	GC-6S	NA	130-150	NA
	GC-6D	NA	255-275	NA
	GC-7S	NA	80-100	NA
	GC-8S	NA	86-106	NA
	GC-8D	NA	169-189	NA
	GC-9S	NA	40-60	NA
	GC-10S	NA	20-40	NA
	GC-11S	NA	95-115	NA
	GC-11D	NA	210-230	NA
	GC-WP1	NA	5-10	NA
	G-4	NA	125-130	NA

Table 3-1 (continued)

PALL AND PHOTOCIRCUITS CORPORATIONS RI/FS
GLEN COVE, NEW YORK
MONITORING WELL CONSTRUCTION DETAILS

Site	Well Designation	Date Installed	Screen Zone (feet below grade)	Well Diameter (inches)
Pass & Seymour (Slater Electric)	MW-1S	1/27/1992	6-21	4
	MW-2S	1/27/1992	6-21	4
	MW-3S	1/27/1992	5-20	4

*Screen zone inferred based on reported total depths.
**Actual well number not known.

NA: Not available

WILLOW STREET

CARNEY STREET

HAZEL STREET

CARNEY STREET WELLFIELD PROPERTY

SUPPLY WELL NO. 21

GC-3S
GC-3M
GC-3D

CITY OF GLEN COVE WATER DEPARTMENT

MW-1GS
MW-1GI
MW-1GD

MAN PRODUCTS

MW-2GS
MW-2GI
MW-2GD

EMS GARAGE

DAY CARE CENTER

GLEN COVE CREEK

MW-2A
MW-2AI
MW-2AD

MW-10S
MW-10P
MW-10D

MW-11S
MW-11P
MW-11D

AUGUST THOMSEN

MW-12PS
MW-12PI
MW-12PD

MW-4P
MW-4PI
MW-4PD

MW-1A

MW-3P

MW-13PS
MW-13PI
MW-13PD

MW-2P

PALL

GLEN COVE - ARTERIAL HIGHWAY

SEA CLIFF AVENUE

MW-6P
MW-6PD

MW-7P

MW-14PCD

MW-8PS
MW-8PI

NCWELL

MW-3

MW-12

MW-8

MW-13

MW-1P
MW-1PI
MW-1PD

MW-15PCD

MW-9

MW-10

MW-11

MW-3S

MW-16PCI
MW-16PCD

PHOTOCIRCUITS

MW-14

MW-7

RANGE OF REPORTED GROUNDWATER FLOW DIRECTION

PASS AND SEYMOUR/ SLATER ELECTRIC

MW-2

MW-5
MW-4

MW-6

MW-4S

MW-2S

MW-1S

PHOTOCIRCUITS

GLEN COVE CREEK

LEGEND:

MW-12PD — GROUNDWATER MONITORING WELL

PROPERTY LINE

0 150 300

SCALE IN FEET
(APPROXIMATE)

F:\24532\2453-3.dwg, FIG 3, 03/22/06 03:20:09 PM, KRBrower

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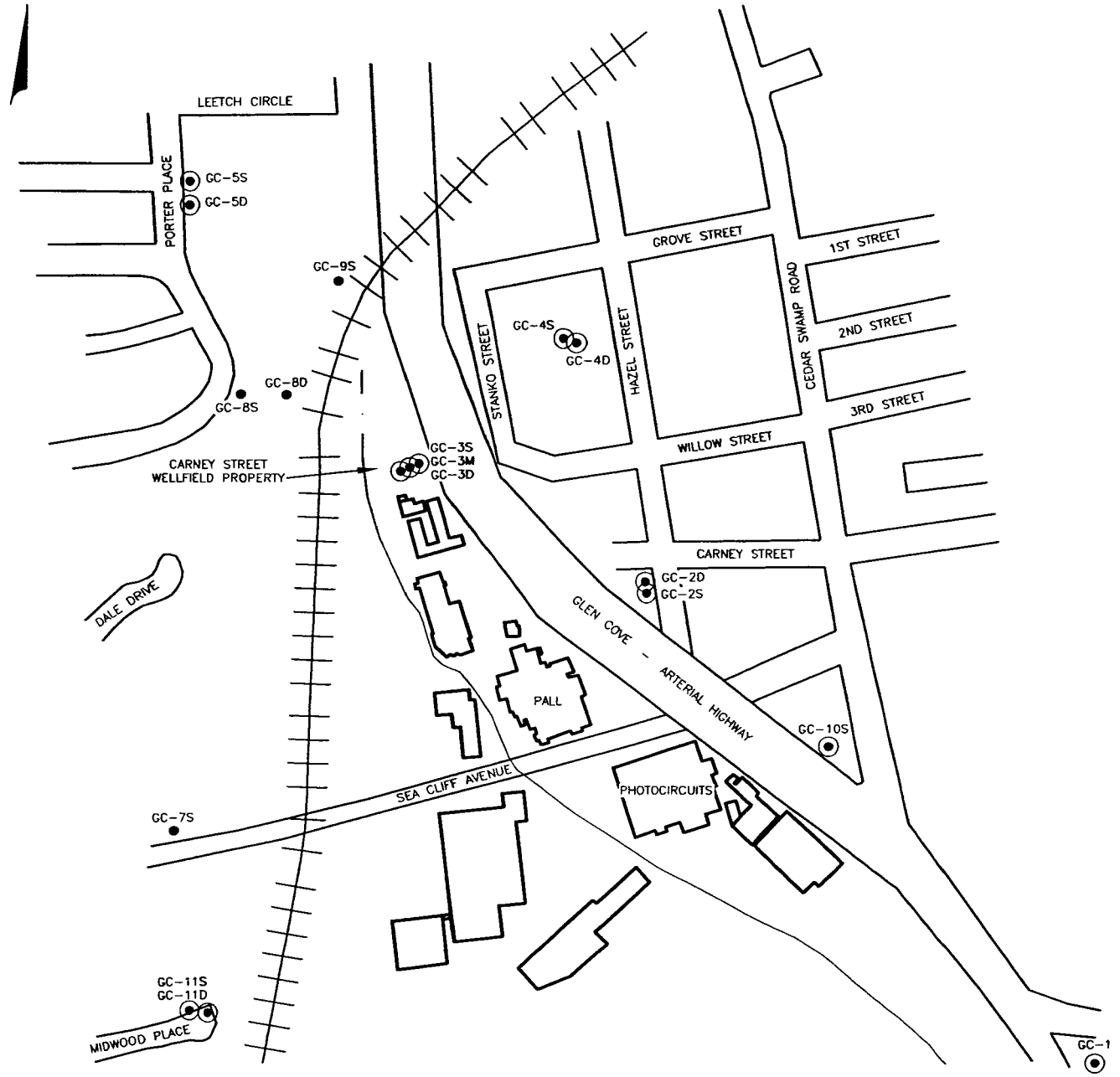
PALL AND PHOTOCIRCUITS CORPORATIONS RI/FS
GLEN COVE, NEW YORK

LOCATIONS OF EXISTING MONITORING WELLS

FIGURE 3-1



LEGEND:

GC-7S • EXISTING GROUNDWATER MONITORING WELL

GC-1 ⊙ GROUNDWATER MONITORING WELL TO BE SAMPLED

0 500

SCALE IN FEET (APPROXIMATE)

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GLEN COVE, NEW YORK

LOCATIONS OF EXISTING OFF-SITE PUBLIC SUPPLY WELLFIELD MONITORING WELLS

FIGURE 3-2

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Table 3-2

PALL AND PHOTOCIRCUITS CORPORATIONS RI/FS
GLEN COVE, NEW YORK
GROUNDWATER MONITORING WELL INSTALLATION RATIONALE

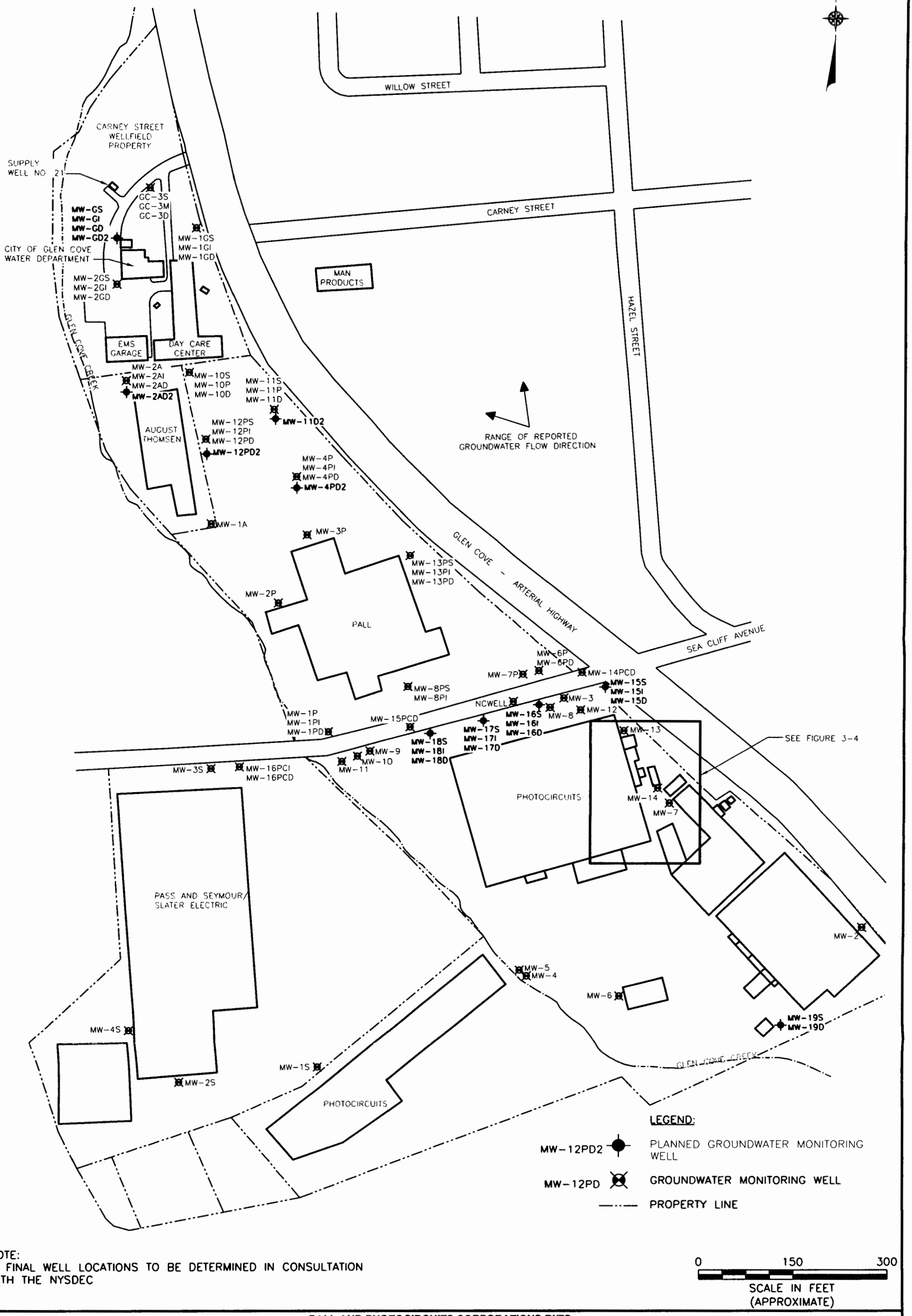
Well Designation	Location	Screen Interval (feet below grade)	Objective
CARNEY STREET WELL FIELD			
MW-2GD1 MW-2GD2 MW-2GD3 MW-2GD4	75 feet south of Carney Street Well Field Well No. 21	70-80 110-120 150-160 210-220	Provide monitoring of deeper zone near Carney Street Well Field Well No. 21 in vicinity of existing cluster MW-2GS/I/D
PALL CORPORATION			
MW-2AD2	Northeast corner of August Thomsen building	145-155	Provide monitoring capacity of deeper zone at existing cluster MW-2A/AI/AD
MW-4PD2	In center of lot north of former Pall building	145-155	Provide monitoring capacity of deeper zone at existing cluster MW-4P/P1/PD
MW-11D2	Along eastern boundary of Pall property near northeast corner	145-155	Provide monitoring capacity of deeper zone at existing cluster MW-11S/P/D
MW-12D2	Along eastern side of August Thomsen building	145-155	Provide monitoring capacity of deeper zone at existing cluster MW-12PS/P1/PD
PHOTOCIRCUITS CORPORATION			
MW-GW4S MW-GW4I MW-GW4I2 MW-GW4D2	Area of 31-GW-04B	60-70 80-90 120-130 150-160	Delineate impacts found at 31-GW-04B
MW-15S MW-15I MW-15D	Along Sea Cliff Avenue	70-80 90-100 110-120	Provide intermediate depth monitoring capacity between Photocircuits and Pall properties
MW-16S MW-16I MW-16D	Along Sea Cliff Avenue	70-80 90-100 110-120	Provide intermediate depth monitoring capacity between Photocircuits and Pall properties
MW-17S MW-17I MW-17D	Along Sea Cliff Avenue	70-80 90-100 110-120	Provide intermediate depth monitoring capacity between Photocircuits and Pall properties

Table 3-2 (continued)

PALL/PHOTOCIRCUITS CORPORATIONS RI/FS
GLEN COVE, NEW YORK
GROUNDWATER MONITORING WELL INSTALLATION RATIONALE

Well Designation	Location	Screen Interval (feet below grade)	Objective
MW-18S MW-18I MW-18D MW-18D1	Along Sea Cliff Avenue	60-70 80-90 120-130 150-160	Provide intermediate depth monitoring capacity between Photocircuits and Pall properties
MW-19S MW-19I	Along southern property boundary	50-60 90-100	Provide upgradient monitoring point
MW-20*	Vicinity downgradient of 31-GW-04B in former drum storage area	140-150	Delineate impacts found at 31-GW-04B
MW-21*	Vicinity downgradient of 31-GW-04B in former drum storage area	140-150	Delineate impacts found at 31-GW-04B
MW-22*	Vicinity downgradient of 31-GW-04B in former drum storage area	140-150	Delineate impacts found at 31-GW-04B

*Provisional well.



NOTE:
1. FINAL WELL LOCATIONS TO BE DETERMINED IN CONSULTATION WITH THE NYSDEC

0 150 300
SCALE IN FEET (APPROXIMATE)

F:\2455\24554\dwg\FIG 3-3, 09/22/06 03:28:34 PM, KRBROWER

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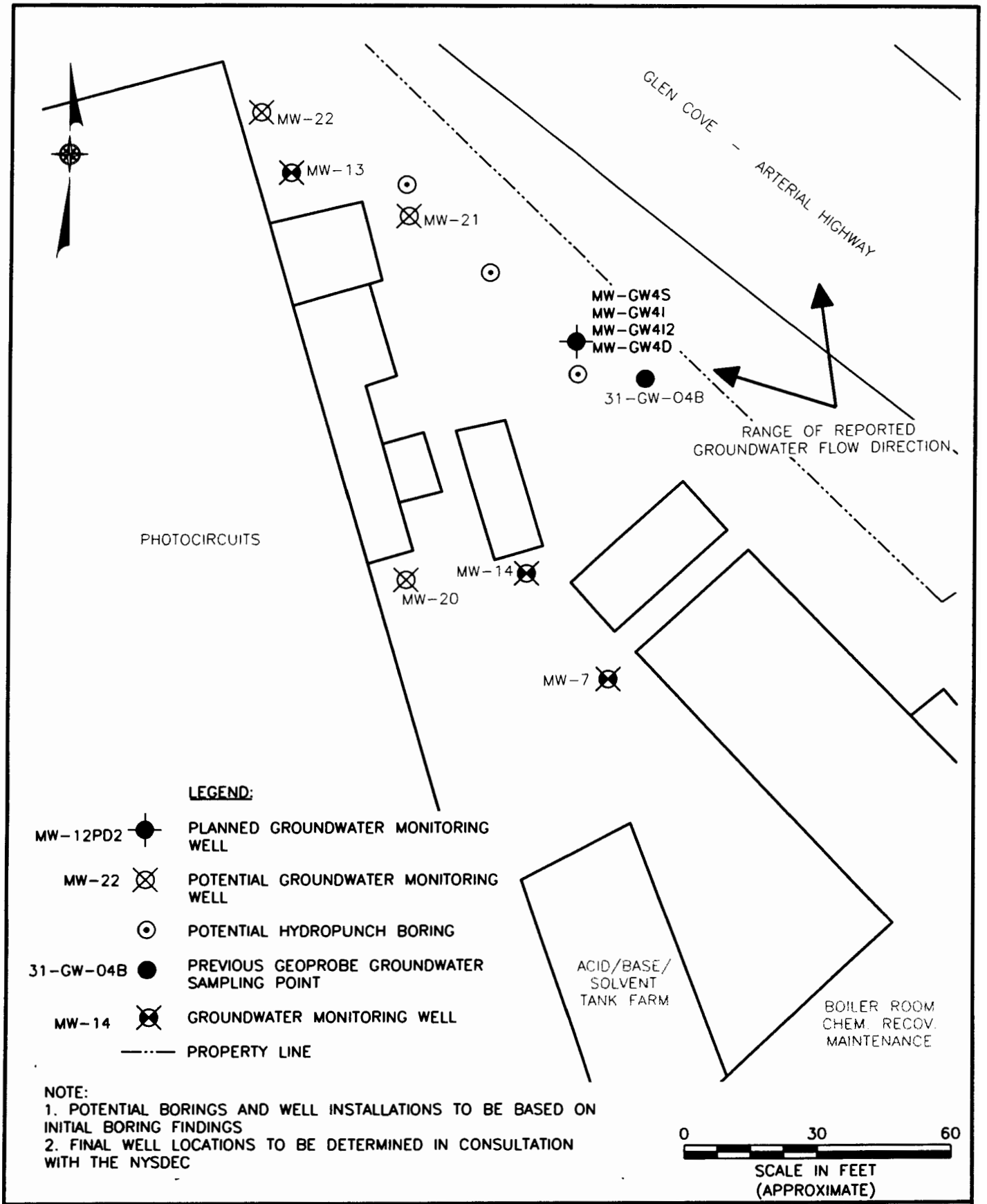
PALL AND PHOTOCIRCUITS CORPORATIONS RI/FS
GLEN COVE, NEW YORK

LOCATIONS OF GROUNDWATER SAMPLING POINTS AND MONITORING WELLS

FIGURE 3-3



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PALL AND PHOTOCIRCUITS CORPORATIONS RI/FS
GLEN COVE, NEW YORK

PLANNED AND POTENTIAL GROUNDWATER SAMPLING POINTS AND MONITORING WELLS

FIGURE 3-4

F:\2453\2453-5.dwg, FIG 5, 03/22/06 03:29:49 PM, KRBrower

(described below), up to three additional wells may be installed at the northern drum storage area of the Photocircuits property.

The groundwater sampling program at the drum storage area on the Photocircuits property initially involves the collection of groundwater samples from Hydropunch borings for evaluation purposes to determine the need and location of the potential monitoring wells. This program is described in Section 3.6.1.

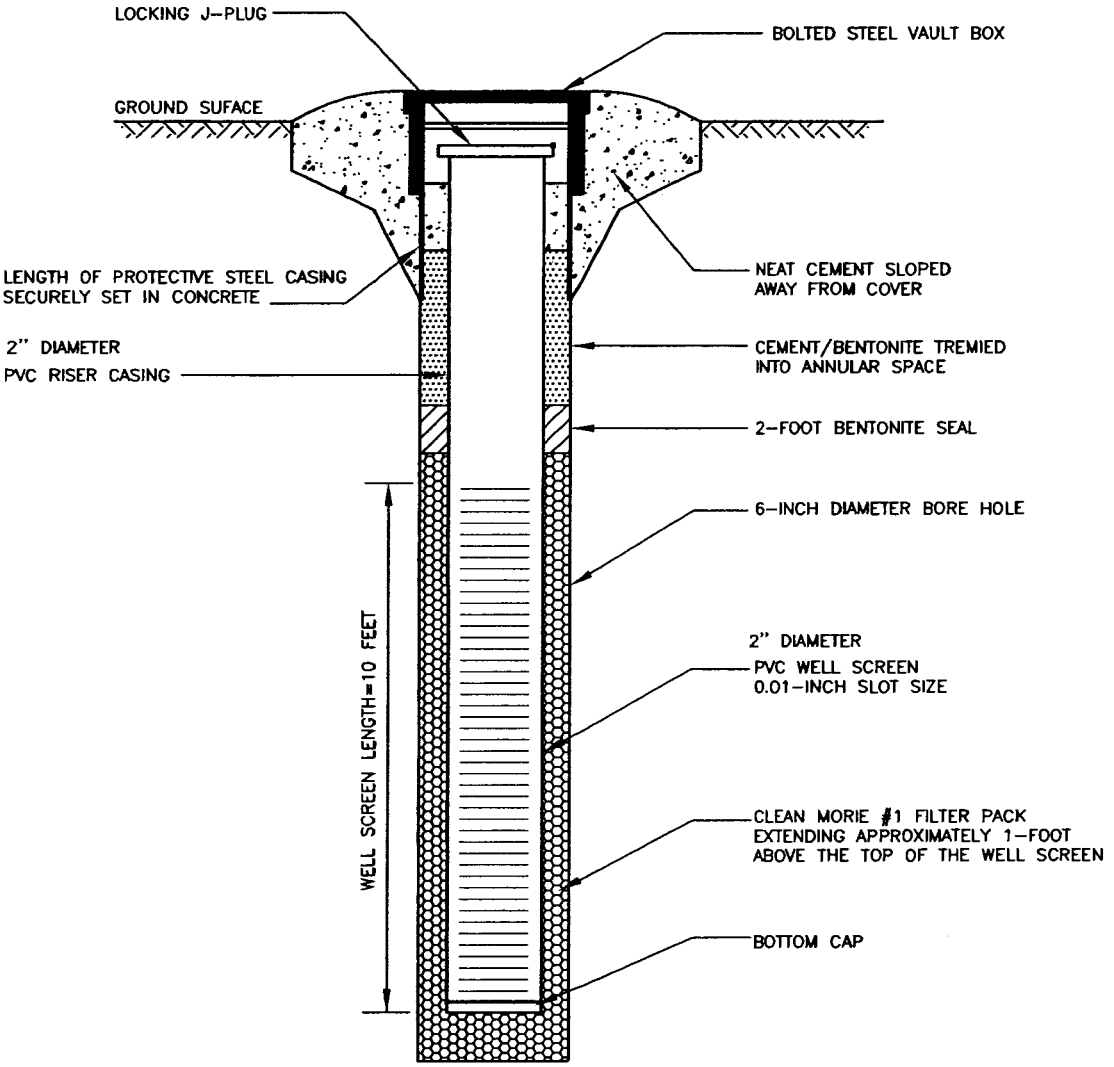
Prior to installing the wells, a geophysical survey will be conducted at each location to investigate the presence of buried utilities.

The new monitoring wells will be installed using 4¼-inch ID hollow stem augers. If difficulties with "running sands" are encountered which hinder drilling, potable water or drilling mud may be introduced to maintain a positive hydrostatic head.

Split-spoon samples will not be collected during construction of these wells. Soil cuttings generated from the boreholes will be logged and documented by a geologist. Notes will be kept in both bound field books and on boring logs. The Unified Soils Classification System will be used to describe the soil. Cuttings will also be screened for VOCs using an organic vapor analyzer equipped with a photoionization detector (PID).

The monitoring wells will be constructed of 2-inch Schedule 40, 0.010-inch slot PVC well screen and threaded, flush joint PVC casing. Each well screen will be 10 feet long. A typical well construction diagram is shown on Figure 3-5.

The well screen and riser pipe will be inserted into the hollow stem auger and set at the desired depth. A sand filter pack will be placed into the annular space around the screen to at least 2 feet above the top of the screen. A minimum 2-foot thick bentonite seal will then be placed above the filter pack. The remaining borehole will be filled to just below ground surface with a bentonite/cement grout. A flush-mounted well cover will be installed in a cement pad at ground surface.



PALL AND PHOTOCIRCUITS RI/FS
GLEN COVE, NEW YORK

TYPICAL MONITORING WELL CONSTRUCTION DIAGRAM

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

FIGURE 3-5

Attempts will be made to install all of the wells using the hollow stem auger drilling method. However, since the screen zone for the deep well in the cluster to be installed at the Carney Street Well Field is 210 to 220 feet below grade, this well may need to be constructed using the mud rotary drilling method, depending on the drilling conditions encountered during construction of the other wells. If the mud rotary method is required, a minimum 6-inch diameter roller bit will be utilized to advance the borehole. This well will be constructed of 2-inch Schedule 40, 0.010-inch slot PVC well screen and threaded, flush joint PVC casing. The filter pack, bentonite seal, grout and well cover for this well will be installed in the same manner as previously described.

All drilling equipment will be decontaminated before the first use during this project, between boreholes and prior to demobilization using high-pressure steam. Decontamination will be conducted at a dedicated decontamination pad constructed for this project on the Pall property. Decontamination fluids will be contained for subsequent discharge to the City of Glen Cove sewer system.

Soil cuttings from all well borings will be containerized in lined and covered roll-off containers for subsequent off-site disposal. The roll-off containers will be staged at the Pall property.

3.5.1 Hydropunch Borings

The groundwater sampling program at the drum storage area on the Photocircuits property initially involves the collection of groundwater samples from Hydropunch borings for evaluation purposes to determine the need and location of the potential monitoring wells.

The Hydropunch borings will be advanced on the Photocircuits property at the former drum storage area east of the main building near existing well MW-7. Initially, one boring will be advanced near previous Geoprobe location 31-GW-04B, where chlorinated VOCs were detected in the groundwater. The boring will be advanced to a depth of 160 feet below grade with sampling at 5-foot intervals for VOC analysis. The information obtained from this boring

will be used to potentially adjust screen intervals to enable the well to be used as a treatment well. Additionally, based on the finding of this initial Hydropunch boring and with input by the NYSDEC, two additional Hydropunch borings may be installed to evaluate groundwater quality and the potential for three additional wells in this area. Groundwater samples from these borings will be collected at 20-foot intervals and analyzed for VOCs. The proposed groundwater sampling locations are depicted on Figure 3-4.

3.5.2 Monitoring Well Development

After construction, each new monitoring well will be developed to ensure a good connection to the aquifer. It is assumed that each well be developed for a maximum of two hours. The wells will be developed by pumping and surging using a submersible pump or similar technique. Well development will continue until the turbidity of the groundwater from the well is less than 50 Nephelometric Turbidity Units (NTUs). During well development, measurement of field parameters, including temperature, pH and specific conductivity, will be conducted. Water generated during well development will be containerized for subsequent discharge to the City of Glen Cove sewer system. All equipment used for the development of monitoring wells will be decontaminated prior to use, between wells and before removal from the Site, in accordance with the procedures described in the QA/QC Plan.

3.6 Collection of Water Level Measurements

Two sets of water level measurements will be collected from all of the wells of the monitoring network identified to be useful and viable during the well inspection survey (discussed in Section 3.4). The water levels will be collected prior to scheduled sampling of the wells and all measurements will be collected within 1 day. An electronic water level indicator will be used to collect the measurements to a precision of 0.01 foot.

3.7 Gamma Logging of Monitoring Wells

To characterize the lithology of the site deposits, including the deep zones of the new wells, gamma logging will be conducted in selected groundwater monitoring wells. Six wells will be gamma logged to encompass the following areas:

- Near the Carney Street Well Field at the new deep well cluster MW-2G.
- At the northwest corner of the Thomsen August property at well cluster MW-2A.
- In the center of the Pall property at well cluster MW-4P.
- Within Sea Cliff at well cluster MW-16.
- At northern drum storage area on Photocircuits property at well cluster MW-GW4.
- At the southern property boundary on Photocircuits property at well cluster MW-19.

The gamma logging will be conducted in the wells after they are installed. If any of the specific wells identified above are unable to be logged should the well no be plumb and the sensor probe unable to fit down the well, a nearby well will be logged.

3.8 Surveying and Base Map Development

A physical features map will be produced by a land surveyor licensed by the State of New York. The basis of bearings and elevations of the survey will be in accordance with the New York State Plane Coordinate System (North American Datum [NAD] 1983) and North American Vertical Datum (NAVD) of 1988. The map will be at the scale of 1" = 50'. The mapping will include, at a minimum, existing site features, structures, aboveground utilities, horizontal limits of Glen Cove Creek, limits of vegetation, ditches, sidewalks, curbs, catch basins, trials, streets, fences, gates, and other significant physical and environmental sensitive features. The map will include all existing and new monitoring wells.

3.9 Monitoring Well Sampling

Two rounds of groundwater samples will be collected from the 29 newly installed wells and the 51 selected existing wells on the Site and surrounding properties. The sampling rounds will be scheduled approximately three months apart. All groundwater samples will be analyzed for Target Compound List (TCL) VOCs. The wells to be sampled are identified in Table 3-3, which also provides the screen zone and well diameter for each well.

Prior to sampling, the depth to water in each well will be measured to calculate the volume of standing water in the well. Water level measurements will be collected using an electronic water level indicator. The pump will be lowered slowly into the screen zone of the well and positioned at least 2 feet from the bottom of the well. The pump will be operated at a flow rate of between 200 to 500 milliliters per minute (ml/min), ideally to stabilize the water level within the well with a maximum drawdown of 0.3 foot. Care will be taken to maintain pump suction.

During purging, pH, specific conductance, temperature, turbidity, dissolved oxygen and redox potential (Eh) will be monitored at approximate 5-minute intervals. The wells will be considered stabilized and ready for sample collection when indicator parameters have stabilized for three consecutive readings ±0.1 for pH, ±3% for specific conductance, ±10 millivolts for redox potential, and ±10% of DO and turbidity. A maximum of one casing volume will be removed from a well. All purge water will be discharged to the City of Glen Cove sewer system.

Groundwater samples will be collected using the lowest sustainable flow rate into the laboratory supplied 40 ml vials. All samples will be stored in an iced cooler and will be shipped under chain of custody procedures to the laboratory within 48 hours after collection.

Appropriate QA/QC procedures will be followed and samples will be collected as referenced in Appendix E. These will include matrix spike samples, matrix spike duplicate samples and trip blanks. Decontamination of the submersible pump used for purging will be performed in accordance with procedures described in the QA/QC Plan.

Table 3-3

PALL AND PHOTOCIRCUITS CORPORATIONS RI/FS
GLEN COVE, NEW YORK
MONITORING WELL SAMPLING PROGRAM

Site	Well Designation	Screen Zone (Feet below grade)	Well Diameter (Inches)
Carney St. Well Field	MW-GD1	70-80	2
	MW-GD2	110-120	2
	MW-GD3	150-160	NA
	MW-GD4	210-220	2
City of Glen Cove	MW-1GS	5-15	NA
	MW-1GI	40-50	NA
	MW-1GD	85-95	2
August Thomsen	MW-2A	3.5-13.5	NA
	MW-2AI	40-50	2
	MW-2AD	80-90	2
	MW-12PS	5-15	2
	MW-12-PI	40-50	2
	MW-12PD	85-95	2
Pall Corporation	MW-1P	5-15	NA
	MW-1PI	41-51	2
	MW-1PD	90-100	2
	MW-2AD2	145-155	2
	MW-4D2	145-155	2
	MW-4P	13-23	NA
	MW-4PI	45-55	2
	MW-4PD	91-101	2
	MW-5PS	3-13	NA
	MW-5PI	40-50	2
	MW-5PD	90-100	2
	MW-6P	50-60	4
	MW-6PD	90-100	2
	MW-7P	3-18	4
	MW-10PS	5-15	2
	MW-10PI	40-50	2
	MW-10PD	90-100	2
	MW-11D2	145-155	2
	MW-11PS	5-15	2
	MW-11PI	40-50	2
	MW-11PD	85-95	2
	MW-12PS	5-15	2
	MW-12PI	40-50	2
	MW-12PD	85-95	2
	MW-12D2	145-155	2
	MW-13-PS	5-15	2
	MW-13PI	40-50	2
	MW-13PD	85-95	2

Site	Well Designation	Screen Zone (Feet below grade)	Well Diameter (Inches)
Sea Cliff Avenue	MW-14PCD	85-95	2
	MW-15PCD	90-100	2
	MW-16PCI	40-50	2
	MW-16PCD	85-95	2
Photocircuits	MW-3	5-20*	2
	MW-7	8-23	4
	MW-8	155-170	2
	MW-9	10-25	2
	MW-10	115-130	2
	MW-11	155-170	2
	MW-12	40-50	2
	MW-15S	70-80	2
	MW-15I	90-100	2
	MW-16S	70-80	2
	MW-16I	90-100	2
	MW-16D	110-120	2
	MW-17S	60-70	2
	MW-17I	80-90	2
	MW-17D	120-130	2
	MW-17D1	150-160	2
	MW-18D	140-150	2
	MW-19S	50-60	2
	MW 19-I	90-100	2
	MW-20**	140-150	2
	MW-21**	140-150	2
	MW-22**	140-150	2
Public Supply Well Field Monitoring Wells	GC-1S	19-39	NA
	GC-1D	175-195	NA
	GC-2S	19-39	NA
	GC-2D	188-208	NA
	GC-3S	4-24	NA
	GC-3M	94-114	NA
	GC-3D	180-200	NA
	GC-4S	34-54	NA
	GC-4D	200-220	NA
	GC-5S	85-105	NA
	GC-5D	234-254	NA
	GC-10S	20-40	NA
	GC-11S	95-115	NA

*: screen zone inferred based on reported total depths
**: provisional well
NA: Not available

3.10 Pump Test on Well No. 21

A pump test will be conducted on Well No. 21 of the Carney Street Well Field. The objectives of this test are: 1) to determine the capture zone and hydraulic dynamics of Well No. 21, and 2) to determine the groundwater quality of the pumped groundwater. The results of the pump test will be evaluated to assess the viability of future operation of Well No. 21 for VOC plume capture, treatment and potential usage of the treated water for industrial purposes.

Well No. 21 was reported to have been pump tested in 2000 by the City of Glen Cove. The scope and findings of the test were not available to assess the relationship between the pumping impacts and groundwater quality.

The pumping of Well No. 21 and associated discharge will be coordinated with the City of Glen Cove. The pump test will be conducted for 24 hours and the well will be pumped at the maximum practical pumping rate at a constant rate. It was reported in historical files that the well had a capacity of 1,400 gallons per minute (gpm). Water level measurements will be collected from the production well and selected nearby monitoring wells. Background measurements will be collected for at least 1 day prior to the pump test. The water levels will be collected manually using an electronic water level indicator and electronically by transducers with data logging capacity. Water levels measurements during the pump test and recovery period will be collected from the selected monitoring wells with the frequencies summarized in Table 3-4. The recovery period will be considered when the water level have returned to 90% of pre-test levels.

The pumped water is assumed to be discharged to the Glen Cove sewer system as was reportedly done during previous investigations. Permission will be obtained from the City of Glen Cove and the pump test will be coordinated with the City.

Samples for analysis will be collected of pumped water from Well No. 21 in addition to the new wells of the cluster to be installed 75 feet to the south (MW-2GD1, MW-2D2 and MW-2GD3). The samples will be collected at the beginning, middle and end of the pump test and analyzed for TCL VOCs.

Table 3-4

PALL AND PHOTOCIRCUITS CORPORATION RI/FS
GLEN COVE, NEW YORK
WELL NO. 21 PUMP TEST MONITORING SCOPE

Well	Distance and Direction from Well No. 21	Well Screen Zone Depth (feet)	Frequency of Water Level Measurements	Rationale or Objective of Water Level Measurements	Samples to be Collected for VOC Analysis and Frequency
Well No. 21	0	120-165	Continuous	Specific capacity	Beginning, midpoint and end of test
MW-2GD1 MW-2GD2 MW-2GD3 MW-2GD4	75' South	70-80 110-120 150-160 210-220	Minimum Hourly	Zone of Influence	Beginning, midpoint and end of test
MW-2GS MW-G2I MW-2GD	75' South	5-15 40-50 90-100	Minimum Hourly	Zone of Influence	None
MW-4P MW-4PI MW-4PD MW-4PD1	500' Southeast	13-23 45-55 91-101 145-155	Hourly	Zone of Influence	None
GC-8S GC-8D	500' Northeast	86-106 169-189	Hourly	Zone of Influence	None
GC-2S GC-2D	900' Southeast	19-36 188-208	Hourly	Zone of Influence	None
MW-1P MW-1PI MW-1PD	100' South	5-15 41-51 90-100	Hourly	Zone of Influence	None

3.11 Data Validation

In accordance with the work assignment, all data for samples will be validated. Data validation will be conducted by a third-party individual meeting the NYSDEC requirements for a data validator.

3.12 Remedial Investigation Report

The information and sample results obtained during the Remedial Investigation program will be used to characterize the Site, including determination of the nature, extent and sources of contamination, and groundwater flow and quality during pumping of Well No. 21. This information, together with the documentation of all field procedures undertaken, including sampling, testing, and quality assurance/quality control, will be included in the Remedial Investigation Report. Analytical results will be presented in a spreadsheet format and compared to the New York State Class GA groundwater standards and guidance values.

The report will present figures and maps illustrating the locations of all sampling points, including monitoring wells, as well as pertinent analytical results. Cross sections will be prepared, if necessary, to depict the geologic and hydrogeologic characteristics of the site, as well as pertinent hydraulic and analytical information. Groundwater contour maps and flow diagrams will be prepared for hydrogeologic units, to depict groundwater flow characteristics with and without Well No. 21 pumping.

A draft Remedial Investigation Report will be prepared and submitted to the NYSDEC for review. Comments received on the draft report will be incorporated into the final Remedial Investigation Report. D&B will plan to a public meeting with the NYSDEC to present the findings of the investigation.

3.13 Feasibility Study

A feasibility study (FS) will be conducted to identify and evaluate remediation technologies, and recommend remedial action. The FS will be prepared after the Remedial Investigation Report has been finalized. As part of the FS, presumptive remedies will be evaluated including groundwater extraction and treatment, air sparging, no further action and long-term monitoring. If applicable, new emerging technologies not identified in the presumptive remedies for the Site will also be evaluated as part of the FS. The FS will include development, preliminary screening and detailed evaluation of remediation alternatives.

A draft Feasibility Study Report will be prepared and submitted to the NYSDEC for review. Comments received on the draft report will be incorporated into the final Feasibility Study Report. D&B will plan to a public meeting with the NYSDEC to provide support for presentation of the Proposed Remedial Action Plan.

Section 4

4.0 PROJECT MANAGEMENT

4.1 Project Schedule and Key Milestones/Reports

The schedule for the Pall and Photocircuits Corporations RI/FS is provided in Table 4-1. Key milestones are identified to monitor work progress. The following are milestones proposed for this project.

- Milestone 1: Submittal of the Draft RI/FS Work Plan
- Milestone 2: Submittal of the Draft Remedial Investigation Report
- Milestone 3: Submittal of Draft Feasibility Study Report

4.2 Project Management, Organization and Key Technical Personnel

Dvirka and Bartilucci Consulting Engineers (D&B) will be the prime consultant responsible for performance of the RI/FS. Subcontractors proposed to be used for this project include:

- Delta Well and Pump Company, Inc. (WBE) - Drilling, Hydropunch sampling and monitoring well installation;
- Mitkem Corporation (MBE) - Sample analysis;
- Nancy Potak (WBE) - Data validation;
- YEC, Inc. - Surveying; and
- Action Trucking, Inc. - Waste Disposal.

The project organization for the RI/FS, indicating management and project responsibilities for the project team and key personnel, is provided in Table 4-2.

Table 4-1

PALL AND PHOTOCIRCUITS CORPORATIONS RI/FS
GLEN COVE, NEW YORK
PROJECT SCHEDULE

Task 1 - Work Plan Preparation:

• Site Visit/Scoping Meeting	February 2006
• Draft RI/FS Work Plan	March 2006
• Final RI/FS Work Plan	April 2006

Task 2 - Field Investigation

• Field Investigation	
– Well Inspection Survey	May 2006
– Hydropunch Sampling	May 2006
– Monitoring Well Installation	May - June 2006
– Well Sampling	July and October 2006
– Collection of Water Level Measurements	July and October 2006
– Well Surveying and Base Map Development	July 2006
– Pump Test	July 2006
• Laboratory Analysis	July-August and September-October 2006
• Data Validation	August and November 2006

Task 3 - Remedial Investigation Report

• Draft Remedial Investigation Report	January 2007
• Final Remedial Investigation Report	February 2007
• Remedial Investigation Report Public Meeting	To be determined

Task 4 - Feasibility Study

• Draft Feasibility Study Report	March 2007
• Final Feasibility Study Report	April 2007
• Public Meeting (Proposed Remedial Action Plan)	To be determined

Table 4-2

PALL AND PHOTOCIRCUITS CORPORATIONS' RI/FS PROJECT ORGANIZATION

NYSDEC Project Manager	Joseph Jones
D&B Project Director	Richard Walka
D&B Project Manager	Albert Jaroszewski
Health and Safety Officer	Stephen Tauss
Quality Assurance/Quality Control Officer	Robbin Petrella
Field Operations Manager	Keith Robins
Remedial Investigation Report	Albert Jaroszewski
Feasibility Study Report	Maria Wright
Drilling and Well Construction	Delta Well and Pump Company, Inc. (WBE)
Sample Analysis	Mitkem Corporation (MBE)
Data Validation	Nancy Potak (WBE)
Surveying Services	YEC, Inc. (MBE)
Waste Disposal	Action Trucking, Inc.

Section 5

5.0 SITE-SPECIFIC QUALITY ASSURANCE/QUALITY CONTROL PLAN

This section presents a summary of major site-specific quality assurance/quality control (QA/QC) elements that will be utilized during this investigation. Except as noted below, sampling procedures, analytical protocols and QA/QC procedures are described in the generic QA/QC plan provided in Appendix E. Table 5-1 lists the sample matrix and analytical protocols to be utilized for this sampling program.

Sample analyses will be conducted by Mitkem Corporation. Mitkem is certified by the New York State Department of Health Environmental Laboratory Approval Program (ELAP) for the analyses to be conducted during this investigation. Groundwater samples will be analyzed in accordance with the NYSDEC 2000 Analytical Services Protocol (ASP). Category B data deliverable packages will be provided for all groundwater samples.

One trip blank will be sent with each shipment containing aqueous samples to be analyzed for VOCs. Samples will be shipped to the laboratory to ensure that samples will be received at the laboratory within 48 hours after collection.

Matrix spike/matrix spike duplicate (MS/MSD) sample sets will be collected for Hydropunch groundwater samples, and the samples collected from the permanent monitoring wells. MS/MSD sample sets will be collected at a frequency of one set per twenty samples or portion thereof (if less than 20 samples).

Table 5-1

PALL AND PHOTOCIRCUITS CORPORATIONS RI/FS
GLEN COVE, NEW YORK
SUMMARY OF MONITORING PARAMETERS

Sample Location	Sample Type	Sample Matrix	Sample Fraction	Container Type/Size/No.	Sample Preservation	Maximum Holding Time*	Analytical Method
Hydropunch Borings and Monitoring Wells	Grab	Groundwater	Volatile Organics	Glass, clear/40 ml/2 Ichem 300 or equivalent	Cool to 4°C	7 days for analysis	6/00 NYSDEC ASP Method EPA SOW OLM 04.2
Hydropunch Borings and Monitoring Wells (MS/MSD and MSB)	Grab	Groundwater	Volatile Organics	Glass, clear/40 ml/2 Ichem 300 or equivalent	Cool to 4°C	7 days for analysis	6/00 NYSDEC ASP Method EPA SOW OLM 04.2

*Holding times as listed for each method in Exhibit D of the 6/00 NYSDEC ASP and based upon VTSR (Verified Time of Sample Receipt).

Section 6

6.0 SITE-SPECIFIC HEALTH AND SAFETY PLAN

This section presents a summary of site-specific health and safety information. The complete Health and Safety Plan (HASP) for the site is Appendix F.

Project Name:	Pall and Photocircuits Corporations
	Remedial Investigation/Feasibility Study (RI/FS)
Address:	30-36 Sea Cliff Avenue (Pall) and 31 Sea Cliff Avenue (Photocircuits), Nassau County, New York
Telephone:	Not available (facility vacant)
Date of HASP Preparation	March 2006
Anticipated Dates of Field Investigation:	May 2006 through September 2006
Project Objectives:	Investigate and characterize groundwater quality

Project Organization:

	Name	Telephone
Project Director:	Richard Walka	(516) 364-9890
Project Manager:	Albert Jaroszewski	(516) 364-9890
Health and Safety Officer (HSO):	Stephen Tauss	(516) 364-9890
Field Operations Manager:	Keith Robins	(516) 364-9890
Field Subcontractors:	Delta Well and Pump Company, Inc.	(631) 981-2255
	YEC, Inc.	(845) 268-3203
	Action Trucking, Inc.	(516) 781-3000

Medical Assistance:

Physician:	Plainview Medical Group, P.C.
Address:	100 Manetto Hill Road, Suite 205
	Plainview, NY 11803
Telephone:	(516) 822-2541

Hospital: North Shore University Hospital/Glen Cove Hospital
101 Saint Andrews Lane, Glen Cove NY 11542

Telephone: 516-674-7300

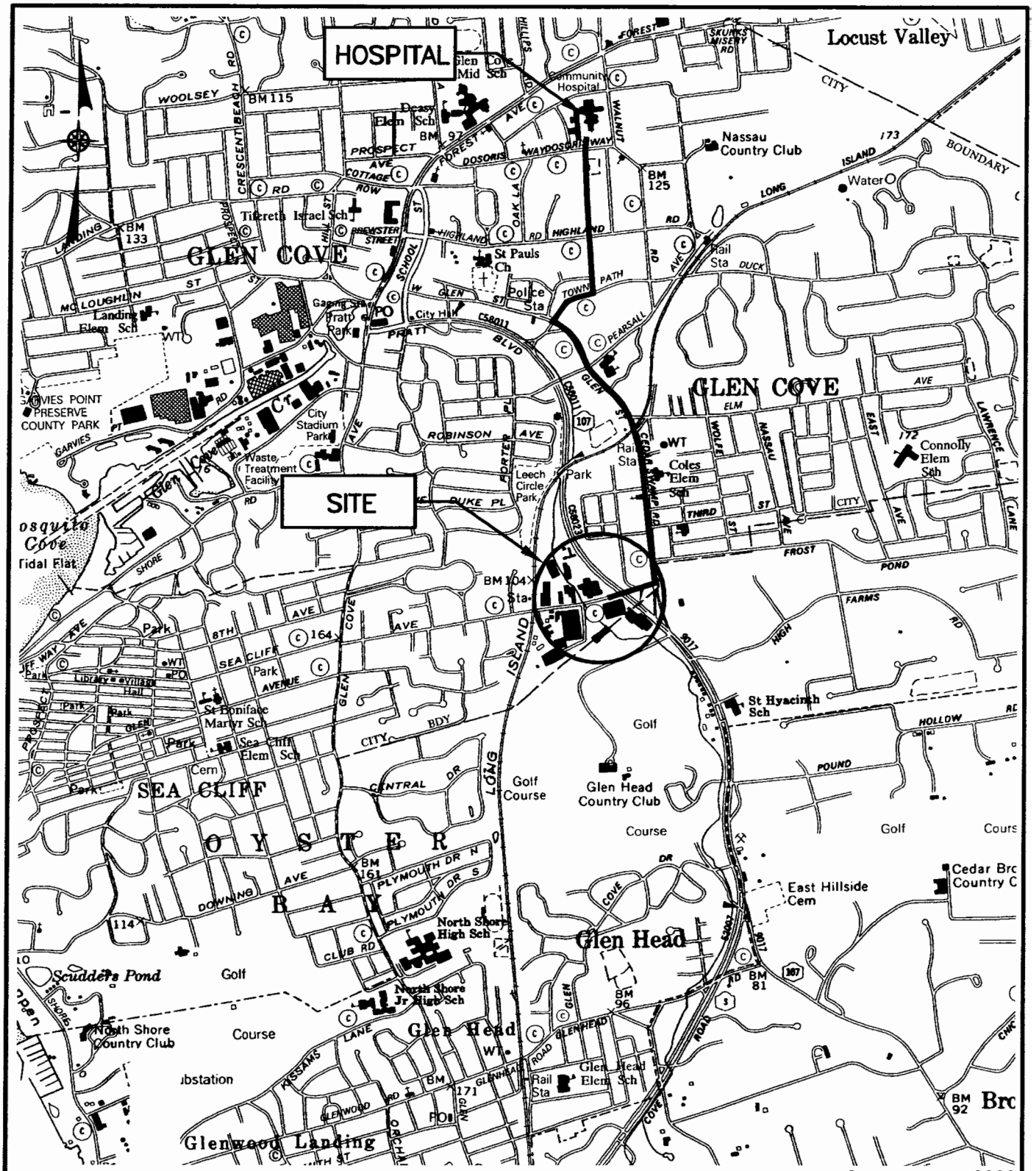
Directions: (see Figure 6-1) Go east on Sea Cliff Avenue toward Hazel Street. Turn left onto Cedar Swamp Road. Cedar Swamp Road Glen Street. Turn right onto Pearsall Avenue. Follow the blue hospital signs, bearing left onto Walnut Road. The hospital is on the left-hand side. To reach the main entrance, turn left at the traffic light onto St. Andrews Lane.

Emergency Contacts:

Agency/Facility	Telephone	Emergency Telephone
EMS - Ambulance		911
Glen Cove Police Department		911
Glen Cove Fire Department		911
Hospital	(516) 674-7300	
Poison Control Center	(516) 542-2323	

Additional site-related information (including special hazards, site control, waste storage and disposal, personal protective equipment, decontamination area location, special engineering controls, etc.):

Staging area for roll-offs drill cuttings, and decontamination, development and purge water to be determined. VOCs and dust will be monitored in the work zone. A Community Air Monitoring Plan will be implemented in accordance with the attached protocol.



SOURCE: USGS SEA CLIFF AND HICKVILLE QUADRANGLES

PALL AND PHOTOCIRCUITS CORPORATIONS RI/FS
GLEN COVE, NEW YORK

ROUTE TO HOSPITAL

FIGURE 6-1

Dvirka and Bartilucci CONSULTING ENGINEERS
A DIVISION OF WILLIAM F. COSULICH ASSOCIATES, P.C.

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APPENDIX 1A

New York State Department of Health
Generic Community Air Monitoring Plan

A Community Air Monitoring Plan (CAMP) requires real-time monitoring for volatile organic compounds (VOCs) and particulates (i.e., dust) at the downwind perimeter of each designated work area when certain activities are in progress at contaminated sites. The CAMP is not intended for use in establishing action levels for worker respiratory protection. Rather, its intent is to provide a measure of protection for the downwind community (i.e., off-site receptors including residences and businesses and on-site workers not directly involved with the subject work activities) from potential airborne contaminant releases as a direct result of investigative and remedial work activities. The action levels specified herein require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, the CAMP helps to confirm that work activities did not spread contamination off-site through the air.

The generic CAMP presented below will be sufficient to cover many, if not most, sites. Specific requirements should be reviewed for each situation in consultation with NYSDOH to ensure proper applicability. In some cases, a separate site-specific CAMP or supplement may be required. Depending upon the nature of contamination, chemical- specific monitoring with appropriately-sensitive methods may be required. Depending upon the proximity of potentially exposed individuals, more stringent monitoring or response levels than those presented below may be required. Special requirements will be necessary for work within 20 feet of potentially exposed individuals or structures and for indoor work with co-located residences or facilities. These requirements should be determined in consultation with NYSDOH.

Reliance on the CAMP should not preclude simple, common-sense measures to keep VOCs, dust, and odors at a minimum around the work areas.

Community Air Monitoring Plan

Depending upon the nature of known or potential contaminants at each site, real-time air monitoring for volatile organic compounds (VOCs) and/or particulate levels at the perimeter of the exclusion zone or work area will be necessary. Most sites will involve VOC and particulate monitoring; sites known to be contaminated with heavy metals alone may only require particulate monitoring. If radiological contamination is a concern, additional monitoring requirements may be necessary per consultation with appropriate NYSDEC/NYSDOH staff.

Continuous monitoring will be required for all ground intrusive activities and during the demolition of contaminated or potentially contaminated structures. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, test pitting or trenching, and the installation of soil borings or monitoring wells.

Periodic monitoring for VOCs will be required during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. "Periodic" monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. In some instances, depending upon the proximity of potentially exposed individuals, continuous monitoring may be required during sampling activities. Examples of such situations include groundwater sampling at wells on the curb of a busy urban street, in the midst of a public park, or adjacent to a school or residence.

VOC Monitoring, Response Levels, and Actions

Volatile organic compounds (VOCs) must be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a continuous basis or as otherwise specified. Upwind concentrations should be measured at the start of each workday and periodically thereafter to establish background conditions. The monitoring work should be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment should be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment should be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

- If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.

- If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities must be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.

- If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown.

All 15-minute readings must be recorded and be available for State (DEC and DOH) personnel to review. Instantaneous readings, if any, used for decision purposes should also be recorded.

Particulate Monitoring, Response Levels, and Actions

Particulate concentrations should be monitored continuously at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate monitoring should be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment must be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration should be visually assessed during all work activities.

- If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m^3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m^3 above the upwind level and provided that no visible dust is migrating from the work area.

- If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m^3 above the upwind level, work must be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m^3 of the upwind level and in preventing visible dust migration.

All readings must be recorded and be available for State (DEC and DOH) personnel to review.

Section 7

7.0 CITIZEN PARTICIPATION PLAN

As part of the RI/FS to be performed for the Site, a site-specific Citizen Participation Plan will be developed. The following sections identify the information that will be incorporated into the site-specific Citizen Participation Plan.

7.1 Identification of Elected Officials

This section of the Citizen Participation Plan will include the names, addresses and telephone numbers of elected officials who have expressed interest in the project/site, or are directly affected by the site or the proposed RI/FS program. A mailing list with all local and/or affected elected officials will be prepared. The mailing list will be used to inform those officials and involve those that express an interest in the project. A mechanism will also be provided in the plan to allow other interested officials to add their names to this mailing list.

7.2 Identification of Affected and/or Interested Public

This section of the Citizen Participation Plan will include the names, addresses and telephone numbers of organizations and individuals who have expressed interest in the project/site, or are directly affected by the site or the proposed RI/FS program. The names, addresses and telephone numbers of the individuals, groups and organizations identified in the following categories will be provided in the site-specific plan:

- Potentially responsible parties;
- Individuals and organizations expressing an interest in receiving newsletters, fact sheets, status reports, etc., with respect to the activities at the site;
- Residents located in close proximity and adjacent to the site; and
- Local media (newspapers, radio and TV stations).

The names and addresses of affected and/or the interested parties will be included on the mailing list. As discussed above, the list will be used to inform and involve the interested public.

Interest in the site, issues arising during various stages of investigation and development of the remediation plan, and other factors will determine if additional individuals and organizations are to be added. It should be noted that as the RI/FS proceeds, the list of interested citizens is likely to increase. While in some cases, as necessary, names may be dropped if the individual requests it due to reasons such as moving or lack of interest. Information will also be included in this section to identify the name and address of the contact person accessible to interested parties who would like their name and address included on the mailing list.

7.3 Identification of NYSDEC Contacts

This section of the Citizen Participation Plan will include the names, addresses and telephone numbers of contacts at the NYSDEC, including but not limited to the following positions:

- Project Director,
- Project Manager, and
- Regional Office Contacts.

7.4 Identification of Document Repositories

Documents relating to the RI/FS will be made available for public review at appropriate repositories. Typically, local document repositories are public buildings located near the site, such as a municipal building and/or public library. The location, including addresses, of repositories will be provided in the site-specific plan. Documents to be made available will include, but are not limited to:

- Site-specific RI/FS Work Plan;
- RI/FS Reports; and
- Fact sheets, newsletters, status reports, etc.

7.5 Description of Citizen Participation Activities

This section of the Citizen Participation Plan will describe the specific activities planned to be performed during each task of the RI/FS program to enhance public understanding of the project. The following activities will, at a minimum, be implemented, unless directed otherwise by NYSDEC. Based upon the progress of the RI/FS, local issues and level of interest, these activities may be modified.

- Development of a RI/FS Initial Fact Sheet - A "kick-off" fact sheet will be developed that would include a brief description of the site; planned work to be conducted as part of the RI/FS, including the project schedule; the date of initiation of the field program; and identification of appropriate contact person(s) to obtain additional information with regard to the project.

- Development of the Draft Work Plan, including the Field Operation and Investigation Plan; QA/QC Plan; and Health and Safety Plan - A public meeting or availability session, depending upon public interest, will be held to address any questions or comments on the recommended RI/FS program activities.

- Development of the Draft Remedial Investigation Report and possible Interim Remedial Measure - A fact sheet will be prepared, including a brief description of the site; objectives of the remedial investigation; a summary of the work completed; a summary of the findings; recommendations for an IRM and/or presumptive remedy, if required; location(s) where reports are available; a schedule for remainder of the work; and names and telephone numbers of contact person(s). If there is sufficient interest, a public meeting will be held to present the results of the remedial investigation.

- Development of the Draft Feasibility Study Report and Recommended Remedial Action - If an interim remedial measure is not installed and a presumptive remedy is not selected, a public meeting (or availability session) will be held to discuss the results of the Feasibility Study and the selection of the recommended remedial action for the site.

After submittal of a final RI/FS Report, which incorporates agency and public comments, a Record of Decision (ROD) will be prepared by NYSDEC. The ROD will document the decision process used to determine the remedial actions deemed appropriate for the site, as well as present the selected remedial action plan.

Section 8

8.0 PROJECT COST ESTIMATE

8.1 Assumptions

This section provides the estimated cost to complete the scope of work described in Section 3.0. The following assumptions have been made as part of the cost estimate.

- All field work can be completed with Level D personal protection;
- Site access for drilling locations will be secured by the NYSDEC;
- The NYSDEC will notify owners of private properties and municipalities in the vicinity of monitoring well construction and sampling activities;
- State-owned field equipment will be available for the duration of this project;
- The depth to groundwater in the site vicinity is approximately 5 to 30 feet bgs;
- Hollow stem auger drilling will be effective for the construction of planned monitoring wells;
- Drill cuttings from the monitoring wells will be placed into roll-offs and staged at a location to be determined at the beginning of the drilling program;
- Each of the newly installed monitoring wells will be developed for up to 2 hours each;
- Characterization sampling will not be required for disposal of decontamination, development and purge water;
- Decontamination, development and purge water will be discharged to the City of Glen Cove sewer system;
- Standard laboratory turnaround time of 4 weeks will be utilized;
- The operation of Well No. 21 will be conducted by the City of Glen Cove using existing equipment (no pump rental or operating equipment is included);
- Pump test water will be discharged to the City of Glen Cove sewer system;
- Two public meetings will be arranged (for the RI and PRAP) and facilitated by the NYSDEC, and the NYSDEC will distribute notification information for the meetings. The NYSDEC will prepare the PRAP material.

8.2 Schedule 2.11 Forms

The project budget Schedules 2.11 forms are provided in the remainder of this section.

Schedule 2.11 (a)

Summary of Work Assignment Price
Pall and Photocircuits Corporations RI/FS

Work Assignment Number D003600-49

1.	Direct Salary Costs (Schedules 2.10 (a) and 2.11(b))	$89,117
2.	Indirect Costs (Schedule 2.10 (g))	$141,072
3.	Direct Non-Salary Costs (Schedules 2.11 (c)and (d))	$19,482

Subcontract Costs

Cost-Plus-Fixed-Fee Subcontracts (Schedules 2.11(e))

Name of Subcontractor	Services To Be Performed	Subcontract Price
YEC, Inc. (MBE)	Land Surveying	$29,542

4.	Total Cost-Plus-Fixed-Fee Subcontracts	$29,542

Unit Price Subcontracts (Schedules 2.11(f))

Name of Subcontractor	Services To Be Performed	Subcontract Price
Delta Well and Pump (WBE)	Drilling Services	$159,601
Mitkem Corporation (MBE)	Sample Analysis	$27,060
Aqua Terra Geophysics	Gamma Logging	$1,800
Nancy Potak (WBE)	Data Validation	$2,952
To be determined	Utility Survey	$13,600
Action Trucking, Inc.	Drill Cuttings Disposal	$10,050

5.	Total Unit Price Subcontracts	$215,063
6.	Subcontract Management Fee	$6,885
7.	Total Subcontract Costs (lines 4 + 5 + 6)	$251,490
8.	Fixed Fee (Schedule 2.10 (h))	$19,336
9.	Total Work Assignment Price (lines 1 + 2 + 3 + 7 +8)	$520,497

NAME/LABOR CLASSIFICATION	NSPE Level	Hourly Rate as of July 1, 2002	Task 1 Work Plan Development		Task 2 Remedial Investigation		Task 3 RI Report		Task 4 FS Report		Task 5 Meetings		TOTAL TASKS	
Richard Walka Project Director	VIII	$59.68	4	$239	0	$0	10	$597	6	$358	12	$716	32	$1,910
Brian Veith Principal Engineer	VIII	$59.68	0	$0	24	$1,432	8	$477	6	$358	0	$0	38	$2,268
Kenneth Wenz Senior Associate	VI	$41.78	18	$752	4	$167	16	$668	8	$334	4	$167	50	$2,089
Albert Jaroszewski Senior Geologist	VI	$41.78	58	$2,423	148	$6,183	184	$7,688	72	$3,008	32	$1,337	494	$20,639
Maria Wright Senior Engineer	V	$35.11	0	$0	0	$0	18	$632	140	$4,915	32	$1,124	190	$6,671
Robbin Petrella QA/QC Officer	V	$35.11	3	$105	8	$281	60	$2,107	0	$0	0	$0	71	$2,493
Richard Avanzini Engineering Technician	V	$35.11	6	$211	0	$0	16	$562	8	$281	16	$562	46	$1,615
John Zegers Senior Designer	V	$35.11	2	$70	0	$0	4	$140	0	$0	0	$0	6	$211
Keith Robins Senior Geologist	IV	$29.65	0	$0	208	$6,167	120	$3,558	16	$474	4	$119	348	$10,318
Christopher Morris Geologist	III	$26.91	12	$323	1110	$29,870	120	$3,229	12	$323	16	$431	1270	$34,176
Frank DeVita Project Manager	III	$26.91	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0
Dario Cortes Drafter	II	$23.36	32	$748	0	$0	96	$2,243	24	$561	24	$561	176	$4,111
Virginia Passalacqua Administrative Assistant	II	$23.36	4	$93	14	$327	12	$280	6	$140	4	$93	40	$934
Allyson Manz Word Processor	II	$23.36	6	$140	14	$327	24	$561	26	$607	2	$47	72	$1,682
Meaghan Baldwin Geologist	I	$18.63	5	$93	314	$5,850	40	$745	8	$149	4	$75	371	$6,912
Labor Subtotal (Direct Salary)			145	$5,104	1530	$44,755	688	$22,742	324	$11,360	146	$5,155	2,833	$89,117
Indirect Cost (1.583)				$8,080		$70,847		$36,000		$17,983		$8,161		$141,072
Profit (0.084)				$1,107		$9,711		$4,934		$2,465		$1,119		$19,336
TOTAL			145	$14,292	1530	$125,313	688	$63,676	324	$31,809	146	$14,435	2833	$249,525

NAME/LABOR CLASSIFICATION	NSPE Level	Hourly Rate as of July 1, 2002	Task 1A Draft Work Plan Preparation		Task 1B Final Work Plan Preparation		Total 1 Work Plan (hours)	($)
Richard Walka Project Director	VIII	$59.68	2	$119	2	$119	4	$239
Brian Veith Principal Engineer	VIII	$59.68		$0		$0	0	$0
Kenneth Wenz Senior Associate	VI	$41.78	16	$668	2	$84	18	$752
Albert Jaroszewski Senior Geologist	VI	$41.78	50	$2,089	8	$334	58	$2,423
Maria Wright Senior Engineer	V	$35.11		$0		$0	0	$0
Robbin Petrella QA/QC Officer	V	$35.11	2	$70	1	$35	3	$105
Richard Avanzini Engineering Technician	V	$35.11	4	$140	2	$70	6	$211
John Zegers Senior Designer	V	$35.11	2	$70		$0	2	$70
Keith Robins Senior Geologist	IV	$29.65		$0		$0	0	$0
Christopher Morris Geologist	III	$26.91	8	$215	4	$108	12	$323
Frank DeVita Project Manager	III	$26.91		$0		$0	0	$0
Dario Cortes Drafter	II	$23.36	32	$748		$0	32	$748
Virginia Passalacqua Administrative Assistant	II	$23.36	4	$93		$0	4	$93
Allyson Manz Word Processor	II	$23.36	4	$93	2	$47	6	$140
Meaghan Baldwin Geologist	I	$18.63		$0	5	$93	5	$93
Labor Subtotal (Direct Salary)			124	$4,307	21	$797	145	$5,104
Indirect Cost (1.583)				$6,819		$1,261		$8,080
Profit (0.084)				$935		$173		$1,107
TOTAL			124	$12,061	21	$2,231	145	$14,292

NAME/LABOR CLASSIFICATION	NSPE Level	Hourly Rate as of July 1, 2002	Task 2A File Review		Task 2B Well Inspection Survey		Task 2C Well Installation Gamma Logging		Task 2D Water Level Measurements		Task 2E Base Map Survey		Task 2F Well Sampling		Task 2G Pump Test		Total 2 (hours)	Total 2 ($)
Richard Walka Project Director	VIII	$59.68		$0		$0		$0		$0		$0		$0	0	$0	0	$0
Brian Veith Principal Engineer	VIII	$59.68		$0	2	$119	16	$955		$0		$0	4	$239	2	$119	24	$1,432
Kenneth Wenz Senior Associate	VI	$41.78		$0		$0		$0		$0		$0		$0	4	$167	4	$167
Albert Jaroszewski Senior Geologist	VI	$41.78	16	$668	16	$668	64	$2,674	8	$334	4	$167	16	$668	24	$1,003	148	$6,183
Maria Wright Senior Engineer	V	$35.11		$0		$0		$0		$0		$0		$0		$0	0	$0
Robbin Petrella QA/QC Officer	V	$35.11		$0		$0		$0		$0		$0	8	$281		$0	8	$281
Richard Avanzini Engineering Technician	V	$35.11		$0		$0		$0		$0		$0		$0		$0	0	$0
John Zegers Senior Designer	V	$35.11		$0		$0		$0		$0		$0		$0		$0	0	$0
Keith Robins Senior Geologist	IV	$29.65	16	$474	8	$237	60	$1,779	20	$593	24	$712	20	$593	60	$1,779	208	$6,167
Christopher Morris Geologist	III	$26.91		$0	30	$807	840	$22,604	20	$538		$0	160	$4,306	60	$1,615	1110	$29,870
Frank DeVita Project Manager	III	$26.91		$0		$0		$0		$0		$0		$0		$0	0	$0
Dario Cortes Drafter	II	$23.36		$0		$0		$0		$0		$0		$0		$0	0	$0
Virginia Passalacqua Administrative Assistant	II	$23.36		$0	2	$47	4	$93		$0	2	$47	4	$93	2	$47	14	$327
Allyson Manz Word Processor	II	$23.36	2	$47	2	$47	4	$93		$0	2	$47	4	$93		$0	14	$327
Meaghan Baldwin Geologist	I	$18.63	24	$447	30	$559	60	$1,118	20	$373		$0	160	$2,981	20	$373	314	$5,850
Labor Subtotal (Direct Salary)			34	$1,190	60	$1,926	988	$28,199	48	$1,465	32	$972	216	$6,274	152	$4,730	1530	$44,755
Indirect Cost (1.583)				$1,883		$3,049		$44,639		$2,320		$1,539		$9,931		$7,487		$70,847
Profit (0.084)				$258		$418		$6,118		$318		$211		$1,361		$1,026		$9,711
TOTAL			34	$3,331	60	$5,392	988	$78,957	48	$4,103	32	$2,722	216	$17,566	152	$13,243	1530	########

NAME/LABOR CLASSIFICATION	NSPE Level	Hourly Rate as of July 1, 2002	Task 3A Data Assessment		Task 3B Draft RI Report		Task 3C Final RI Report		Total 3 (hours)	Total 3 ($)
Richard Walka Project Director	VIII	$59.68		$0	8	$477	2	$119	10	$597
Brian Veith Principal Engineer	VIII	$59.68		$0	8	$477		$0	8	$477
Kenneth Wenz Senior Associate	VI	$41.78		$0	16	$668		$0	16	$668
Albert Jaroszewski Senior Geologist	VI	$41.78	40	$1,671	120	$5,014	24	$1,003	184	$7,688
Maria Wright Senior Engineer	V	$35.11	8	$281	8	$281	2	$70	18	$632
Robbin Petrella QA/QC Officer	V	$35.11	60	$2,107		$0		$0	60	$2,107
Richard Avanzini Engineering Technician	V	$35.11		$0	8	$281	8	$281	16	$562
John Zegers Senior Designer	V	$35.11		$0	4	$140		$0	4	$140
Keith Robins Senior Geologist	IV	$29.65	24	$712	80	$2,372	16	$474	120	$3,558
Christopher Morris Geologist	III	$26.91	24	$646	80	$2,153	16	$431	120	$3,229
Frank DeVita Project Manager	III	$26.91		$0		$0		$0	0	$0
Dario Cortes Drafter	II	$23.36		$0	80	$1,869	16	$374	96	$2,243
Virginia Passalacqua Administrative Assistant	II	$23.36	2	$47	8	$187	2	$47	12	$280
Allyson Manz Word Processor	II	$23.36		$0	16	$374	8	$187	24	$561
Meaghan Baldwin Geologist	I	$18.63		$0	40	$745		$0	40	$745
Labor Subtotal (Direct Salary)			158	$5,463	436	$14,293	94	$2,986	688	$22,742
Indirect Cost (1.583)				$8,648		$22,626		$4,726		$36,000
Profit (0.084)				$1,185		$3,101		$648		$4,934
TOTAL			158	$15,296	436	$40,021	94	$8,359	688	$63,676

NAME/LABOR CLASSIFICATION	NSPE Level	Hourly Rate as of July 1, 2002	Task 4A Identify and Sreen Alternatives		Task 4B Draft FS Report		Task 4C Final FS Report		Total 4 (hours)	Total 4 ($)
Richard Walka Project Director	VIII	$59.68		$0	4	$239	2	$119	6	$358
Brian Veith Principal Engineer	VIII	$59.68		$0	4	$239	2	$119	6	$358
Kenneth Wenz Senior Associate	VI	$41.78		$0	4	$167	4	$167	8	$334
Albert Jaroszewski Senior Geologist	VI	$41.78	4	$167	60	$2,507	8	$334	72	$3,008
Maria Wright Senior Engineer	V	$35.11	24	$843	100	$3,511	16	$562	140	$4,915
Robbin Petrella QA/QC Officer	V	$35.11		$0		$0		$0	0	$0
Richard Avanzini Engineering Technician	V	$35.11		$0	4	$140	4	$140	8	$281
John Zegers Senior Designer	V	$35.11		$0		$0		$0	0	$0
Keith Robins Senior Geologist	IV	$29.65	4	$119	8	$237	4	$119	16	$474
Christopher Morris Geologist	III	$26.91		$0	8	$215	4	$108	12	$323
Frank DeVita Project Manager	III	$26.91		$0		$0		$0	0	$0
Dario Cortes Drafter	II	$23.36		$0	16	$374	8	$187	24	$561
Virginia Passalacqua Administrative Assistant	II	$23.36		$0	4	$93	2	$47	6	$140
Allyson Manz Word Processor	II	$23.36	2	$47	16	$374	8	$187	26	$607
Meaghan Baldwin Geologist	I	$18.63	8	$149		$0		$0	8	$149
Labor Subtotal (Direct Salary)			34	$1,175	228	$8,096	62	$2,089	324	$11,360
Indirect Cost (1.583)				$1,860		$12,816		$3,307		$17,983
Profit (0.084)				$255		$1,757		$453		$2,465
TOTAL			34	$3,290	228	$22,669	62	$5,849	324	$31,809

NAME/LABOR CLASSIFICATION	NSPE Level	Hourly Rate as of July 1, 2002	Task 5A CCP and Presentation Prep		Task 5B RI Public Meeting		Task 5C PRAP Public Meeting		Total 5 Meetings (hours)	($)
Richard Walka Project Director	VIII	$59.68	4	$239	4	$239	4	$239	12	$716
Brian Veith Principal Engineer	VIII	$59.68		$0		$0		$0	0	$0
Kenneth Wenz Senior Associate	VI	$41.78	4	$167		$0		$0	4	$167
Albert Jaroszewski Senior Geologist	VI	$41.78	24	$1,003	4	$167	4	$167	32	$1,337
Maria Wright Senior Engineer	V	$35.11	24	$843	4	$140	4	$140	32	$1,124
Robbin Petrella QA/QC Officer	V	$35.11		$0		$0		$0	0	$0
Richard Avanzini Engineering Technician	V	$35.11	16	$562		$0		$0	16	$562
John Zegers Senior Designer	V	$35.11		$0		$0		$0	0	$0
Keith Robins Senior Geologist	IV	$29.65	4	$119		$0		$0	4	$119
Christopher Morris Geologist	III	$26.91	16	$431		$0		$0	16	$431
Frank DeVita Project Manager	III	$26.91		$0		$0		$0	0	$0
Dario Cortes Drafter	II	$23.36	24	$561		$0		$0	24	$561
Virginia Passalacqua Administrative Assistant	II	$23.36	4	$93		$0		$0	4	$93
Allyson Manz Word Processor	II	$23.36		$0		$0	2	$47	2	$47
Meaghan Baldwin Geologist	I	$18.63		$0		$0	4	$75	4	$75
Labor Subtotal (Direct Salary)			120	$4,016	12	$546	14	$593	146	$5,155
Indirect Cost (1.583)				$6,358		$865		$939		$8,161
Profit (0.084)				$871		$119		$129		$1,119
TOTAL			120	$11,245	12	$1,530	14	$1,660	146	$14,435

SCHEDULE 2.11 (b)
SUMMARY
Pall and Photocircuits Corporations RI/FS
Work Assignment No. D003600-49

Average NSPE Wage Rates	IX	VIII	VII	VI	V	IV	III	II	I	TOTAL HOURS
as of July 1, 2002	$63.70	$59.68	$51.87	$41.78	$35.11	$29.65	$26.91	$23.36	$18.63	
Task 1 - Work Plan Development	0	4	0	18	69	0	12	47	0	150
Task 2 - Remedial Investigation	0	24	0	4	156	208	1110	342	0	1844
Task 3 - RI Report	0	18	0	16	282	120	120	172	0	728
Task 4 - FS Report	0	12	0	8	220	16	12	64	0	332
Task 5 - Meetings	0	12	0	4	80	16	16	34	0	162
Total Hours	0	70	0	50	807	360	1270	659	0	3,216
Total Direct Labor Cost	$0	$4,178	$0	$2,089	$28,334	$10,674	$34,176	$15,394	$0	$94,844

SCHEDULE 2.11 (b)-1
SUMMARY
Pall and Photocircuits Corporation RI/FS
Work Assignment No. D003600-49

Average NSPE Wage Rates	IX	VIII	VII	VI	V	IV	III	II	I	TOTAL HOURS
as of July 1, 2002	$63.70	$59.68	$51.87	$41.78	$35.11	$29.65	$26.91	$23.36	$18.63	
Task 1	0	0.5	0	4	0	0	0	8	0	12.5
Task 2	0	0.5	0	2	0	0	1	4	0	7.5
Task 3	0	0.5	0	2	0	0	1	8	0	11.5
Task 4	0	0.5	0	2	0	0	1	2	0	11.5
Task 5	0	0.5	0	2	0	0	21	0	60	11.5
Total Hours	0	2.5	0	12	0	0	24	22	60	120.5
Total Direct Labor Cost	$0	$149	$0	$501	$0	$0	$646	$514	$1,118	$2,928

Dvirka & Bartilucci Consulting Engineers
Pall and Photocircuits Corporation RI/FS
Work Assignment No. D003600-49

BREAKDOWN OF ADMINISTRATIVE LOE HOURS ON SCHEDULE 2.11(b-1)

ADMIN ACTIVITY	WORK PLAN DEVELOPMENT														REVIEW WORK ASSIGNMENT (WA) PROGRESS													
	Conflict of Interest Checks						Prepare 2.11 Schedules								Conduct Progress Reviews							Prepare Monthly Report & Update Schedules						
NSPE	IX	VIII	VII	VI	V	IV	VIII	VII	VI	V	IV	III	II	I	VIII	VII	VI	V	IV	III		VIII	VII	VI	V	IV	III	II	I
TASK 1		0.5							4																				
TASK 2																								2			1		
TASK 3																								2			1		
TASK 4																								2			1		
TASK 5																								2			1		
TOTAL	0	0.5	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0		0	0	8	0	50	4	0	0

ADMIN ACTIVITY	REVIEW WORK ASSIGNMENT (WA) PROGRESS														CAP PREPARATION											
	MBE/WBE Activities								Program Management						Prepare Monthly Cost Control Report & CAP								Oversee CAP			
NSPE	VIII	VII	VI	V	IV	III	II	I	IX	VIII	VII	VI	V	IV	VIII	VII	VI	V	IV	III	II	I	IX	VIII	VII	VI
TASK 1																					8					
TASK 2										0.5											4					
TASK 3										0.5											8					
TASK 4										0.5											2					
TASK 5										0.5											0					
TOTAL	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	22	0	0.0	0	840	0

ADMIN ACTIVITY	MISCELLANEOUS																									
	Update NSPE List								Equipment Use and Inventory				Word Proc. and Report Preparation				Total Adm. LOE (hrs)									
NSPE	VIII	VII	VI	V	IV	III	II	I	IV	III	II	I	IV	III	II	I	IX	VIII	VII	VI	V	IV	III	II	I	
TASK 1																		0.5	0	4	0	0	0	8		
TASK 2																		0.5	0	2	0	0	1	4		
TASK 3																		0.5	0	2	0	0	1	8		
TASK 4																		0.5	0	2	0	0	21	2	60	
TASK 5																		0.5	0	2	0	0	1	0		
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.5	0	12	0	0	24	22	60	

SCHEDULE 2.11 (c)
DIRECT NON-SALARY COSTS
SUMMARY
Pall and Photocircuits Corporation RI/FS
Work Assignment No. D003600-49

ITEM	MAXIMUM REIMBURSEMENT RATE	UNIT	ESTIMATED NUMBER OF UNITS	TOTAL ESTIMATED COSTS
IN-HOUSE				
Outside Services*	$200.00	set	0	$0.00
Express Mail	$25.00	package	10	$250.00
Sample Shipping	$50.00	shipment	20	$1,000.00
Level D Safety Equipment	$14.00	$/person/day	116	$1,624.00
Level C Safety Equipment	$40.00	$/person/day	0	$0.00
Level B Safety Equipment	$50.00	$/person/day	0	$0.00
TRAVEL				
Transportation (Personal Car)	$0.445	mile	2400	$1,068.00
Van Rental	$100.00	day	20	$2,000.00
Gas	$50.00	day	4	$200.00
TOTAL DIRECT NON-SALARY COSTS				$6,142.00

* Includes photo finishing, slides and any other costs not associated with in-house capabilities.

SCHEDULE 2.11 (d) 1

EQUIPMENT PURCHASED UNDER THE CONTRACT
SUMMARY
Pall and Photocircuits Corporation RI/FS
Work Assignment No. D003600-49

ITEM	ESTIMATED PURCHASE PRICE	O&M RATE ($/per month)	TERM OF USAGE (MONTHS)	ESTIMATED USAGE COST (COL. 2 + [3X4])
			TOTAL	$0.00

Schedule 2.11 (d) 2
Summary

Maximum Reimbursement Rates for Consultant/Subconsultant - Owned Equipment
Pall and Photocircuits Corporation RI/FS
Work Assignment No. D003600-49

ITEM	PURCHASE PRICE X 85%	USAGE RATE ($/day)	CAPITAL RECOVERY RATE ($/Unit of Time)	O & M RATE ($/Unit of Time)	ESTIMATED USAGE (days)	ESTIMATED USAGE COST (Col. 3x6)
						$0
					TOTAL	$0

Notes:
Usage Rate = Capital Recovery Rate + O&M rate

The maximum usage rate for an item of equipment reverts to the O&M rate when the total usage reimbursement exceed 85% of the purchase price.

SCHEDULE 2.11 (d) 3
EQUIPMENT
VENDOR RENTED
SUMMARY
Fumex Sanitation Site Remedial Design
Pall and Photocircuits Corporation RI/FS
Work Assignment No. D003600-49

ITEM	MAXIMUM REIMBURSEMENT RATE	TIME PERIOD	ESTIMATED USAGE (period of time)	ESTIMATED USAGE COST (Col. 2 X 3)
Century OVA 128	$125.00	day	0	$0.00
Photovac Microtip	$125.00	day	0	$0.00
MIE Miniram Digital Dust Indicator	$200.00	week	0	$0.00
YSI Meter and Flow Cell	$100.00	day	48	$4,800.00
Solinst Water Level Indicator	$25.00	day	48	$1,200.00
Generator	$60.00	day	24	$1,440.00
Peristaltic Pump	$50.00	day	0	$0.00
Grundfos Pump	$125.00	day	24	$3,000.00
GoMac Helium Meter	$75.00	day	0	$0.00
In-Situ MiniTroll	$225.00	week	4	$900.00
			Total	$11,340.00

SCHEDULE 2.11 (d) 4
SUMMARY
EXPENDABLE SUPPLIES
Pall and Photocircuits Corporation RI/FS
Work Assignment No. D003600-49

ITEM	ESTIMATED QUANTITY	UNITS	UNIT COST	TOTAL BUDGETED COST (COL. 2 X 3)
Polyethylene tubing	4000	feet	$0.25	$1,000.00
			TOTAL	$1,000.00

SCHEDULE 2.11 (d) 5
CONSUMABLE SUPPLIES
SUMMARY
Pall and Photocircuits Corporation RI/FS
Work Assignment No. D003600-49

ITEM	ESTIMATED QUANTITY	UNIT COST	TOTAL BUDGETED COST (COL. 2 X 3)
Miscellaneous Supplies	4	$250.00	$1,000.00
		TOTAL	$1,000.00

Schedule 2.11 (e)
Cost Plus Fixed-Fee Subcontracts

Pall Glen Cove

March 27, 2006

NAME OF SUBCONTRACTOR	SERVICES TO BE PERFORMED	SUBCONTRACT PRICE
YEC, INC.	Surveying & CAD	$29,542.27

A. Direct Salary Costs

Professional Responsibilty Level	Labor Classi-fication	Average Reimbursement Rate ($/Hr.)		Maximum Reimbursement Rate ($/Hr.)		Estimated Number of Hours	Total Estimated Direct Salary Cost ($)
Principal	VIII	2006	63.16	2006	68.23	8	505.28
Senior Geologist/Scientist/ Engineer/ Licensed Surveyor	V	2006	41.77	2006	45.94	90	3,759.30
Staff Geologist/ Scientist/Engineer	IV	2006	36.28	2006	39.93	0	0.00
Staff Geologist/ Scientist/Engineer/CAD Operator	III	2006	31.51	2006	34.96	12	378.12
Senior Technician/Staff Engineer/Scientist/Geologist	II	2006	23.30	2006	26.12	80	1,864.00
Technician/Draftsperson	I	2006	21.11	2006	23.66	160	3,377.60
						Total Direct Salary Costs:	9,884.30

B. Indirect Costs - 117% of direct salary cost

Indirect Costs: 11,564.63

C. Maximum Reimbursement Rates for Direct Non-Salary Costs:

Item	Maxium Reimbursement Rate	Estimated No. of Units	
Mileage	0.45 /mi.	800 miles	356.00
Tolls	25.00 /day	8 trips	200.00
Survey Equipment Rental	65.00 /day	8 days	390.00
CAD Equipment	15.00 /hour	8 hours	180.00
GPS NYS Plane Coordinates			750.00
Aerial Mapping (without countours)			3,000.00
		Total Direct Non Salary Costs:	4,876.00

D. Fixed Fee (15% of Total Direct and Indirect Salary Costs)

Fixed Fee: 3,217.34

5/27/06

SCHEDULE 2.11 (f) 1
UNIT PRICE SUBCONTRACTS
SUMMARY
Pall and Photocircuits CorporationS RI/FS
Work Assignment No. D003600-49

NAME OF SUBCONTRACTOR
Delta Well and Pump

SERVICES TO BE PERFORMED	SUBCONTRACT PRICE	MANAGEMENT FEE
Drilling, Well Installation, Hydropunch Borings	$159,601	$5,586

Item			Maximum Reimbursement Rate	Estimated No. of Units	Total Estimated Costs
1.	A. MOBILIZATION/DEMOBILIZATION,		1		$2,500.00
	B. CONSTRUCTION AND REMOVAL OF DECON PAD	Lump Sum	1	$800.00	$800.00
	C. WELL/BORING SET-UP	Per Well/Boring	29	$300.00	$8,700.00
2	HOLLOW STEM AUGER DRILLING				
	(1) 0-50 FEET IN DEPTH				
	C. 4.25- INCH ID HOLLOW STEM AUGERS	Lineal Foot	1450	$18.00	$26,100.00
	(2) 50-100 FEET IN DEPTH				
	B. 4.25- INCH ID HOLLOW STEM AUGERS	Lineal Foot	1270	$17.00	$21,590.00
	(3) 100-200 FEET IN DEPTH				
	B. 4.25- INCH ID HOLLOW STEM AUGERS	Lineal Foot	740	$20.00	$14,800.00
3	HYDRO PUNCH SAMPLING				
	A 0-50 FEET IN DEPTH	Per Sample	16	$250.00	$4,000.00
	B 50-100 FEET IN DEPTH	Per Sample	14	$275.00	$3,850.00
	C. 100-200 FEET IN DEPTH	Per Sample	18	$300.00	$5,400.00
4	WELL SCREEN - SCHEDULE 40 PVC				
	B 2-INCH ID	Per Foot	290	$6.00	$1,740.00
5	WELL RISER - SCHEDULE 40 PVC				
	B. 2-INCH ID	Per Foot	3170	$3.00	$9,510.00
6	WELL SCREEN SANDPACK MATERIAL	Bag (94 LBS)	174	$10.00	$1,740.00
7	BENTONITE				
	A. PELLETS	5 Gallon Pail	232	$60.00	$13,920.00
	B. POWDER	Bag (50 LBS)	29	$30.00	$870.00
	C. GRANULAR	Bag (50 LBS)	29	$30.00	$870.00
8	GROUT				
	A. PORTLAND CEMENT TYPE-I	Bag (94 LBS)	174	$15.00	$2,610.00
	B. PORTLAND CEMENT TYPE-II	Bag (94 LBS)	174	$25.00	$4,350.00
9	INSTALLATION OF PROTECTIVE CASINGS				
9A	FLUSH MOUNT SURFACE CASING				
	(1) FLUSH MOUNT WITH LOCKING COVER, DRAIN HOLE SET IN A 2'X2' CONCRETE PAD EXTENDING AT LEAST 6 INCHES BELOW GROUND SURFACE				
	A. 4-INCH ID	Per Casing	29	$200.00	$5,800.00
	9 KEYED ALIKE LOCKS	Per Lock	29	$19.00	$551.00
10	CONTAINERIZATION OF DRILLING MATERIAL AND STAGING (ON PALLETS)				
	A. PROVIDE CLEAN EMPTY DOT APPROVE GALLON DRUMS WITH SEALS, BUNGS,	Per 55 Gallon Drum	20	$45.00	$900.00
	B FILLING, MOVING, STAGING 55 GALLON ON-SITE ON PALLETS	Per 55 Gallon Drum	175	$45.00	$7,875.00
	C MOVE FILLED DRUMS TO SECONDARY WITHIN 1 MILE OF DRILL SITE	Per 55 Gallon Drum	175	$45.00	$7,875.00
11	WELL DEVELOPMENT				
	B. PUMP AND SURGE (submersible, centrifu	Per Hour	60	$140.00	$8,400.00
12	ONSITE RESTORATION				
	A TOPSOIL	Cubic Yard	5	$30.00	$150.00
	B GRASS SEEDING	Square Yard	20	$10.00	$200.00
	C ASPHALT PAVING	Bag (60 LBS)	20	$20.00	$400.00
13	SPECIALTY ITEMS (Road and Hydrant Permits)		1	$200.00	$200.00
14	STANDBY TIME	Per Hour	30	$130.00	$3,900.00
15	LABOR CHARGE for services not listed in the Price Quotation Schedule	Per Hour			
		SUBTOTAL			**$159,601.00**
		SUBCONTRACT MANAGEMENT FEE			**$5,586**
		TOTAL			**$165,187.04**

SCHEDULE 2.11 (f) 2
UNIT PRICE SUBCONTRACTS
SUMMARY
Pall and Photocircuits Corporation RI/FS
Work Assignment No. D003600-49

NAME OF SUBCONTRACTOR	SERVICES TO BE PERFORMED	SUBCONTRACT PRICE	MANAGEMENT FEE
Mitkem Corporation	Sample Analysis	$27,060	$947

Item	Method	Maximum Reimbursement Rate	Estimated Units	Total Estimated Cost
Groundwater				
Groundwater Wells	EPA SOW OLM04.2 (6/00 ASP)	$110.00 per sample	160	$17,600.00
Hydropunch Borings	EPA SOW OLM04.2 (6/00 ASP)	$110.00 per sample	38	$4,180.00
Pump Test	EPA SOW OLM04.2 (6/00 ASP)	$110.00 per sample	15	$1,650.00
QA/QC Samples				
Groundwater				
Matrix Spike/Matrix Spike Duplicate/Matrix Spike Blank				
Groundwater	EPA SOW OLM04.2 (6/00 ASP)	$110.00 per sample	33	$3,630.00

SUBTOTAL	**$27,060.00**
SUBCONTRACT MANAGEMENT FEE	**$947**
TOTAL	**$28,007.10**

SCHEDULE 2.11 (f) 4
UNIT PRICE SUBCONTRACTS
SUMMARY
Pall and Photocircuits CorporationS RI/FS
Work Assignment No. D003600-49

NAME OF SUBCONTRACTOR	SERVICES TO BE PERFORMED	SUBCONTRACT PRICE	MANAGEMENT FEE
Nancy Potak	Data Validation	$2,952	$0

Item	Maximum Reimbursement Rate	Estimated No. of Units	Total Estimated Costs
VOCs	$12 Per Sample	246 Samples	$2,952

SUBTOTAL	$2,952
SUBCONTRACT MANAGEMENT FEE	$0
TOTAL	$2,952

SCHEDULE 2.11 (f) 5
UNIT PRICE SUBCONTRACTS
SUMMARY
Pall and Photocircuits CorporationS RI/FS
Work Assignment No. D003600-49

NAME OF SUBCONTRACTOR	SERVICES TO BE PERFORMED	SUBCONTRACT PRICE	MANAGEMENT FEE
Action Trucking, Inc.	**Drill Cuttings Staging and Disposal**	**$10,050**	**$352**

Item	Maximum Reimbursement Rate		Estimated No. of Units	Total Estimated Costs
Provide roll-off, liner	$550	per container	2	$1,100
Rental	$300	per month	2	$600
Transport to disposal facility	$450	per container	2	$900
Disposal characterization	$825	per program	1	$825
Disposal of non-hazardous material	$58	per ton	100	$5,800
Soil characterization	$825	each	1	$825

SUBTOTAL	**$10,050**
SUBCONTRACT MANAGEMENT FEE	**$352**
TOTAL	**$10,402**

UNIT PRICE SUBCONTRACTS
SUMMARY
Pall and Photocircuits Corporation RI/FS
Work Assignment No. D003600-49

NAME OF SUBCONTRACTOR	SERVICES TO BE PERFORMED	SUBCONTRACT PRICE	MANAGEMENT FEE
To be Determined	Utility Survey	$13,600	$476

Item	Maximum Reimbursement Rate	Estimated No. of Units	Total Estimated Costs
Conduct Buried Utility Survey	$2,720 per day	5	$13,600

SUBTOTAL	$13,600
SUBCONTRACT MANAGEMENT FEE	$476
TOTAL	$14,076

UNIT PRICE SUBCONTRACTS
SUMMARY
Pall and Photocircuits CorporationS RI/FS
Work Assignment No. D003600-49

NAME OF SUBCONTRACTOR	SERVICES TO BE PERFORMED	SUBCONTRACT PRICE	MANAGEMENT FEE
Aqua Terra Geophysics	Gamma Logging	$1,800	$0

Item	Maximum Reimbursement Rate	Estimated No. of Units	Total Estimated Costs
Mobilization/demobilization	$300 per event	1	$300
Gamma log wells	$250 each	6	$1,500

SUBTOTAL	$1,800
SUBCONTRACT MANAGEMENT FEE	$0
TOTAL	$1,800

Project Name: Pall and Photcircuits RI/FS
Work Assignment No.: D003600-49
Task No./Name: All Tasks
Complete: 0.00%

SCHEDULE 2.11 (g)
SUMMARY

Date Prepared:
Billing Period:
Invoice No.:

MONTHLY COST CONTROL REPORT
SUMMARY OF FISCAL INFORMATION

Expenditure Category	A Costs Claimed This Period	B Paid To Date	C Total Disallowed To Date	D Total Costs Incurred To Date (A+B+B1)	E Estimated Costs To Completion	F Total Work Assignment Price (A+B+E)	G Approved Budget	H Estimated Under/(Over) (G-F)
1. Direct Salary Costs	0.00	0.00	0.00	0.00	0.00	0.00	$89,117	0.00
2. Indirect	0.00	0.00	0.00	0.00	0.00	0.00	$141,072	0.00
3. Subtotal Direct Salary Costs and Indirect Costs	0.00	0.00	0.00	0.00	0.00	0.00	$230,189	0.00
4. Travel	0.00	0.00	0.00	0.00	0.00	0.00	$3,268	0.00
5. Other Non-Salary Costs	0.00	0.00	0.00	0.00	0.00	0.00	$16,214	0.00
6. Subtotal Direct Non-Salary Costs	0.00	0.00	0.00	0.00	0.00	0.00	$19,482	0.00
7. Subcontractors	0.00	0.00	0.00	0.00	0.00	0.00	$244,605	0.00
7a. Management Fee	0.00	0.00	0.00	0.00	0.00	0.00	$6,885	0.00
8. Total Work Assignment Cost	0.00	0.00	0.00	0.00	0.00	0.00	$501,161	0.00
9. Fixed Fee	0.00	0.00	0.00	0.00	0.00	0.00	$19,336	0.00
10. Total Work Assignment Price	0.00	0.00	0.00	0.00	0.00	0.00	$520,497	0.00

Project Manager (Engineer) _____ Date _____

Work Assignment No.: D003600-49
Task No./Name: All Tasks
Task No./Name: 1/Work Plan Development
Complete: 0.00%

SCHEDULE 2.11 (g)

Date Prepared:
Billing Period:
Invoice No.:

MONTHLY COST CONTROL REPORT
SUMMARY OF FISCAL INFORMATION

Expenditure Category	A Costs Claimed This Period	B Paid To Date	C Total Disallowed To Date	D Total Costs Incurred To Date (A+B+B1)	E Estimated Costs To Completion	F Total Work Assignment Price (A+B+E)	G Approved Budget	H Estimated Under/(Over) (G-F)
1. Direct Salary Costs	0.00	0.00	0.00	0.00	0.00	0.00	$5,104	0.00
2. Indirect	0.00	0.00	0.00	0.00	0.00	0.00	$8,080	0.00
3. Subtotal Direct Salary Costs and Indirect Costs	0.00	0.00	0.00	0.00	0.00	0.00	$13,184	0.00
4. Travel	0.00	0.00	0.00	0.00	0.00	0.00	$50	0.00
5. Other Non-Salary Costs	0.00	0.00	0.00	0.00	0.00	0.00	$50	0.00
6. Subtotal Direct Non-Salary Costs	0.00	0.00	0.00	0.00	0.00	0.00	$100	0.00
7. Subcontractors	0.00	0.00	0.00	0.00	0.00	0.00	$0	0.00
7a. Management Fee	0.00	0.00	0.00	0.00	0.00	0.00	$0	0.00
8. Total Work Assignment Cost	0.00	0.00	0.00	0.00	0.00	0.00	$13,284	0.00
9. Fixed Fee	0.00	0.00	0.00	0.00	0.00	0.00	$1,107	0.00
10. Total Work Assignment Price	0.00	0.00	0.00	0.00	0.00	0.00	$14,392	0.00

Project Manager (Engineer) _____ Date _____

Work Assignment No.: D003600-49
Task No./Name: All Tasks
Task No./Name: 2/Remedial Investigation
Complete: 0.00%

SCHEDULE 2.11 (g)

Date Prepared:
Billing Period:
Invoice No.:

MONTHLY COST CONTROL REPORT
SUMMARY OF FISCAL INFORMATION

Expenditure Category	A Costs Claimed This Period	B Paid To Date	C Total Disallowed To Date	D Total Costs Incurred To Date (A+B+B1)	E Estimated Costs To Completion	F Total Work Assignment Price (A+B+E)	G Approved Budget	H Estimated Under/(Over) (G-F)
1. Direct Salary Costs	0.00	0.00	0.00	0.00	0.00	0.00	$44,755	0.00
2. Indirect	0.00	0.00	0.00	0.00	0.00	0.00	$70,847	0.00
3. Subtotal Direct Salary Costs and Indirect Costs	0.00	0.00	0.00	0.00	0.00	0.00	$115,603	0.00
4. Travel	0.00	0.00	0.00	0.00	0.00	0.00	$3,168	0.00
5. Other Non-Salary Costs	0.00	0.00	0.00	0.00	0.00	0.00	$15,964	0.00
6. Subtotal Direct Non-Salary Costs	0.00	0.00	0.00	0.00	0.00	0.00	$19,132	0.00
7. Subcontractors	0.00	0.00	0.00	0.00	0.00	0.00	$219,155	0.00
7a. Management Fee	0.00	0.00	0.00	0.00	0.00	0.00	$6,533	0.00
8. Total Work Assignment Cost	0.00	0.00	0.00	0.00	0.00	0.00	$360,423	0.00
9. Fixed Fee	0.00	0.00	0.00	0.00	0.00	0.00	$9,711	0.00
10. Total Work Assignment Price	0.00	0.00	0.00	0.00	0.00	0.00	$370,133	0.00

Project Manager (Engineer) _____ Date _____

Work Assignment No.: D003600-49
Task No./Name: All Tasks
Task No./Name: 3/RI Report
Complete: 0.00%

SCHEDULE 2.11 (g)

Date Prepared:
Billing Period:
Invoice No.:

MONTHLY COST CONTROL REPORT
SUMMARY OF FISCAL INFORMATION

Expenditure Category	A Costs Claimed This Period	B Paid To Date	C Total Disallowed To Date	D Total Costs Incurred To Date (A+B+B1)	E Estimated Costs To Completion	F Total Work Assignment Price (A+B+E)	G Approved Budget	H Estimated Under/(Over) (G-F)
1. Direct Salary Costs	0.00	0.00	0.00	0.00	0.00	0.00	$22,742	0.00
2. Indirect	0.00	0.00	0.00	0.00	0.00	0.00	$36,000	0.00
3. Subtotal Direct Salary Costs and Indirect Costs	0.00	0.00	0.00	0.00	0.00	0.00	$58,742	0.00
4. Travel	0.00	0.00	0.00	0.00	0.00	0.00	$0	0.00
5. Other Non-Salary Costs	0.00	0.00	0.00	0.00	0.00	0.00	$150	0.00
6. Subtotal Direct Non-Salary Costs	0.00	0.00	0.00	0.00	0.00	0.00	$150	0.00
7. Subcontractors	0.00	0.00	0.00	0.00	0.00	0.00	$10,050	0.00
7a. Management Fee	0.00	0.00	0.00	0.00	0.00	0.00	$352	0.00
8. Total Work Assignment Cost	0.00	0.00	0.00	0.00	0.00	0.00	$69,294	0.00
9. Fixed Fee	0.00	0.00	0.00	0.00	0.00	0.00	$4,934	0.00
10. Total Work Assignment Price	0.00	0.00	0.00	0.00	0.00	0.00	$74,228	0.00

Project Manager (Engineer) _____ Date _____

Work Assignment No.: D003600-49
Task No./Name: All Tasks
Task No./Name: 4/FS Report
Complete: 0.00%

SCHEDULE 2.11 (g)

Date Prepared:
Billing Period:
Invoice No.:

MONTHLY COST CONTROL REPORT
SUMMARY OF FISCAL INFORMATION

Expenditure Category	A Costs Claimed This Period	B Paid To Date	C Total Disallowed To Date	D Total Costs Incurred To Date (A+B+B1)	E Estimated Costs To Completion	F Total Work Assignment Price (A+B+E)	G Approved Budget	H Estimated Under/(Over) (G-F)
1. Direct Salary Costs	0.00	0.00	0.00	0.00	0.00	0.00	$11,360	0.00
2. Indirect	0.00	0.00	0.00	0.00	0.00	0.00	$17,983	0.00
3. Subtotal Direct Salary Costs and Indirect Costs	0.00	0.00	0.00	0.00	0.00	0.00	$29,344	0.00
4. Travel	0.00	0.00	0.00	0.00	0.00	0.00	$25	0.00
5. Other Non-Salary Costs	0.00	0.00	0.00	0.00	0.00	0.00	$50	0.00
6. Subtotal Direct Non-Salary Costs	0.00	0.00	0.00	0.00	0.00	0.00	$75	0.00
7. Subcontractors	0.00	0.00	0.00	0.00	0.00	0.00	$0	0.00
7a. Management Fee	0.00	0.00	0.00	0.00	0.00	0.00	$352	0.00
8. Total Work Assignment Cost	0.00	0.00	0.00	0.00	0.00	0.00	$29,770	0.00
9. Fixed Fee	0.00	0.00	0.00	0.00	0.00	0.00	$2,465	0.00
10. Total Work Assignment Price	0.00	0.00	0.00	0.00	0.00	0.00	$32,235	0.00

Project Manager (Engineer) _____ Date _____

Work Assignment No.: D003600-49
Task No./Name: All Tasks
Task No./Name: 5/Meetings
Complete: 0.00%

SCHEDULE 2.11 (g)

Date Prepared:
Billing Period:
Invoice No.:

MONTHLY COST CONTROL REPORT
SUMMARY OF FISCAL INFORMATION

Expenditure Category	A Costs Claimed This Period	B Paid To Date	C Total Disallowed To Date	D Total Costs Incurred To Date (A+B+B1)	E Estimated Costs To Completion	F Total Work Assignment Price (A+B+E)	G Approved Budget	H Estimated Under/(Over) (G-F)
1. Direct Salary Costs	0.00	0.00	0.00	0.00	0.00	0.00	$5,155	0.00
2. Indirect	0.00	0.00	0.00	0.00	0.00	0.00	$8,161	0.00
3. Subtotal Direct Salary Costs and Indirect Costs	0.00	0.00	0.00	0.00	0.00	0.00	$13,317	0.00
4. Travel	0.00	0.00	0.00	0.00	0.00	0.00	$25	0.00
5. Other Non-Salary Costs	0.00	0.00	0.00	0.00	0.00	0.00	$0	0.00
6. Subtotal Direct Non-Salary Costs	0.00	0.00	0.00	0.00	0.00	0.00	$25	0.00
7. Subcontractors	0.00	0.00	0.00	0.00	0.00	0.00	$0	0.00
7a. Management Fee	0.00	0.00	0.00	0.00	0.00	0.00	$0	0.00
8. Total Work Assignment Cost	0.00	0.00	0.00	0.00	0.00	0.00	$13,342	0.00
9. Fixed Fee	0.00	0.00	0.00	0.00	0.00	0.00	$1,119	0.00
10. Total Work Assignment Price	0.00	0.00	0.00	0.00	0.00	0.00	$14,460	0.00

Project Manager (Engineer) _____ Date _____

SCHEDULE 2.11 (g) SUPPLEMENTAL
MONTHLY COST CONTROL REPORT
SUBCONTRACTS

Subcontract Name	Subcontract Costs Claimed This Application Incl. Resubmittals	Subcontract Costs Approved for Payment on Previous Application	Total Subcontract costs to Date (A plus B)	Subcontract Approved Budget	Management Fee Budget	Management Fee Paid	Total Costs To Date
1. Delta Well & Pump Co. Inc.	$0.00	$0.00	$0.00	$159,601	$5,586		
2. Mitkem Corporation	$0.00	$0.00	$0.00	$27,060	$947		
3. YEC, Inc.	$0.00	$0.00	$0.00	$29,542	$0		
4. To be determined	$0.00	$0.00	$0.00	$13,600	$476		
5. Aqua Terra Geophysics	$0.00	$0.00	$0.00	$1,800	$0		
6. Nancy Potak	$0.00	$0.00	$0.00	$2,952	$0		
7. Action Trucking, Inc.	$0.00	$0.00	$0.00	$10,050	$0		
Total				$244,605	$7,009		

Schedule 2.11 (h)

Date Prepared:
Billing Period
Invoice No.

Work Assignment No.: D003600-49
Task No./Name: All Tasks

Monthly Cost Control Report
Summary of Labor Hours
Expended to Date/Estimated To Completion

NSPE Labor Classification	IX EXP/EST	VIII EXP/EST	VII EXP/EST	VI EXP/EST	V EXP/EST	IV EXP/EST	III EXP/EST	I & II EXP/EST	ADMIN/ SUPPORT	TOTAL NUMBER OF DIRECT LABOR HOURS EXP/EST
Task 1	0/ 0	0/ 4	0/ 0	0/ 18	0/ 69	0/ 0	0/ 12	0/ 39	0/ 8	0/ 150
Task 2	0/ 0	0/ 24	0/ 0	0/ 4	0/ 156	0/ 208	0/ 1110	0/ 338	0/ 4	0/ 1844
Task 3	0/ 0	0/ 18	0/ 0	0/ 16	0/ 282	0/ 120	0/ 120	0/ 164	0/ 8	0/ 728
Task 4	0/ 0	0/ 12	0/ 0	0/ 8	0/ 220	0/ 16	0/ 12	0/ 62	0/ 2	0/ 332
Task 5	0/ 0	0/ 12	0/ 0	0/ 4	0/ 80	0/ 16	0/ 16	0/ 34	0/ 0	0/ 162
Total Hours	0/ 0	0/ 70	0/ 0	0/ 50	0/ 807	0/ 360	0/ 1270	0/ 637	0/ 22	0/ 3216
TOTAL HOURS	0/ 0	0/ 70	0/ 0	0/ 50	0/ 807	0/ 360	0/ 1270	0/ 637	0/ 22	0/ 3216

MBE/WBE
UTILIZATION PLAN
SUMMARY
Pall and Photocircuits Corporations RI/FS
Work Assignment No. D003600-49

Areas to be Subcontracted	Subcontractor Name	MBE/WBE	Total Subcontract Value	% MBE/WBE Utilization
1. Sample Analysis	Mitkem Corporation	MBE	$27,060	5.2%
2. Land Surveying	YEC, Inc.	MBE	$29,542	5.7%
3. Data Validation	Nancy Potak	WBE	$2,952	0.6%
4. Drilling Services	Delta Well & Pump Co., Inc.	WBE	$159,601	30.7%
Total MBE Utilization	MBE Subcontract Value / Total Contract Value	=	$56,602 / $520,497	10.9%
Total WBE Utilization	WBE Subcontract Value / Total Contract Value	=	$162,553 / $520,497	31.2%
Total MBE/WBE Utilization	MBE/WBE Subcontract Value / Total Contract Value	=	$219,155 / $520,497	42.1%

Section 9

9.0 REFERENCES

Sea Cliff Industrial Park And General

Nassau County Department of Public Works and Nassau County Department of Health, *Investigation of Contaminated Aquifer Segment, City of Glen Cove, Nassau County, New York,* 1990.

H2M Group, *Source Area Investigation, Sea Cliff Industrial Area, Glen Cove, New York,* 1992.

Pall Corporation

Enviro-Sciences, Inc., *Phase II Remedial Investigation Report, Pall Corporation 30 Sea Cliff Avenue, Glen Cove, New York*, 2000.

Enviro-Sciences, Inc., *Feasibility Study Report, Pall Corporation, 30 Sea Cliff Avenue, Glen Cove, New York,* 2001.

GT Engineering, *Groundwater Sampling and Analysis Report, Pall Corporation, 30 Sea Cliff Avenue, Glen Cove, New York,* 1995.

Photocircuits Corporation

McLaren/Hart Environmental Engineering Corporation, *Results of Preliminary Site Investigation, 31 and 45A Sea Cliff Properties,* 1996.

McLaren/Hart, Environmental Engineering Corporation, *Remedial Investigation Report, 31 and 45A Sea Cliff Avenue Sites, Photocircuits Corporation, Glen Cove. New York,* 1998.

Barton and Loguidice, P.C., *Remedial Design, Groundwater Hydraulic Control System, Photocircuits Sites, 31 Sea Cliff Avenue,* 2002.

Barton and Loguidice, P.C., *Fourth Quarter 2003 Progress Report, Photocircuits and Former Pass and Seymour Sites, 31 and 45 Sea Cliff Avenue,* 2004.

NUS, *"Site Data and File Review,"* circa 1989.

Terra Systems Incorporated, *December 2003 Status Report, Photocircuits Accelerated Anaerobic Bioremediation Project,* 2003.

Carney Street Well Field

Nassau County Department of Health, *"Water Quality Database for Well #21, City of Glen Cove,* 2006.

Appendix A

APPENDIX A

SUMMARY OF LAND USE MAPS AND AERIAL PHOTOGRAPHS REVIEW

The EDR Aerial Photo Decade Package

31 Sea Cliff Avenue
31 Sea Cliff Avenue
Glen Cove, NY 11542

Inquiry Number: 1608471.6

February 07, 2006

EDR® Environmental Data Resources Inc

The Standard in Environmental Risk Management Information

440 Wheelers Farms Road
Milford, Connecticut 06461

Nationwide Customer Service

Telephone: 1-800-352-0050
Fax: 1-800-231-6802
Internet: www.edrnet.com

Date EDR Searched Historical Sources:

Aerial Photography February 07, 2006

Target Property:

31 Sea Cliff Avenue
Glen Cove, NY 11542

Year	*Scale*	*Details*	*Source*
1953	Aerial Photograph. Scale: 1"=750'	Panel #: 2440073-G5/Flight Date: December 02, 1953	EDR
1966	Aerial Photograph. Scale: 1"=750'	Panel #: 2440073-G5/Flight Date: February 23, 1966	EDR
1976	Aerial Photograph. Scale: 1"=750'	Panel #: 2440073-G5/Flight Date: March 29, 1976	EDR
1980	Aerial Photograph. Scale: 1"=750'	Panel #: 2440073-G5/Flight Date: April 06, 1980	EDR
1994	Aerial Photograph. Scale: 1"=833'	Panel #: 2440073-G5/Flight Date: April 04, 1994	EDR


INQUIRY #: 1608471.6
YEAR: 1953
= 750'
N

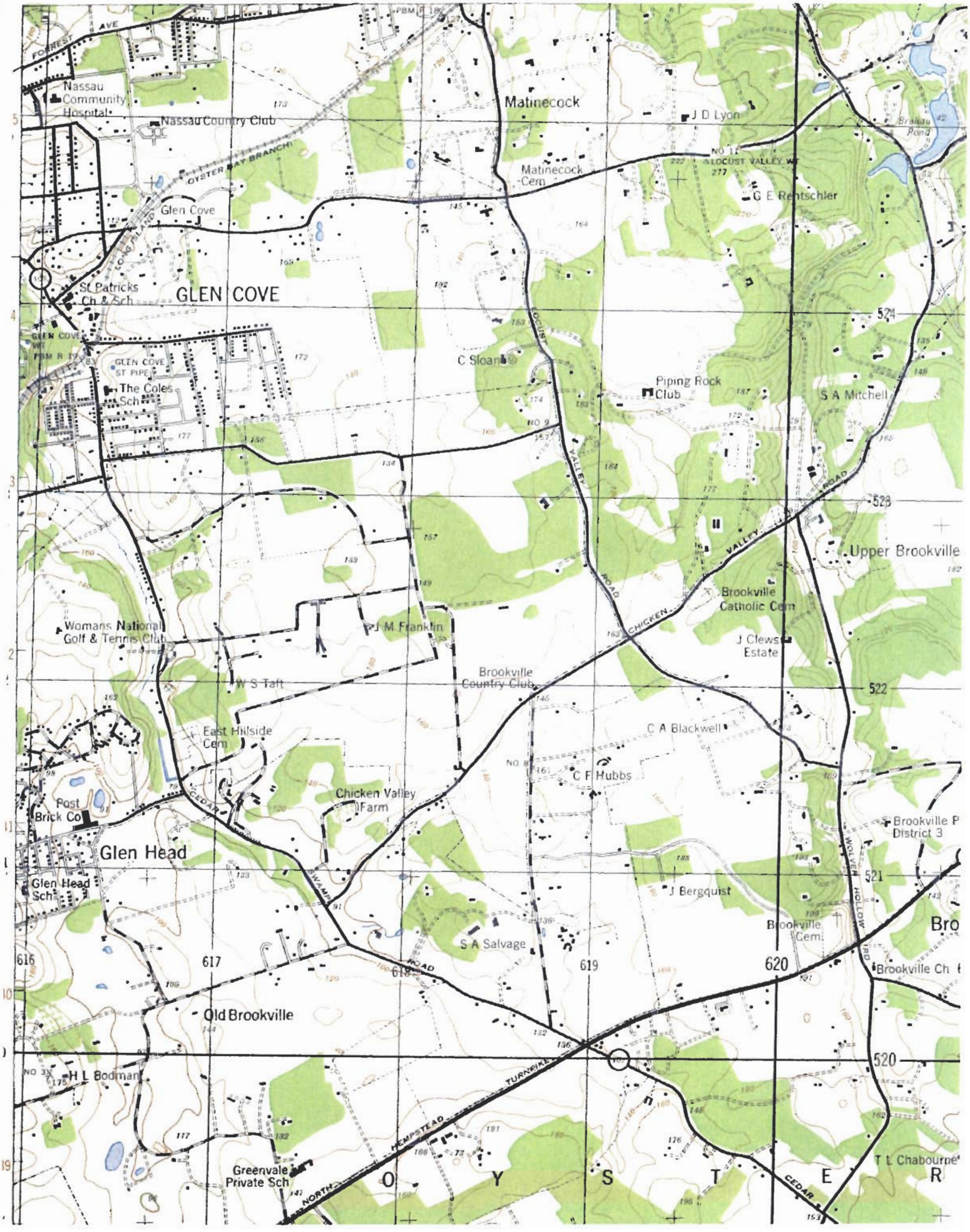

INQUIRY #: 1608471.6
YEAR: 1966
= 750'
N


INQUIRY #: 1608471.6
YEAR: 1976
= 750'
N


INQUIRY #: 1608471.6
YEAR: 1980
= 750'
N

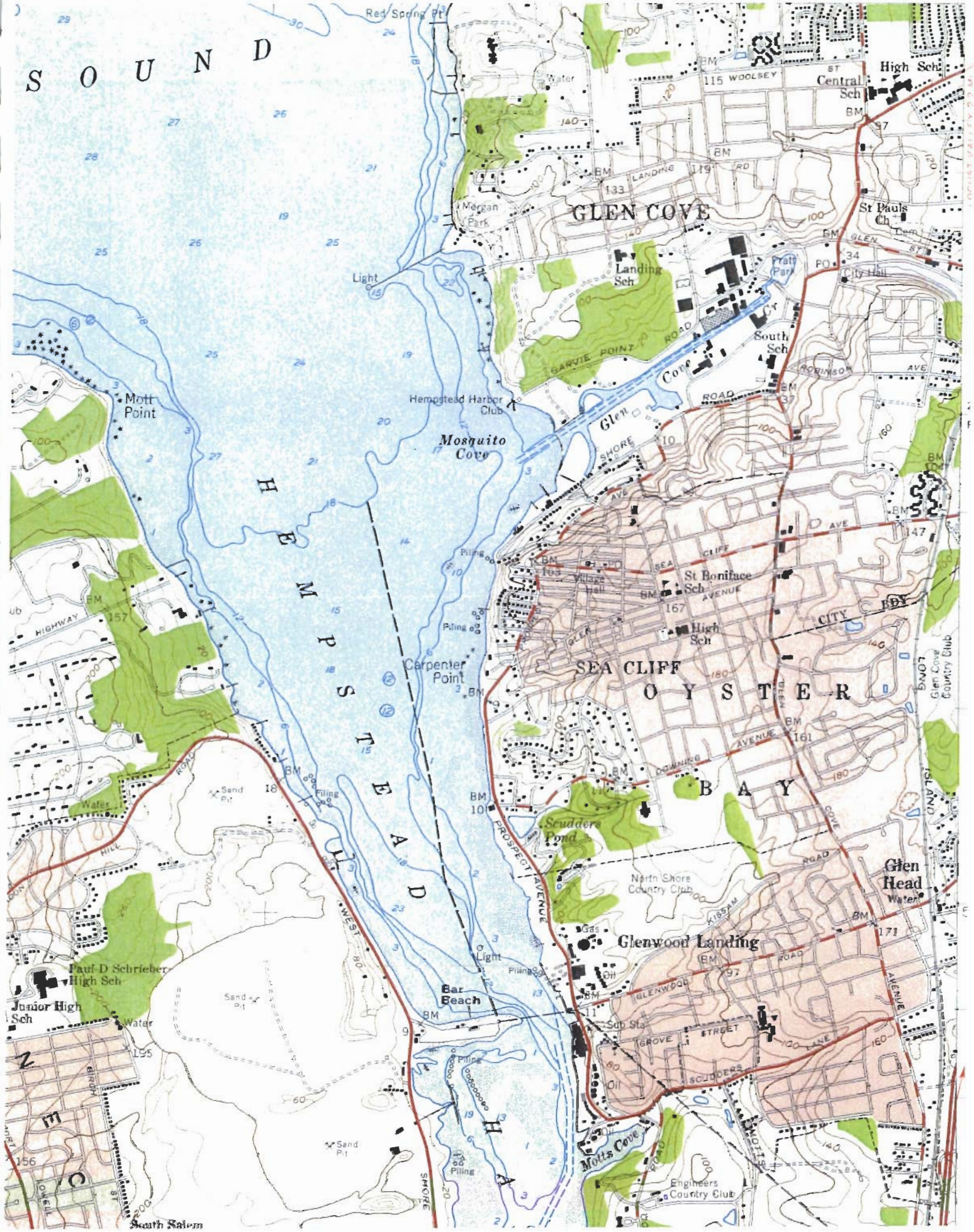

INQUIRY #: 1608471.6
YEAR: 1994
= 833'
N

N ^ EDR INQUIRY# 1608471.4 TARGET QUAD: CAMPMILLS YEAR: 1918 Series: 15' Scale: 1:62,500

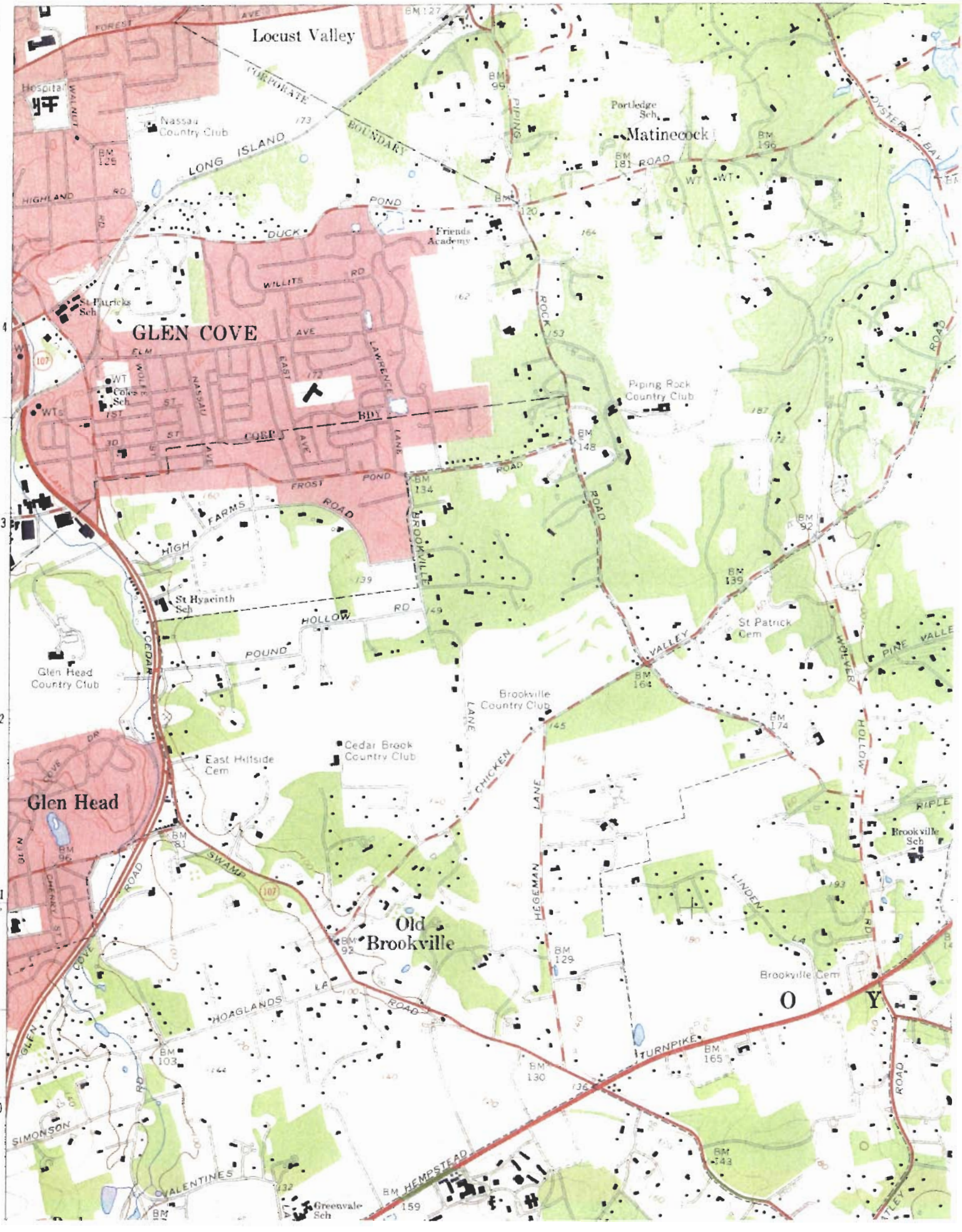


N ^ EDR INQUIRY# 1608471.4 TARGET QUAD: HICKSVILLE YEAR: 1947 Series: 7.5' Scale: 1:25,000

N ^ EDR INQUIRY# 1608471.4 ADJOINING QUAD: SEACLIFF YEAR: 1947 Series: 7.5' Scale: 1:25,000

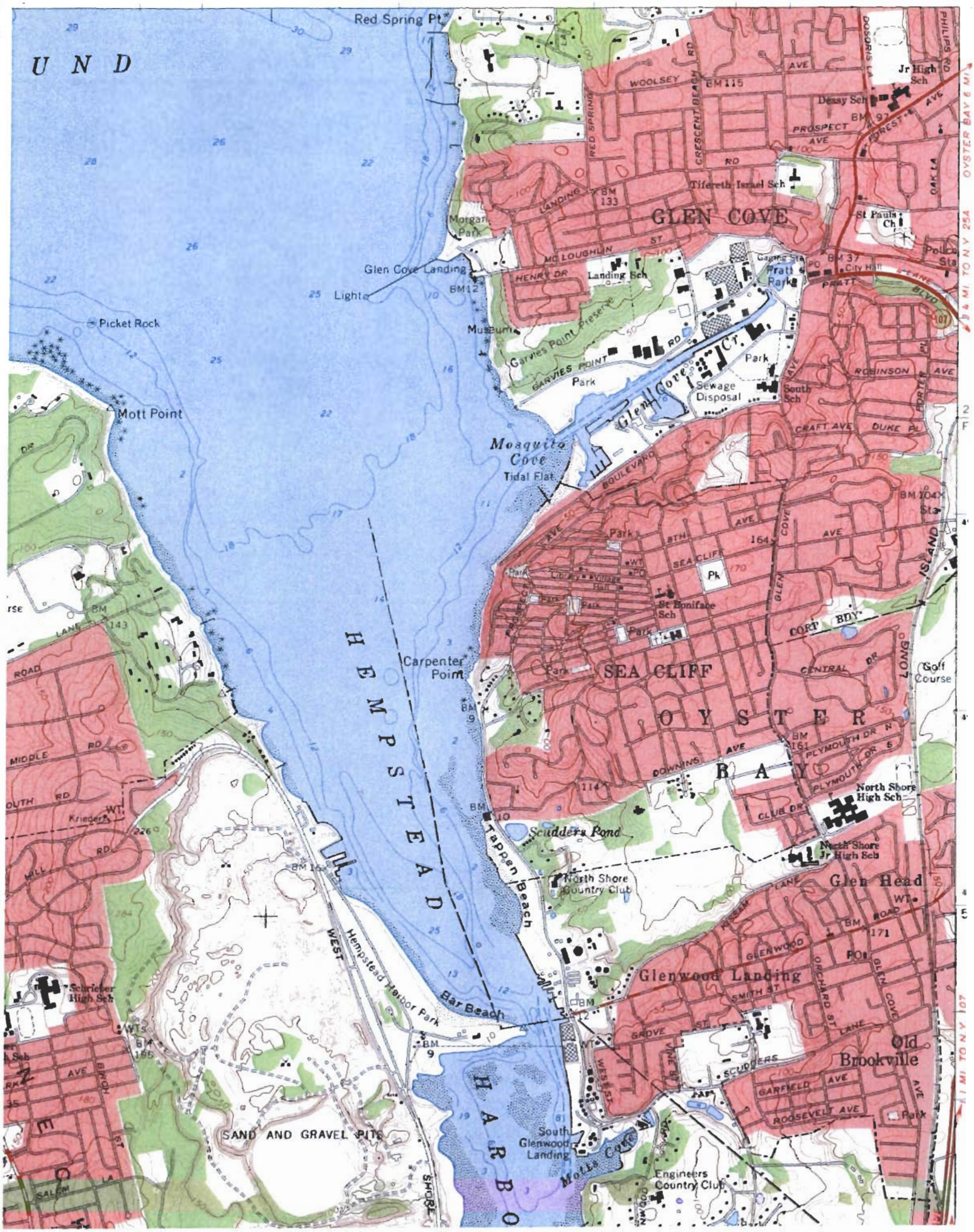


N ^ EDR INQUIRY# 1608471.4 ADJOINING QUAD: SEACLIFF YEAR: 1954 Series: 7.5' Scale: 1:24,000

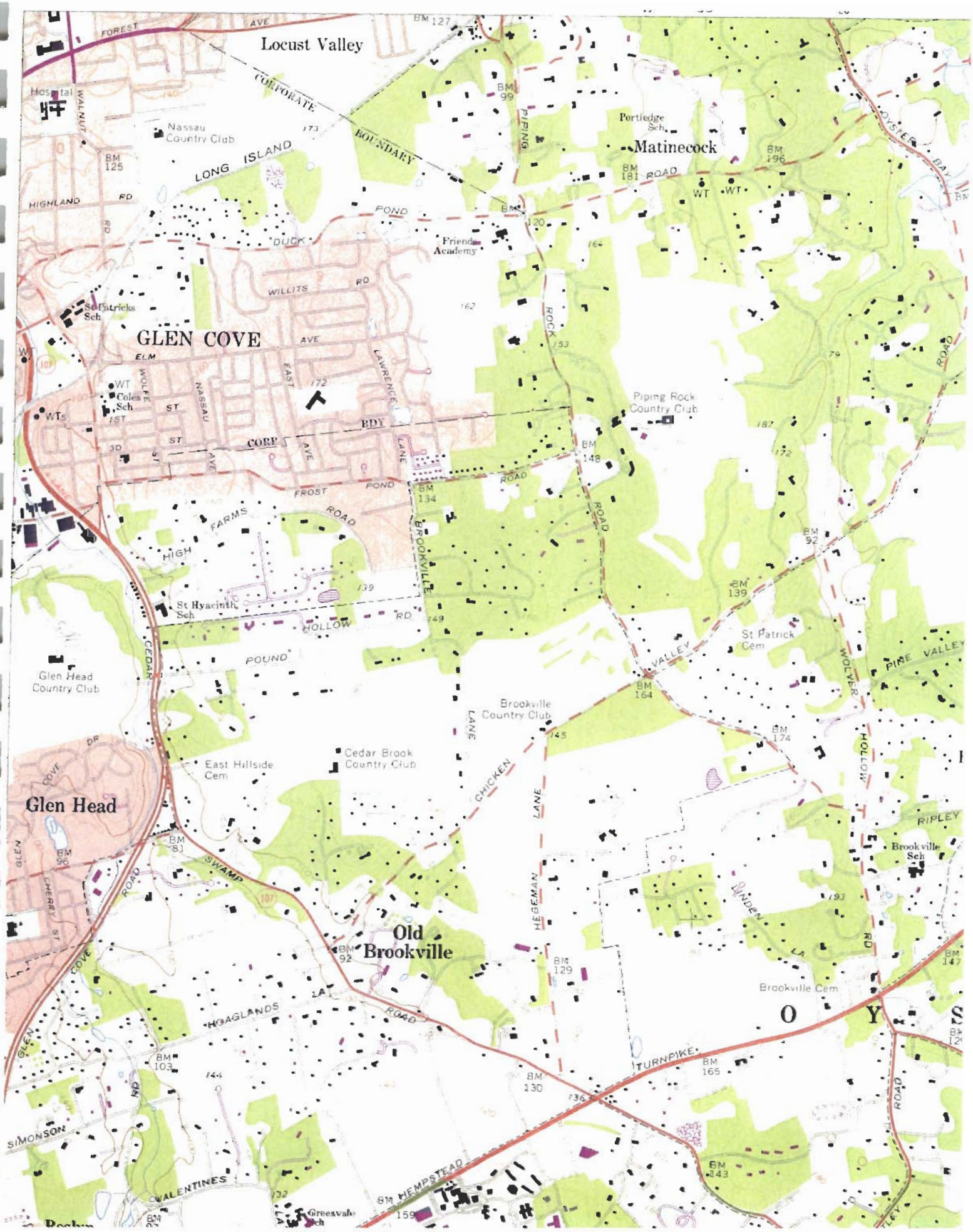


N ^ EDR INQUIRY# 1608471.4 TARGET QUAD: HICKSVILLE YEAR: 1967 Series: 7.5' Scale: 1:24,000

N ^ EDR INQUIRY# 1608471.4 ADJOINING QUAD: SEACLIFF PhotoRevised: 1968-1979 Series: 7.5' Scale: 1:24,000

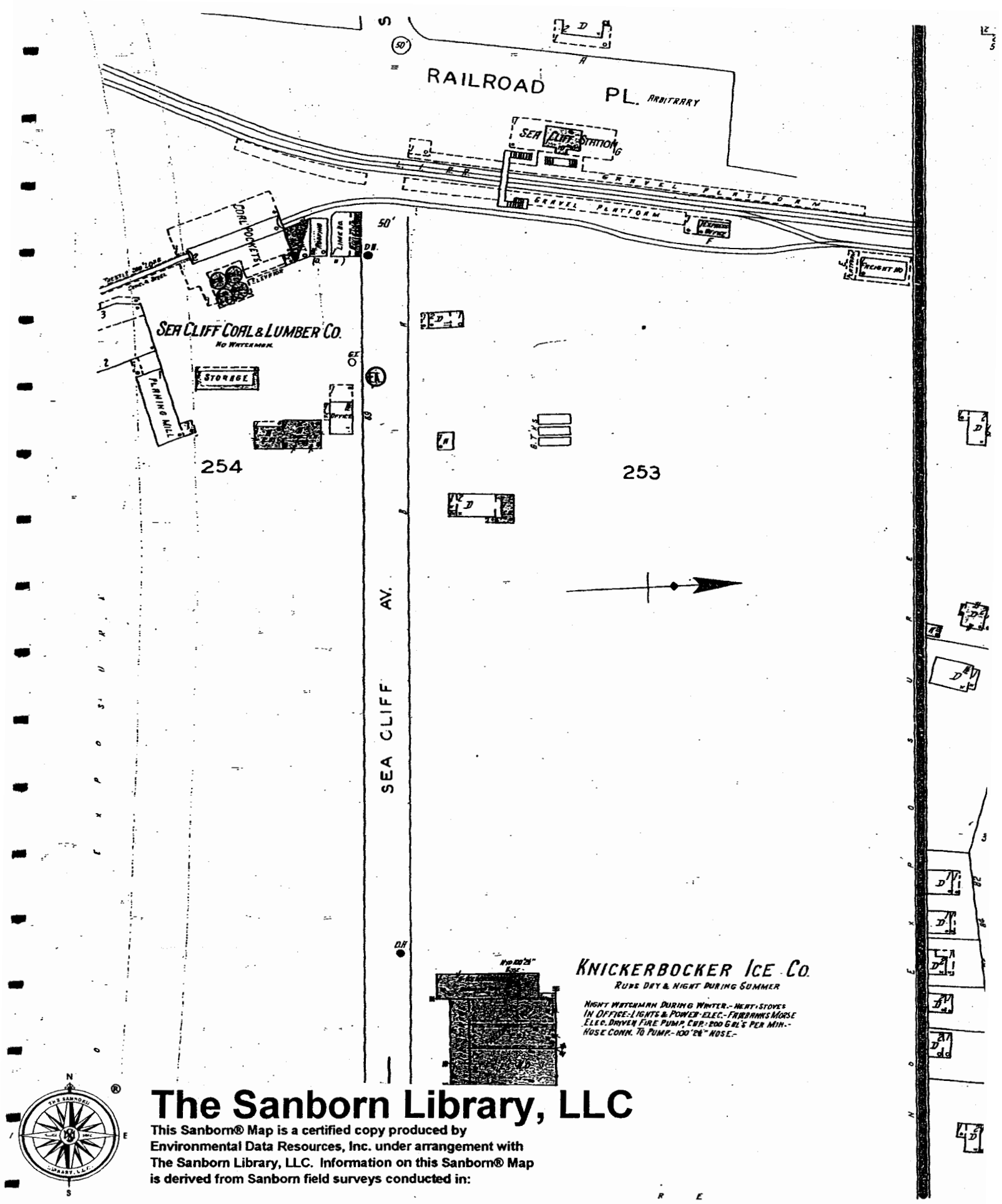


N ^ EDR INQUIRY# 1608471.4 ADJOINING QUAD: SEACLIFF YEAR: 1968 Series: 7.5' Scale: 1:24,000



N ^ EDR INQUIRY# 1608471.4 TARGET QUAD: HICKSVILLE PhotoRevised: 1967-1979 Series: 7.5' Scale: 1:24,000

N ^ EDR INQUIRY# 1608471.4 TARGET QUAD: OYSTERBAY YEAR: 1900 Series: 15' Scale: 1:62,500



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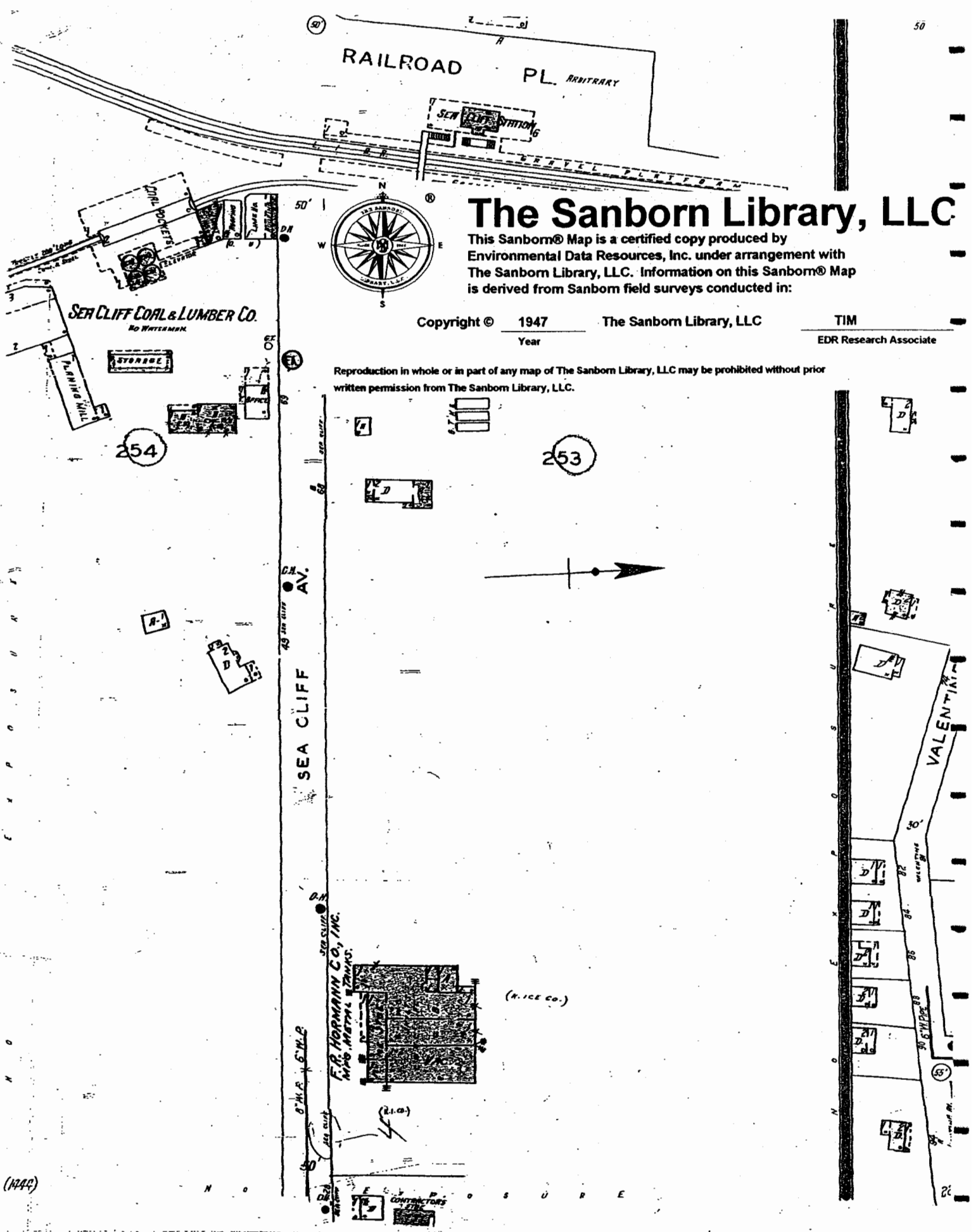

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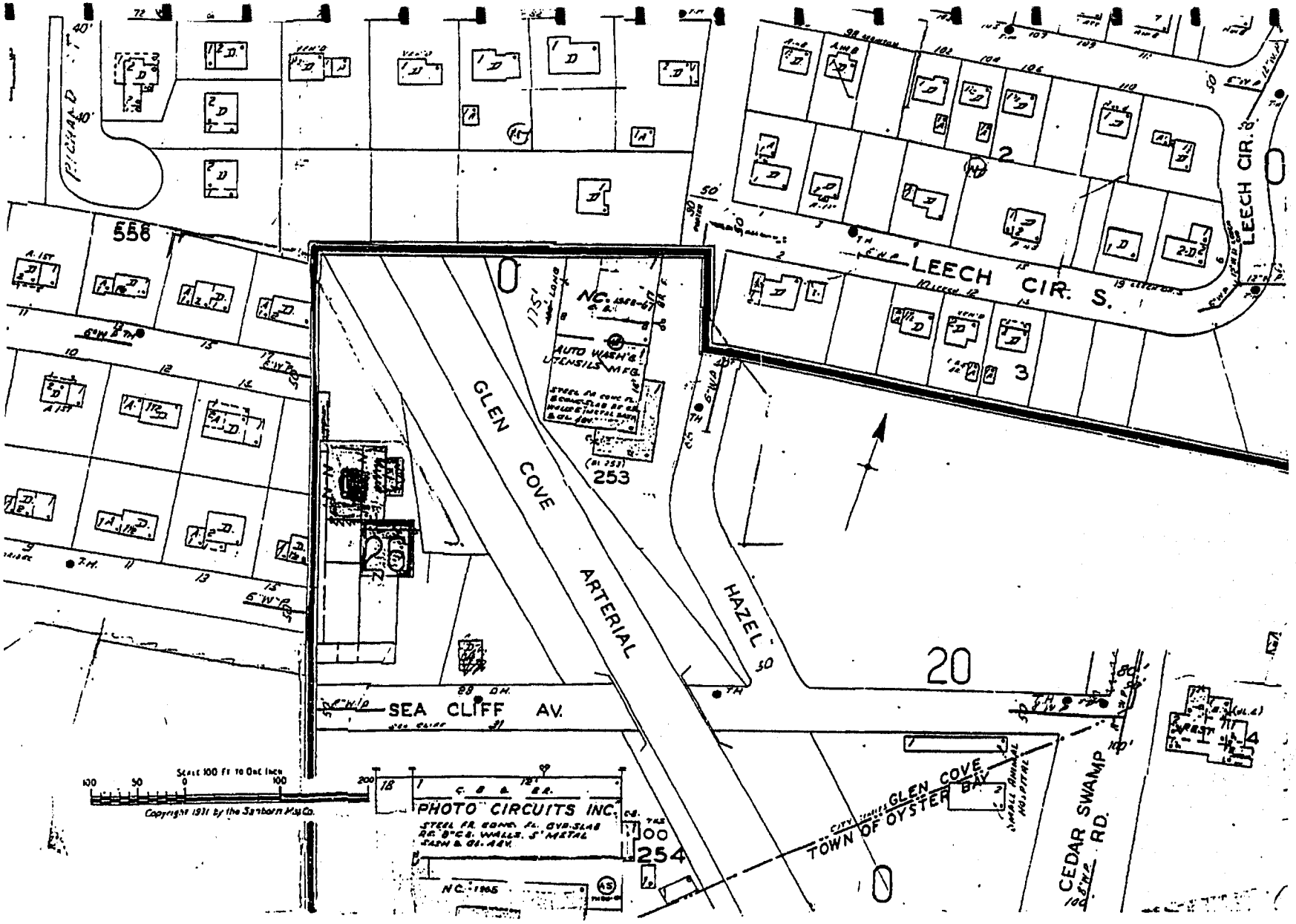

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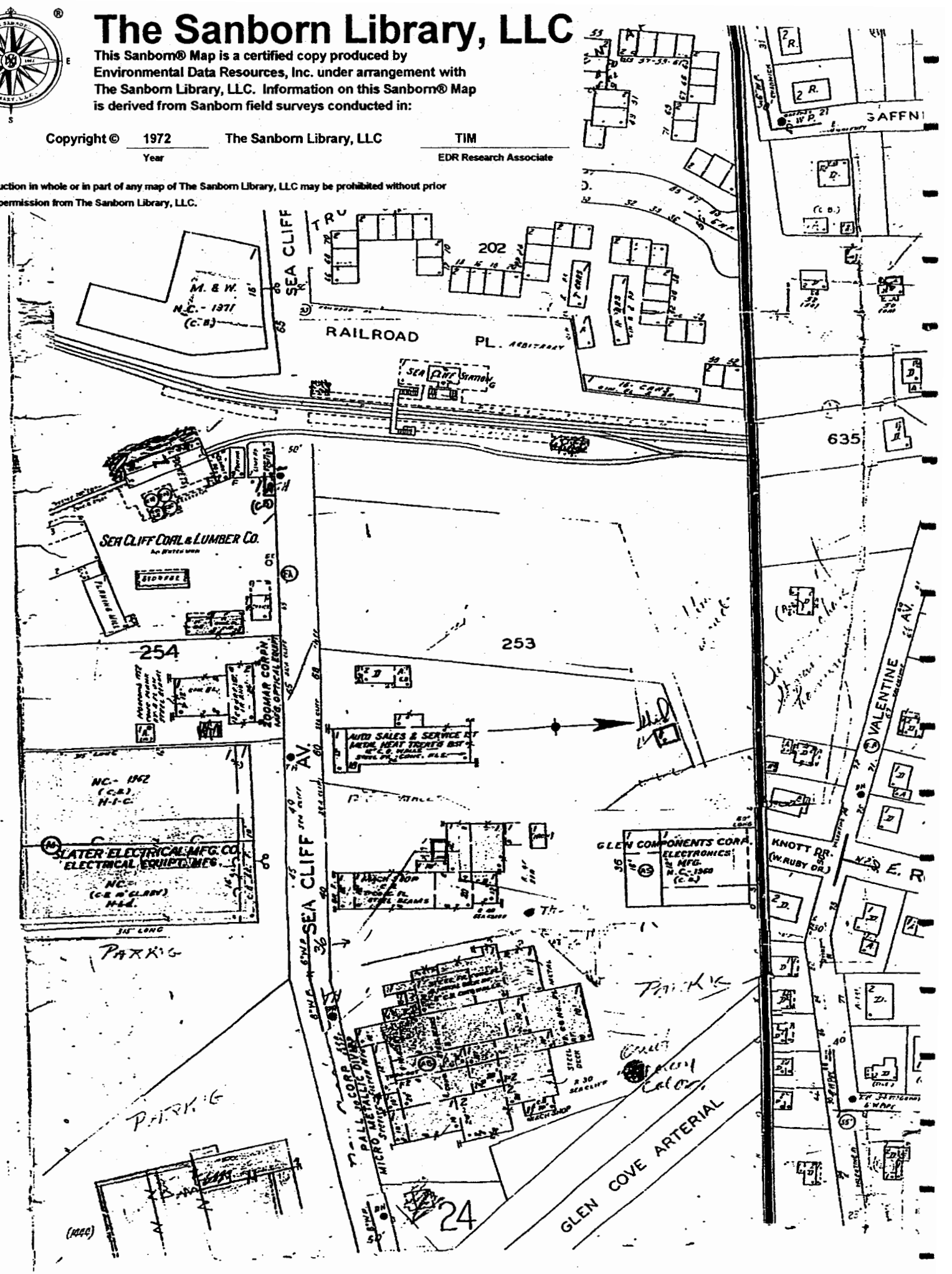


Appendix B

APPENDIX B

SUMMARY OF SITE INVESTIGATIONS AND FINDINGS

PALL and PHOTOCIRCUITS CORPORATIONS RI/FS
SUMMARY ON PREVIOUS INVESTIGATIONS FINDINGS[1]

REGIONAL

1977 - *Supply wells at Carney Street Well Field were shut down due to the detections of chlorinated VOCs*

1990 - *Investigation of Contaminated Aquifer Segment conducted for the Sea Cliff Industrial Area (SCIA) by Nassau County Department of Public Works and Nassau County Department of Health.*

Scope

- Reviewed existing files and studies.
- Installed 21 groundwater monitoring wells.

Findings

- Sediments under the SCIA sere comprised silty clayey sand to sand units of the Upper Glacial aquifer and defined at its base by the Port Washington Confining Unit.
- PCE, TCE and TCA were identified as chlorinated volatile organic compound (VOC) contaminants-of-concern with plumes extending vertically from the water table to the base of the Upper Glacial aquifer.
- Contaminants were spread vertically downward primary by localized industrial pumping within the SCIA and subsequently reintroduced back into the water table aquifer through diffusion wells.

1992 - *Source Area Investigation for the Sea Cliff Industrial Area conducted by H2M*

Scope

- Conducted soil gas survey, surface soil sampling, soil borings and monitoring well installations.
- Investigated five properties (Pall, Pass and Seymour/Slater Electric, August Thomsen, Man Products and Carney Street Well Field) focusing on VOC impacts in SCIA.

[1] Abbreviations defined at end of document

Findings

- VOCs, primarily TCE and PCE, were found at all five properties in soil and groundwater samples, including shallow groundwater above supply wells in Carney Street Well Field (CSWF).

  - Elevated VOCs in soil gas indicated multiple source areas with potential to contaminate CSWF.

  - Interim Remedial Measure of soil vapor extraction and air sparging was conducted at Photocircuits – Tank Farm Area, and at Pass and Seymour - Building 7 Area.

PHOTOCIRCUITS (31 Sea Cliff Avenue) AND PASS AND SEYMOUR (45A Sea Cliff Avenue) PROPERTIES

1996 - *Preliminary Site Assessment conducted at 31 and 45A Sea Cliff Avenue Properties by McLaren/Hart Environmental Engineering Corporation*

Scope

- Monitoring well development, and soil and groundwater sampling.

Findings

- At 31 Sea Cliff Avenue, soil exceedances of cleanup objectives were identified at a drum storage and tank field area (TCA, DCE and DCA) and at 45A Sea Cliff Avenue in a storage tank area (PCE).

- At 31 Sea Cliff Avenue, groundwater was contaminated by chlorinated VOCs at MW-7 in tank farm area, MW-10 at northwest property corner and at center of downgradient boundary, and by toluene and xylenes east of Building 2.

- At 45A Sea Cliff Avenue, groundwater was contaminated by PCE in MW-1S southeast of main building, and by TCE and PCE in MW-3S north of main building.

1998 - *Remedial Investigation conducted at 31 and 45A Sea Cliff Avenue Sites by McLaren/Hart Environmental Engineering Corporation*

Scope

- At 31 Sea Cliff Avenue, soil sampling, and Geoprobe and well sampling were conducted at the Solvent Tank Farm.

- At the 45A Site, soil sampling, and Geoprobe and well groundwater sampling were conducted at the former aboveground storage tank and one well was installed.

Findings

- PCE was detected as high as 2,500 ug/kg in the soil.
- Soil PID screening reading were as high as 2,100 parts per million (ppm).
- Groundwater contamination was primarily comprised of PCE, TCE and TCA with other compounds likely to have been degradation products.
- At 31 Sea Cliff Avenue, total VOC concentrations along the downgradient boundary were low (between 1 to 15 ug/l) with localized contamination about MW-7 near the drum storage area and tank farm. TVOC concentrations as high as 8,300 ug/l were present in shallow groundwater with sharp decrease to north.
- At 45A Sea Cliff Avenue, the highest TVOC concentrations (up to 32,000 ug/l) were detected at Building 7.

2002 - *Remedial Design of Groundwater Hydraulic Control System for Photocircuits Site at 31 Sea Cliff Avenue provided by Barton and Loguidice, P.C*

Scope

- Pump test was conducted and a design provided for a hydraulic control system to evaluate remedial options to augment a bioremediation pilot test conducted at the northeastern drum storage area of the Photocircuits property.

Findings

- In December 2002, NYSDEC approved implementation of the hydraulic control work plan downgradient of bioremediation pilot test area.
- The pump test was conducted on wells MW-12 and MW-13 at pumping rates of 1 to 3 gpm.
- The pump test results lead to initial design of 5 wells with total pumping rate of 15 gpm to capture particles originating from bioremediation pilot test area.
- The effluent was discharged to City of Glen Cove sewer manhole #9 with discharge limitation of 2 mg/l TTO.

2003 - *Status Report for Accelerated Anaerobic Bioremediation Project at Photocircuits, prepared by Terra Systems Incorporated*

Scope

- Soybean oil substrate was injected into the treatment cell at the former drum storage area.
- Substrate was slow release emulsified substrate (SRS) of edible soybean oil to provide carbon source for approximately 12 months.

Findings

- Monitoring data indicated that some biodegradation of VOCs was occurring at site prior to start of pilot study in February 2002:
    - Daughter products were detected: c- and t-1,2-dichloroethene (DCE), vinyl chloride (VC) and ethane.
    - Historical data indicates breakdown is limited by availability of organic carbon.
- Substrate monitoring indicated distribution throughout bioremediation cell; highest substrate levels in MW-14 and then in MW-7 so no sampling.
- Pilot test results were varied:
    - Increases in VOC concentrations were observed in both wells; contributing factors may be desorption of contaminants and partitioning of the chemicals into the oil.
    - Where substrate levels were above 50 mg/l, decreases of VOCs of 60% to 100% were noted.
    - Highly varied degradation rates were calculated between 1 and 160 ug/l, dependent on initial VOC concentrations.
    - The average VOC concentration in cell decreased by 80% between August 2000 and 2003.
    - 2003 monitoring results showed low TOC concentrations, except in SMP-1 and DMP-1, where levels were above the 50 mg/l target level of TOC.

2003 - *Fourth Quarter 2003 Progress Report for Photocircuits and Former Pass and Seymour Sites, 31 and 45 Sea Cliff Avenue prepared by Barton and Loguidice*

Scope

- One quarter sampling was conducted (December 2003).
- SVE/AS was conducted at 45A Sea Cliff Avenue; started at west side of Building 7 and then extended to east side in 2001 and 2002, respectively.
- SVE/AS system at 45A Sea Cliff Avenue continued operations.
- Hydraulic control system at 31 Sea Cliff Avenue was continued.

Findings

- SVE/AS system at 45A Sea Cliff Avenue is planned to be decommissioned.
- The bioremediation pilot test results provided the following:
    - Addition of edible oil substrate (soybean oil) had enhanced extent and rate of chlorinated solvent biodegradation (as high as 160 ug/l of TVOCs).
    - Substrate appeared adequately distributed.
    - First order half-life of 533 days calculated for average VOC in pilot cell area suggesting 90% removal of VOC mass with cell within 48 months.
    - Bioremediation deemed to be primary treatment technology for contaminant destruction at site.
- Concentrations of PCE in both air and groundwater decreased during 2003 (1 to 0.03 parts ppmv and 1,240 to 180 ug/l in MW-4S, respectively).
- Hydraulic control system along Sea Cliff Avenue comprised of 4 wells installed to 80 feet.
- Evaluation of operation of the hydraulic control system concluded that, in addition to collecting contaminated groundwater, pumping also accelerated movement the of contaminants from bioremediation cell.

PALL CORPORATION

1995 - *Groundwater Sampling and Analysis Report prepared by GT Engineering.*

Scope

- Existing files were reviewed.
- Developed wells, collected water level measurements and sampled wells.

Findings

- PCE was present in site wells at concentrations up to 420 ug/l.
- TCE, TCA and 1,1-DCE were detected in upgradient wells indicating an upgradient contaminant source.

2000 - *Phase II Remedial Investigation Report prepared by Enviro-Sciences, Inc.*

Scope

- Reviewed historical information.
- Conducted soil borings, surface and sediment sampling, Geoprobe testholes, and groundwater monitoring and installation.

Findings

- The investigation identified six Areas of Concern on the Pall property:
    - #1 – downgradient plume at cluster 5
    - #2 – PCE tank at northwest corner of August Thomsen building
    - #3 – Reported former drum storage
    - #4 – Drum storage area
    - #5 – Reported drum rinse area
    - #6 – Upgradient plume entering the Pall site
- Soil investigation found four targeted VOCs above recommended soil cleanup levels (RSCOs) in only 1 of 50 samples: xylenes below water table at northwest Thomsen; slight exceedances of polyaromatic hydrocarbons in three samples; chlorinated VOCs above RSCOs at SB-5 area (near drum cleaning area).
- In Glen Cove Creek, the highest VOC was PCE detected at 77 ug/l near the August Thomsen building.

- Groundwater gradients caused deep upgradient contamination to be shallow with flow onto Pall property.

- Groundwater was contaminated by VOCs throughout aquifer:

  - VOCs highest at northern end of property.
  - Contamination in deeper groundwater was more widespread and consistent contamination.
  - Freons were detected highest in downgradient wells; some in deep upgradient wells but lower.
  - Highest shallow contamination was detected at MW-5P (PCE at 110, TCE at 230 and c-DCE at 3,600 ug/l.
  - Highest contamination in the intermediate zone was at MW-6 at, PCE at 150 ug/l.
  - Highest contamination in deep zone was at MW-2, MW-5, MW-6, and MW-10.
  - Relative concentrations of PCE to TCE, and t-DCE to VC indicate substantially aged historic upgradient release.
  - January 2000 sampling partially conducted while Well No. 21 was being pumped tested and unknown to EnviroSciences so relationships were not known.

- Limited Offsite Investigation

- At the City of Glen Cove property, TCE was detected highest near EMS garage at a depth of 55 feet.

- Offsite plume appears to have been delineated.

- Contaminant transport and transformation mechanisms at the Pall property indicate that migration of contamination is significantly affected by pumping cycles of public water supply and industrial wells and locations and depths of diffusion wells.

- Qualitative Flow Model Results:

  - MT3D simulations confirmed upgradient releases could have migrated through Pall property and impact CSWF (without sources at the Pall property); and showed that contamination could have been dragged downward at upgradient source as well as downward on Pall and City of Glen Cove properties.

  - Quantitative analysis predicted long-term downgradient residual VOC contamination.

- Findings and Conclusions

  - The source for AOC1 (downgradient plume) was from locations upgradient of the Pall property:

    - The leading edge of the plume was near off-site well location GC-5, and the plume boundaries to the east and west are GC-2 and GC-8, respectively; and
    - The depth of the off-site plume is at least 178 feet below grade.

  - AOC2 (northeast corner of August Thomsen) may be portion of the eastern downgradient plume

    - Freons at shallow and intermediate depth indicate may be source on the Pall property.

  - At AOC4 (north drum storage) Freons were detected in shallow and intermediate groundwater; recommended additional delineation south of area during chemical oxidation pilot test.

  - At AOC 5 (drum rinse area), one PCE exceedance in soil; more delineation at pilot test proposed in this area.

  - AOC6 (upgradient) intermediate and deep zones had PCE and TCE and/or daughter products.

2001 - *Feasibility Study Report prepared by Enviro-Sciences, Inc.*

- Chemical treatment/oxidation has been successful at bench-, pilot- and full-scale level; recommended permanganate to create oxidation barrier at downgradient property line.

- AS/SVE proposed as contingency if in-situ chemical oxidation is ineffective at SB-5 with sparge barrier along downgradient property line

- Suggested that thermal desorption may be successful in enhancing the selected remedial option.

NOTES:
Any conclusions provided in the study synopsis provided above are from the specific reference source study.

DEFINITION OF ABBREVIATIONS

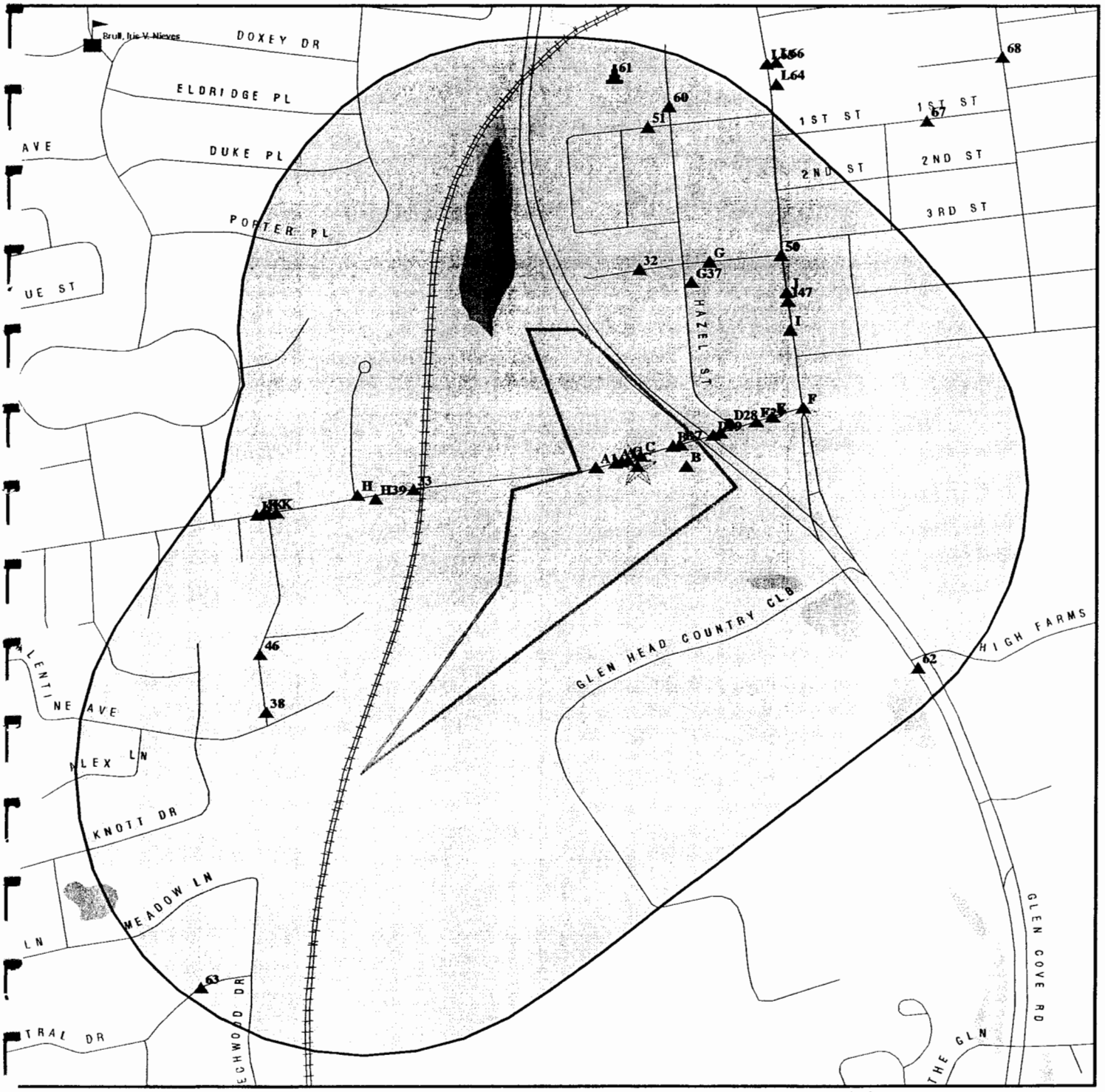
CSWF	Carney Street Well Field
gpm	Gallons per minute
PCE	perchloroethene
ppm	Parts per million
ppmv	Parts per million by volume
RSCO	Recommended Soil Cleanup Objectives
SCIA	Sea Cliff Avenue Industrial Area
TCE	Trichloroethene
TOC	Total organic carbon
TTO	Total Toxic Organics
TVOC	Total volatile organic compounds
ug/kg	micrograms per kilogram
VOC	Volatile organic carbon

Appendix C

APPENDIX C

SUMMARY OF SEARCHED ENVIRONMENTAL DATABASES

DETAIL MAP - 1608471.2s



- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- Sensitive Receptors
- National Priority List Sites
- Landfill Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Oil & Gas pipelines
- 100-year flood zone
- 500-year flood zone
- Federal Wetlands
- State Wetlands

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: 31 Sea Cliff Avenue ADDRESS: 31 Sea Cliff Avenue Glen Cove NY 11542 LAT/LONG: 40.8519 / 73.6219	CLIENT: Dvirka & Bartilucci Cons. Eng. CONTACT: Ken Wenz INQUIRY #: 1608471.2s DATE: February 07, 2006

EXECUTIVE SUMMARY

MULTIWIRE DIVISION KOLLMORGEN COR
31 SEA CLIFF AVE
GLEN COVE, NY 11542

RCRA-SQG
FINDS

NYD096920608

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

FEDERAL RECORDS

NPL ..... National Priority List
Proposed NPL ..... Proposed National Priority List Sites
Delisted NPL ..... National Priority List Deletions
NPL Liens ..... Federal Superfund Liens
CERCLIS ..... Comprehensive Environmental Response, Compensation, and Liability Information System
RCRA-TSDF ..... Resource Conservation and Recovery Act Information
ERNS ..... Emergency Response Notification System
HMIRS ..... Hazardous Materials Information Reporting System
US ENG CONTROLS ..... Engineering Controls Sites List
US INST CONTROL ..... Sites with Institutional Controls
DOD ..... Department of Defense Sites
FUDS ..... Formerly Used Defense Sites
CONSENT ..... Superfund (CERCLA) Consent Decrees
ROD ..... Records Of Decision
UMTRA ..... Uranium Mill Tailings Sites
ODI ..... Open Dump Inventory
TSCA ..... Toxic Substances Control Act
FTTS ..... FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
SSTS ..... Section 7 Tracking Systems
PADS ..... PCB Activity Database System
MLTS ..... Material Licensing Tracking System
MINES ..... Mines Master Index File
RAATS ..... RCRA Administrative Action Tracking System

STATE AND LOCAL RECORDS

HSWDS ..... Hazardous Substance Waste Disposal Site Inventory
DEL SHWS ..... Delisted Registry Sites
SWTIRE ..... Registered Waste Tire Storage & Facility List
CBS UST ..... Chemical Bulk Storage Database
MOSF UST ..... Major Oil Storage Facilities Database
MOSF AST ..... Major Oil Storage Facilities Database
ENG CONTROLS ..... Registry of Engineering Controls
INST CONTROL ..... Registry of Institutional Controls
VCP ..... Voluntary Cleanup Agreements
DRYCLEANERS ..... Registered Drycleaners

RCRAInfo:RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. RCRAInfo replaces the data recording and reporting abilities of the Resource Conservation and Recovery Information System(RCRIS). The database includes selective information on sites which generate, transport, store , treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month. Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month Large quantity generators generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month. Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

A review of the RCRA-SQG list, as provided by EDR, and dated 12/15/2005 has revealed that there are 13 RCRA-SQG sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Dist / Dir	Map ID	Page
TROUSDELL VILLAGE	***72 SEACLIFF AVE***	***0 - 1/8***	***A1***	***258***
SLATER ELECTRIC INC	***45 SEA CLIFF AVE***	***0 - 1/8***	***B2***	***258***
WIND AUTO	***44 SEACLIFF AVE***	***0 - 1/8***	***B7***	***274***
PALL CORP	***65 SEA CLIFF AVE***	***0 - 1/8***	***A11***	***280***
V-MAN AUTOMOTIVE INC	***63 SEA CLIFF AVE***	***0 - 1/8***	***A13***	***281***
T & D TOWING CORP	***59 SEA CLIFF AVE***	***0 - 1/8***	***C16***	***282***
NYSDOT BIN 1036889	***RTE 107 OVER SEA CLIFF***	***0 - 1/8 SW***	***D28***	***294***
LAND ROVER GLEN COVE	***70 CEDAR SWAMP RD***	***1/8 - 1/4 SW***	***J49***	***318***
JAMES AUTO WORKS	161 SEACLIFF AVE	1/8 - 1/4 SE	K52	321
JAMES AUTO WORKS	***161 SEA CLIFF AVE***	***1/8 - 1/4 SE***	***K53***	***321***
JAMES AUTO WORKS	***162 SEA CLIFF AVE***	***1/8 - 1/4 SE***	***K55***	***322***
AUTO ADVICE SQUAD INCTHE	***166A SEA CLIFF AVE***	***1/8 - 1/4 SE***	***K57***	***323***
TREVI AUTO SERVICE INC	***170 SEA CLIFF AVE***	***1/8 - 1/4 SE***	***K58***	***324***

US BROWNFIELDS: The EPA's listing of Brownfields properites addressed by Cooperative Agreement Recipients and Brownfields properties addressed by Targeted Brownfields Assessments

A review of the US BROWNFIELDS list, as provided by EDR, and dated 11/29/2005 has revealed that there is 1 US BROWNFIELDS site within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Dist / Dir	Map ID	Page
TWEEZERMAN	55 SEA CLIFF AVENUE	0 - 1/8	C18	283

STATE AND LOCAL RECORDS

SHWS: The State Hazardous Waste Sites records are the states' equivalent to CERCLIS. These sites may or may not already be listed on the federal CERCLIS list. Priority sites planned for cleanup using state funds (state equivalent of Superfund) are identified along with sites where cleanup will be paid for by potentially responsible parties. The data come from the Department of Environmental Conservation's Inactive Hazardous waste Disposal Sites in New York State.

A review of the SHWS list, as provided by EDR, and dated 12/30/2005 has revealed that there are 5 SHWS sites within approximately 1 mile of the target property.

Equal/Higher Elevation	Address	Dist / Dir	Map ID	Page
SLATER ELECTRIC INC	***45 SEA CLIFF AVE***	***0 - 1/8***	***B2***	***258***

Class Code: Significant threat to the public health or environment - action required.

Equal/Higher Elevation	Address	Dist / Dir	Map ID	Page
MAN PRODUCTS Date Closed: 11/23/88	*100 CARNEY STREET*	*0 - 1/8 SW*	*G41*	*308*
TROUSDALL VILLAGE APTS Date Closed: 07/05/95	*SEACLEFF AVENUE*	*1/8 - 1/4 E*	*H44*	*312*
TROUSDELL VILLAGE Date Closed: 02/24/89	*SEA CLIFF AVENUE*	*1/8 - 1/4 E*	*H45*	*314*
GLEN COVE HS Date Closed: 06/20/88	*DESORIS AVENUE*	*1/4 - 1/2 SW*	*L64*	*325*
LEXUS CAR DEALER Date Closed: 01/28/94	*20 CEDAR SWAMP ROAD*	*1/4 - 1/2 SW*	*L65*	*328*
GLEN COVE SCHOOLS Date Closed: 07/05/89	*CEDAR SWAMP ROAD*	*1/4 - 1/2 SW*	*L66*	*330*
BONO RESIDENCE Date Closed: 05/31/00	*27 1ST STREET*	*1/4 - 1/2 SW*	*67*	*332*
GLEN COVE WATER DISTRICT Date Closed: 11/10/94	*KELLY STREET*	*1/4 - 1/2 SW*	*68*	*335*
HILLMAN RESIDENCE Date Closed: 05/10/93	*4 COLONIAL GATE*	*1/4 - 1/2 SE*	*69*	*337*

HIST LTANKS:A listing of leaking underground and aboveground storage tanks. The causes of the incidents are tank test failures, tank failures or tank overfills. In 2002, the Department of Environmental Conservation stopped providing updates to its original Spills Information Database. This database includes fields that are no longer available from the NYDEC as of January 1, 2002. Current information may be found in the NY LTANKS database.

A review of the HIST LTANKS list, as provided by EDR, and dated 01/01/2002 has revealed that there are 14 HIST LTANKS sites within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Dist / Dir	Map ID	Page
SLATER ELECTRIC INC	*45 SEA CLIFF AVE*	*0 - 1/8*	*B2*	*258*
A-1 RECYCLING & SALVAGE	*45B SEACLIFF AVENUE*	*0 - 1/8*	*B9*	*275*
KEYCO MOTOR FREIGHT	*45B SEACLIFF AVENUE*	*0 - 1/8*	*B10*	*278*
HARBOR FUEL	*10 SEACLIFF AVENUE*	*0 - 1/8 SW*	*E31*	*297*
MASSARO BROS FUEL OIL	*8 MCGRADY STREET*	*0 - 1/8 ESE*	*38*	*303*
MAN PRODUCTS	*100 CARNEY STREET*	*0 - 1/8 SW*	*G41*	*308*
TROUSDALL VILLAGE APTS	*SEACLEFF AVENUE*	*1/8 - 1/4 E*	*H44*	*312*
TROUSDELL VILLAGE	*SEA CLIFF AVENUE*	*1/8 - 1/4 E*	*H45*	*314*
GLEN COVE HS	*DESORIS AVENUE*	*1/4 - 1/2 SW*	*L64*	*325*
LEXUS CAR DEALER	*20 CEDAR SWAMP ROAD*	*1/4 - 1/2 SW*	*L65*	*328*
GLEN COVE SCHOOLS	*CEDAR SWAMP ROAD*	*1/4 - 1/2 SW*	*L66*	*330*
BONO RESIDENCE	*27 1ST STREET*	*1/4 - 1/2 SW*	*67*	*332*
GLEN COVE WATER DISTRICT	*KELLY STREET*	*1/4 - 1/2 SW*	*68*	*335*
HILLMAN RESIDENCE	*4 COLONIAL GATE*	*1/4 - 1/2 SE*	*69*	*337*

CBS AST: Chemical Bulk Storage Database. Registration data collected as required by 6 NYCRR Part 596. It includes facilities storing hazardous substances listed in 6 NYCRR Part 597, in aboveground tanks with capacities of 185 gallons or greater, and/or in underground tanks of any size. Includes facilities registered (and closed) since effective date of CBS regulations (July 15, 1988) through the date request is processed.

A review of the CBS AST list, as provided by EDR, and dated 01/01/2002 has revealed that there is 1 CBS AST site within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Dist / Dir	Map ID	Page
SLATER ELECTRIC INC	*45 SEA CLIFF AVE*	*0 - 1/8*	*B2*	*258*

SPILLS: Data collected on spills reported to NYSDEC. is required by one or more of the following: Article 12 of the Navigation Law, 6 NYCRR Section 613.8 (from PBS regs), or 6 NYCRR Section 595.2 (from CBS regs). It includes spills active as of April 1, 1986, as well as spills occurring since this date.

A review of the NY Spills list, as provided by EDR, and dated 12/08/2005 has revealed that there are 11 NY Spills sites within approximately 0.125 miles of the target property.

Equal/Higher Elevation	Address	Dist / Dir	Map ID	Page
SLATER ELECTRIC INC Date Closed: 04/10/87	*45 SEA CLIFF AVE*	*0 - 1/8*	*B2*	*258*
SUNRISE OIL Date Closed: 01/20/87	*45 SEACLIFF AVENUE*	*0 - 1/8*	*B3*	*268*
SLATTER ELECTRIC Date Closed: 11/09/88	*45 SEACLIFF AVENUE*	*0 - 1/8*	*B4*	*270*
UNK Date Closed: 12/19/95	*45 SEACLIFF AVENUE*	*0 - 1/8*	*B6*	*272*
PHOTO CIRCUITS Date Closed: 05/21/99	*33 SEACLIFF AVENUE*	*0 - 1/8 SW*	*D19*	*283*
PALL CORPORATION Date Closed: 01/20/89	*30 SEA CLIFF AVE*	*0 - 1/8 SW*	*D27*	*288*
PHOTO CIRCUITS Date Closed: 08/02/88	*13 SEACLIFF AVENUE*	*0 - 1/8 SW*	*E29*	*294*
Not reported Date Closed: 05/29/98	*200 CARNEY STREET*	*0 - 1/8 SW*	*32*	*299*
UNKNOWN Date Closed: 10/06/04	122 SEACLIFF AVENUE	0 - 1/8 E	33	301
AA&M CARTING Date Closed: 06/13/88	*SEACLIFF AVE / GLENKE*	*0 - 1/8 E*	*H39*	*306*
VOLVO DEALERSHIP Date Closed: 07/25/03	79 CEDAR SWAMP ROAD	0 - 1/8 SW	I42	310

Due to poor or inadequate address information, the following sites were not mapped:

Site Name	Database(s)
MATTIACE PETRO CHEMICALS	SHWS, DEL SHWS
TRANS TECHNOLOGY	SHWS
SEA COVE CLEANERS	DRYCLEANERS
SUN CARTING	SWF/LF, SWRCY
GARVIES POINT LANDFILL	SWF/LF
CITY OF GLEN COVE	LTANKS, HIST LTANKS
NICKS AUTO REPAIR CENTRE	UST
WALKER, MARGO	AST
UNIVERSAL UNLIMITED, INC.	AST
CUMBERLAND FARMS #70252	RCRA-SQG
MORRIS AVENUE	ERNS
CITY OF GLEN COVE	NY Spills, NY Hist Spills
RTE 107 / GLEN HEAD ROAD	NY Spills, NY Hist Spills
LILCO	NY Spills, NY Hist Spills

Appendix D

APPENDIX D

MONITORING WELL INSPECTION CHECKLIST

MONITORING WELL INSPECTION CHECKLIST

Well No. _____

	Yes	No	Remarks
1. Surface Concrete Seal			
Intact	_____	_____	_____
Cracked	_____	_____	_____
Missing	_____	_____	_____
2. Ponding of Water Around Concrete Seal	_____	_____	_____
3. Protective Flush-Mounted Cover/Standpipe and Lock			
Flush-Mounted Cover - Intact	_____	_____	_____
Standpipe - Intact	_____	_____	_____
Lock - Intact	_____	_____	_____
4. Well Casing Alignment (Straight)	_____	_____	_____
5. Survey Measuring Point Clearly Marked	_____	_____	_____
6. Well Clearly Labeled	_____	_____	_____
7. Well is Protected	_____	_____	_____

Comments: _____

_____

_____

_____

Inspector Signature _____

Date of Inspection _____

Appendix E

APPENDIX E

QUALITY ASSURANCE/QUALITY CONTROL PLAN

A.0 QUALITY ASSURANCE AND QUALITY CONTROL PLAN

The purpose of this Quality Assurance/Quality Control (QA/QC) Plan is to describe the detailed sample collection and analytical procedures that will ensure high quality, valid data for use in the remedial investigation. If any of the collection procedures, sample analysis or sample matrices are modified for a specific site investigation, detailed information regarding the changes and rationale for the change will be provided in the Site-Specific Work Plan.

A.1 Data Usage

The data generated from the sampling program will be used to determine the nature, extent and source(s) of contamination at the site, prepare a human health risk and environmental assessment, and identify, evaluate and recommend a cost-effective, environmentally sound, long-term remedial action plan. The data will also be utilized to monitor for the health and safety of workers at the site and potential receptors off-site.

A.2 Sampling Program Design and Rationale

The following presents a general discussion of the sampling to be conducted during the remedial investigation.

- Groundwater - Groundwater samples will be obtained from monitoring wells and/or probe or hydropunch sampling devices which will be installed as part of the remedial investigation or from monitoring wells which were installed previously at and in the vicinity of the site. Groundwater samples will be collected to determine if disposal of waste material has impacted groundwater on and off-site.

For a detailed discussion of the sampling program, and selection of sample matrices and locations, see the Field Operation and Investigation Plan (Section 2.0). Site-Specific descriptions of sampling matrices and locations are provided in the Site-Specific Work Plan.

A.3 Analytical Parameters

Analysis for groundwater will consist of the Target Compound List (TCL) +10 volatile organic compounds identified in the 2000 New York State Department of Environmental Conservation (NYSDEC) Analytical Services Protocol (ASP).

A.4 Data Quality Requirements and Assessment

Data quality requirements and assessments are provided in the 2000 NYSDEC ASP, which includes the detection limit for each parameter and sample matrix. Note that quantification limits, estimated accuracy, accuracy protocol estimate precision and precision protocol are determined by the laboratory and will be in conformance with the requirements of the 2000 NYSDEC ASP, where applicable.

In addition to meeting the requirements provided in the 2000 NYSDEC ASP, the data must also be useful in evaluating the nature, extent and impact of contamination. Data obtained during the remedial investigation will be compared to specific Standards, Criteria and Guidelines (SCGs) as discussed in Section 1.2.4 of this Work Plan. The SCGs to be utilized include:

Matrix	SCG
Groundwater, Surface Water and Drinking Water	Division of Water Technical and Operational Guidance Series (TOGs) (1.1.1) - Ambient Water Quality Standards and Guidance Values, dated October 1993.

The methods of analysis will be in accordance with the 2000 NYSDEC ASP. Specific analytical procedures and laboratory QA/QC descriptions are not included in this QA/QC Plan, but will be available upon request from the laboratory selected to perform the analyses. The laboratory will be New York State Department of Health (NYSDOH) Environmental Laboratory Approval Program (ELAP) certified for organic and inorganic analyses and also be NYSDOH Contract Laboratory Protocol (CLP) certified.

A.4.1 Data Representativeness

Representative samples will be collected as follows:

- Groundwater (Hydropunch) - Samples will be collected immediately upon installation of the hydropunch screen using a dedicated polyethylene small diameter bailer.
- Groundwater (Monitoring Well) - Samples will be collected with a dedicated polyethylene bailer after the monitoring well has been purged of three to five well casing volumes until field measurements for pH, conductivity, temperature and turbidity have stabilized, or until the well is purged dry (whichever comes first) and the well has been allowed to recharge.
- Equipment Calibration - Field equipment used for air monitoring will be calibrated daily before use according to the manufacturer's procedures.
- Equipment Decontamination - Nondedicated sampling equipment will be decontaminated prior to use at each location according to the procedures described in Section 4.6 of this QA/QC Plan.

A.4.2 Data Comparability

All data will be presented in the units designated by the methods specified by a NYSDOH ELAP and CLP certified laboratory, and the 2000 NYSDEC ASP. In addition, sample locations, collection procedures and analytical methods from earlier studies will be evaluated for comparability with current procedures/methods.

A.4.3 Data Completeness

The acceptability of 100% of the data is desired as a goal for this project. The acceptability of less than 100% complete data, meeting all laboratory QA/QC protocols/standards, will be evaluated on a case-by-case basis.

A.5 Detailed Sampling Procedures

Environmental samples will be collected from different locations as part of the remedial investigation. These include groundwater. Sample locations will consist of monitoring wells and hydropunch. Actual locations will be described in the Site-Specific Work Plan.

Sampling approaches and equipment are described in this section.

When taking soil samples, an attempt will be made to maintain sample integrity by preserving its physical form and chemical composition to as great an extent as possible. An appropriate sampling device (i.e., decontaminated or dedicated equipment) will be utilized to transfer the sample into the sample container. The sample will reflect and contain a good representation of the matrix from which it was collected.

The sample will be transferred into the sample bottle as quickly as possible, with no mixing, to ensure that the volatile fraction is not lost.

The materials involved in groundwater sampling are critical to the collection of high quality monitoring information, particularly where the analyses of volatile, pH sensitive or reduced chemical constituents are of interest. The materials for bailers and pump parts will be PTFE (e.g., Teflon^{R}) stainless steel and/or polyethylene.

There will be several steps taken after the transfer of the soil or water sample into the sample container that are necessary to properly complete collection activities. Once the sample is transferred into the appropriate container, the container will be capped and, if necessary, the outside of the container will be wiped with a clean paper towel to remove excess sampling material. The container will not be submerged in water in an effort to clean it. Rather, if necessary, a clean paper towel moistened with distilled/deionized water will be used.

The sample container will then be properly labeled. Information such as sample number, location, collection time and sample description will be recorded in the field log book.

Associated paper work (e.g., Chain of Custody forms) will then be completed and will stay with the sample. The samples will be packaged in a manner that will allow the appropriate storage temperature to be maintained during shipment to the laboratory. Samples will be delivered to the laboratory within 48 hours of collection.

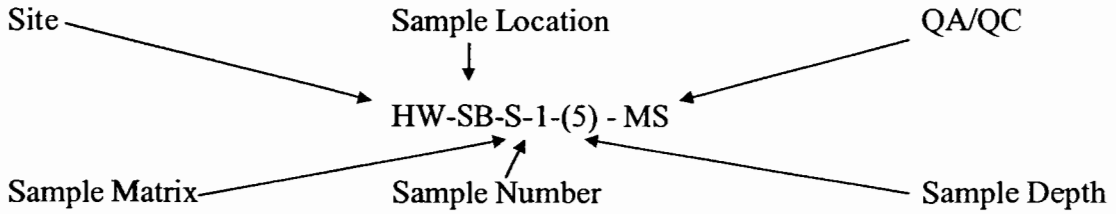
A.5.1 Sample Identification

All samples collected will be labeled with a sample identification code. The code will identify the site, sample location, sample matrix and series numbers for sample locations with more than one sample. Samples will be labeled according to the following system:

- Site: - Site name (i.e., Hazardous Waste "HW")
- Sample Location:
  - Soil Boring "SB"
  - Monitoring Well "MW"
  - Water Supply "WS"
  - Dry Well "DW"
  - Surface Soil "SS"
  - Surface Water "SW"
  - Hydropunch "H"
  - Probe "P"
  - Test Pit "TP"
  - Storm Drain "SD"
  - Sanitary System Leaching Pool "LP"
  - Sanitary System Septic Tank "ST"
  - Soil Vapor "SV"
  - Ambient Air "AA"
  - Shallow Excavation "SE"
- Sample Matrix:
  - Soil "S"
  - Sediment "SD"
  - Sludge "SL"
  - Groundwater "GW"
  - Drainage Water/Storm Water "DW"
  - Surface Water "SW"
  - Wastewater "WW"
  - Air "A"
  - Soil Vapor "SV"
  - Tap Water "TW"
- Sample Number: - For circumstances where more than one sample of the same type and/or from the same location will be collected, a consecutive sample number will be assigned. When more than one sample is collected from a borehole in a sampling round at different depths, the depth will be indicated on the sample container and in the field log book.

- Quality Assurance/
  Quality Control (QA/QC): - Matrix Spike "MS"
  - Matrix Spike Duplicate "MSD"
  - Field Blank "FB"
  - Trip Blank "TB"
  - Drill Water "DW"

Based upon the above sample identification procedures, an example of a sample label may be:



A.5.2 Sample Handling, Packaging and Shipping

All samples will be placed in the appropriate containers as specified in the 2000 NYSDEC ASP.

Prior to packaging any samples for shipment, the sample containers will be checked for proper identification and compared to the field log book for accuracy. The samples will then be wrapped with a cushioning material and placed in a cooler (or laboratory shuttle) with a sufficient amount of bagged ice or "blue ice" packs in order to keep the samples at 4°C until arrival at the laboratory.

All necessary documentation required to accompany the sample during shipment will be placed in a sealed plastic bag and taped to the underside of the cooler lid. The cooler will then be sealed with fiber (duct) or clear packing tape, and custody seals will be placed in such a manner that any opening of the cooler prior to arrival at the laboratory can be detected.

All samples will be shipped to ensure laboratory receipt within 48 hours of sample collection in accordance with NYSDEC requirements. The laboratory will be notified prior to the shipment of the samples.

A.5.14 Groundwater (Hydropunch)

1. Be certain sample location is noted on Location Sketch (see Section 4.20).
2. Using hydropunch equipment drive/punch screen to desired depth.
3. Remove inner sleeve and lower down decontaminated hydropunch bailer.
4. Remove the laboratory precleaned sample container from the sample cooler, label container with an indelible marker, fill out Sample Information Record and Chain of Custody form.
5. Obtain a volatile organic sample by using a hydropunch bailer. Gently pour the sample into the sample container taking care not to spill on the outside of the container or overfill container and replace cover on the sample container. Samples for volatile organic analyses will have no air space in the sample vial prior to sealing. This is done by filling the vial such that there is a meniscus on top. Carefully slide the septum, Teflon side down, onto the top of the vial and cap the vial. Check for bubbles by turning the vial upside down and tapping it lightly. If bubbles appear, reopen the vial, remove the septum and add more sample (or resample). Replace the septum, recap and check for bubbles. Continue until vial is bubble-free.
6. Obtain a sample and analyze for field parameters (pH, conductivity, temperature and turbidity).
7. Turbidity must be less than 50 NTUs prior to collection of a sample for metals analysis. If the turbidity of the sample is greater than 50 NTUs, the sample will be filtered in the field or by the laboratory. Both the filtered and unfiltered portion of the sample will be analyzed.
8. Collect remaining samples. Gently pour the sample into the sample container, taking care not to spill water on the outside of the container or overfill the container. Replace cover on the sample container.
9. Return sample container to sample cooler.
10. Punch down to next depth and repeat items 3 through 9.
11. Decontaminate hydropunch equipment as described in Section 4.6.

12. Place all disposable personal protective equipment and disposable sampling equipment into a 55 gallon drum and store in a secure area (fenced, if possible).

A.5.15 Groundwater (Monitoring Well)

1. Measure the depth of water using a decontaminated water level indicator and compute the volume of standing water in the well.

2. Remove three to five times the volume of standing water from the well until field measurements (pH, conductivity, temperature and turbidity) stabilize, or until the well is dry, whichever occurs first. Turbidity should be less than 50 NTUs prior to collection of a sample for metals analysis.

3. Remove the laboratory precleaned sample containers from sample cooler, label container with an indelible marker, fill out Sample Information Record and Chain of Custody Form.

4. Obtain a sample by using a disposable polyethylene bailer.

5. If the turbidity of the sample is greater than 50 NTUs, the metals; (iron and manganese) portion of the sample will be filtered in the field or by the laboratory. Both the filtered and unfiltered portion of the sample will be analyzed.

6. Gently pour the sample into the sample container taking care not to spill on the outside of the container or overfill container and replace the cover on the sample container. Samples for volatile organic analyses will have no air space in the sample vial prior to sealing. This is done by filling the vial such that there is a meniscus on top. Carefully slide the septum, Teflon side down, onto the top of the vial and cap the vial. Check for bubbles by turning the vial upside down and tapping it lightly. If bubbles appear, reopen the vial, remove the septum and add more sample (or resample). Replace the septum, recap and check for bubbles. Continue until vial is bubble-free.

7. Return sample container to sample cooler.

8. Place all disposable personal protective equipment and disposable sampling equipment into a 55 gallon drum and store in a secure area (fenced, if possible).

A.6 Decontamination Procedures

Whenever possible, all field sampling equipment should be sterile/disposable and dedicated to a particular sampling point. In instances where this is not possible, a field cleaning/decontamination procedure will be used in order to mitigate cross contamination

between sample locations. A decontamination station/pad will be established for all field activities. This will be an area located away from the source of contamination so as not to adversely impact the decontamination procedure, but close enough to the sampling locations to keep equipment transport handling to a minimum after decontamination.

A.6.1 Field Decontamination Procedures

All nondisposable equipment will be decontaminated at appropriate intervals (e.g., prior to initial use, prior to moving to a new sampling location and prior to leaving the site). Different decontamination procedures are used for various types of equipment that are used to collect samples. When using field decontamination, sampling should commence in the area of the site with the lowest contamination, if known or probable, and proceed through to the areas of highest contamination.

A.6.2 Decontamination Procedure for Drilling/Probing Equipment

All equipment such as drill rigs and other mobile equipment will receive an initial cleaning prior to use at the site. The frequency of subsequent cleanings while on-site will depend on how the equipment is actually used in relation to collecting environmental samples. All wash/rinse solutions will be collected and recharged on-site after testing, if possible. If an appropriate location for on-site recharge is not available, the next preferable option is to discharge to a municipal sewer system. Until an appropriate discharge alternative is determined, all wash/rinse solutions will be collected and contained on-site in 55 gallon drums.

After the initial decontamination, cleaning may be reduced to those areas that are in close proximity to materials being sampled. Drill rig/probe items such as augers, drill/probe rods and drill bits will be cleaned in between sample locations.

Drilling/probing equipment will be decontaminated in the following manner:

- Wash thoroughly with nonresidual detergent (alconox) and tap water using a brush to remove particulate matter or surface film. This is necessary in order to remove any

solids buildup on the back of the rig, auger flights, drill rods, drilling head, etc. Any loose paint chips, paint flakes and rust must also be removed.

- Steam clean (212°F).
- Once decontaminated, remove all items from the decontamination area.

Also, following the general cleaning procedures described above, all downhole/drilling items, such as split spoon samplers, Shelby tubes, rock corers, or any other item of equipment which will come in direct contact with a sample during drilling, will be decontaminated by steam cleaning.

A.6.3 Decontamination Procedure for Sampling Equipment

Teflon, PVC, polyethylene and stainless steel sampling equipment decontamination procedures will be the following:

- Wash thoroughly with nonresidual detergent (alconox) and clean potable tap water using a brush to remove particulate matter or surface film.
- Rinse thoroughly with tap water.
- Rinse thoroughly with distilled water.
- Rinse in a well ventilated area with methanol (pesticide grade) and air dry.
- Rinse thoroughly with distilled water and air dry.
- Wrap completely in clean aluminum foil with dull side against the equipment. For small sampling items, such as scoops, decontamination will take place over a drum specifically used for this purpose.

The first step, a soap and water wash, will be performed to remove all visible particulate matter and residual oils and grease. This step will be followed by a tap water rinse and a distilled/deionized water rinse to remove the detergent. Next, a high purity solvent rinse will be used for trace organics removal. Methanol has been chosen because it is not an analyte of concern on the Target Compound List. The solvent will be allowed to evaporate and then a final distilled/deionized water rinse will be performed. This rinse removes any residual traces of the

solvent. The aluminum wrap will protect the equipment and keep it clean until it is used at another sampling location.

A.6.4 Decontamination Procedure for Well Casing and Development Equipment

Field cleaning of well casings will consist of a manual scrubbing to remove foreign material and steam cleaning, inside and out, until all traces of oil and grease are removed. This material will then be stored in such a manner so as to preserve it in this condition. Special attention to threaded joints will be necessary to remove cutting oil or weld burn residues.

Materials and equipment that will be used for the purposes of well development will also be decontaminated by steam cleaning. An additional step will involve flushing the interior of any hose, pump, etc. with a nonphosphate detergent solution and potable water rinse prior to the development of the next well. This liquid waste will be disposed of on-site, if possible after testing.

A.7 Laboratory Sample Custody Procedures

A NYSDOH ELAP and CLP certified laboratory meeting the requirements for sample custody procedures, including cleaning and handling sample containers and analytical equipment, will be used to analyze samples collected during the remedial investigation. The selected laboratory's Standard Operating Procedures will be made available upon request.

A.8 Field Management Documentation

Proper management and documentation of field activities is essential to ensure that all necessary work is conducted in accordance with the sampling plan and QA/QC Plan in an efficient and high quality manner. Field management procedures will include following proper chain of custody procedures to track a sample from collection through analysis, noting when and how samples are split (if required); preparing a Location Sketch; completing Sample Information Records, Chain of Custody Forms, and Boring, Well and Test Pit Construction Logs;

maintaining a daily Field Log Book; preparing Daily Field Activity Reports; completing Field Change Forms; and filling out a Daily Air Monitoring Form. Copies of each of these forms, with the exception of the Air Monitoring Forms, are provided in Section A.20. Proper completion of these forms and the field log book are necessary to support the consequent actions that may result from the sample analysis. This documentation will support that the samples were collected and handled properly.

A.8.1 Location Sketch

For each sampling point, a Location Sketch (found in Section A.20) will be completed using permanent references and distances to the sampling point noted, if possible.

A.8.2 Sample Information Record

At each sampling location, a Sample Information Record Form (found in Section A.20) is filled out including, but not limited to, the following information:

- Site name
- Sample crew
- Sample location
- Field sample identification number
- Date
- Time of sample collection
- Weather conditions
- Temperature
- Sample matrix
- Method of sample collection and any factor that may affect its quality adversely
- Well information (groundwater only)

- Field test results
- Analysis to be performed
- Remarks

A.8.3 Chain of Custody

The Chain of Custody Form will be completed and is initiated at the laboratory with container preparation and shipment to the site. The form remains with the sample at all times and bears the name of the person assuming responsibility for the samples. This person is tasked with ensuring secure and appropriate handling of the containers and samples. When the form is complete, it will indicate that there was no lapse in sample accountability.

A sample is considered to be in an individual's custody if any of the following conditions are met:

- It is in the individual's physical possession, or
- It is in the individual's view after being in his or her physical possession, or
- It is secured by the individual so that no one can tamper with it, or
- The individual puts it in a designated and identified secure area.

In general, Chain of Custody Forms are provided by the laboratory selected to perform the analytical services. At a minimum, the following information will be provided on these forms:

- Project name and address
- Project number
- Sample identification number
- Date
- Time
- Sample location

- Sample type
- Analysis requested
- Number of containers and volume taken
- Remarks
- Type of waste
- Sampler(s) name(s) and signature(s)
- Spaces for relinquished by/received by signature and date/time.

For this particular study, forms provided by the laboratory will be utilized.

The Chain of Custody Form will be filled out and signed by the person performing the sampling. The original of the form will travel with the sample and will be signed and dated each time the sample is relinquished to another party, until it reaches the laboratory or analysis is completed. The field sampler will keep one copy and a copy will be retained for the project file. The sample bottle will also be labeled with an indelible marker with a minimum of the following information:

- Sample number
- Analysis to be performed
- Date of collection

A copy of the completed form will be returned by the laboratory with the analytical results.

A.8.4 Split Samples

Whenever samples are being split with another party, a Receipt for Samples Form will be completed and signed. A copy of this form can be found in Section A.20. A copy of the Chain of Custody Form will accompany this form.

A.8.5 Field Log Book

Field log books will be bound and have consecutively numbered, water resistant pages. All pertinent information regarding the site and sampling procedures will be documented. Notations will be made in log book fashion, noting the time and date of all entries. Information recorded in this notebook will include, but not be limited to, the following:

The first page of the log will contain the following information:

- Project name and address
- Name, address and phone number of field contact
- Waste generator and address, if different from above
- Type of process (if known), generating waste
- Type of waste
- Suspected waste composition, including concentrations

Daily entries will be made for the following information:

- Purpose of sampling
- Location of sampling point
- Number(s) and volume(s) of sample(s) taken
- Description of sampling point and sampling methodology
- Date and time of collection, arrival and departure
- Collector's sample identification number(s)
- Sample distribution and method of storage and transportation
- References, such as sketches of the sampling site or photographs of sample collection
- Field observations, including results of field analyses (e.g., pH, temperature, specific conductance), water levels, drilling logs, and organic vapor and dust readings

- Signature of personnel responsible for completing log entries.

A.8.6 Daily Field Activity Report

At the end of each day of field work, the Field Operations Manager, or designee, will complete this form noting personnel on-site and summarizing the work performed that day, equipment, materials and supplies used, results of field analyses, problems and resolutions. This form will be signed and subject to review. A copy of the Daily Field Activity Report form is contained in Section A.20.

A.8.7 Field Changes and Corrective Actions

Whenever there is a required or recommended investigation/sampling change or correction, a Field Change Form will be completed by the Field Operations Manager and the NYSDEC on-site supervisor, and approved by the Consultant/PRP and NYSDEC Project Managers.

A.9 Calibration Procedures and Preventive Maintenance

The following information regarding equipment will be maintained at the project site:

1. Equipment calibration and operating procedures which will include provisions for documentation of frequency, conditions, standards and records reflecting the calibration procedures, methods of usage and repair history of the measurement system. Calibration of field equipment will be performed daily at the sampling site so that any background contamination can be taken into consideration and the instrument calibrated accordingly.
2. A schedule of preventive maintenance tasks, consistent with the instrument manufacturer's specific operation manuals, that will be carried out to minimize down time of the equipment.
3. Critical spare parts, necessary tools and manuals will be on hand to facilitate equipment maintenance and repair.

Calibration procedures and preventive maintenance, in accordance with the NYSDEC 2000 ASP, for laboratory equipment, will be contained in the laboratory's standard operating procedures (SOP) which will be available upon request.

A.10 Performance of Field Audits

During field activities, the QA/QC officer will accompany sampling personnel into the field, in particular in the initial phase of the field program, to verify that the site sampling program is being properly conducted, and to detect and define problems so that corrective action can be taken early in the field program. All findings will be documented and provided to the Field Operations Manager.

A.11 Control and Disposal of Contaminated Material

During construction and sampling of the monitoring wells and soil borings, contaminated waste, soil and water may be generated from drill cuttings, drilling fluids, decontamination water, development water and purge water. All soil cuttings generated during the remedial investigation will be handled in a manner consistent with NYSDEC Technical and Administrative Guidance Memorandum (TAGM) No. 4032, Disposal of Drill Cuttings.

All water generated during the investigation, including decontamination water, drill water and purge water, will be recharged on-site, if possible, following testing. The Site-Specific Work Plan will provide detailed information on the disposal of water generated during the investigation. If it is not possible to recharge water on-site, the next preferred option is discharge of the water to a municipal sewer system. This will be evaluated in preparation of the Site-Specific Work Plan.

Department of Transportation approved 55 gallon drums will be used for the containment of soil cuttings and water, and for disposal of personal protective clothing and disposable sampling equipment (i.e., bailers, scoops, tongue depressors, etc.). The drums will be marked,

labeled with a description of the contents and from what location they were collected. All drums will be sealed and stored on-site in a secure area.

A.12 Documentation, Data Reduction and Reporting

A NYSDOH ELAP and CLP certified laboratory meeting the New York State requirements for documentation, data reduction and reporting will be used. All data will be cataloged according to sampling locations and sample identification nomenclature which is described in Section A.5.1 of this QA/QC Plan.

NYSDEC "Sample Identification and Analytical Requirement Summary" and "Sample Preparation and Analysis Summary" forms (for VOC and inorganic analysis) will be completed and included with each data package. The sample tracking forms are required and supplied by the 2000 NYSDEC ASP.

A.13 Data Validation

As described in Section A.12 above, summary documentation regarding data validation will be completed by the laboratory using NYSDEC forms contained in the 2000 NYSDEC ASP and submitted with the data package.

Data validation will be performed in order to define and document analytical data quality in accordance with NYSDEC requirements that investigation data must be of known and acceptable quality. The analytical and validation processes will be conducted in conformance with the NYSDEC ASP dated December, 2000.

Because the NYSDEC Analytical Services Protocol is based on the USEPA CLP, the USEPA Functional Guidelines for Evaluating Organics and Inorganics Analyses for the Contract Laboratory Program (CLP) will assist in formulating standard operating procedures (SOPs) for the data validation process. The data validation process will ensure that all analytical requirements specific to this work plan, including the QA/QC Plan are followed. Procedures will

address validation of routine analytical services (RAS) results based on the NYSDEC Target Compound List for standard sample matrices.

The data validation process will provide an informed assessment of the laboratory's performance based upon contractual requirements and applicable analytical criteria. The report generated as a result of the data validation process will provide a base upon which the usefulness of the data can be evaluated by the end user of the analytical results. The overall level of effort and specific data validation procedure to be used will be equivalent to a "100% validation" of all analytical data in any given data package.

During the review process, it will be determined whether the contractually required laboratory submittals for sample results are supported by sufficient back-up data and QA/QC results to enable the reviewer to conclusively determine the quality of data. Each data package will be checked for completeness and technical adequacy of the data. Upon completion of the review, the reviewers will develop a QA/QC data validation report for each analytical data package.

"Qualified" analytical results for any one field sample will be established and presented based on the results of specific QC samples and procedures associated with its sample analysis group or batch. Precision and accuracy criteria (i.e., QC acceptance limits) will be used in determining the need for qualifying data. Where test data have been reduced by the laboratory, the method of reduction will be described in the report. Reduction of laboratory measurements and laboratory reporting of analytical parameters will be verified in accordance with the procedures specified in the NYSDEC program documents for each analytical method (i.e., recreate laboratory calculations and data reporting in accordance with the method specific procedure). The standard operating guideline manuals and any special analytical methodology required will specify documentation needs and technical criteria and will be taken into consideration in the validation process. Copies of the complete data package and the validation report, including the laboratory results data report sheets, with any qualifiers deemed appropriate by the data reviewer, and a supplementary field QC sample result summary statement, will be submitted to the NYSDEC.

The following is a description of the two-phased approach to data validation which will be used in the remedial investigation. The first phase is called checklisting and the second phase is the analytical quality review, with the former being a subset of the latter.

- Checklisting - The data package will be checked for correct submission of the contract required deliverables, correct transcription from the raw data to the required deliverable summary forms and proper calculation of a number of parameters.
- Analytical Quality Review - The data package will be closely examined to recreate the analytical process and verify that proper and acceptable analytical techniques have been performed. Additionally, overall data quality and laboratory performance will be evaluated by applying the appropriate data quality criteria to the data to reflect conformance with the specified, accepted QA/QC standards and contractual requirements.

At the completion of the data validation, a Summary Data Validation/Usability Report will be prepared and submitted to NYSDEC.

A.14 Performance and System Audits

A NYSDOH ELAP and CLP certified laboratory which has satisfactorily completed performance audits and performance evaluation samples will be used to perform sample analyses for the remedial investigation.

A.15 Corrective Action

A NYSDOH ELAP and CLP certified laboratory will meet the requirements for corrective action protocols, including sample "clean up" to attempt to eliminate/mitigate matrix interference.

The 2000 NYSDEC ASP protocol includes both mandatory and optional sample cleanup and extraction methods. Cleanup is required by the 2000 NYSDEC ASP in order to meet contract required detection limits. There are several optional cleanup and extraction methods noted in the 2000 NYSDEC ASP protocol. These include: florisil column cleanup, silica gel

column cleanup, acid-base partition, steam distillation and sulfuric acid cleanup for PCB analysis.

High levels of matrix interference may be present in waste, soil and sediment samples. This interference may prevent the achievement of ASP detection limits if no target compounds are found. In order to avoid unnecessary dilutions, the optional cleanup methods noted in the 2000 NYSDEC ASP will be required to be performed by the laboratory as necessary.

It should be noted that if these optional cleanup and extraction methods are utilized, holding time requirements will not be exceeded due to negligence of the laboratory. Subsequent to selection of the analytical laboratory for this project, a meeting or telephone conference call will be undertaken with representatives of the NYSDEC, the Consultant and the laboratory to discuss these issues and establish procedures to ensure effective and timely communications among all parties.

A.16 Trip Blanks (Travel Blanks)

The primary purpose of a trip blank is to detect other sources of contamination that might potentially influence contaminant values reported in actual samples, both quantitatively and qualitatively. The following have been identified as potential sources of contamination:

- Laboratory reagent water;
- Sample containers;
- Cross contamination in shipment;
- Ambient air or contact with analytical instrumentation during preparation and analysis at the laboratory; and
- Laboratory reagents used in analytical procedures.

A trip blank will consist of a set of 40 ml sample vials filled at the laboratory with laboratory demonstrated analyte free water. Trip blanks will be handled, transported and analyzed in the same manner as the samples acquired that day, except that the sample containers

themselves are not opened in the field. Rather, these sample containers only travel with the sample cooler. The temperature of the trip blanks will be maintained at 4°C while on-site and during shipment. Trip blanks will return to the laboratory with the same set of bottles they accompanied in the field.

The purpose of a trip blank is to control sample bottle preparation and blank water quality as well as sample handling. Thus, the trip blank will travel to the site with the empty sample bottles and back from the site with the collected samples in an effort to simulate sample handling conditions. Contaminated trip blanks may indicate inadequate bottle cleaning or blank water of questionable quality. Trip blanks will be implemented only when collecting water samples, including field blanks, and analyzed for volatile organic compounds only.

A.17 Drill Water

If water is utilized during the drilling process, a sample of the drill water will be collected and analyzed for TCL VOC +10. The purpose of the drill water sample is to determine if the water may be a potential source of contamination for the environmental samples.

The sample will be collected directly from the valve on the drill rig. The drill water sample will be handled in the same manner as the environmental samples.

A.18 Method Blanks/Holding Blanks

A method blank is an aliquot of laboratory water or soil which is spiked with the same internal and surrogate compounds as the samples. The purpose of the method blank is to define and determine the level of laboratory background contamination. Frequency, procedure and maximum laboratory containment concentration limits are specified in the 2000 NYSDEC ASP. A holding blank is an aliquot of analyte-free water that is stored with the environmental samples in order to demonstrate that the samples have not been contaminated during laboratory storage. This blank will be analyzed using the same analytical procedure as the samples.

A.19 Matrix Spikes/Matrix Spike Duplicates and Spiked Blanks

Matrix spike samples are quality control procedures, consistent with 2000 NYSDEC ASP specifications, used by the laboratory as part of its internal Quality Assurance/Quality Control program. The matrix spikes (MS) and matrix spike duplicates (MSD) will be aliquots of a designated sample (water or soil) which are spiked with known quantities of specified compounds. These QA/QC samples will be used to evaluate the matrix effect of the sample upon the analytical methodology, as well as to determine the precision of the analytical method used. A matrix spike blank will be an aliquot of analyte-free water, prepared in the laboratory, and spiked with the same solution used to spike the MS and MSD. The matrix spike blank (MSB) will be subjected to the same analytical procedure as the MS/MSD and used to indicate the appropriateness of the spiking solution by calculating the spike compound recoveries. The procedure and frequency regarding the MS, MSD and MSB samples are defined in the 2000 NYSDEC ASP.

A.20 Field Management Forms

Appendix F

APPENDIX F

HEALTH AND SAFETY PLAN

5.0 HEALTH AND SAFETY PLAN

5.1 General

This Health and Safety Plan (HASP) is intended to meet the requirements outlined in 29 CFR §1910.120 and §1926, the NIOSH/OSHA/USCG/EPA Guidance Manual for Hazardous Waste Site Activities (NIOSH No. 85-115), USEPA "Standard Operating Safety Guides," and Superfund Amendments and Reauthorization Act (SARA), Title I, Section 126. The HASP addresses activities associated with remedial investigations and feasibility studies (RI/FS) conducted at dry cleaner sites. Compliance with the HASP is required of all on-site personnel entering and/or conducting investigation activities at the site. Personnel conducting activities at the sites will be subject to the requirements of this HASP and be accountable to the authorities having jurisdiction at the site. Site-specific information regarding health and safety will be included in the Site-Specific Work Plan. At a minimum, the information provided in Exhibit 5-1 will be included in the Work Plan.

5.2 Purpose and Scope of the HASP

To ensure health and safety during activities associated with field investigation (including drilling, sampling and excavation) in the restricted zones, this HASP sets forth the requirements for on-site health and safety supervision, air monitoring, medical monitoring, personal protective equipment, controls, safe work practices and proper decontamination by providing this information in the following sections.

5.3 Site Description (General)

In summary, contaminants of concern for the site, including the chemicals and their breakdown products, are the following:

- Cis-1,2-dichloroethene

- Tetrachloroethene
- Trans-1,2-dichloroethene
- Trichloroethene
- 1,1,1-Trichloroethane
- Vinyl chloride

5.4 Personnel Organization and Responsibilities

This project will require the interaction of government agencies, contractors, site facility operators and technical specialists, both on-site and off-site. The project team will comprise representatives of the New York State Department of Environmental Conservation (NYSDEC), the environmental consultant and various subcontractors.

5.4.1 Project Director

The Project Director will have overall responsibility for implementation of the corporate and Site-Specific Health and Safety Plan, and the supervision and monitoring of employees and subcontractors.

5.4.2 Project Manager

The Project Manager will assure that all elements of this HASP are implemented where applicable and that all project staff are protected and working in a safe manner.

5.4.3 Health and Safety Officer (HSO)

The HSO will be responsible for preparation of the Site-Specific HASP and has the final authority to resolve health and safety issues at the site. The HSO has overall responsibility for ensuring that the policies and procedures of this HASP are implemented.

The HSO will provide regular support for all health and safety activities, including recommendations for upgrading or downgrading the level of personal protection, as needed.

The HSO will be on-site as needed during the project. The HSO has the has the authority to stop work at any time unsafe work conditions are present. Any potentially hazardous condition posing a risk beyond the defined role or mission is anticipated to require the HSO to consult with the Field Operations Manager (FOM) and Project Director.

The HSO will be a Certified Hazardous Materials Manager (CHMM), a Certified Industrial Hygienist (CIH) or designee, and will be available off-site on an as-needed basis to provide technical support to the HSO. Any decisions requiring use or selection of personal protection equipment (PPE) or monitoring devices other then those in the HASP will be approved by the HSO or designee.

5.4.4 Field Operations Manager (FOM) and Alternate HSO

The FOM, or designee, will serve as the Alternative HSO and will be responsible for conducting the work and for assuring that the work is conducted in accordance with the requirements of the HASP. The FOM will be on-site as needed during the project and will manage all day-to-day activities of all parties on this project.

The FOM will be responsible for implementing safety precautions and procedures during all investigation phases, and has final authority to resolve health and safety issues at the site when the HSO is not on-site.

5.4.5 Physician

A physician will be responsible for all medical review, diagnosis and certification of all site personnel. An on-call physician will be selected for each site and designated in the Site-Specific Work Plan.

5.4.6 General Health and Safety Requirements for all Employees

The following general health and safety requirements will apply to all persons working at the site:

- All persons working on the investigation team will read, sign and become familiar with the HASP (a copy of the Field Team Review Form is provided in Exhibit 5-2). If any information is unclear, the reader will contact the HSO for clarification prior to any field work. A copy of the plan will be available for review through the Project Manager, FOM or his designee.

- No one will be allowed in active investigation areas without the prior knowledge and approval of the HSO, Project Manager or FOM. All active areas that could pose a potential threat to health and safety will be designated with warning tape or other measures to prevent access by other site personnel or the public.

- Sufficient backup personnel will be available for all site activities. At a minimum, two persons will be present at any location during investigation activities.

- All personnel involved in the investigation at the site will notify the HSO, Project Manager or FOM of any unsafe conditions or activities.

- Standard hygiene practices will be implemented, such as no smoking, eating or drinking during site investigation work activities A thorough washing of hands and face prior to smoking, eating or drinking will be conducted.

- Workers will avoid unnecessary contamination, such as walking through, sitting on, leaning on or kneeling in areas that are known or suspected to be contaminated.

- All site personnel will observe their partners for any signs of adverse effects associated with the work activity, and will inform their partner or supervisor of any unusual signs or symptoms that they are experiencing themselves.

5.5 Hazard Assessment and Risk Analysis

5.5.1 Potential Health Hazards

The general hazard potential at the dry cleaner sites is characterized in Table 5-1. The primary concern at these sites is to protect workers from potential exposure to contaminated

soils, vapors, groundwater and other contaminated materials when conducting the remedial investigation. In addition to the chemical hazards, physical, biological and underground hazards also exist. These hazards are identified on Table 5-2 and are discussed below.

Table 5-1

SUMMARY OF CHARACTERISTICS AND HEALTH HAZARDS

Type of site	Chlorinated VOC sites
Apparent hazard	Low-moderate
Potential source	Contaminated surface and subsurface soil, groundwater, waste water, drainage water, surface water, sediment and sanitary waste/sludge
Contamination characteristics	Toxic, corrosive, flammable
Form of hazards	Dusts, liquids, vapors
Routes of exposure	Inhalation, ingestion, skin, eyes

Table 5-2

SUMMARY OF POTENTIAL HAZARDS

CHEMICAL HAZARDS	Tetrachloroethene
	Trichloroethene
	Cis 1,2 dichloroethene
	Trans 1,2 dichloroethene
	Vinyl chloride
	1,1,1 Trichloroethane
PHYSICAL HAZARDS	Noise
	Slips, trips, falls
	Deteriorated overhead surfaces
	Heavy equipment traffic
	Heat or cold stress
	Striking and struck by (heavy equipment)
	Streamline
BIOLOGICAL HAZARDS	Pigeon droppings
	Rabies carrying animals (rats, raccoons, etc.)
	Poisonous snakes (weather dependent)
	Stinging insects (weather dependent)
	Poisonous plants (weather dependent)
ELECTRICAL HAZARDS	Overhead power lines
	Lightning
	Electrical equipment
FIRE/EXPLOSION HAZARDS	Combustible gas
OXYGEN DEFICIENCY	Working in confined spaces
RADIATION HAZARDS	N/A
UNDERGROUND HAZARDS	Electrical lines
	Telecommunication lines
	Gas lines
	Water lines
	Sewer/storm lines

5.5.1.1 - Health Hazard Identification

A list of the chemical contaminants of concern are provided in Table 5-3. These chemical contaminants may be present, along with other compounds, at levels, which upon volatilization, may result in concentrations approaching the OSHA Permissible Exposure Limits (PELs). There may also be chemical or mixtures of chemicals for which no information at the time of preparation of this HASP have been identified. Workers should be observant of any unplanned occurrences (unusual odor, soil colorations, etc.) for chemical hazard groups including:

- sanitary wastes
- solvents
- chemically contaminated dusts
- cement dusts

5.5.1.2 - Health Hazard Evaluation

The primary potential health hazards of concern to workers from contaminants are from the inhalation of vapors and dusts, and skin exposure to corrosive substances or skin absorptive poisons. Potential for these exposures exist when conducting field programs using various investigation techniques.

OSHA PELs and American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values (TLV) may be exceeded during investigative activities. Table 5-3 lists the chemicals, PELs, TLVs and primary health hazards. The activities to be performed during remedial investigations are summarized in Table 5-4. These activities will be closely monitored and evaluated to determine the potential for exceeding the standards and the need to implement control measures to protect personnel and the environment.

Table 5-3

PERMISSIBLE EXPOSURE LIMITS (PELS) AND PRIMARY HEALTH HAZARDS FOR POTENTIAL CONTAMINANTS OF CONCERN

Chemical	ACGIH TLV (ppm)	ACGIH STEL/ Ceiling (ppm)	OSHA PEL (ppm)	OSHA Acceptable Ceiling/ST Concentration (ppm)	Primary Health Hazards
Tetrachloroethene	25	100	100	200	Liver, kidneys, eyes, upper respiratory system, central nervous system
Trichloroethene	50	100	100	200	Respiratory system, heart, liver, kidneys, central nervous system, skin
1,1,1-Trichloroethane	350	450	350	---	Central nervous system, eyes, liver, kidneys, skin, cardiovascular systems
Vinyl Chloride	5	---	1 Action Level = 0.5	5	Liver, skin, respiratory system, central nervous system, lymphatic system, *confirmed human carcinogen*
Cis-1,2-Dichloroethene	200	---	200	---	Respiratory system, eyes, central nervous system
Trans-1,2-Dichloroethene	200	---	200	---	Respiratory system, eyes, central nervous system

Table 5-4

ACTIVITIES TO BE PERFORMED DURING The REMEDIAL INVESTIGATION

Borehole construction
Monitoring well installation
Groundwater sampling

5.5.1.3 - Potential Exposures

The expected risk of exposure to these chemicals would be from inhalation, ingestion, skin or eye contact with volatile compounds, contaminated dusts, etc. Potential exposures can be mitigated through appropriate investigation procedures, work practices, air monitoring and personal protective equipment. Duration and frequency of exposure will be short and intermittent over a period of several weeks. All personnel related to the investigation will keep upwind of all soil disturbances and sampling activities at all times, when possible. In addition, splashing of liquids should be minimized by employing careful handling practices.

5.5.1.4 - Physical and Biological Hazards

Potential physical hazards from routine investigative work are low, but still require consideration due to their ability to cause injury. Workers may encounter sharp objects, pinch points or unsecured footing, especially when working inside the dry cleaner facility. Improper or careless use of sampling, drilling and excavation equipment increases the risks of accidents from underground and overhead utilities, and operation of the equipment. When working around machinery inside a dry cleaner, there are also potential electrical hazards. In addition, workers may be exposed to poison ivy, stinging and biting insects, ticks and vermin. Heat/cold stress, sunlight and UV radiation, and biological hazards are also potential hazards.

Open excavations, pits, trenches and other confined spaces also represent hazards and under no circumstances will they be entered unless written procedures are in place and anyone performing confined space operations has received the necessary training. Gases such as methane or hydrogen sulfide may be encountered in drains, sump pits, dry wells or sanitary systems.

5.5.2 Activity Safety and Health Hazard Analysis

Field activities for the will include collecting analytical data from various sampling locations and environmental media using techniques including:

- Borehole construction
- Monitoring well installation
- Groundwater sampling

Potential safety risks will vary with the specific activity and equipment used, and with the sampling sites themselves. When any new data is collected, potential health and safety hazards will be evaluated and related to the current and planned activities at the site. All sampling work in which the potential hazards have not been identified may require additional precautions to assure protection against potential hazards. Any modifications of the Generic Work Plan or changes contained in the Site-Specific Work Plan will require evaluation to determine if the existing Health and Safety Plan is adequate in protecting on-site investigators.

With the installation of groundwater monitoring wells and soil borings, soil and groundwater sampling, test pit excavations, and drywell, storm water drainage system and sanitary system sampling during the investigation, some safety risks inherent with these activities may be expected. There is the potential for mechanical and physical struck-by hazards associated with the equipment and sampling activities. There are also potential electrical hazards from underground lines, overhead lines and use of electrical equipment and tools. All underground utilities must be located in areas where subsurface investigation is to be performed. Utility companies will be contacted to provide "mark-outs" on and off site at all investigation locations prior to initiation of subsurface activities. The property owner will also be contacted to determine utility locations on site. When conducting work inside dry cleaners, machinery lockout/tagout must be performed. Workers should be aware of pinch points when working around machines.

The direct handling of contaminated drums, containers or concentrated/pure chemicals is not expected during the investigation. In the event that such materials are encountered during the field program, the operation will cease and uncovered drums which have been damaged will be immediately covered with soil to minimize release of volatile compounds. This condition will be recorded and reported to NYSDEC, and the field team will be instructed to secure the area until health and safety risks are properly assessed and NYSDEC determines further action.

The activities to be conducted at dry cleaner sites represent low to moderate health risk given the potential to encounter contaminated material. The risk associated with safety hazards is also low to moderate. Potential levels of airborne contaminants may dictate use of appropriate personal protective equipment as deemed necessary by the HSO.

Initial work will be conducted in Level D personal protection. Monitoring equipment to be used includes: portable PID/FID, and combustible gas, oxygen, hydrogen sulfide indicator. Other instrumentation and sampling systems may be utilized, if deemed necessary by the HSO or designee. The HSO or designee may modify these requirements as deemed necessary.

Proper wearing of protective equipment and employment of stringent personal hygiene practices should reduce potential health hazards.

Restricting access of on-site personnel to all equipment operations, maintaining safe distances from equipment and wearing proper safety equipment will reduce risk of injuries.

5.6 Training Requirements

5.6.1 General Health and Safety Training

All on-site personnel assigned to or regularly entering areas of the site other than the Support Zone (once established) will be trained in accordance with 29 CFR 1910.120. This training will be required for personnel performing or supervising work; for health, safety, security, or administrative purposes; for maintenance; or for any other site related function.

The training will include a minimum of forty hours of general health and safety training and three days of on-site supervised experience. Documentation of all such training will be made available to the HSO, HSO designee or FOM before any person will be allowed to enter any potentially contaminated area (namely, the Exclusion Zone or the Contaminant Reduction Zone - See Section 5.10 for further discussion of Work Zones).

5.6.2 Site-Specific Training

All site personnel will attend a Site-Specific training meeting and will become familiar with the HASP and site-specific information, and certify their understanding of this plan (see Exhibit 5-2). This meeting will include, at a minimum, discussion in the following areas:

- Site specific hazard analysis (chemical/physical hazards).
- Standard safety operating procedures.
- Personal hygiene.
- Safety equipment to be used.
- Personal protective equipment to be worn, including care, use and proper fitting.
- Decontamination procedures.
- Areas of restricted access and prohibitions in work areas.
- Emergency procedures and plans.
- On-site and off-site communications.
- Hazardous materials handling procedures.
- Air monitoring instrumentation use and calibration.
- Hazardous materials recognition.
- The "Buddy System" to be used at the site.

Visitors entering the Exclusion and Contaminant Reduction Zones will also be briefed on similar information. This briefing will be conducted by the HSO or the FOM/Alternate HSO. Abbreviated awareness briefings for visitors who remain in the Support Zone will also be provided by the HSO, HSO designee or FOM.

Proof of training for all on-site personnel will be included in the Site-Specific HASP or provided to the HSO prior to commitment of field activities. Personnel who have not successfully completed the required training will not be permitted to enter the Exclusion Zone or the Contaminant Reduction Zone.

New employees involved in hazardous activities will be indoctrinated by the HSO prior to entering the site to work. All training requirements will be completed by a new employee prior to indoctrination. Indoctrination will be comprised of the site-specific refresher briefing, the task/operation safety and health risk analysis, and the phased accident prevention plan.

5.7 Personal Protective Equipment

5.7.1 General

All on-site personnel will be issued appropriate personal protective equipment (PPE). All PPE is to be used properly and protective clothing is to be kept clean and well maintained. The HSO or designee will maintain constant communication with the Project Director when conducting air monitoring and consult the Project Director with regard to "action levels" at which the specified minimum levels of protection are either upgraded or downgraded based upon air monitoring results and direct contact potential. The HSO or designee has the authority to require the use of additional equipment, if necessary, for specific operations, or may tailor PPE specifications to best fit the hazard control requirements as appropriate.

5.7.2 General Site Safety Equipment Requirements

The following is the basic work uniform and will be worn primarily outside the Exclusion Zone and the Contaminant Reduction Zone at the site. Equipment includes:

- Coveralls - (optional, may be disposable type).
- Boots/shoes - (OSHA compliant construction footwear)

- Hard hat with splash shield, if needed - ANSI approved.
- Gloves (optional).

5.7.3 Level D Protection

Level D protection will be initially worn in the Exclusion Zone and Contaminant Reduction Zone during intrusive sampling and investigative activities. Equipment includes:

- Coveralls - One or two piece disposable suit, tyvek or equivalent.
- Gloves - Outer (neoprene, nitrile, or equivalent); Inner (latex).
- Boots - Outer (vulcanized rubber or equivalent); Inner (steel toe and shank) or equivalent combination (ANSI approved).
- Safety glasses or goggles (ANSI approved).
- Hard hat with splash shield, if needed (ANSI approved).
- Hearing protection (if work is near heavy or noisy equipment)

5.7.4 Level C Protection

Level C protection will be selected when a modified level of respiratory protection is needed. Selection will be made when air monitoring results for the site or individual work areas exceed the action level criteria (See Section 5.9.2 for action level criteria). Equipment includes:

- Respirators - Full facepiece, air purifying respirator with combination organic vapor and high efficiency particulate air (HEPA) cartridges (OSHA/NIOSH approved).
- Coveralls- Hooded one or two piece chemical resistant suit, PE - Tyvek or equivalent (modification of protective suits may be made upon the approval of the HSO).
- Gloves - Outer (nitrile or equivalent); Inner (latex).
- Boots - Outer (neoprene or equivalent); Inner (steel toe and shank) or equivalent combination (ANSI approved).

- Two-way radio communications (for remote operations).
- Hard hat with splash shield (ANSI approved).
- Hearing protection (if work is near heavy or noisy equipment)

5.7.5 Level B Protection

Level B protection requires full chemical resistant clothing with a full facepiece SCBA or supplied air respirator. Generally, this level of protection is not expected for this project. However, provision will be made to have this equipment available should its use be determined to be required. Investigation activities which may result in this level of protection being required will not be implemented until the equipment has been transported to the site. The HSO will be notified should air monitoring indicate this level of protection is required. Implementation of Level B protection will only be performed when sufficiently trained personnel (minimum of two) are available on-site.

5.7.6 Confined Spaces

Under no circumstances will confined spaces be entered unless discussed with the Project Director and HSO, and this plan is revised or the Site-Specific HASP is prepared to incorporate additional safety requirements, and all personnel are trained appropriately to deal with confined space hazards.

5.7.7 Standing Orders

5.7.7.1 - Eye Protection

Prescription lens inserts will be provided or personal contact lenses may be used for full-face respirators. All eye and face protection will conform to OSHA 1910.133.

5.7.7.2 - Respiratory Protection

Programs for respiratory protection will conform to OSHA 1910.134 and ANSI Z88.2-1980. A respiratory program addressing respirator care and cleaning is described in Exhibit 5-3.

5.7.7.3 - Respirator Fit-testing

Personnel unable to pass a fit-test will not engage in any investigation activities that will require level C or higher protection.

5.7.7.4 - Respirator Maintenance and Repair

Each respirator will be individually assigned and not interchanged between workers without cleaning and sanitizing. Cartridges/canisters and filters will be changed daily or upon breakthrough, whichever occurs first. If breakthrough occurs, a reevaluation by the HSO of the protection level will be made. A procedure for assuring periodic cleaning, maintenance, and change of filters will be followed by each respirator wearer. This procedure is described in Exhibit 5-3 - Respiratory Cleaning and Maintenance Procedure.

5.7.7.5 - Head Protection

A hard hat will be worn by all personnel. All head protection will conform to the requirements in OSHA 1910.135.

5.7.7.6 - Reuse and Retirement of PPE

All non-disposable Level D or C personal protective equipment worn on-site will be decontaminated before being reissued. The FOM, HSO or designee is responsible for ensuring all non-disposable personal protective equipment is decontaminated before being reissued (see Section 5.11). Disposable PPE will be properly disposed of according to NYSDEC requirements and regulations.

5.7.7.7 - Foot Protection

All safety boots will conform to OSHA 1910.136.

5.7.7.8 - Noise Protection

Power equipment may generate excessive noise levels (in excess of 85 decibels). Proper ear protection will be provided and used in accordance with OSHA 1926.52.

5.8 Medical Surveillance

All on-site personnel involved in hazardous waste operations will have satisfactorily completed a comprehensive medical examination prior to the initiation of investigation activities at the site. Medical examinations are required for any and all personnel entering Exclusion or Contamination Reduction Zones.

Medical examinations are not required for people making periodic deliveries provided they do not enter Exclusion or Contamination Reduction Zones.

The date of physical examination of each site worker will be documented. A specific Medical Data Sheet for each individual will be filed with the HSO or designee prior to commencing operations and with the Project Manager.

All personnel who will enter the Exclusion Zone or the Contaminant Reduction Zone will be provided with medical surveillance at the start of their employment (entrance examination) and at the end of the on-site personnel's employment (exit examination). Medical surveillance protocol is the physician's responsibility, but will meet the requirements of OSHA Standard 29 CFR 1910.120 for all personnel. The protocol will be selected by the physician. Additional clinical tests may be included at the discretion of the attending physician performing the medical

examination. Non-scheduled medical exams may be conducted as determined necessary by the physician, but will be conducted:

- After acute exposure to any toxic or hazardous material.
- At the discretion of the Project Director and/or the physician, when an employee has been exposed to potentially dangerous levels of toxic or hazardous materials.
- At the discretion of the Project Director and/or the physician, and at the request of an employee with demonstrated symptoms of exposure to toxic or hazardous materials.

In addition to non-scheduled exams, any medical or biological monitoring required by an OSHA standard when OSHA Action Levels are exceeded will be performed.

Companies contracted to perform work on-site in the Exclusion Zone or Contaminant Reduction Zone, will provide equivalent medical surveillance to their on-site personnel and supply documentation to that effect.

5.8.1 Documentation and Recordkeeping

The examining physician will notify the Project Director in writing that the individual has received a medical examination and advise as to any specific limitations upon such individual's ability to work at the project site, which were identified as a result of the examination. Appropriate action will be taken in light of the advice given pursuant to this paragraph.

The ability of on-site personnel to wear respiratory protection during hazardous waste activities will be certified by the physician. Cardiopulmonary system examination and pulmonary function testing are minimum requirements.

The physician will maintain and provide access for employees to his medical surveillance records according to OSHA requirement 29 CFR 1910.20. These records will be maintained for a period of 40 years.

5.9 Environmental and Personal Monitoring Program

5.9.1 General

In order to protect site workers from harmful levels of airborne toxic materials, potentially explosive gases, or excessively cold conditions, regular environmental and personnel monitoring will be accomplished to document exposures and to decide when to increase protective measures.

5.9.2 Air Monitoring

Particular phases of work will require the utilization of specific air monitoring equipment to detect relative levels of contaminants or identify unknown environments.

Air monitoring will be conducted by the HSO or FOM or designee for the express purpose of safe guarding the health and welfare of site workers and the general public residing in the vicinity of the site.

5.9.2.1 - Air Monitoring Instrumentation

On-site air monitoring will be performed using the following direct reading instruments:

- Century OVA-128 (or equivalent) portable flame ionization device (FID) for detection of volatile organic vapors (with and without a methane filter)
- PhotoVac Microtip (or equivalent) portable photo ionization device (PID) for the detection of organic vapors
- Portable combustible gas/oxygen/hydrogen sulfide detector will be available for determining lower explosive limits, oxygen and hydrogen sulfide levels in any identified confined spaces. Under no circumstances will confined spaced be entered unless discussed with the Project Director and the HASP is revised to incorporate additional safety requirements and all personnel are trained appropriately to deal with confined space hazards.

- Draeger gas detector tubes for detecting specific hydrocarbons (e.g., VC, PCE and TCE) should PID/FID readings exceed 1 ppm.

All monitoring and surveillance equipment will be operated, maintained and calibrated each working day in accordance with the manufacturer's instructions and quality assurance procedures. Organic vapor monitoring will be conducted by trained field staff prior to, during and following sampling, and disturbance of soils or sediments at a sampling site. Should contamination levels indicate high hazard potential, the HSO will review monitoring procedures and results.

A daily air monitoring form or entries in a daily log book will be used to record monitoring data. (See Exhibit 5-4).

Instruction and calibration manuals for the proper use of these, as well as other field instrumentation, will be provided as a separate document available for use at the site.

Monitoring and surveillance equipment is impacted by cold weather, communication transmissions and possibly high voltage electrical transmission wires and other interferences. Any unusual meter responses will be noted on the air monitoring form and a diagnosis of potential influencing factors made to determine and eliminate the cause.

5.9.2.2 - Air Monitoring Locations and Action Level Criteria

The primary areas to be monitored during the project are the work zones established around sampling, drilling or excavation locations. Air monitoring protocols for each area will differ, since target populations, contaminant concentrations and atmospheric conditions will vary. Monitoring will be conducted within these work zones and at the site perimeter.

Air monitoring conducted at the sampling locales will focus on workers' breathing zones and may include personal breathing zone samples. Air monitoring just outside of these locations will consist of instruments attempting to quantify the types and degrees of emissions originating from sampling sites.

5.9.2.2.1 - Duration, Frequency and Protocol

Monitoring will be conducted daily or as deemed necessary by the HSO or designee during all activities in the Exclusion Zone, particularly during intrusive activities. The HSO or designee may modify the work zone sampling frequency upon review of previously analyzed work zone samples.

5.9.2.2.2 - Background Air Monitoring

Background monitoring for contaminants will be conducted at the upwind perimeter of the Exclusion Zone prior to allowing workers to enter the Exclusion Zone. Monitoring will occur continuously, or at the discretion of the HSO or designee, downwind and crosswind while work is occurring in the Exclusion Zone. Data will be annotated in the Air Monitoring Form for that day. Indoor air quality monitoring will also be conducted when working inside.

Changes in wind direction will require reassessment of air monitoring locations. Wind directions may be determined with the aid of a wind sock (if appropriate). Levels of contaminants that warrant use of respiratory protection by site workers may require initiation of site perimeter and personal sampling as deemed necessary by the HSO or designee.

5.9.2.2.3 - Exclusion Zone Air Monitoring

Air monitoring conducted in the Exclusion Zone will focus on real time measurement of toxic compounds that pose inhalation hazards, levels of flammable compounds for explosive hazards, and oxygen deficient atmospheres. A summary of the action levels are provided in Table 5-5.

Table 5-5

ACTION LEVELS FOR
REMEDIAL INVESTIGATION

Action Level	**Action To Be Taken**
OVA/TIP	
Background	**Level D**
Background to 5 units* above background in breathing zone.	Halt work, evacuate area and allow area to ventilate prior to resuming work. Should levels persist, upgrade to **Level C** protection if required upon approval by HSO and FOM.
Greater than 5 units* above background in breathing zone.	Halt work, evacuate work area and allow area to ventilate prior to resuming work. Should levels persist, contact FOM and upgrade to **Level B** protection if required upon approval by HSO and FOM.

*Units equal total ionizable organic/inorganic vapors and gases.

**Reading sustained for 1 minute (60 seconds) or longer.

Vapor Emission

If the ambient air concentration of total organic vapors exceeds 5 ppm (or 5 units) above background at the perimeter of the Exclusion Zone, work at that location will be stopped, and the area evacuated until a review of work procedures, air monitoring needs, and use of appropriate respiratory protection and equipment is performed by the HSO or FOM. In addition, downwind monitoring at the site perimeter will be performed to determine whether off-site contaminant migration is occurring. Work will proceed only after review and approval by the HSO or FOM, and the appropriate corrective action is taken or level of protection established. More frequent intervals of monitoring will be conducted as directed by the HSO, including Draeger tube screening for specific contaminants.

If the organic vapor level decreases to below 5 ppm (5 units), and vinyl chloride is not present, activities can resume, but more frequent intervals of monitoring, as directed by the HSO, must be conducted and must include monitoring for vinyl chloride. If the organic vapor levels are greater then 5 ppm, but less than 25 ppm over background at the perimeter of the Exclusion Zone, activities can resume provided Level B protection is worn and the area is monitored for vinyl chloride until levels fall below background.

If the organic vapor level is above 25 ppm at the perimeter of the Exclusion Zone, work activities must be shutdown. When work shutdown occurs, downwind air monitoring as directed by the HSO will be implemented to ensure that vapor emissions do not impact the nearest residential or commercial structure at levels exceeding those specified in the Major Vapor Emission section.

5.9.2.2.4 - Community Air Monitoring Plan

Air monitoring for volatile organic compounds will be accomplished at the upwind and downwind perimeter of the Exclusion Zone to document real time levels of contaminants which might be moving off-site. The plan must include the following:

- VOCs will be monitored at the downwind perimeter of the Exclusion Zone daily at 2 hour intervals. If total organic vapor levels exceed 5 ppm above background, activities must be halted and monitoring continued under the provisions of Major Vapor Emission Response Plan (see below). All readings must be recorded and be available for NYSDEC and New York State Department of Health (NYSDOH) personnel to review.

Major Vapor Emission

If organic levels greater than 5 ppm (or 5 units) above background are identified 200 feet downwind from the Exclusion Zone or half the distance to the nearest residential or commercial property, whichever is less, all work activities must be halted.

If, following cessation of the work activities, or as the result of an emergency, organic levels persist above 5 ppm above background 200 feet downwind, or half the distance to the nearest residential or commercial property from the Exclusion Zone, then the air quality must be monitored within 20 feet of the perimeter of the nearest residential or commercial structure (10-foot zone).

If either of the following criteria are exceeded in the 20 foot zone, then the Major Vapor Emission Response Plan will be implemented:

- Organic vapor levels approaching 5 ppm above background for a period of more than 30 minutes; or
- Organic vapor levels greater than 10 ppm above background for any time period.

Major Vapor Emission Response Plan

Upon activation, the following actions will be undertaken:

1. The local police authorities will be immediately contacted by the HSO and advised of the situation.

2. Frequent air monitoring will be conducted at 30 minute intervals within the 20 foot zone. If two successive readings below action levels are measured, air monitoring may be halted or modified by the HSO.

3. All emergency contacts will go into effect as appropriate.

Off-Site Migration Procedures

The same procedures and protocols practiced by on-site workers will aid in preventing any potential adverse conditions with respect to areas adjacent to the site. That is, these procedures are designed to assist in eliminating or minimizing the potential for extensive off-site migration. In the unlikely event that such migration occurs, the following notification procedures and work procedures are listed below:

1. Notification of local police, fire and rescue personnel advising them of the remedial investigation activities and the schedule of events on-site.

2. Immediate notification of NYSDEC, NYSDOH and local officials in the event of a threatening hazardous condition that may effect the health and safety of on-site workers and the surrounding community.

3. Decontamination procedures for equipment to prevent off-site migration of contaminants.

4. Use of a flame or photo ionization detector to monitor volatile organic vapors and potential off-site migration of contaminants.

5. Wetting down the ground surface or using clean cover material or calcium chloride to suppress particulate dust in the event that dust levels in the air of the work area are exceeded.

General visual observation will also be used during all intrusive activities to identify airborne releases (vapors, smoke, etc.) changes in the coloration of excavated materials, changes to the structural integrity of the surface or mechanical integrity of the equipment. Should such conditions be noticed or encountered, work will be halted, and the area evacuated until such time the FOM can be contacted and specific procedures for characterizing and handling the hazard can be developed.

The HSO, or his on-site designee, will observe site conditions daily with special attention to the aforementioned conditions. Depending on site conditions, additional personal protection measures will be implemented during the course of site work.

5.9.2.3 - Heat/Cold Stress Monitoring

Heat/cold stress guidelines are described in detail in Exhibit 5-5

5.9.3 Quality Assurance and Control

All monitoring instruments will be protected from surface contamination during use to allow easy decontamination. All instrumentation will be calibrated before and after use, and operational checks conducted periodically in the field over the duration of the day's field activities.

The following data will be recorded by the HSO or designee on the Air Monitoring Data form:

- Date and time of monitoring;
- Air monitoring location;
- Instrument, model number, serial number;
- Calibration/background levels; and
- Results of monitoring.

Interpretation of the data and any further recommendations will be made by the HSO or designee.

Air monitoring results will be provided verbally to the FOM following each site scan that indicates volatile organic vapor concentrations in excess of the action levels. Results will then be documented in writing and provided to the FOM by the end of that work day.

5.10 Site Control Measures

5.10.1 Work Zones

Those activities discussed previously in Section 5.5 will be subject to the designation of workzones. The Restricted Zone (RZ) will be identified as the area within which all project operations take place. At each sampling site, three work areas will be established: the Exclusion Zone (EZ), Contaminant Reduction Zone (CRZ) and Support Zone (SZ). Only authorized personnel will be allowed in the RZ. Typically, a five foot wide (or distance determined by the HSO or FOM) strip of land bordering the EZ is considered the CRZ. In addition to this strip of land, a specially demarcated area that connects the decontamination area to the CRZ is treated as an extension of the CRZ. All other areas inside the restricted area that are not an active Exclusion or Contaminant Reduction Zone are treated as a Support Zone.

5.10.1.1 - Exclusion Zone

The Exclusion Zone includes the intrusive activities and isolates the area of contaminant generation, and restricts (to the extent possible) the spread of contamination from active areas of the site to support areas and off-site locations. This area will encompass all intrusive work. The Exclusion Zone is demarcated by the Hot Line (i.e., a tape or rope line or physical barrier). Personnel entering the Exclusion Zone must:

- Enter through a controlled access point (the Contaminant Reduction Zone);
- Wear the prescribed level of protection (see Section 5.7); and
- Be authorized to enter the Exclusion Zone (see Section 5.4, 5.6, and 5.8).

Any personnel, equipment or materials exiting the Exclusion Zone will be inspected for contamination. Personnel will be subject to decontamination if deemed necessary by the HSO or

FOM. Equipment and materials (e.g., drill rods) will be decontaminated at decontamination facilities.

Specific access for emergency services to areas of specific site operations will be established by the HSO prior to commencing any operation. The delineated area of the Exclusion Zone may vary with task. (See Section 5.5 for specific task descriptions and the levels of protection.)

5.10.1.2 - Contaminant Reduction Zone

It is not anticipated that the prototypical CRZ will be necessary for investigations at dry cleaner sites. The extent and configuration of the CRZ will be at the discretion of the HSO or FOM. Certain safety equipment (e.g., emergency eye wash, fire extinguisher and first aid kit) will be located in the van at the sampling location.

The level of protection to be used for decontamination will normally be Level D. However, the HSO will determine appropriate levels of protection based upon air monitoring readings, and visual inspection of personnel and equipment operations in the Exclusion Zone. Equipment operators (e.g., truck drivers) physically performing tasks outside the EZ may be exempt from this requirement as approved by the HSO or FOM.

5.10.1.3 - Support Zone

A van will be used for storage of equipment and materials, paperwork, MSDS, emergency equipment and communications equipment. A log of all persons entering the site will be maintained by the FOM.

5.10.2 Operations Start-Up

No personnel will be positioned downwind of Exclusion Zone during intrusive activities and sampling, if possible.

5.10.3 Buddy System

All on-site personnel will utilize a buddy system when any task performed at the site requires:

- Personnel to assist in performing an activity.
- Intrusive work performed in the Exclusion Zone.
- Use of protective clothing.
- Communication between the Exclusion Zone and outside the Exclusion Zone.

The FOM, HSO or designee will enforce the buddy system and has the authority to modify the criteria stated above to deal with changing site-specific and environmental conditions.

In order to ensure that help will be provided in an emergency, all on-site personnel will be in line-of-sight contact or in communication with the HSO or FOM when working in the Exclusion Zone.

5.10.4 Site Communications Plan

- Internal communications on-site should be instituted prior to initiating any task in the Exclusion Zone.
- Internal communications will be used by on-site supervisory personnel.
- The FOM, HSO or designee will ensure that all site personnel are trained to use internal communications to:
  - alert personnel on-site of emergencies;
  - pass along safety information (such as for heat stress, cold stress control, or rest period time, etc.);
  - changes in work scope, scheduling or sequencing of operations; and

- maintain site control (such as notification of vandalism, intruders or violations of HASP protocol).

- Verbal communications and hand signals will be used for all tasks associated with the project. However, for those tasks performed in Level D or Level C, radio communications may be used.

- Any Exclusion Zone work activity being performed out of the line of sight may require use of radio communications.

- Air horns will be positioned at any Exclusion Zone work area to be used for emergency response only. The HSO or designee will designate air horn blast sequences for identification of work location, type of emergency and need for evacuation of all personnel.

- Wind direction indicators will be installed such that a line-of-sight is maintained with all personnel in all work zones. The HSO or designee will designate specific locations for wind direction indicators.

- All moving machinery, bulldozers, cranes, dump trucks, etc. will have working backup alarms.

- External communications (outside the site) will be maintained and used to coordinate emergency response, report to management and maintain contact with essential off-site personnel.

- All on-site personnel will be informed of external communications hardware (such as telephone, etc.) and the necessary telephone numbers to contact in the event of an emergency situation (fire, police, ambulance, etc.).

- All emergency numbers will be available at the site (see Section 5.1.1 for listing of important telephone numbers).

- Appropriate action will be taken should any hazardous environmental condition be observed on site. These conditions and the appropriate action to be taken will be as follows:

Observation	Potential Hazard	Action
Muddy condition	Personnel slip, equipment instability	Monitor work until condition improves
Lightning	Electrocution	Stop work until condition subsides
Horn blasts or other notification by site personnel	Site emergency	Stop work - evacuate to van or trailer - follow emergency notification procedures
Personal injury	Other personnel may be affected	Follow emergency notification procedures

Observation	Potential Hazard	Action
Personal fatigue	Cold stress	Follow cold stress guidelines
Windy condition	Overhead hazards, visual impairment	Stop work until condition subsides

5.10.5 Medical Assistance and General Emergency Procedures

Site-specific information regarding medical assistance and emergency numbers will be listed in the Site-Specific HASP. Emergency medical information for substances potentially present on-site include:

Substance	Exposure Symptoms	First Aid
VOCs (PCE, TCE, VC, DCE)	Dermal: irritation Inhalation: dizziness, nausea	Rinse affected area with water. Ventilate, artificial respiration.

5.10.5.1 - General Emergency Procedures

The following standard emergency procedures will be used by on-site personnel. The HSO or designee will be notified of any on-site emergencies and will be responsible for ensuring that the appropriate procedures are followed.

- Personnel Injury: Administer first aid and/or CPR, and arrange for medical attention.
- Fire/Explosion: Alert the fire department. Personnel will move a safe distance from the involved area.

5.10.6 Safe Work Practices

Workers will adhere to established safe work practices for their respective specialties. The need to exercise caution in the performance of specific work tasks is made more acute due to:

- Physical, chemical and toxicological properties of contaminated material present;
- Other types of hazards present, such as heavy equipment, falling objects, loss of balance or tripping;

- Weather restrictions;
- Restricted mobility and reduced peripheral vision caused by the protective gear itself;
- Need to maintain the integrity of the protective gear; and
- Increased difficulty in communicating caused by respirators.

Work at the site will be conducted according to established protocols and guidelines for the safety and health of all involved. Among the most important of these principles are the following:

5.10.6.1 - General

- In any unknown situation, always assume the worst conditions and plan responses accordingly.
- Because no personal protective equipment is 100 percent effective, all personnel must minimize contact with contaminated materials. Plan work areas, decontamination areas and procedures accordingly.
- Smoking, eating, chewing gum or tobacco, or drinking in the Contaminant Reduction Zone and the Exclusion Zone will not be allowed. Oral ingestion of contaminants is the second most likely means of introducing toxic substances into the body (inhalation is the first).
- Work breaks should be planned to prevent stress related accidents or fatigue related to wearing protective gear.
- Medicine and alcohol can potentiate the effects from exposure to toxic chemicals and cold stress. Prescribed drugs should not be taken if working in the Contaminant Reduction Zone or Exclusion Zone, unless approval has been given by the physician. Alcoholic beverage consumption will be prohibited on the site.
- Personnel must be observant of not only one's own immediate surrounding, but also those of others. Everyone will be working under constraints, therefore, a team effort is needed to notice and warn of impending dangerous situations. Extra precautions are necessary when working near heavy equipment and while utilizing personal protective gear because vision, hearing and communication will be restricted.

- Contact lenses are not allowed to be worn on site. If corrosive or lachrymose substances enter the eyes, proper flushing is impeded.

- All facial hair that interferes with the respirator facepiece fit, must be removed prior to donning a respirator for all tasks requiring **Level C** or **Level B** protection.

- Personnel must be aware that chemical contaminants may mimic or enhance symptoms of other illnesses or intoxication. Avoid excess use of alcohol or working while ill during the duration of task assignment.

5.10.6.2 - Site Personnel

- All personnel at the site will be identified to the HSO and FOM.

- All personnel operating in respective work zones will dress according to the protection levels set forth in this HASP (see Section 5.7).

- No red head wooden matches or lighters of any kind will be allowed in the Contaminant Reduction Zone or Exclusion Zone.

- All personnel will notify the HSO or FOM of any unusual occurrences that might effect the overall safe operation of the site.

- Any time a fire extinguisher is used, personnel will notify the HSO or FOM of what took place.

- All injuries and accidents will be immediately reported to the HSO or FOM and the appropriate reports filed (see Exhibit 5-6).

5.10.6.3 - Traffic Safety Rules

- Any vehicles that will not be involved in the site operations will be secured and the motor shut down.

- Only personnel assigned to this remedial investigation will be allowed to enter the site. Any other people, whether from OSHA, USEPA or vendors supplying equipment, etc., will have to be met prior to entering the site.

- At no time will any equipment be allowed to block any access road. If in the moving of equipment, a temporary blockage will exist, that equipment will have an operator available to move that equipment.

- The locations of all fire fighting equipment, valves, hydrants, hose storage places and fire extinguishers will be indicated to all personnel so that they will not be inadvertently blocked at any time.

5.10.6.4 - Equipment Safety Rules

- Proper loading and operation of trucks on-site will be maintained in accordance with DOT requirements covering such items as grounding, placarding, driver qualifications and the use of wheel locks.
- Operation of heavy construction equipment will be in accordance with OSHA regulations 29 CFR 1910 and 1926.
- All equipment that is brought on-site will be available for inspection by the HSO.
- The HSO, or designee, will assign protective equipment to all site personnel and this equipment will be made available for inspection at anytime.
- All equipment will be installed with appropriate equipment guards and engineering controls. These include rollover protective structures.
- Safe distances will be maintained when working around heavy equipment.
- All equipment and tools to be operated in potentially explosive environments will be intrinsically safe and not capable of sparking or be pneumatically or hydraulically driven. Portable electric tools and appliances can be used where there is no potential for flammable or explosive conditions use three-wire grounded extension cords to prevent electric shocks. Ground fault interrupters will be used as well.
- With hydraulic power tools, fire-resistant fluid that is capable of retaining its operating characteristics at the most extreme temperatures will be used.
- Cutting or welding operations will not be carried out without the approval of the HSO and FOM.
- At the start of each work day and on a weekly basis, inspection of brakes, hydraulic lines, light signals, fire extinguishers, fluid levels, steering, and splash protection will be made by the equipment operators (see Exhibit 5-10 for the Daily Unit Inspection Report and the Weekly Safety Inspection List).
- All non-essential people will be kept out of the work area.
- Loose-fitting clothing or loose long hair around moving machinery will be prohibited.
- Cabs will be free of all non-essential items and all loose items will be secured.

- The rated load capacity of a vehicle will not be exceeded.
- Dust control measures will be employed to prevent the movement of dusts from contaminated areas to clean areas. The method employed will be determined and reviewed by the HSO and the FOM.
- Equipment operators will report to their supervisor(s) any abnormalities such as equipment failure, oozing liquids, unusual odors, etc.
- When an equipment operator must negotiate in tight quarters, a second person will be used to ensure adequate clearance.
- A signalman will be used to direct backing as necessary.
- Refueling will be done in safe areas. Engines will not be fueled while vehicle is running. Ignition sources near a fuel area will be prohibited.
- All blades and buckets will be lowered to the ground and parking brakes set before shutting off the vehicles.
- An ongoing maintenance program for all tools and equipment will be implemented by the responsible subcontractor equipment supervisor. All tools and moving equipment will be regularly inspected to ensure that parts are secured and intact with no evidence of cracks or areas of weakness, that the equipment turns smoothly with no evidence of wobble, and that it is operating according to manufacturer's specifications.
- Tools will be stored in clean, secure areas so that they will not be damaged, lost or stolen.
- All heavy equipment that is used in the Exclusion Zone will be kept in that zone until the investigation is complete or the equipment is decontaminated. Equipment will be completely decontaminated before moving it into the Support Zone.

5.10.6.5 - Drilling and Excavation and Equipment Safety Rules

Drill rig and excavator operation, maintenance and safety will be the responsibilities of the drill rig/excavator operator.

5.10.6.6 - Electrical Safety

Electrical hazards can exist at sites because of downed power lines, contact with subsurface utilities or improper use of electrical equipment. The presence of underground electric lines will be checked before any digging or excavating is undertaken. When using cranes or material handlers, care will be taken that the machinery does not come in contact with any energized lines. There should be a 10 foot clearance between a crane and electrical power lines unless the lines have been deenergized or an insulating barrier has been erected.

The following should be used for protecting personnel from electrical shocks:

- Ground equipment
- Double insulating tools
- Over current devices such as fuses and circuit breakers
- Ground fault circuit interrupter
- Tools and flexible cords will be inspected for damage that could lead to shock

5.10.6.7 - Daily Housekeeping

The site and all work zones will be kept in an orderly fashion and the site is to be left safe and secure upon completion of each day's work.

5.10.6.8 - Site Personnel Conduct

- All site personnel will conduct themselves properly and in accordance with generally accepted good work practice.
- At all times, the HSO will monitor all safe operations at the site. Any operation not within the scope of the HASP will be discussed fully before that operation begins.

5.11 Personal Hygiene and Decontamination

5.11.1 General

- All personnel performing or supervising remedial work within a hazardous work area, or exposed or subject to exposure to hazardous chemical vapors, liquids or contaminated solids, will observe and adhere to the personal hygiene-related provisions of this section.

- Any personnel found to be repeatedly disregarding the personal hygiene-related provisions of the HASP will be barred from the site by the HSO.

- All on-site personnel will wear personal protective equipment as required at all times whenever entering the Exclusion Zone or the Decontamination Area.

- Personal hygiene and decontamination facilities, in accordance with OSHA 29 CFR 1910.120 (N), will be provided on-site, when necessary, and include the following:

  - Storage and disposal containers for used disposable outerwear.

  - Hand washing facilities.

  - An uncontaminated lunch area.

  - An uncontaminated rest/break area.

  - Chemical toilet, if no other facilities are located on-site.

- All personnel must enter and leave the work site through the facilities. The portable chemical toilet (if required), if possible, will be located in the Support Zone.

- The personal hygiene and decontamination facilities will be provided so that any personnel leaving the Exclusion Zone may perform decontamination, safely remove all protective outer clothing, and wash face and hands.

- Decontamination will be performed prior to taking breaks, eating lunch or leaving the work site.

- All site personnel will be given orientation training to the use and operation of the personal hygiene and decontamination facilities.

5.11.2 Contamination Prevention

To minimize contact with contaminated substances and lessen the potential for contamination, the following will be adhered to:

- Personnel will make every effort not to walk through any areas of obvious contamination (i.e., liquids, discolored surfaces, smoke/vapor clouds, etc.).
- Personnel will not kneel or site on the ground in the Exclusion Zone and/or the Decontamination Area.

5.11.3 Personal Hygiene Policy

- Smoking and chewing tobacco will be prohibited except in a designated break area.
- Eating and drinking will be prohibited except in the designated lunch or break area.
- All outer protective clothing (e.g., chemically protective suits, gloves, and boots) will be removed and personnel will thoroughly cleanse their hands and other exposed areas before entering the break or lunch area.
- Drinking of replacement fluids will be permitted in a designated area outside the Exclusion Zone. Personnel will, as a minimum, remove outer and inner gloves, respirator and coverall top, and wash hands prior to drinking replacement fluids.
- All personnel should change into fresh clothing after each working period or shift. Showering is mandatory upon return to each individuals' rest place.

5.11.4 Personnel Decontamination Procedures

Decontamination procedures are followed by all personnel leaving the Exclusion Zone. Generalized procedures for decontamination follow. All procedures apply for Level C personal protection, however for Level D only steps 2, 3, and 8 apply. The HSO may modify these procedures based on site conditions.

Step 1 Drop tools, monitors, samples, and trash at designated drop stations (i.e., plastic containers or drop sheets).

Step 2 Scrub outer boots and outer gloves with decon solution or detergent and water. Rinse with water.

Step 3 Remove tape from outer boots (if applicable) and remove boots and discard tape in disposal container. Place boots on boot rack.

Step 4 Remove tape from outer gloves (if applicable) and remove only outer gloves and discard in disposal container.

Step 5 This is the last step in the decontamination procedure if the worker has left the Exclusion Zone to exchange the cartridges on his/her air purifying respirator. The cartridges should be exchanged, new outer gloves and boot covers donned, the joints taped, if necessary, and the worker returns to duty.

Step 6 Remove outer garments and discard in disposal container. New outer garments will be issued at the beginning of each work day or as deemed necessary by the HSO.

Step 7 Remove respirator and place or hang in the designated area.

Step 8 Remove inner gloves and discard in disposal container.

Note: Disposable items (i.e., coveralls, gloves, and boots) will be changed on a daily basis unless there is reason to change more frequently. Dual respirator cartridges will be changed daily, unless more frequent changes are deemed appropriate by site surveillance data or by assessments made by the HSO.

Pressurized sprayers or other designated equipment will be available in the decontamination area for wash down and cleaning of personnel, samples and equipment.

A waterless hand cleaner and paper towels may be used for hands, arms and any other skin surfaces potentially in contact with contaminated material.

Respirators (if used) will be decontaminated daily and taken from the drop area. The masks will be disassembled, the cartridges set aside and all other parts placed in a cleansing solution. After an appropriate time in the solution, the parts will be removed and rinsed with tap water. Old cartridges will be discarded in the contaminated trash container for disposal. In the morning, the masks will be reassembled and new cartridges installed, if appropriate. Personnel will inspect their own masks and readjust the straps for proper fit.

5.11.5 Emergency Decontamination

Decontamination will be delayed if immediate medical treatment is required to save a life. Decontamination will then be performed after the victim is stabilized. When decontamination can be performed without interfering with medical treatment, or a worker has been contaminated with an extremely toxic or corrosive material that could cause additional injury or loss of life, decontamination will be performed immediately.

When decontamination cannot be done, the victim will be wrapped in a chemical protective barrier (clothing or sheeting) to reduce contamination of other personnel. Emergency and off-site medical personnel will be informed of potential contamination and will be instructed about specific decontamination procedures. When the victim is transported off the site, personnel knowledgeable of the incident, the site and decontamination procedure will accompany the victim.

5.11.6 Equipment Decontamination - General

- All vehicles and equipment used in the Exclusion Zone will be decontaminated prior to leaving the site.
- No vehicles will leave the decontamination area until they are properly inspected and approved by the HSO or FOM for general cleanliness of frame and tires.
- No vehicle will leave the site unless it is in a broom-clean condition and free of loose dirt or material on tailgates, axles, wheels, etc.
- The HSO or designee will monitor all vehicles to confirm proper decontamination prior to exiting. Approval will be based on visual inspection of all exposed surfaces.
- Equipment decontamination wash water residues will be collected for disposal.
- Personnel engaged in vehicle decontamination will wear Level C or Level D equipment with respiratory protection consistent with the air monitoring results collected by the HSO, and perform personal decontamination at the completion of equipment decontamination.

- Only clean water will be used for personnel, equipment and vehicle decontamination.

5.11.7 Small Equipment Decontamination Procedures

Small equipment will be protected from contamination as much as possible by draping, masking or otherwise covering the instruments with plastic (to the extent feasible) without hindering operation of the unit. For example, the photoionization detector can be placed in a clear plastic bag to allow reading the scale and operation of the controls.

Step 1 Remove coverings from equipment left in the drop area and place the coverings in appropriate waste containers.

Step 2 Brush or wipe any soil or moisture with a disposal paper wipe. Place soiled wipes in appropriate containers.

Step 3 Place bare units in a clean plastic tub and wiped off with a damp, clean, disposable wipe. Equipment will then be allowed to air dry.

Step 4 Following decontamination, check and recharge equipment, as necessary, for the next day's operations.

Step 5 Prior to entering the Exclusion Zone, recover all small equipment with new, protective coverings, if necessary.

5.11.8 Heavy Equipment Decontamination Procedures

The decontamination area for the drill rig and excavator will be set up as described in 5.11.6. A wash/rinse will be performed on to all surfaces that came in contact with contaminants (e.g., augers). Prior to removing any heavy equipment or vehicles from the Exclusion Zone, they must be thoroughly decontaminated. Specific procedures are as follows:

Step 1 Initially, inspect equipment/vehicles to determine if gross decontamination is required first. Particular attention must be paid to tires, under surfaces, points of contact with the ground, and horizontal surfaces where dusts or aerosols might settle.

Step 2 If visible contamination is present, the equipment/vehicle must be moved to the decontamination pad where gross contamination will be scraped, brushed or swept off.

Step 3 Following gross decontamination, or if visible contamination is no longer present, wash the equipment/vehicle with high pressure washer as deemed necessary by the HSO or designee. Efforts should be made to minimize water usage to reduce wastewater quantities.

Step 4 Prior to releasing any heavy equipment or vehicles from the Contaminant Reduction Zone, decontamination personnel will contact the HSO for final approval.

5.12 Emergency Response and Contingency Plan

5.12.1 General

This plan has been prepared in accordance with 29 CFR 1910.120 (l) and will address the following potential emergencies:

- Emergencies outside the site.
- Emergencies within the site.
- Chemical exposures.
- Site evacuation.

5.12.2 Emergency Equipment

Specially marked and readily accessible emergency equipment will be provided on-site.

5.12.3 Special Requirements

- The Project Director or FOM will be on-call for any after hour emergencies resulting from adverse weather conditions. Incidents resulting from adverse weather will be reported to the HSO who will in turn contact the Project Director.
- First aid kit locations will be specially marked and have adequate water and other supplies necessary to cleanse and decontaminate burns wounds, or lesions. First aid stations will also stock buffer solutions for treating acid and caustic burns.

5.12.4 Emergency/Accident Reporting and Investigation

In the event of an emergency associated with the site work, the HSO or FOM will, without delay take: 1) diligent action to remove or otherwise minimize the cause of the emergency; 2) alert the Project Director; and 3) institute whatever measures are necessary to prevent any repetition of any conditions or actions leading to, or resulting in, the emergency. Notification of the Project Director will occur immediately and initially be verbal with written notification occurring within 24 hours of the incident (i.e., accident, explosion, serious exposure, etc.). The Incident Notification Form, provided in Exhibit 5-6, will be used for written notifications and documentation.

5.12.5 Emergency Medical Care

- Site-specific emergency medical information will be provided in the Site-Specific Work Plan.
- The hospital will be informed by the HSO or FOM of potential medical emergencies that could result from site operations and advised on the types of hazardous materials that are on site. In the event of an incident requiring their assistance, specific details of hazardous materials should be provided to the hospital medical staff, if available.
- A list of emergency information and a map to the nearest medical facility/hospital will be posted at every work site telephone. Copies of this map will also be available to be placed in vehicles used to transport injured personnel to the medical facility.

5.12.6 Emergencies Outside the Site

- All work in the site area will stop when advised by any authorized personnel and will remain so until otherwise instructed.
- The HSO and FOM will be fully advised of any work that may affect the safety of on-site employees or property.
- Actions to be taken by on-site personnel in the event of an outside emergency will include:
  - All operations will cease immediately and all equipment will be shut down and secured.

- All personnel will leave vehicles in work zone in a safe manner making sure any remaining vehicles will not hamper any emergency traffic in the area or block any fire hydrants or foam supply systems.
- All personnel will evacuate to a prearranged muster area.
- All personnel will remain in the muster area to await further instructions.

5.12.7 Emergencies Within the Site

- The HSO will monitor all operations from the roadway and assist any emergency personnel responding to an emergency within this work zone.
- It will be the HSO's responsibility to maintain communications with public works personnel.
- In the event of an emergency within the work zone at the site, the emergency notification procedures will be followed as described in Section 5.12.
- In all emergency situations, it will be the responsibility of the HSO to ensure that all site personnel are accounted for.

5.12.8 Personnel Exposures

The emergency procedures which will be used in the event of acute exposure (eyes, skin contact, inhalation) are described in Exhibit 5-7.

5.12.9 Site Evacuation

The site area will be evacuated, and fire and police departments will be notified in the event of fire, explosion or their potential. Depending on the cause and magnitude of the conditions requiring evacuation, three stages have been designated. See Exhibit 5-7 for details.

5.13 Postings

Postings will be available on-site. These postings will cover four specific areas:

- Use of personal protective equipment

- Personal hygiene
- Provisions for smoking, eating, chewing and drinking
- Emergency information

These postings may be added to based on need to disseminate information or policy. All postings will be coordinated for approval prior to posting. Three specified regulations are shown in Exhibit 5-8. The emergency information for each site will be included on Exhibit 5-1 and will be posted at each site.

SITE-SPECIFIC INFORMATION

The following site-specific information will be filled out by project personnel for each site and will be posted on-site:

Site Name: _____
Address: _____
_____

Telephone: _____
Date of HASP Preparation: _____
Dates of Field Investigation: _____
Entry Objectives: _____
_____
_____
_____
_____

Site Organizational Structure:	Name	Phone
Proj. Director:	_____	_____
Proj. Manager:	_____	_____
HSO:	_____	_____
FOM/ Alternate HSO:	_____	_____
Field team staff:	_____	_____
	_____	_____
	_____	_____
	_____	_____
Subcontractors:	_____	_____
	_____	_____
	_____	_____
	_____	_____

Medical Assistance
Physician: _____
Hospital: _____
Address: _____
_____

Emergency Telephone: _____

Directions: _____

_____

_____

_____

_____

Please attach a route to hospital

Emergency Telephones

Agent/Facility	Telephone	Emergency No.
EMS - Ambulance		911
Police Department		911
Fire Department		911
Hospital		
Poison Control Center		

Additional site related information (may include special hazards, site control, waste storage and disposal, PPE, decon area location, special engineering controls, etc.).

_____

_____

_____

_____

EXHIBIT 5-2

FIELD TEAM REVIEW FORM
PROJECT HEALTH AND SAFETY PLAN

INSTRUCTIONS: This form is to be completed by each person working on the subject work-site. Upon completion, this form is to be given to the HSO.

JOB NUMBER: _____

CLIENT/PROJECT: _____

DATE: _____

I represent that I have read and understand the contents of the above mentioned Plan and agree to perform my work in accordance with it:

_____

Signature

_____

Name Printed

_____

Company/Office

_____

Date Signed

EXHIBIT 5-3

CARE AND CLEANING OF RESPIRATORS

General Requirements

Any organization using respirators on a routine basis should have a program for their care and cleaning. The purpose of a program is to assure that all respirators are maintained at their original effectiveness. If they are modified in any way, their Protection Factors may be voided. Usually one person in an organization is trained to inspect, clean, repair, and store respirators.

The program should be based on the number and types of respirators, working conditions, and hazards involved. In general, the program should include:

- Inspection (including a leak check)
- Cleaning and Disinfection
- Repair
- Storage

Inspection

Inspect respirators after each use. Inspect a respirator that is kept ready for emergency use monthly to assure it will perform satisfactorily.

On air-purifying respirators, thoroughly check all connections for gaskets and "O" rings and for proper tightness. Check the condition of the facepiece and all its parts, connecting air tubes, and headbands. Inspect rubber or elastic parts for pliability and signs of deterioration.

Maintain a record for each respirator inspection, including date, inspector, and any unusual conditions for findings.

EXHIBIT 5-3 (continued)

CARE AND CLEANING OF RESPIRATORS

Cleaning and Disinfection

Collect respirators at a central location. Brief employees required to wear respirators on the respirator program and assure them that they will always receive a clean and sanitized respirator. Such assurances will boost morale. Clean and disinfect respirators as follows:

- Remove all cartridges, canisters, and filters, plus gaskets or seals not affixed to their seats.
- Remove elastic headbands.
- Remove exhalation cover.
- Remove speaking diaphragm.
- Remove inhalation valves.
- Wash facepiece and breathing tube in cleaner/sanitizer powder mixed with warm water, preferably at 120 to 140 F. Wash components separately from the facemask, as necessary. Remove heavy soil from surfaces with a hand brush.
- Remove all parts from the wash water and rinse twice in clean, warm water.
- Air dry parts in a designated clean area.
- Wipe facepieces, valves, and seats with a damp lint-free cloth to remove any remaining soap or other foreign material.

NOTE: Most respirator manufacturers market their own cleaners/sanitizers as dry mixtures of a bactericidal agent and a mild detergent. One-ounce packets for individual use and bulk packages for quantity use are usually available.

Repairs

Only a trained person with proper tools and replacement parts should work on respirators. No one should ever attempt to replace components or to make adjustments or repairs beyond the manufacturers' recommendations. It may be necessary to send high pressure side components of SCBA's to an authorized facility for repairs.

CARE AND CLEANING OF RESPIRATORS

Make repairs as follows:

- Disassemble and hand clean the pressure-demand and exhalation valve assembly (SCBA's only). Exercise care to avoid damage to the rubber diaphragm.
- Replace all faulty or questionable parts or assemblies. Use parts only specifically designed for the particular respirator.
- Reassemble the entire respirator and visually inspect the completed assembly.
- Insert new filters, cartridges, or canisters, as required. Make sure that gaskets or seals are in place and tightly sealed.

Storage

Follow manufacturers' storage instructions, which are always furnished with new respirators or affixed to the lid of the carrying case. In addition, these general instructions may be helpful:

- After respirators have been inspected, cleaned, and repaired, store them so to protect against dust, excessive moisture, damaging chemicals, extreme temperatures, and direct sunlight.
- Do not store respirators in clothes lockers, bench drawers, or tool boxes. Place them in wall compartments at work stations or in a work area designated for emergency equipment. Store them in the original carton or carrying case.
- Draw clean respirators from storage for each use. Each unit can be sealed in a plastic bag, placed in a separate box, and tagged for immediate use.

EXHIBIT 5-3 (continued)

RESPIRATORY CERTIFICATION RECORDS

RESPIRATORY PROTECTION PROGRAM
RECORD OF RESPIRATOR USE

Name _____ Date _____

Social Security Number _____ Age _____

Location _____

Department _____ Supervisor _____

Area to be used in _____

Type of Respirator _____ Fitted By _____

Medical Approval Date _____

Medical Facility/Physician _____

Specific contaminants for which respiratory protection is necessary:

EMPLOYEE STATEMENT

I, an employee of _____ have received the above referenced respirator. I have been fitted and properly instructed on its uses and limitations. I, also, understand that it is my responsibility to properly clean, maintain and store my respirator in a clean area unless other arrangements have been made to assure maintenance and care of the respiratory protection.

Signature _____

Date _____

EXHIBIT 5-4

AIR MONITORING RESULTS REPORT

Date: _____

Duration of Monitoring: _____

Work Location and Task: _____

_____

Instrument Reading _____ (Time)	Instrument Reading _____ (Time)	Instrument Reading _____ (Time)
_____	_____	_____
_____	_____	_____
_____	_____	_____

(Note: If instruments have recorders, just attach tape to report. Also note any action levels when exceeded.)

Instrument Calibration: _____

Perimeter Samples Collected: _____

_____

Personnel Samples Collected: _____

_____

Perimeter and Personnel Sample Results From Previous Day (attach data once received):

_____

Comments: _____

_

_____

_____ _____

Name Title (Site Safety Officer)

Signature _____

EXHIBIT 5-5

HEAT/COLD STRESS

1.0 WORKING CONDITIONS AS RELATED TO HEAT STRESS

1.1 Personal Protective Clothing

All of the protective ensemble does not lend itself to the release of body heat generated during work. With this in mind, the following will be taken into consideration during the work schedule so as to minimize the heat stress to all personnel:

- All personnel will be advised to wear lightweight undergarments with short sleeves, under the chemical protective coverall.
- Personnel will be advised that extra clothing be on-site for use as the workday progresses due to the clothing becoming wet from perspiration.
- Dressing-out will be done in a designated trailer and be scheduled so as not to extend time in the protective ensembles.
- The dress-out area will have a table with fresh water and/or other water replenishing liquids along with disposable cups. All personnel will be expected to drink liquids before each work cycle. The SSO will supervise the dressing and water intake.
- As the job progresses and more information becomes available as to the materials that the workers are coming in contact with, consideration as to modifications to the protective ensemble will be examined. Such things as allowing personnel to keep the protective garment's hood down allowing for the release of heat. All decisions regarding the protective ensemble will be the SSO's decision based on available information.
- After completion of each work cycle, personnel will pass through personnel decontamination and remove their protective ensembles in the designated area. All personnel will then be medically monitored, if deemed necessary by the SSO. Liquid replenishment will be mandatory after each work cycle.
- Eating facilities will allow for meal periods to be taken in the designated lunch area. On days of extreme temperatures, the use of air conditioning in the decontamination trailer will be limited so as not to have personnel exposed to temperature extremes.

1.2 Causes of Heat Stress

Wearing the expected levels of protection on-site can put personnel at risk of developing heat stress. This section will discuss heat stress and what steps will be taken to monitor personnel for the signs of it.

The body's chemical activities take place in a limited temperature range. Heat is generated by these processes. Any heat not needed to sustain the activities must be lost from the body to maintain a balance. HYPOTHERMIA is an abnormally high body temperature. The three main avenues for the release of body heat are:

- Respiration is our breathing pattern. Care should be taken that the body is not fooled into believing it is cool based on skin temperature.
- Radiation is how heat is released from the skin. Blood will pool on the surface of the skin as body temperatures increase. The protective ensemble specified for this site will not allow for this type of heat release.
- Evaporative Heat Loss normally allows for a body to cool itself by the evaporation of perspiration. Because the protective ensemble stops any contact with moving air the sweat coming off of the body will not evaporate.

If any of these release mechanisms is out of balance, the following conditions can occur and may be considered emergencies needing care:

- **HEAT RASH** is a common occurrence in areas where body parts rub causing friction. The level of protection will heighten its effects. Proper treatment would be personal washing of the affected areas and administering powder to help healing.
- **HEAT CRAMPS** occur when people are exposed to heat for extended periods of time. Due to the wearing of the required protective ensemble, this will be expected. The person will sweat heavily and drink large quantities of water. The more the person sweats, the more electrolytes are lost. If enough body salts are lost, the individual will begin to experience body cramps and pain in the extremities.

Proper treatment includes slow replenishment of body fluids augmented by a proper salt solution along with cooling the individual down, taking care not to expose the person to extreme cooling measures. The worker will not be allowed to return to work until the SSO has monitored and approved re-entry.

- **HEAT EXHAUSTION** occurs as the blood pools at the skin surface in an attempt to cool the body. Sweating is profuse, skin is moist and cool, and the patient will experience dizziness, nausea, or fainting. This condition is an indicator of overwork in the environmental conditions. Treatment includes all for heat cramps with an extended rest period before re-entry. Depending on the worker's physical condition, rest periods may be from 30-60 minutes. After experiencing heat exhaustion, the worker should be closely monitored for symptoms reoccurring.

- **HEAT STROKE** can occur if heat exhaustion is not cared for. This occurs when the body loses its ability to regulate its temperature. Sweating stops and, if not treated, can lead to death. Signs and symptoms include dry red skin with no perspiration along with nausea, dizziness and confusion. A strong, rapid pulse should be carefully monitored as this condition can lead to coma. Proper treatment begins by understanding that this is a true medical emergency and requires activating the emergency medical system as covered in other sections. When notifying the Emergency Medical Response organization, emphasis should be placed on the words HEAT STROKE and the need for rapid transportation to the medical facility. (See Appendix A of the SSHP). Emergency medical treatment in the field includes immediate cooling of the body with total body immersion preferable. Water temperature should be cool enough to absorb the high body heat but not cold. Ice packs can be applied to the person's head area and under the arms. Due to the personnel needed to treat the patient while awaiting emergency medical care, all work will stop and all attention will be devoted to the person in stress. The First Aid Technician will evaluate all personnel after the patient is transported to determine if they also are showing signs of heat stroke.

To facilitate treatment of all of the above, the trailer, with its air conditioning, fresh water supply and shower, will be used if necessary. In all cases requiring treatment, emergency decontamination procedures based on the individual's degree of contamination will be done before entry into the trailer. Remember: *You* are your own best indicator of signs of heat stress.

2.0 COLD STRESS

The purpose of this section is to make all workers on-site aware of the problems associated with cold weather operations. As with heat related emergencies, cold weather injuries are progressive. That means that if the worker is aware of the problems beforehand he may prevent further damage and remain working.

Cold related injuries may be divided into two types:

- LOCAL COOLING affects the particular part of the body coming in direct contact with the cold air. This is commonly known as FROSTBITE.
- GENERAL COOLING affects the entire body and is known as HYPOTHERMIA. Hypothermia is a true medical emergency and should be recognized as such and treated immediately by trained medical personnel.

As stated, cold related injuries are progressive. The body loses heat either by CONDUCTION or direct transfer of body heat into the cold environment. An example would be an unprotected head allowing the surface area of the head to come in direct contact with the colder air. The other means by which the body loses heat is by CONVECTION. This occurs when colder air is allowed to pass over the body surface. When that air is also moist or the garments work become wet, a WATER CHILL or more commonly recognized WIND CHILL occurs. An example of wind chill would be a 20 mph wind during a 10 degree day would produce the same effect as -25 degree temperature. Both of these conditions may be easily prevented by proper work attire and safe work practices. Hardhat liners prevent the wind from blowing under the brim but will also affect your hearing ability.

Lose layers of work clothes rather than bulky garments will allow the wearer to adapt to changing conditions. Use of rubber overboots will prevent leather workboots from getting wet and are excellent for stationary work to stop cold penetration.

EXHIBIT 5-5 (continued)

HEAT/COLD STRESS

Signs to Look For:

FROSTNIP, the first stage of frostbite occurs when a body part comes in direct contact to a cold object or cold air. This condition is not serious and can be remedied by warming of the region. The real problem is that a numbing effect can occur and keep the worker from realizing that he is going into the next stage SUPERFICIAL FROSTBITE.

The skin and under layers become effected. If not treated this can become a FREEZING condition in which the deeper structures of the body become effected.

CONDITION	SKIN SURFACE	TISSUE UNDER SKIN	SKIN COLOR
frostnip	soft	soft	red-white
frostbite	hard	soft	white/waxy
freezing	hard	hard	white/gray

HYPOTHERMIA occurs when the body is unable to maintain its proper temperature of 98.6 degrees. It is important for the worker to realize that this can occur in temperatures of 50 degrees and below. Submersion of a body part in cold water will also cause hypothermia very quickly. Some early signs are:

1. Shivering
2. Numbness in extremities
3. Drowsiness
4. Slow breathing and pulse rates
5. Failing eyesight
6. Loss of coordination, inability to do easy tasks
7. Freezing of body parts

EXHIBIT 5-5 (continued)

HEAT/COLD STRESS

Proper treatment begins by activation of emergency medical service procedure. Hypothermia required prompt qualified medical treatment. Initial site action would revolve around getting the affected worker out of the weather and begin the warming process. The most important thing to realize is that Hypothermia is a MEDICAL EMERGENCY.

Workers exposed to cool temperatures for extended period of time can experience lesions in the form of red swollen areas that seem hot and itchy. These chronic lingering lesions are known as CHILBLAINS. Although not an emergency, the Chilblains indicate that the worker in not adequately protecting the affected area.

A common problem in wet work areas is TRENCH FOOT. The worker whose feet remain unprotected by leather footwear in water close to freezing will have swollen limbs that appear waxy and mottled in color. The affected limb will appear cold to the touch. Basic treatment revolves around getting the worker to a warm place and slowly removing the wet footwear. The obvious way to prevent TRENCH FOOT is to wear rubber protective footwear.

Some suggestions to prevent cold weather operation problems:

1. Plan ahead as to the proper work clothes to be worn.
2. Avoid early overheating which dampens clothes and hastens the release of body heat by evaporation.
3. Use of windbreaks in the work zone.
4. Elimination of standing water or avoid prolonged immersion in that water.
5. Provision of heated rest area (i.e., trailer or vehicle).
6. Avoid overheating of the rest area. Extreme temperature differentials between the work area and the rest area will lead to chilling upon return to work.
7. Proper diet and eating habits.

8. Avoid or cut down smoking which constricts the blood vessels.

REMEMBER, YOU ARE THE BEST PROVIDER OF INFORMATION ABOUT HOW YOU FEEL. THE BEST WAY TO PREVENT INJURIES FROM COLD WEATHER OPERATIONS IS TO RECOGNIZE THE EARLY SIGNS AND PREVENT SERIOUS INJURY.

EXHIBIT 5-6

INCIDENT NOTIFICATION FORM

TO: Project Manager

Date:_____

FROM: HSO and/or _____
(someone who has direct knowledge of the incident)

1. Contractor's Name:_____
2. Organization:_____
3. Telephone Number:_____
4. Location:_____
5. Reporter Name:_____
6. Name of Injured:_____ Birth date_____
7. Company Employing Injured:_____
8. Date of Incident:_____
9. Company Employing Injured:_____
10. Location of Incident:_____
11. Brief Summary of Incident (provide pertinent details including type of operation at time of incident):

    _____

    _____

    _____

12. Cause, if known:_____
13. Casualties, if any:_____

EXHIBIT 5-6 (continued)

INCIDENT NOTIFICATION FORM

14. Details of Any Existing Chemical Hazards or Contamination:

_____

_____

15. Estimated Property Damage:_____

16. Affect on Contract Schedule:_____

17. Actions Taken by Contractor:_____

18. What Medical Help was Given:_____

_____

_____

19. Doctor and/or Hospital (if known):_____

_____

20. When did Employee Return to Work:_____

21. Other Damages/Injuries Sustained (public or private):

_____

_____

22. Additional Information:

_____

_____

_____

EXHIBIT 5-7

EMERGENCY INFORMATION

1. Emergencies Within the Site

- Contact the HSO On-Site
- Contact the FOM
- Contact Public Works
- Report the following:
  - Location of emergency in relation to a specific recognizable landmark.
  - Nature of emergency:
    - **FIRE**, if so of what kind and what equipment is involved.
    - **EMERGENCY MEDICAL INCIDENT, ALL INJURIES, ACCIDENTS OR FIRES.**
      Communication will include:
      - Number of injured people.
      - Nature of injuries.
      - If Project Field Team Members can't handle injuries with its resources, what emergency medical services will be needed.
    - If any outside personnel must enter the site, any hazards will be communicated and those people will be supervised by the HSO.
    - In the event that any site personnel wearing protective equipment in the Exclusion Zone becomes injured, the HSO or designated individual will do whatever decontamination is necessary to remove that equipment.
    - Any emergency treatment information dealing with the injury will accompany the injured party so that those treating that person will have any and all information.
    - **REQUEST FOR POLICE**. If any person entering the site who does not belong there becomes a problem, Police will be notified. If that person either endangers the safe operation of Project Field Team members or himself, the HSO will suspend all work until that person can be removed.
  - If site personnel will be evacuating the site due to emergency.

2. Personnel Exposures Within the Site

- Contact the HSO On-Site
- Contact the FOM
- Provide treatment as follows:
  - Eye Exposure - treat by immediate flushing with distilled water (portable eyewash). Transport for examination and treatment. Site-Specific hospital information can be found in Section 5.1.1.
  - Skin Exposure - remove contaminated clothing and treat by washing with soap and water.
  - Inhalation - if a person inhales a large amount of organic vapor, the person will be removed from the work area to fresh air and artificial respiration will be administered if breathing has ceased. The affected person will be transported to the hospital by ambulance or emergency vehicle if overexposure to lungs has occurred.

- Personal Injuries - in case of severe injury, the victim will receive emergency first aid at the site, as appropriate, and will be transported by ambulance or emergency vehicle to the hospital. An accident form must be completed for any accident or occupational exposure and forwarded to the Project Manager.

3. Evacuating the Site

- Contact the HSO On-Site
- Contact the FOM
- Follow the directions below:
  - Upwind withdrawal - withdraw to a safe upwind location if:
    - Air quality concentration contain excessive concentrations of volatile organics, combustible gases, or oxygen percentage above or below safe levels for the level of protection being worn. The field team will withdraw to a safe upwind location determined by the HSO.
    - A minor accident occurs. The victim will undergo decontamination procedures and be transported to a safe upwind location. Field operations will resume after first aid and/or decontamination procedures have been administered to the affected individual.
    - Protective clothing and/or respirator malfunctions.
  - Withdrawal from site - evacuate the site if:
    - Explosive levels of combustible gases, toxic gases, or volatile organics are recorded.
    - A major accident or injury occurs.
    - Fire and/or explosion occurs.
    - Shock-sensitive, unstable, or explosive materials are discovered.
    - High levels of radioactive materials are discovered.

- Evacuation of nearby facilities - a continuous release of toxic, flammable, or explosive vapors from the site could affect people off-site. Air quality should be monitored downwind to assess the situation. The FOM, or on-site designee, is responsible for determining if circumstances exist for any level of off-site contamination warranting concern for people off-site. he should always assume worst case conditions until proven otherwise. If conditions are marginal, evacuation should be conducted until acceptable conditions resume. Key personnel identified in the HASP should be contacted when evacuation of nearby facilities becomes necessary.

EXHIBIT 5-7 (continued)

EMERGENCY INFORMATION

TABLE I

EMERGENCY SIGNALS

In most cases, field personnel will carry portable radios for communications. If this is the case, a transmission that indicates an emergency will take priority over all other transmissions. All other site radios will yield the frequency to the emergency transmissions.

Where radio communication is not available, the following air-horn and/or hand signals will be used:

EMERGENCY AIR-HORN SIGNALS

HELP!	Three short blasts	. . .
EVACUATION!	Three long blasts	— — —
ALL CLEAR!	Alternating long and short blasts	— . — .

EMERGENCY HAND SIGNALS

OUT OF AIR, CAN'T BREATH	Hand gripping throat
LEAVE AREA IMMEDIATELY, NO DEBATE!	Grip partner's wrist or place both hands around waist
NEED ASSISTANCE	Hands on top of head
OKAY! - I'M ALRIGHT! - I UNDERSTAND!	Thumbs up
NO! - NEGATIVE!	Thumbs down

EXHIBIT 5-7 (continued)

EMERGENCY INFORMATION

TABLE II

LOCATION OF EMERGENCY EQUIPMENT

EQUIPMENT	TYPE	LOCATION(S)
Fire Extinguisher Dry Chemical	20A-80B:C	
First Aid Kit		
Eye Wash	Portable	
Emergency Sprayer	Portable	
Communication	Air Horns Each work area.	
Map (Figure 10-1)	Hospital Route	

EXHIBIT 5-8

POSTING 1 - USE OF PERSONAL PROTECTIVE EQUIPMENT

WHO This posting applies to all site workers, supervisors, and visitors, *without exception.*

WHEN Prior to entering the Contaminant Reduction Zone (CRZ) or Exclusion Zone (EZ) provisions of this posting will be followed.

WHAT This posting outlines the initial forms of PPE required to be worn while working in the CRZ and EZ. Particular types or forms of PPE may be altered based on the authority of the HSO. Specific guidelines are provided in Section 7.0 of this HASP. Disposable PPE will not be worn more than one work shift of workday. In some instances disposable PPE may have to be replaced more than once during a workday. The HSO will determine the frequency of replacing disposable PPE. Reusable PPE will be properly decontaminated, cleaned, sterilized (if appropriate), and stored. Doubts regarding what to wear will be directed to the HSO for resolution.

WHY The levels of protection specified in the SSHP were chosen to protect individuals from potentially harmful exposures to chemicals or physical hazards. No changes to PPE specifications are authorized without the permission of the HSO.

EXHIBIT 5-8 (continued)

POSTING 2 - PERSONAL HYGIENE

WHO This posting applies to all site workers, supervisors, and visitors, but is intended primarily for site workers.

WHEN Before beginning work, during scheduled breaks, and at the end of a workday.

WHAT This posting summarizes the policy on personal hygiene that applies to all site personnel. Personal hygiene includes those activities such as washing hands, showering, shaving, etc., that are conducive to keeping one's body clean and mind refreshed. For the individual's sake, and his/her coworkers, each worker will be responsible for maintaining a high level of personal hygiene. This is especially critical prior to breaks where food, beverages, or smoking will occur. If proper personal hygiene is not followed, potential ingestion, absorption, or inhalation of toxic materials may occur. Particular attention must be paid to close shaving whenever respirators are worn. Facial hair and long hair will interfere with respirator fit and will allow excessive contaminant penetration.

WHY To avoid accidental ingestion, absorption, or inhalation of hazardous materials. To maintain an elevated state of awareness, thus reducing potential mental errors and accidents.

POSTING 3 - PROVISIONS FOR SMOKING, EATING, CHEWING, AND DRINKING

WHO This posting applies to all site workers, supervisors, and visitors, *without exception.*

WHEN At all times personnel are on-site. This regulation will specifically apply during breaks and rest periods.

WHAT Site personnel are forbidden to smoke, eat, chew, or drink in the Exclusion Zone or Contaminant Reduction Zone. Only those areas specified as break areas or common areas in the Support Zone may be used for smoking, eating, chewing, or drinking. The rest/break facility and office trailers in the Support Zone may be used. Individuals found to be repeatedly disregarding these provisions will be released.

The only exception to this posting involves access to electrolytic fluids in the Contaminant Reduction Zone when the HSO has determined heat stress warrants regular replenishing of lost body fluids.

WHY To protect personnel from accidental exposures to hazardous materials, smoking, eating, chewing, and drinking is prohibited everywhere except designated break areas. To avoid potential fires and explosions, smoking is prohibited everywhere except designated break areas and office trailers.

EXHIBIT 5-9

ACRONYMS

ACGIH - American Conference of Governmental Industrial Hygienists
AIHA - American Industrial Hygiene Association
AOC- Area of Concern
ANSI - American National Standards Institute
AST - Air Sampling Technician
BG - Background
Ca - Carcinogen
CBC - Complete Blood Count
CFR - Code of Federal Regulations
CEMT - Certified Emergency Medical Technician
CHMT - Certified Hazardous Materials Technician
CIH - Certified Industrial Hygienist
CRZ - Contaminant Reduction Zone
DECON - Decontamination
DOT - Department of Transportation
EMT - Emergency Medical Technician
EPA - Environmental Protection Agency
eV - Electron Volt
FEV1 - Forced Expiratory Volume at One Second
FID - Flame Ionization Detector
FM - Factory Mutual
FSC - Field Safety Corporation
FVC - Forced Vital Capacity
HASP - Health and Safety Plan
HDPE - High Density Polyethylene
HEPA - Common use: "HEPA Filter" High Efficiency Particulate Air Filter
HMT - Hazardous Materials Technician
HSWA- Hazardous Solid Waste water Amendment
IDLH - Immediately Dangerous to Life or Health
IP - Ionization Potential
mg/m^3 - Milligrams Per Cubic Meter
MPH - Miles Per Hour
MSL - Mean Sea Level
NIOSH - National Institute for Occupational Safety and Health
NYSDEC- New York State Department of Environmental Conservation
O&R - Overhaul and Repair
OSHA - Occupational Safety and Health Administration
PEL - Permissible Exposure Limit

EXHIBIT 5-9 (continued)

ACRONYMS

PID -	Photoionization Detector
PPE -	Personal Protective Limit
ppm -	Parts Per Million
RCRA -	Resource Conservation and Recovery Act
RI/FS -	Remedial Investigation/Feasibility Study
SARs -	Supplied Air Respirators
SCBA -	Self Contained Breathing Apparatus
SMAC-25 -	Trade Name for a Blood Analyzer Measuring Twenty-Five Constituents in Blood
SS# -	Social Security Number
SSHP	Site Safety and Health Plan
HSO -	Site Safety Officer
STEL -	Short Term Exposure Limit
SVOC-	Semivolatile Organic Compound
SWMU-	Solid Waste Management Unit
TLVs -	Threshold Limits Values
TSP -	Total Suspended Particulates
TWA -	Time Weighted Average
UL -	Underwriters Laboratories
USEPA-	United States Environmental Protection Agency
UST -	Underground Storage Tank
VOCs -	Volatile Organic Compounds