| | | | |
|---|---|---|---|
| **NAME:** | Photocircuits Div./Kollmorgen Corp. | **EPA ID NO.:** | NYD096920483 |
| **ADDRESS:** | Glen Cove, Long Island, NY | **LATITUDE:** | 45° 51′ 06″ N |
| | | **LONGITUDE:** | 073° 37′ 24″ W |

# 1.0 SITE SUMMARY

The Photocircuits Division/Kollmorgen Corporation Site, hereafter referred to as Photocircuits, is located in a small industrial park in Glen Cove, Nassau County, New York, and covers approximately 10.8 acres. Two sides of the property are bordered by roadways: the north by Sea Cliff Avenue, and the east side by State Route 107. Slater Electric Company occupies the property immediately west of the site, and the Glen Head Country Club covers an extensive area to the south.

Photocircuits has been operating in Glen Cove, New York since the late 1950s. The company manufactures printed circuit boards for the electronics industry, and its processes include metal plating, stripping, and etching. These processes not only produce hazardous waste, but require the use of hazardous substances as feedstock material.

There are four buildings on site, two which are production facilities and two which house the waste treatment and maintenance operations. A portion of one of the buildings is designated as storage space, and is augmented by a small storage shed located next to it. Various containers of feedstock material are kept on a bermed, concrete pad between two of the buildings. Containers of waste material are also stored here temporarily, prior to their removal for off-site disposal. There are two production wells, each with a pump house, and three diffusion wells on site.

Most of the property's surface is paved over, and most of this is designated as parking areas. Glen Cove Creek, sometimes referred to as Cedar Swamp Creek, flows through the western half of the site property in a northerly direction. The creek separates the three larger buildings on site from the fourth, but their respective parking areas are adjoined by a car bridge and a smaller pedestrian bridge. There is a narrow grass-covered strip of land on either side of the creek with a few trees scattered along its length. The only other vegetated areas are along the north and east edges of the property, parallel to the bordering roadways.

The facility has a history of unauthorized discharges to Glen Cove Creek. On several occasions discharges from Photocircuits to the Glen Cove wastewater treatment plant exceeded the State Pollutant Discharge Elimination System (SPDES) permit limits for copper. In addition, local groundwater contamination has been documented and may be attributable to the site. Table 1 presents a detailed chronology of events at the Photocircuits Site.

# TABLE 1
# HISTORY OF THE PHOTOCIRCUITS DIVISION/KOLLMORGEN SITE AND CHRONOLOGY OF RESPONSE ACTIONS

| | |
|---|---|
| 4/01/56 | Photocircuits began operations. Date taken from RCRA Hazardous Waste Permit Application. |
| 5/01/63 | Work is started on the site for 155-foot-deep well to be used for cooling purposes. |
| 5/19/63 | Work is completed on the 155-foot-deep well. |
| 3/20/64 | A leak occurred in the waste treatment tank at Photocircuits, discharging untreated waste to a parking lot storm drain. The storm drain leads to Glen Cove Creek, and the discharge caused a dark blue discoloration in the creek. |
| 3/21-22/64 | The waste treatment tank undergoes repairs. |
| 3/23/64 | The waste treatment tank is back in operation. Samples were collected by the Nassau County Health Department (NCHD) from the weir, the pond, and the storm drain on Sea Cliff Avenue. The results indicated the presence of heavy metals and solvents. The NCHD notified Photocircuits Corporation to contact them immediately should another discharge occur. A discussion was held regarding the stoppage of operation should the problem recur. |
| 4/22/64 | An inspection of the creek by NCHD revealed blue liquid emanating from the storm drain. A sample was collected from the weir at Photocircuits Corporation. |
| 4/23/64 | The NCHD received a call from Photocircuits Corporation stating that a partially treated tank of copper waste was discharged into the creek, causing the blue coloration. A copper reading taken by Photocircuits Corporation revealed copper concentrations of 100 ppm. |
| 12/15/69 | Work is started on site for the second 155-foot-deep well to be used for cooling purposes. |
| 01/29/70 | Work is completed on the second 155-foot-deep well. |

## TABLE 1 (CONT'D)
## HISTORY OF THE PHOTOCIRCUITS DIVISION/KOLLMORGEN SITE AND CHRONOLOGY OF RESPONSE ACTIONS

| | |
|---|---|
| 12/09/74 | Photocircuits Corporation circulates an internal memorandum stating company policy for discharge of any material to unauthorized facilities. |
| 7/77 | The Carney Street well field in Glen Cove is closed. |
| 8/31/77 | A status report of the investigation of organic contamination at the Carney Street well field is prepared by the NCHD. The interim conclusion indicates Photocircuits as a potential responsible party. Sampling results show the presence of solvents. |
| 12/21/78 | A New York State Department of Environmental Conservation (NYSDEC), Septic Tank Cleaner and Industrial Waste Collector Certificate of Registration is issued to the Kollmorgen Corporation, Reg. No. A1-001, expiration date, 3/31/79. |
| 12/27/79 | A NYSDEC, Septic Tank Cleaner and Industrial Waste Collector Certificate of Registration is issued to the Kollmorgen Corporation Reg. No. A1-011, expiration date, 12/31/80. |
| 8/13/80 | A RCRA 3001 permit is received by Photocircuits. |
| 1/16/81 | A NYSDEC, Septic Tank Cleaner and Industrial Waste Collector Certificate of Registration is issued to Photocircuits Corporation, Reg. No. A1-001, expiration date, 12/31/81. |
| 5/15/81 | A RCRA inspection of Photocircuits Corporation is conducted by the NYSDEC, RCRA I.D. No. NYD096920483. |
| 1/07/83 | A RCRA inspection of Photocircuits corporation is conducted by the NYSDEC, RCRA I.D. No NYD096920483. |

## TABLE 1 (CONT'D)
## HISTORY OF THE PHOTOCIRCUITS DIVISION/KOLLMORGEN SITE AND CHRONOLOGY OF RESPONSE ACTIONS

| | |
|---|---|
| 11/15/84 | While collecting what were supposed to be empty, clean drums from Photocircuits, a city worker is burned by liquid remaining inside one of them. This prompted the Director of Public Works in Glen Cove to file a Hazardous Materials Complaint against Photocircuits. |
| 1/15/85 | 17.7 tons of wastewater treatment sludge from electroplating operations were shipped to WRC Processing, Pottsville, Pa, under Permit No. PA 089 "For Reclamation". |
| 12/11/85 | An inspection of Photocircuits Corporation is conducted by the NYSDEC under the New York State Industrial Hazardous Waste Management Act. |
| 1/17/86<br>1/20/86<br>1/21/86<br>1/22/86<br>1/28/86<br>1/30/86<br>2/18/86<br>2/26/86 | Photocircuits discharge to the Glen Cove wastewater treatment plant exceeds the copper standard on each of these dates, violating its SPDES permit number 0026620. |
| 1/20/86<br>1/29/86<br>2/05/86<br>2/11/86<br>2/13/86 | As a direct result of the Photocircuits' violations, the Glen Cove wastewater treatment plant violates its SPDES permit five times during the same time frame. |
| 3/24/86 | The Director of Public Works in Glen Cove sends a letter to Photocircuits pointing out the fact that the Glen Cove wastewater treatment plant violated its SPDES permit because of Photocircuits' negligence. The letter also serves as a Notice of Violation and subjects Photocircuits to a $1,000 fine for each violation in February. |

## TABLE 1 (CONT'D)
## HISTORY OF THE PHOTOCIRCUITS DIVISION/KOLLMORGEN SITE AND CHRONOLOGY OF RESPONSE ACTIONS

| | |
|---|---|
| 5/30/86 | A permit is issued to Photocircuits Corporation authorizing the discharge of industrial wastewater to the City of Glen Cove sewer system in compliance with Chapter 46 of Municipal Code. The application was filed on 4/16/86, and the permit, No. GCI, expires on 5/30/89. |
| Summer 1986 | The Kollmorgen Corporation sells its interest in Photocircuits Division. |
| 6/30/86 | An inspection of the Photocircuits property is conducted by Mr. Welsh of the NCHD in response to a complaint from the Water Pollution Section regarding an alleged illegal discharge by Photocircuits. The discharge was noncontact cooling water from the air conditioning circuit. Photocircuits was notified that this was an illegal discharge. |
| 7/1/86 | The Consulting Engineer to Photocircuits is informed of the illegal discharge. He states that he is aware that the discharge was illegal and is in the process of remediating the situation. |
| 7/14/86 | The NYSDEC is made aware of the illegal air conditioning discharge caused by a problem with Photocircuits' diffusion wells. The NCHD turns the issue over to the NYSDEC. |
| 10/01/86 | A Potential Hazardous Waste Site Preliminary Assessment of Photocircuits is prepared by the U.S. Environmental Protection Agency. The site is assigned a medium priority for further assessment. |
| 3/16/87 | NUS Corporation requests access to Photocircuits to perform a Site Inspection. Photocircuits requests rescheduling the Site Inspection for April 6, 1987 due to the absence of its key technical personnel. NUS Corporation agrees to April 6, 1987, and a site reconnaissance is scheduled for March 31, 1987. |
| 3/31/87 | NUS Corporation conducts an on-site reconnaissance of Photocircuits' property. |

## TABLE 1 (CONT'D)
## HISTORY OF THE PHOTOCIRCUITS DIVISION/KOLLMORGEN SITE AND CHRONOLOGY OF RESPONSE ACTIONS

| | |
|---|---|
| 11/17/87 | NUS Corporation and Photocircuits do not reach an acceptable access agreement, and the site inspection is not conducted. The Photocircuits Site is proposed as an Expanded Site Inspection (ESI). Sampling at the site will not be conducted until the ESI/SI status has been determined. |
| 2/3/88 | NUS Corporation is tasked by U.S. EPA Region 2 to conduct an ESI at the Photocircuits facility. |
| 3/88 | ESI discontinued as per EPA. |
| 3/29/89 | NUS Corporation submits Draft Work Plan for ESI at Photocircuits Corporation, as requested by EPA. |
| 9/8/89 | H2M, a consulting firm hired by Photocircuits, informs NUS that it is unable to supply a copy of its report on remedial work done at the Photocircuits Site, due to a confidentiality agreement. |

NUS Corporation Region 2 FIT was tasked by the U.S. EPA to perform a site inspection of the Photocircuits Site. Due to difficulties in obtaining site access, only an on-site reconnaissance was conducted. No sampling was performed and no photographs were taken.

H2M, a consulting firm hired by Photocircuits, has performed remedial work at the site. However, information concerning the remedial work is unavailable to NUS Region 2 FIT.

Ref. Nos. 1 through 27

# 2.0 SITE INSPECTION NARRATIVE

## 2.1 EXISTING ANALYTICAL DATA

From June 30, 1977 to July 26, 1977, the Nassau County Health Department (NCHD) collected 10 samples for organic analysis. Samples of waste discharges, drains, groundwater, and Cedar Swamp Creek were collected in the Carney Street vicinity.

Results of the analysis show that the Carney Street well field was contaminated by trichloroethylene and tetrachloroethylene. The NCHD stated that at the time, only two industries in the area, Slater Electric Company and Photocircuits Corp., used solvents of the type found in the wells. However, as there were no waste disposal practices at that time that could have accounted for the extent of contamination found, the NCHD concluded that the contamination was due to past waste discharges originating in an industrial area southeast of the Carney Street well field. It is in that industrial area that Photocircuits is found. The NCHD named Photocircuits as a possible responsible party.

Analysis results from this 1977 sampling event are found in Reference 8 of this report. QA/QC procedures used for sampling and analysis are unknown.

Ref. No. 8

## 2.2 WASTE SOURCE DESCRIPTION

Photocircuits utilizes several production methods on site, including metal plating, stripping and etching, image printing, plastic fabrication, and limited chemical formulation. To carry out these processes, potentially hazardous substances such as metals, acids, and solvents are needed in large amounts, as described in Table 2. Much of the resulting waste is treated on site either for reclaiming purposes or to meet current discharge standards.

The primary waste treatment system includes a 4000-gallon flocculating tank, a 15,000-gallon main settling tank, a 7500-gallon sludge thickening and decanting tank, and approximately 1200 square feet of sludge drying and filter beds. All process wastes pass through this system, but cyanide rinses are first treated with calcium hypochlorite and sodium hydroxide. Additional treatment consists of solvent recovery via an on-site still and a three-stage lime treatment method that both neutralizes spent plating rinse waters and precipitates heavy metals. Solutions containing high levels of copper are kept in a 2000-gallon holding tank prior to preliminary treatment. These solutions may contain as much as 60,000 mg/L copper.

**TABLE 2**

**PHOTOCIRCUITS**
**FEEDSTOCK MATERIAL PURCHASED IN 1985**

| CHEMICAL/SOLVENT | USE | QUANTITY PURCHASED |
|---|---|---|
| HYDROCHLORIC ACID | Plating Bath Make Up | 12,400 Gallons |
| SULFURIC ACID | pH Adjustment<br>Wastewater Treatment | 18,000 Gallons |
| PM ACETATE | Screen Cleaning | 13,110 Gallons |
| HYDROSULFIDE SODIUM | Wastewater Treatment | 23,500 Gallons |
| HYDROGEN PEROXIDE | Sulfuric Destruction<br>Wastewater Treatment | 6,000 Gallons |
| CALCIUM CHLORIDE | Wastewater Treatment | Unknown |
| TRICHLOROETHANE 111 | Panel Development | 29,000 Gallons |
| FORMALDEHYDE | Plating Bath Make Up | 6,320 Gallons |
| ANHYDROUS AMMONIA | pH Adjustment in<br>Etching Process | 26,000 Pounds |
| AMMONICAL ETCHANT | Copper Stripping | 221,650 Gallons |
| METHYLENE CHLORIDE | Dissolves Ink | 94,500 Gallons |
| CAUSTIC SODA | Wastewater Treatment | 73,500 Gallons |

Following these treatment methods, there is still a considerable amount of waste remaining. Table 3 shows the waste types produced on site and the potentially affected migration pathways. Because there are many types of waste produced, Photocircuits must utilize several different disposal methods. Sludges are dewatered on a filter press and stored in plastic sacks while the still bottoms and spent solutions are placed in drums. These wastes, along with tanks of liquid feedstock materials, are stored temporarily on a bermed cement pad prior to their collection for off-site disposal. The cement pad drains directly into the Photocircuits treatment plant should any leakage occur.

The total amount of hazardous waste at Photocircuits has not been determined. Historical data do provide some information as to the types and quantities of substances involved in the company's processes. Table 2 shows the amounts of chemicals and solvents purchased by Photocircuits in 1985 and their uses. Table 4 shows the components and total tank capacities of the various cleaning, etching, stripping, and bathing solutions used on site. Table 5 lists the feedstock materials stored outside on a bermed cement pad.

Resource Conservation and Recovery Act (RCRA) reports completed by the New York State Department of Environmental Conservation (NYSDEC) give an indication of the amount of waste found on site at any one time. A RCRA report written following a January 7, 1983 inspection at Photocircuits estimated the waste on site to be 14 tons of metallic sludge, 4000 gallons of spent plating bath rinse water, 550 gallons of still bottoms, and 1000 gallons of spent etchant solutions. However, hazardous waste shipping manifests state that as much as 4000 gallons of spent etchant solution have been collected from Photocircuits at one time, indicating that the amount of waste on site varies. Manifests also show that 20 containers of sludge at a time, equaling roughly 17 tons, are collected for disposal, but the frequency of these collections is not specified.

In addition to the waste produced on site, Photocircuits accepted 1,916,037 gallons of sodium sulfate brine solution per year from a related facility in Aquebogue, New York. The solution was pH adjusted and discharged to the Glen Cove wastewater treatment system. Available information does not specify how many years this waste was accepted by the Glen Cove facility, but this operation was discontinued in 1981.

An analysis of historical aerial photographs of Photocircuits was conducted by the U.S. EPA Environmental Monitoring Systems Laboratory (EMSL) in 1988. The study covers the period from 1963 to 1987, and shows that the number of drums, tanks, and other containers on site has varied greatly over the years. The most recent photograph was taken on July 15, 1987, and shows the presence of 18 vertical tanks, 8 horizontal tanks, 228 drums, a large open-topped vat-like container, and approximately 25 other containers on site. A pool of brown standing liquid near a storm drain in the parking lot and an oil storage bunker are also visible in the photograph

## TABLE 3

### SUMMARY OF WASTE TYPES AND POTENTIAL MIGRATION PATHWAYS

| Hazardous Substance | Process Waste | Potentially Affected Migration Pathway: Ground Water | Surface Water | Sediment | Air | Soil |
|---|---|---|---|---|---|---|
| CHROMIUM * | Sludge, Spent Plating, Stripping, Bath Solutions | | X | X | | X |
| COPPER * | Sludge, Spent Plating, Stripping, Bath Solutions | | X | X | | X |
| CYANIDE | Sludge, Spent Plating, Stripping, Bath Solutions | | X | X | | X |
| IRON | Sludge, Spent Plating, Stripping, Bath Solutions | | X | X | | X |
| LEAD * | Sludge, Spent Plating, Stripping, Bath Solutions | | X | X | | X |
| NICKEL | Sludge, Spent Plating, Stripping, Bath Solutions | | X | X | | X |
| ZINC * | Sludge, Spent Plating, Stripping, Bath Solutions | | X | X | | X |
| ACETATE | Spent Cleaning Solutions | | | | X | |
| AMMONIA | Spent Cleaning Solutions | | X | | X | |
| EPOXIES | Still Bottom Residue | | | | X | |
| METHACRYLATES | Still Bottom Residue | | | | X | |
| METHYLENE CHLORIDE | Spent Ink Dissolving Solution, Cleaning Solutions, Still Bottom Residue | X | | | X | |
| POLYVINYL-CHLORIDE | Still Bottom Residue | | | | X | |
| 1,1,1-TRICHLORO-ETHANE | Spent Panel Development Solution, Cleaning Solutions, Still Bottom Residue | X | | | X | |

*Substance is bioaccumulative.

## TABLE 4

## PHOTOCIRCUITS
## BATHING, ETCHING, AND STRIPPING SOLUTIONS

| CHEMICAL PROCESS | COMPONENTS | TANK CAPACITY |
|---|---|---|
| ACID COPPER BATH | Copper Sulfate<br>Sulfuric Acid<br>Hydrochloric Acid<br>PC 667 Brightener | 1, 367 Gallons |
| SOLDER BATH | Stannous Fluoborate<br>Lead Fluoborate<br>Fluoboric Acid<br>Peptone | 1, 367 Gallons |
| TIN BATH | Stannous Sulfate<br>Sulfuric Acid<br>Tin-Brite Makeup<br>Tin-Brite Replenisher | 683.5 Gallons |
| NICKEL BATH | Nickel Sulfite<br>Boric Acid<br>Nickel Chloride | 1, 367 Gallons |
| ETCHING SOLUTION | Sodium Persulfite | 355 Gallons |
| RACK STRIPPING SOLUTION | Nitric Solution | 1, 367 Gallons |

## TABLE 5

## PHOTOCIRCUITS
## OUTDOOR MATERIAL STORAGE - BERMED CEMENT PAD

| SUBSTANCE | TANK CAPACITY (GALLONS) |
|---|---|
| ACETATE | 2,000 |
| ACETATE | 2,000 |
| COPPER CHLORIDE | 5,000 |
| 1,1,1-TRICHLOROETHANE | 6,000 |
| DICHLOROMETHANE | 5,000 |
| HYDROCHLORIC ACID | 5,000 |
| HYDROCHLORIC ACID | 2,000 |
| COPPER BATH SOLUTION* | 8,000 |
| COPPER BATH SOLUTION | 8,000 |
| COPPER BATH SOLUTION | 4,000 |
| NUMBER 2 FUEL OIL | 20,000 |
| ANHYDROUS AMMONIA | 8,400 |
| HYDROGEN PEROXIDE | 8,000 |
| WATER | 10,000 |

* Refer to Table 1 for components.

Recent inspections by the New York State Department of Environmental Conservation have found the current storage and disposal methods practiced by Photocircuits to be in compliance with RCRA regulations. However, past disposal practices, as highlighted below, are of concern as possible sources of contamination to surface water and groundwater.

- Prior to the company's hookup with the Glen Cove Wastewater Treatment Plant, plating rinse waters were discharged to Glen Cove Creek.
- Heavy metal sludges were stored in an unlined lagoon on site for unknown periods of time prior to off-site disposal.
- Highly concentrated copper waste was discharged to Glen Cove Creek when the treatment tanks malfunctioned.
- An interoffice memorandum was issued acknowledging unauthorized discharges to Glen Cove Creek via a parking lot storm drain.
- A Glen Cove city worker received acid burns while collecting what were supposed to be empty, clean, plastic drums from Photocircuits.
- The Glen Cove Wastewater Treatment Plant was in violation of its SPDES permit on five different occasions as a direct result of receiving discharge from Photocircuits at illegal concentrations.
- Local groundwater contamination has been documented, causing three public supply wells 1000 feet northeast of Photocircuits to be closed. The Nassau County Health Department investigated the matter and concluded it was due to waste discharge from the industrial park, and that only two industries in the area, Photocircuits and Slater Electric, use solvents of the type found in the wells.

The waste sources being evaluated are the 4000-gallon flocculating tank, the 15,000-gallon main settling tank, the 7500-gallon sludge thickening and decanting tank, the 2000-gallon holding tank, the sludge drying and filter beds (1200 $ft^2$), and the bermed cement storage pads and drums. The exact locations of the tanks are unknown, but are assumed to be in the storage and pretreatment facility on the eastern corner of the site (see site map).

The unlined lagoon should also be considered a waste source, but this area was excavated, and the excavated materials were drummed and disposed of off site prior to 1974. The area is now the chemical tank storage area, which is cement-lined and bermed.

The last waste source to be evaluated is the 4-inch pipe that carries discharges from the site into the stream.

Ref. Nos. 1, 3, 7, 8, 13, 14, 15, 16, 17, 18, 19, 27

## 2.3 GROUNDWATER ROUTE

On June 12, 1978, the aquifers underlying Long Island were designated as sole source aquifers under the 1974 Safe Drinking Water Act. The Photocircuits Site is located in northern Nassau County, just north of the Harbor Hill and Ronkonkoma Moraines. The area is considered a segment of the Atlantic Coastal Plain physiographic province. The coastal plain consists of unconsolidated deposits of sand, gravel, and clay that dip and thicken southward. The two terminal moraines south of the site are composed of boulders, gravel, sand, and clay, and were deposited during the Pleistocene Epoch. The Harbor Hill and Ronkonkoma Terminal Moraines are natural groundwater divides along Long Island. North of these moraines, in the area of the site, groundwater flows northward toward Long Island Sound.

Three water-bearing units or aquifers have been identified in the vicinity of the site. They are the Upper Pleistocene deposits (otherwise known as the Upper Glacial Aquifer), the Magothy Aquifer, and the Lloyd Aquifer. The Upper Glacial Aquifer has a maximum thickness of 600 feet and is composed of poorly permeable till containing boulders, gravel, sand, and clay. In the area of the site, the top of the Upper Glacial Aquifer is approximately 10 feet below MSL and is overlain by soil and surficial deposits. The Magothy Formation, the primary source of drinking water in the area, reaches a maximum thickness of approximately 1100 feet. It is composed of fine to medium grain sand with lenses and layers of coarse sand, sandy clay, and solid clay. Gravel is common in the basal portion of the unit. The top of the Magothy Aquifer is at a depth of approximately 300 feet below mean sea level (MSL) near the site, but within a 4-mile radius, there are areas where it may be only 100 feet below MSL. The Magothy is underlain by the Raritan Formation, which is subdivided into two members: the Raritan Clay and the Lloyd Sand, also known as the Lloyd Aquifer. The Raritan Clay has a maximum thickness of 300 feet, and is comprised primarily of clay and silty clay. It has few lenses and layers of sand, little gravel, and the permeability ranges from poor to very poor. The Raritan Clay overlies the Lloyd Aquifer, which has a maximum thickness of 500 feet, and is comprised of fine to coarse grain sand and gravel. This aquifer commonly has a clayey matrix and contains some layers and lenses of solid and silty clay. Permeability of the Lloyd ranges from poor to moderate, and the water is confined under artesian pressure by the overlying Raritan Clay. In the area of the site, the top of the Lloyd Aquifer is at an approximate depth of 350 feet below MSL.

Most municipal supply wells within a 4-mile radius of the site are installed into the Magothy Aquifer at depths ranging from 100 to 300 feet. At these depths, greater amounts of coarse gravels are present and higher yields are achieved. Many private wells are screened in the Upper Glacial Aquifer.

Water level measurements and pump test data for the region indicate that there is a hydraulic connection between the Magothy and Upper Glacial Aquifers. Hydraulically, the Raritan Clay is a leaky confining layer for the Lloyd Aquifer, retarding, but not preventing, vertical leakage of water to and from the Lloyd Aquifer. There are few wells in the Lloyd Aquifer at present, due not only to its greater depth, but to the fact that legal restrictions have been imposed on its use.

The Ronkonkoma Terminal Moraine acts as a divide for regional groundwater flow direction. Depth to groundwater at the site is approximately 8 to 10 feet below the ground surface, and north of the divide, flow is generally northward toward Long Island Sound. Regional groundwater flow direction and velocity in both the Upper Glacial and Magothy Aquifers may be greatly affected by heavy pumping from the numerous supply wells in the area. Groundwater is recharged in the area by precipitation, the use of recharge basins, and diffusion wells. The normal annual precipitation for this area of Long Island is approximately 46 inches, and the mean annual lake evaporation is approximately 31 inches. Therefore, the net precipitation is approximately 15 inches.

There are approximately 27,000 people serviced by wells in the City of Glen Cove and 64,000 people in the Jericho Water District. All public supply wells are interconnected between municipalities. The nearest public supply wells, a cluster of three, are located on Carney Street, approximately 1,000 feet northeast of the site. These wells have been closed since 1977 due to solvent contamination. The Kelly Street well, 2000 feet northeast of the Carney Street wells, was active until January 9, 1989. Routine analysis by the NCHD had shown a steady increase of 1,1,1-trichloroethane in the well. As of January 9, 1989, the New York State Department of Health lowered the public drinking water standard for 1,1,1-trichloroethane from 50 ppb to 5 ppb. On that date the Glen Cove Water District, which operates the Kelly Street well, voluntarily removed the well from service. The Water District is currently installing an air stripping tower to remove the 1,1,1-trichloroethane from the well.

The nearest active public supply well is the Nancy Court well, approximately 1 mile northeast of the site.

Ref. Nos. 28, 29, 30, 31, 32, 33, 34, 35, 36, 40, 44

## 2.4 SURFACE WATER ROUTE

The Photocircuits Site is approximately 80 feet above MSL, with a site slope of less than 1 percent in a northwesterly direction. The surrounding topography is relatively flat to gently sloping to the northwest. The nearest significant increase in elevation occurs approximately 3800 feet northeast of the site at 170 feet above MSL. Glen Cove Creek flows northward through the site and empties into Hempstead Harbor, located approximately 2.3 stream miles away. Hempstead Harbor is classified as a significant coastal zone under the New York State Coastal Zone Management Program.

Surface drainage on site generally flows northwest across the paved portions of the site. However, in the northeast portion of the site, surface drainage flows south for a short distance before turning back to the west toward the creek. Subsurface storm drains under the parking lot channel runoff to Glen Cove Creek.

Glen Cove Creek, which flows through the western half of the site, has been the recipient of unauthorized discharges from Photocircuits on at least two occasions. On March 20, 1964, a waste treatment tank malfunctioned, resulting in the discharge of untreated waste to a storm drain that empties into the creek. The waste, which contained high levels of copper, caused dark blue discoloration in the creek. On April 20, 1964, the treatment tanks malfunctioned again and, as before, partially treated waste was discharged to the creek. Analysis of the waste by Photocircuits revealed that it contained 100 mg/L of copper. As Photocricuits admitted to these unauthorized discharges, and as its own sampling revealed concentrations of copper above the standard for the proposed water classification, a documented release can be attributed to the Photocircuits Site.

That spring and summer, the NCHD collected surface water samples from the creek and storm drains in the vicinity of Photocircuits. No contamination was detected upstream, but high levels of copper and chromium were detected both at Photocircuits' property and downstream of the facility. One of the contaminated creek samples was collected directly opposite the Carney Street well field. Slater Electric Company, northwest of Photocircuits, also borders Glen Cove Creek. Slater uses solvents similar to those used by Photocircuits. Therefore, any contaminants detected from the samples collected by the NCHD cannot be attributed solely to the Photocircuits Site.

The high levels of copper and chromium discharged into Glen Cove Creek may have had immediate toxic effects on the aquatic life. This contamination may continue on a long-term basis as metals have a tendency to adhere to sediments. Contaminated sediment may migrate downstream, and both copper and chromium are bioaccumulative. One segment of Glen Cove Creek is classified as Class D; another segment is Class I. It is unclear as to which classification refers to the segment of the creek that flows through the site.

Glen Cove Creek flows northwest into Hempstead Harbor, which is located approximately 2.3 stream miles away. The harbor has been designated as a significant coastal fish and wildlife habitat and is considered one of the 10 most important waterfowl wintering areas on the north shore of Long Island. It is not only noted for scaup, canvasback, and black ducks, but also provides a nursery and feeding habitat for striped bass, bluefish, Atlantic silverside, menhaden, winter flounder, and blackfish. None of these are federally listed endangered species.

Although there are no known federally listed endangered species within 1 mile of the site, there is one rare plant listed as "State Historical" by the New York Natural Heritage Program. Aristolochia serpentaria (Virginia snakeroot) was last collected in 1879 in the Glen Cove vicinity. No extant sites are currently known, but this plant may be rediscovered.

The 1-year 24-hour rainfall for this area of Long Island is approximately 2.75 inches.

Ref. Nos. 6, 8, 36, 37, 38, 39, 40

## 2.5 AIR ROUTE

During the on-site reconnaissance conducted on March 31, 1987, there were several readings above background on the air monitoring instruments at various locations on site. A reading of 1 part per million (ppm) was noted in the vicinity of the drums of raw materials, and 3 ppm near the generator. In addition, the instruments recorded readings of 1.5 ppm in the bermed area and 5.0 ppm over the drums in that area.

There are no historic landmarks within view of the site.

Ref. Nos. 23, 41, 42

## 2.6 ACTUAL HAZARDOUS CONDITIONS

There are several documented cases of actual hazardous conditions pertaining to human or environmental contamination related to or possibly related to the Photocircuits Site:

- In November 1984, while collecting what were supposed to be empty, clean drums from Photocircuits, a city worker was burned by liquid remaining inside one of them.
- In March 1964 a wastewater treatment tank at Photocircuits leaked, discharging untreated waste to a parking lot storm drain. The storm drain leads to Glen Cove Creek, and the discharge caused a dark blue discoloration in the creek.
- In March 1964 the Nassau County Health Department (NCHD) collected samples from the weir, the pond, and the storm drain on Sea Cliff Avenue. Analytical results indicated the presence of heavy metals and solvents.
- In April 1964 Photocircuits notified the NCHD that partially treated copper waste from a tank was discharged into the creek, causing blue coloration. A copper reading taken by Photocircuits revealed copper concentrations of 100 ppm.

- In July 1977 the Carney Street well field was closed due to organic contamination. In August 1977 the NCHD reported that Photocircuits may have been a potentially responsible party.

- In January and February of 1986 Photocircuits violated its SPDES permit by exceeding the permit limits for copper in its discharges to the Glen Cove wastewater treatment plant.

There are no other documented cases of actual hazardous conditions pertaining to human or environmental contamination related to the Photocircuits Site.

Specifically:

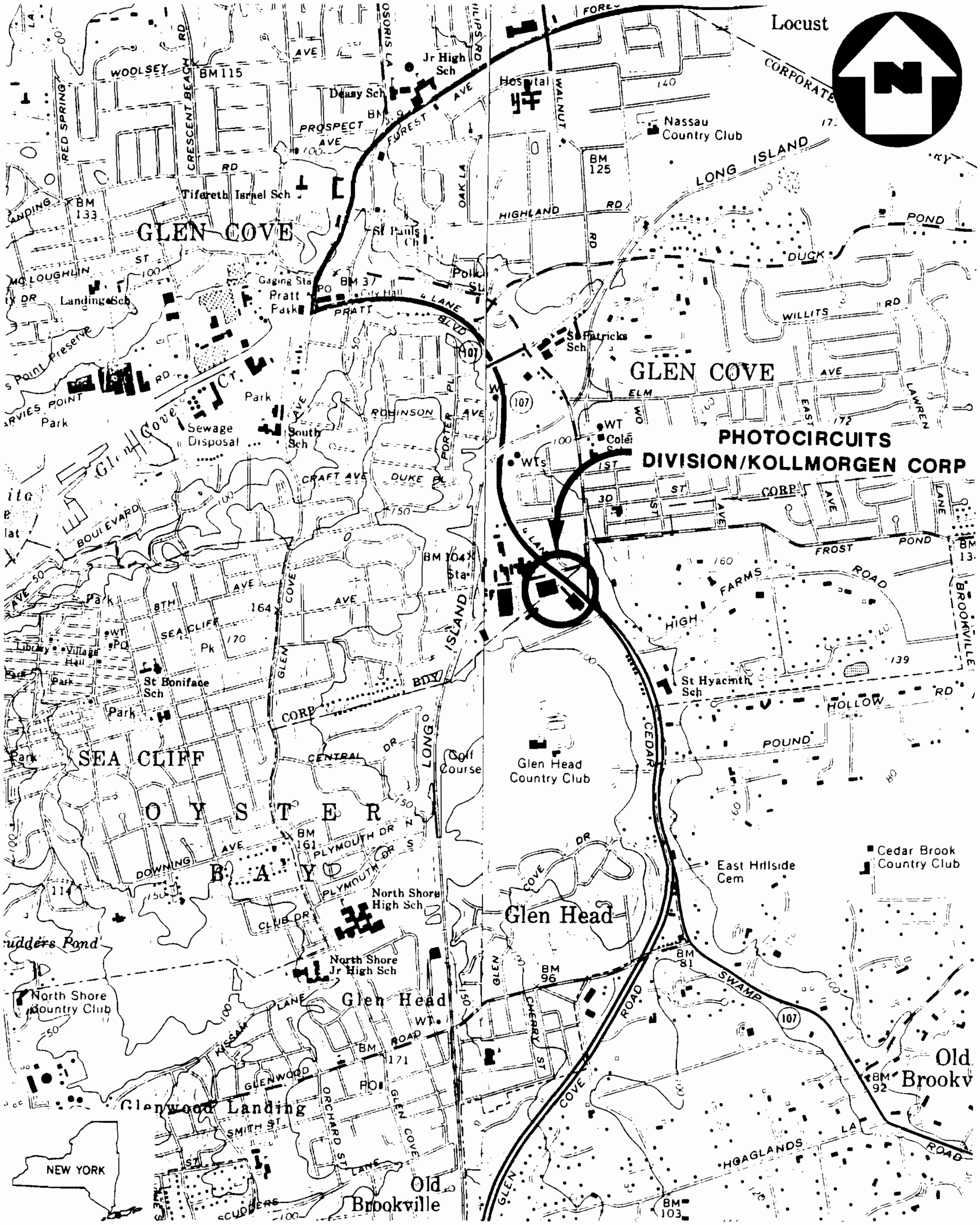
- Contamination has not been documented either in organisms in a food chain leading to humans or in organisms directly consumed by humans.

- There have been no documented incidents of damage to flora (e.g., stressed vegetation) or to fauna (e.g., fish kill) that can be attributed to the hazardous material at the facility.

It is not known whether a fire marshall has certified that the site poses a significant threat of fire or explosion.

Ref. Nos. 6, 8, 15, 17

# 3.0 MAPS AND PHOTOS




(QUAD) HICKSVILLE, N.Y.

**FIGURE 1**

## SITE LOCATION MAP
## PHOTOCIRCUITS DIVISION/KOLLMORGEN CORP.,
## GLEN COVE, N.Y.

**SCALE: 1"=2000'**

NUS CORPORATION

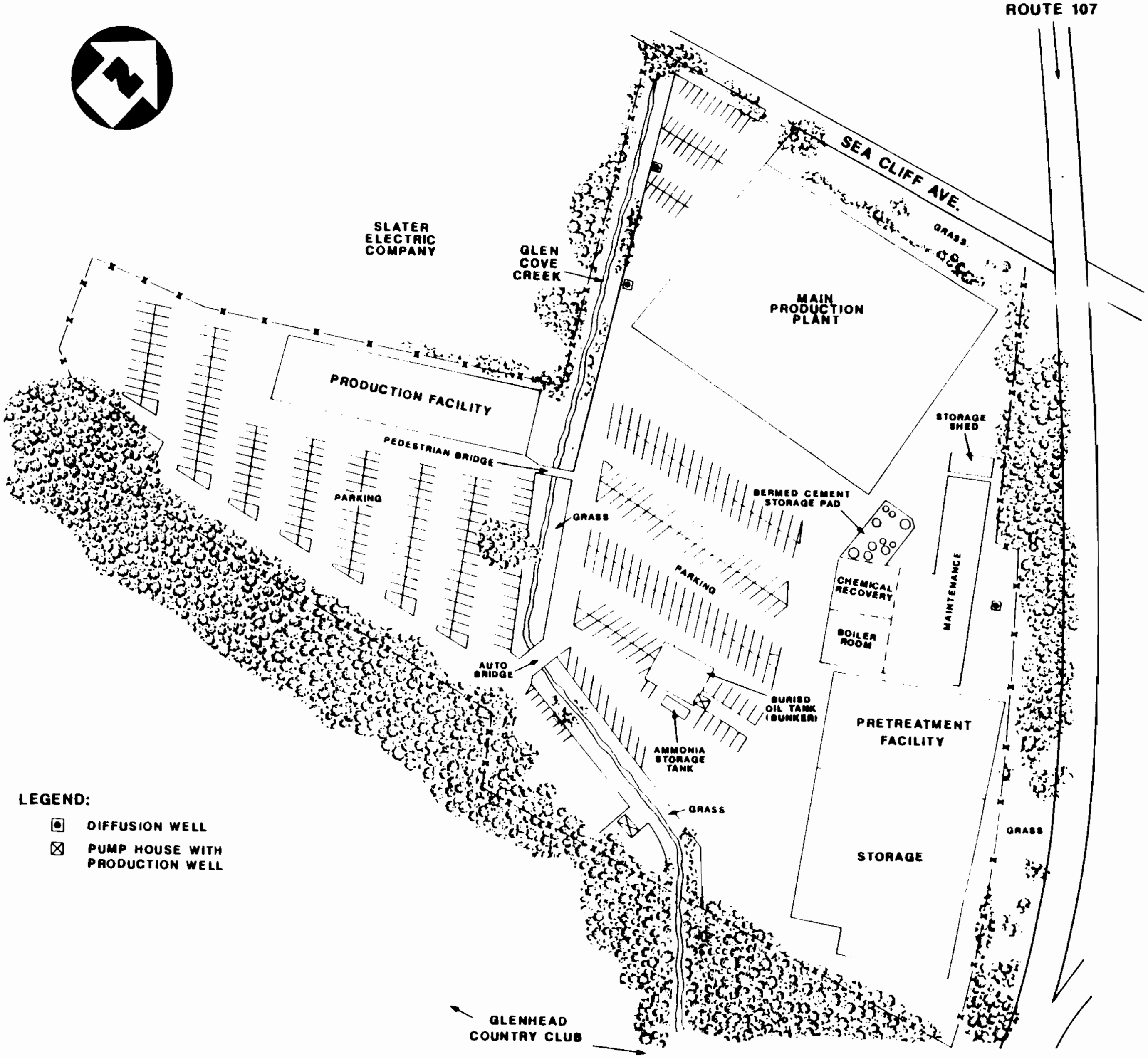



**FIGURE 2**

NUS CORPORATION

## SITE MAP

## PHOTOCIRCUITS DIVISION/KOLLMORGEN CORP., GLEN COVE, N.Y.

(NOT TO SCALE)

## EXHIBIT A

## PHOTOGRAPH LOG

## PHOTOCIRCUITS DIV./KOLLMORGEN CORP.
## GLEN COVE, NEW YORK

No photographs were taken during the on-site reconnaissance conducted on March 30, 1987.

# 4.0 ANALYTICAL DATA

Due to difficulties in obtaining access to the Photocircuits Site, NUS Corp. Region 2 FIT did not conduct sampling at this site. Additional analytical data may have been collected during subsequent on-site remedial work by H2M consultants; however, this information was not available to NUS Region 2 FIT.

# 5.0 CONCLUSIONS AND RECOMMENDATIONS

In 1977, 3 of the City of Glen Cove's 10 potable supply wells were closed due to trichloroethylene and tetrachloroethylene contamination. The Nassau County Department of Health concluded that this contamination was due to past waste discharges that originated in the industrial park within which Photocircuits is located. Photocircuits is one of only two industries in the area that used solvents of the general type found in the wells.

Before the construction of its own treatment plant, Photocircuits stored metal-laden sludge on site in a lagoon. This sludge contained high levels of copper, chromium, zinc, nickel, and cyanide, and was present on site in amounts of up to 17 tons at a time. It is possible that some of this material migrated from the lagoon and contaminated the surrounding soil. Such migration could cause contamination of both Glen Cove Creek and local groundwater, as the water table is only 8 to 10 feet below the ground surface.

In addition to groundwater contamination, there is also potential for surface water contamination to have occurred. Glen Cove Creek, which flows through the western half of the site, received unauthorized discharges from Photocircuits on at least two occasions. The discharges contained high levels of copper. Chromium was also detected in samples collected downstream of the facility.

The high levels of copper and chromium may have had immediate toxic effects on aquatic life. This contamination may continue on a long-term basis, as metals have a tendency to adhere to sediments.

Glen Cove Creek flows northwest into Hempstead Harbor, which is approximately 2.3 stream miles away. The harbor has been designated as a significant coastal fish and wildlife habitat and is considered one of the 10 most important waterfowl wintering areas on the north shore of Long Island.

Since groundwater is the sole source of drinking in the area, and since Glen Cove Creek, which flows into a significant fish and wildlife habitat, is known to have received discharges from Photocircuits, this site is recommended to have a **HIGH PRIORITY** for further action.

An unknown amount of remediation may have been performed at the site, but details are unavailable to NUS Region 2 FIT. Based on the potential and actual contamination attributable to the site, the priority of this site remains high.

# 6.0 REFERENCES


1. Preliminary Assessment Report, U.S. EPA, Environmental Services Division, October 1, 1986.

2. U.S. EPA Hazardous Waste Permit Application, Consolidated Permits Program, EPA ID No. NYD096920483.

3. Department of Environmental Conservation, Division of Solid Waste Management, New York State Hazardous Waste Survey of Photocircuits, March 3, 1978.

4. State of New York, Department of Conservation, Division of Water Power and Control, Completion Report - Long Island Well, Well No. N 7427, May 22, 1963.

5. State of New York, Department of Conservation, Division of Water Power and Control, Completion Report - Long Island Well, Well No. N-8224, March 26, 1971.

6. Nassau County Health Department, Environmental Health, Continuation Sheet, March 20, 1964 through April 23, 1964.

7. Letter from Francis L. Fuggini, Photocircuits Division, to Mr. John Welch, Nassau County Department of Health, December 10, 1974; plus copy of Photocircuits Internal Memorandum, from Executive Committee, to all Employees, Subject: discharges into unauthorized facilities, December 9, 1974.

8. Nassau County Department of Health, Status Report of Investigation of Organic Contamination, Carney Street Well Field, Glen Cove, August 31, 1977.

9. New York State Department of Environmental Conservation (NYSDEC), Septic Tank Cleaner and Industrial Waste Collector Certificate of Registration, Registration No. 1A-011, December 21, 1978; expiration date: March 31, 1979.

10. NYSDEC, Septic Tank Cleaner and Industrial Waste Collector, Certificate of Registration, Registration No. 1A-011; expiration date: December 31, 1980.

11. U.S. EPA Notification of Hazardous Waste Activity, Photocircuits Div., NYD096920483, date received: 08/13/80.

12. NYSDEC, Septic Tank Cleaner and Industrial Waste Collector Permit, Registration No. 1A-011; expiration date: December 31, 1981.

13. RCRA Treatment, Storage and Disposal Facility Inspection Form, Photocircuits, May 15, 1981.

14. RCRA Inspection Form, Photocircuits, January 7, 1983.

15. Hazardous Material Complaint filed by Director of Public Works against Photocircuits, November 15, 1984.

16. Uniform Hazardous Waste Manifest, Photocircuits Corp., January 15, 1985.

17. Letter from Robert J. Mangan, P.E., Director, Department of Public Works, to M. Martin Higgins, Photocircuits, March 24, 1986

18. Letter to Mr. Cronin, Chief, Compliance Section, NYSDEC, re: Violation of SPDES permit for Glen Cove Wastewater Treatment Plant March 14, 1986.

## 6.0 REFERENCES (Cont'd)


19. Nassau County Health Department, Environmental Health, Continuation Sheet, June 30, 1986 and July 1, 1986.

20. Nassau County Health Department, Environmental Health, Continuation Sheet, July 14, 1986.

21. Telecon Note: Conversation between Receptionist, Photocircuits Div., and Joann Wagner, NUS Corp., March 12, 1987.

22. Telecon Note: Conversations between Warren Wagner, Photocircuits Div., and Joann Wagner, NUS Corp., March 16, 1987.

23. Field Notebook No. 0052, Photocircuits Division/Kollmorgen Corp., TDD No. 02-8703-68, On-Site Reconnaissance, NUS Corp., Region 2 FIT, Edison, New Jersey, March 30, 1987.

24. Telecon Note: Conversation between Mike Gentils, H2M, and Sue Lenczyk, NUS Corp., September 8, 1989.

25. NUS Corp. Region 2 FIT, Draft Work Plan, Expanded Site Inspection, Photocircuits Corporation, Glen Cove, New York, prepared under TDD No. 02-8709-11, March 29, 1988.

26. Nassau County Health Department, Environmental Health, Continuation Sheet, November 15, 1984; November 19, 1984.

27. Letter from Photocircuits Corp. to Nassau County Department of Health, May 23, 1963.

28. McClymonds, N.E. and O.L. Franke. Water-Transmitting Properties of Aquifers on Long Island, New York, Geological Survey Professional Paper 627-E, U.S. Government Printing Office, Washington, 1972.

29. Letters and Attachments from Donald H. Myott, P.E., Nassau County Department of Health, to Diane Trube, NUS Corp., re: Public Supply Well Information, March 17, 1987; March 23, 1987.

30. Map of Public Supply and Monitoring Wells, Glen Cove; Source unknown.

31. Telecon Note: Conversation between Mr. Hendrickson, Office Manager, Jericho Water District, and David Grupp, NUS Corp., March 24, 1987.

32. Telecon Note: Conversation between Ron Buscialano, U.S. Geological Survey, Syosset, and John Ducar, NUS Corp., March 8, 1988.

33. Telecon Note: Conversation between Paul Stevens, Sidney Bowne & Son, Well Contractor for City of Glen Cove, and John Ducar, NUS Corp., February 23, 1988.

34. Telecon Note: Conversation between John Lovejoy, Nassau County Health Department, and Susan Kennedy, NUS Corp., February 18, 1988.

35. Removal of Organic Contaminants from Drinking Water Supply at Glen Cove NY, by Nebolsine Kohlmann Ruggiero Engineers P.C., Consulting Engineers, U.S. EPA Cooperative Agreement No. CR 806355-01, May 1980.

## 6.0 REFERENCES (Cont'd)

36. Uncontrolled hazardous waste site ranking system, A user's manual, 40 CFR, Part 300, Appendix A, 1986.

37. Telecon Note: Conversation between John W. Ozard, Senior Wildlife Biologist, Significant Habitat Unit, NYSDEC, Delmar, and David Grupp, NUS Corp., March 24, 1987.

38. Letter from John W. Ozard, Senior Wildlife Biologist, Significant Habitat Unit, NYSDEC, to David J. Grupp, NUS Corp., April 10, 1987.

39. Letter from Carol Reschke, Community Ecologist, NYSDEC, to Susan Kennedy, NUS Corp., March 10, 1988.

40. Three-Mile Vicinity Map based on U.S. Department of the Interior, Geological Survey Topographic Map, 7.5 minute series, Hicksville, NY Quadrangle, 1967, photorevised 1979; Bayville, NY - Conn. Quadrangle, 1967; Mamaroneck, NY- Conn. Quadrangle, 1967; Sea Cliff, NY Quadrangle, 1968, photorevised 1979.

41. U.S. Department of the Interior, National Register of Historic Places Index, February 4, 1987.

42. Hagstrom Map of Nassau County, 1984.

43. Telecon Note: Conversation between Mr. Andy Yerman, Water Unit, NYSDEC, Region 1, and Sue Lenczyk, NUS Corp., September 12, 1989.

44. Telecon Note: Conversation between Mr. John Lovejoy, Water Division, Nassau County Health Department, and Sue Lenczyk, NUS Corp., September 14, 1989.

REFERENCE NO. 1

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION II
EDISON, NEW JERSEY 08837

**POTENTIAL HAZARDOUS WASTE SITE**
**PRELIMINARY ASSESSMENT**

Site Name: Photocircuits Division / Kollmorgen Corporation

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

County: Nassau

EPA I.D. No.: NYD096920483


Summary:

Photocircuits produces printed circuit boards for the electronics industry. Metal-plating is done with copper, tin, nickel, and gold; chrome-plating has apparently been discontinued. Metal stripping or etching is performed using ammonia-based solutions, and solder baths contain fluoroborates and fluoroboric acid. Hydrocarbon solvents (trichloroethane and methylene chloride) are used for cleaning during image formation.

Various waste streams are produced and treated as follows: 1) post-bath rinse waters are pre-treated on site and discharged to the sewer; 2) metallic sulfide sludges are dewatered on a filter press and stored in jumbo sacks; 3) "still bottoms" from on-site solvent recovery (containing epoxies, methacrylates, and polyvinylchlorides) are stored in drums; 4) spent plating, etching, and soldering solutions are stored in drums or aboveground tanks. Prior to licensed removal from the site, all waste containers are stored on bermed concrete with drainage to the pre-treatment plant (located inside a building).

Of primary concern are past practices, rather than current operations. Chromium hydroxide sludges were previously stored in an on-site clay-lined lagoon prior to off-site disposal; between 1977 and 1981, use of the lagoon was discontinued but the current condition of that area is not known. Also, unauthorized discharges into such facilities as the parking lot storm drain were acknowledged by the company in a 1974 memo to employees. Organic solvents contamination, found in area groundwater and in Cedar Swamp Creek, led to the 1977 closure of public drinking water supply wells located roughly 1000 feet from the site.


Priority for Inspection: High ___
Medium X
Low ___
None ___

Recommendations:

An EPA site inspection is recommended. The former lagoon area should be inspected and soils should be analyzed for contamination with heavy metals or solvents; a history on any land rehabilitation should be obtained. Water samples should be taken from Cedar Swamp Creek and Photocircuits' parking lot storm drain (where solvents were detected in 1977). Groundwater analyses should be obtained from the Glen Cove and Jericho Water Districts, and any private wells in the area should be sampled.


Prepared by: Amy J. Brochu, Environmental Engineer
U.S. EPA, Environmental Services Division


Date: October 1, 1986

EPA

# POTENTIAL HAZARDOUS WASTE SITE PRELIMINARY ASSESSMENT
## PART 1 - SITE INFORMATION AND ASSESSMENT

**I. IDENTIFICATION**

| 01 STATE | 02 SITE NUMBER |
|---|---|
| NY | D096920483 |

**II. SITE NAME AND LOCATION**

| | |
|---|---|
| 01 SITE NAME (Legal, common, or descriptive name of site): Photocircuits Division | 02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER: 31 Sea Cliff Avenue |
| 03 CITY: Glen Cove | 04 STATE: NY; 05 ZIP CODE: 11542; 06 COUNTY: Nassau; 07 COUNTY CODE: 059; 08 CONG DIST: 2-5 |
| 09 COORDINATES LATITUDE: 40 51 06. N; LONGITUDE: 073 37 24. W | |

10 DIRECTIONS TO SITE (Starting from nearest public road)
Long Island Expressway to Exit 39S; north on Greenvale-Glen Cove Road until it becomes Cedar Swamp Road; north on Cedar Swamp Road; turn left on Sea Cliff Avenue; Photocircuits on left (south side of road).

**III. RESPONSIBLE PARTIES**

| | |
|---|---|
| 01 OWNER (If known): Kollmorgen Corporation | 02 STREET (Business, mailing, residential): 66 Gate House Road |
| 03 CITY: Stamford | 04 STATE: CT; 05 ZIP CODE: 06902; 06 TELEPHONE NUMBER: (203) 327-7222 (John Endee) |
| 07 OPERATOR (If known and different from owner): Joseph Shaulys, Plant Engineer | 08 STREET (Business, mailing, residential): 31 Sea Cliff Avenue |
| 09 CITY: Glen Cove | 10 STATE: NY; 11 ZIP CODE: 11542; 12 TELEPHONE NUMBER: (516) 448-1325 |

13 TYPE OF OWNERSHIP (Check one)
☐ A. PRIVATE ☐ B. FEDERAL: ____ (Agency name) ☐ C. STATE ☐ D. COUNTY ☐ E. MUNICIPAL
☒ F. OTHER: Corporate (Specify) ☐ G. UNKNOWN

14 OWNER/OPERATOR NOTIFICATION ON FILE (Check all that apply)
☒ A. RCRA 3001 DATE RECEIVED: 8 / 13 / 80 (MONTH DAY YEAR) ☐ B. UNCONTROLLED WASTE SITE (CERCLA 103 c) DATE RECEIVED: __/__/__ (MONTH DAY YEAR) ☐ C. NONE

**IV. CHARACTERIZATION OF POTENTIAL HAZARD**

01 ON SITE INSPECTION ☒ YES ☐ NO DATE 12/11/85, 1/7/83, 5/15/81, 7/26/77 (MONTH DAY YEAR)
BY (Check all that apply) ☒ A. EPA ☐ B. EPA CONTRACTOR ☒ C. STATE ☐ D. OTHER CONTRACTOR ☐ E. LOCAL HEALTH OFFICIAL ☐ F. OTHER: ____ (Specify)
CONTRACTOR NAME(S): ____

02 SITE STATUS (Check one) ☒ A. ACTIVE ☐ B. INACTIVE ☐ C. UNKNOWN
03 YEARS OF OPERATION 1956 (BEGINNING YEAR) — (ENDING YEAR) ☐ UNKNOWN

04 DESCRIPTION OF SUBSTANCES POSSIBLY PRESENT, KNOWN, OR ALLEGED
Wastes include: spent plating, etching, and soldering baths (all containing heavy metals); rinse waters and metallic sulfide sludges; cleaning solutions (trichloroethane, methylene chloride, and acetate); and solvent recovery still "bottoms" (containing epoxies, methacrylates, and polyvinylchlorides, plus residual solvents).

05 DESCRIPTION OF POTENTIAL HAZARD TO ENVIRONMENT AND/OR POPULATION
Organic solvents contamination of area groundwater and surface water has been detected. The company has acknowledged past unauthorized discharges into an on-site storm drain, and metal hydroxide sludges were previously stored in an on-site lagoon.

**V. PRIORITY ASSESSMENT**

01 PRIORITY FOR INSPECTION (Check one. If high or medium is checked, complete Part 2 - Waste Information and Part 3 - Description of Hazardous Conditions and Incidents)
☐ A. HIGH (Inspection required promptly) ☒ B. MEDIUM (Inspection required) ☐ C. LOW (Inspect on time available basis) ☐ D. NONE (No further action needed, complete current disposition form)

**VI. INFORMATION AVAILABLE FROM**

| 01 CONTACT | 02 OF (Agency/Organization) | | 03 TELEPHONE NUMBER | |
|---|---|---|---|---|
| Diana Messina | EPA/ESD/SMB/Superfund Support Section | | (201) 321-6776 | |
| **04 PERSON RESPONSIBLE FOR ASSESSMENT** | **05 AGENCY** | **06 ORGANIZATION** | **07 TELEPHONE NUMBER** | **08 DATE** |
| Amy J. Brochu | EPA | ESD/SMB/Sprfnd. | (201) 906-6802 | 10/1/86 (MONTH DAY YEAR) |

EPA

# POTENTIAL HAZARDOUS WASTE SITE PRELIMINARY ASSESSMENT
## PART 2 - WASTE INFORMATION

| I. IDENTIFICATION | |
|---|---|
| 01 STATE | 02 SITE NUMBER |
| NY | D096920483 |

## II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

**01 PHYSICAL STATES** (Check all that apply)

X A. SOLID
☐ B. POWDER, FINES
X C. SLUDGE
☐ D. OTHER ______ (Specify)
X E. SLURRY
X F. LIQUID
☐ G. GAS

**02 WASTE QUANTITY AT SITE** (Measures of waste quantities must be independent)

TONS —
CUBIC YARDS —
NO. OF DRUMS —

**03 WASTE CHARACTERISTICS** (Check all that apply)

X A. TOXIC
X B. CORROSIVE
☐ C. RADIOACTIVE
X D. PERSISTENT
☐ E. SOLUBLE
☐ F. INFECTIOUS
X G. FLAMMABLE
X H. IGNITABLE
X I. HIGHLY VOLATILE
☐ J. EXPLOSIVE
X K. REACTIVE
☐ L. INCOMPATIBLE
☐ M. NOT APPLICABLE

## III. WASTE TYPE

| CATEGORY | SUBSTANCE NAME | 01 GROSS AMOUNT | 02 UNIT OF MEASURE | 03 COMMENTS |
|---|---|---|---|---|
| SLU | SLUDGE | Unknown | — | Metal sulfides and still "bottoms". |
| OLW | OILY WASTE | | | |
| SOL | SOLVENTS | Unknown | — | Reclaimed in on-site still. |
| PSD | PESTICIDES | | | |
| OCC | OTHER ORGANIC CHEMICALS | | | |
| IOC | INORGANIC CHEMICALS | | | |
| ACD | ACIDS | | | |
| BAS | BASES | | | |
| MES | HEAVY METALS | Unknown | — | Various baths and rinse waters. |

## IV. HAZARDOUS SUBSTANCES (See Appendix for most frequently cited CAS Numbers)

| 01 CATEGORY | 02 SUBSTANCE NAME | 03 CAS NUMBER | 04 STORAGE/DISPOSAL METHOD | 05 CONCENTRATION | 06 MEASURE OF CONCENTRATION |
|---|---|---|---|---|---|
| SLU | Metallic sulfides | — | Sacks/hauled away. | — | — |
| SLU | Solvent recovery still | | | | |
| | "bottoms": epoxies, | | | | |
| | methacrylates, poly- | | | | |
| | vinylchlorides. | — | Drums/hauled away. | — | — |
| SOL | Trichloroethane | 25323-89-1 | Tanks/reclaimed in still. | — | — |
| SOL | Methylene chloride | — | Tanks/reclaimed in still. | — | — |
| SOL | Acetate | — | Drums/hauled away. | — | — |
| MES | Spent plating, etching, | | | | |
| | and soldering baths. | — | Drums or tanks/hauled away. | — | — |
| MES | Rinse waters | — | Pretreated/discharged to sewer. | — | — |
| | | | | | |
| | | | | | |
| NOTE: | SEE ATTACHED LISTS OF CHEMICALS USED AND STORED. | | | | |
| | | | | | |
| | | | | | |

## V. FEEDSTOCKS (See Appendix for CAS Numbers)

| CATEGORY | 01 FEEDSTOCK NAME | 02 CAS NUMBER | CATEGORY | 01 FEEDSTOCK NAME | 02 CAS NUMBER |
|---|---|---|---|---|---|
| FDS | | | FDS | | |
| FDS | | | FDS | | |
| FDS | | | FDS | | |
| FDS | | | FDS | | |

## VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

NYSDEC (Albany and Stony Brook) files
Nassau County Department of Health files
RCRA files (EPA-Federal Plaza)
Robert Mangan, Glen Cove Water District (telecon)
Leonard Martling, Jericho Water District (telecon)

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# POTENTIAL HAZARDOUS WASTE SITE PRELIMINARY ASSESSMENT
## PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION

| 01 STATE | 02 SITE NUMBER |
| --- | --- |
| NY | D096920483 |

## II. HAZARDOUS CONDITIONS AND INCIDENTS

01 X A. GROUNDWATER CONTAMINATION
03 POPULATION POTENTIALLY AFFECTED: 27,000+
02 X OBSERVED (DATE: 7/77) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

Nassau Co. Health Dept. detected trichloroethylene and tetrachloroethylene in area groundwater and attributed contamination to industrial discharges over the previous decade. Drinking water wells serving roughly 27,000 are located within 1.5 miles of the site, with 5 more wells less than 3.5 miles away.

01 X B. SURFACE WATER CONTAMINATION
03 POPULATION POTENTIALLY AFFECTED: 54,500
02 X OBSERVED (DATE: 7/77) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

Nassau Co. Health Dept. detected organic solvents in Cedar Swamp Creek and in Photocircuits' parking lot storm drain (leading to stream). Approximately 54,000 people live within 3 miles of the site.

01 ☐ C. CONTAMINATION OF AIR
03 POPULATION POTENTIALLY AFFECTED: ______
02 ☐ OBSERVED (DATE: ______) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

Previous potential when lagoons were in use; little potential now because the pre-treatment facility is located inside a building and wastes are stored in closed drums and tanks.

01 ☐ D. FIRE/EXPLOSIVE CONDITIONS
03 POPULATION POTENTIALLY AFFECTED: ______
02 ☐ OBSERVED (DATE: ______) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

According to a 1985 NYSDEC inspection report, manner in which wastes are stored is satisfactory to prevent fire or explosion.

01 ☐ E. DIRECT CONTACT
03 POPULATION POTENTIALLY AFFECTED: ______
02 ☐ OBSERVED (DATE: ______) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

Reportedly, a barrier with warning signs posted at each entrance surrounds the active portion of the facility; round-the-clock surveillance is provided for six days per week.

01 X F. CONTAMINATION OF SOIL
03 AREA POTENTIALLY AFFECTED: Unknown (Acres)
02 ☐ OBSERVED (DATE: ______) X POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

Waste chromium hydroxide slurries were previously stored in an on-site clay-lined lagoon before being pumped out and hauled away. Use of the lagoon was discontinued sometime between 3/78 and 5/81; current condition of the lagoon area is unknown.

01 X G. DRINKING WATER CONTAMINATION
03 POPULATION POTENTIALLY AFFECTED: 27,000+
02 X OBSERVED (DATE: 7/77) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

Public water supply wells located roughly 1000 feet northeast of the site were closed in 1977 due to contamination with organic solvents of the same general type used at Photocircuits. The 4 wells currently serving 27,000 Glen Cove residents are located within 1.5 miles of the site; 5 more Jericho wells are located at 2 and 3.5 mil

01 ☐ H. WORKER EXPOSURE/INJURY
03 WORKERS POTENTIALLY AFFECTED: ______
02 ☐ OBSERVED (DATE: ______) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

Employees are reportedly trained in safe handling of the hazardous materials present.

01 X I. POPULATION EXPOSURE/INJURY
03 POPULATION POTENTIALLY AFFECTED: 54,500
02 ☐ OBSERVED (DATE: ______) X POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

People living within a 3-mile radius of the site could potentially be affected by surface water or groundwater contamination.

EPA

# POTENTIAL HAZARDOUS WASTE SITE PRELIMINARY ASSESSMENT
## PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION
01 STATE: NY | 02 SITE NUMBER: D096920483

**II. HAZARDOUS CONDITIONS AND INCIDENTS** (Continued)

01 ☐ J. DAMAGE TO FLORA — 02 ☐ OBSERVED (DATE: ______) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

Potential unknown.

01 ☒ K. DAMAGE TO FAUNA — 02 ☐ OBSERVED (DATE: ______) ☒ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION (include name(s) of species)

Potential danger to animals who drink from Cedar Swamp Creek, where organic solvents were found in 1977.

01 ☒ L. CONTAMINATION OF FOOD CHAIN — 02 ☐ OBSERVED (DATE: ______) ☒ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

Potential contamination of any aquatic life in Cedar Swamp Creek.

01 ☐ M. UNSTABLE CONTAINMENT OF WASTES (Spills/runoff/standing liquids/leaking drums) — 02 ☐ OBSERVED (DATE: ______) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: ______ 04 NARRATIVE DESCRIPTION

No leaking drums or tanks have been noted in past inspections; waste containers are kept in bermed areas with drainage leading to the pre-treatment facility.

01 ☐ N. DAMAGE TO OFFSITE PROPERTY — 02 ☐ OBSERVED (DATE: ______) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

Potential unknown.

01 ☒ O. CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs — 02 ☒ OBSERVED (DATE: 7/77) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

Nassau Co. Health Dept. detected organic solvents in the parking lot storm drain in 1977; earlier, the company acknowledged unauthorized discharges in the parking lot. Also, sewer discharges could contain heavy metals.

01 ☒ P. ILLEGAL/UNAUTHORIZED DUMPING — 02 ☐ OBSERVED (DATE: ______) ☐ POTENTIAL ☒ ALLEGED
04 NARRATIVE DESCRIPTION

In a 1974 memo to employees, the company stated that it had "allowed unauthorized discharges to occur particularly in the parking lot which eventually will contaminate (Cedar Swamp) creek."

05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS

**III. TOTAL POPULATION POTENTIALLY AFFECTED:** 54,500 (living within a 3-mile radius of the site)

**IV. COMMENTS**

**V. SOURCES OF INFORMATION** (Cite specific references, e.g., state files, sample analysis, reports)

NYSDEC (Albany and Stony Brook) files
Nassau County Department of Health files
RCRA files (EPA-Federal Plaza)
Robert Mangan, Glen Cove Water District; Leonard Martling, Jericho Water District

EPA FORM 2070-12 (7-81)

REFERENCE NO. 2

Form Approved OMB No. 158-S80004

FORM 3 RCRA — EPA

U.S. ENVIRONMENTAL PROTECTION AGENCY

# HAZARDOUS WASTE PERMIT APPLICATION

*Consolidated Permits Program*

*(This information is required under Section 3005 of RCRA.)*

**I. EPA I.D. NUMBER**

F | N Y D 0 9 6 9 2 0 4 8 3 3

## FOR OFFICIAL USE ONLY

| APPLICATION APPROVED | DATE RECEIVED (yr., mo., & day) | COMMENTS |
|---|---|---|
| | | |

## II. FIRST OR REVISED APPLICATION

Place an "X" in the appropriate box in A or B below *(mark one box only)* to indicate whether this is the first application you are submitting for your facility or a revised application. If this is your first application and you already know your facility's EPA I.D. Number, or if this is a revised application, enter your facility's EPA I.D. Number in Item I above.

**A. FIRST APPLICATION** *(place an "X" below and provide the appropriate date)*

[X] 1. EXISTING FACILITY *(See instructions for definition of "existing" facility. Complete item below.)*

[ ] 2. NEW FACILITY *(Complete item below.)*

C 8 — YR. 56 MO. 04 DAY 01 — FOR EXISTING FACILITIES, PROVIDE THE DATE *(yr., mo., & day)* OPERATION BEGAN OR THE DATE CONSTRUCTION COMMENCED *(use the boxes to the left)*

YR. ___ MO. ___ DAY ___ — FOR NEW FACILITIES PROVIDE THE DATE *(yr., mo., & day)* OPERATION BEGAN OR IS EXPECTED TO BEGIN

**B. REVISED APPLICATION** *(place an "X" below and complete Item I above)*

[ ] 1. FACILITY HAS INTERIM STATUS

[ ] 2. FACILITY HAS A RCRA PERMIT

## III. PROCESSES – CODES AND DESIGN CAPACITIES

**A. PROCESS CODE** – Enter the code from the list of process codes below that best describes each process to be used at the facility. Ten lines are provided for entering codes. If more lines are needed, enter the code(s) in the space provided. If a process will be used that is not included in the list of codes below, then describe the process *(including its design capacity)* in the space provided on the form *(Item III-C)*.

**B. PROCESS DESIGN CAPACITY** – For each code entered in column A enter the capacity of the process.

1. AMOUNT – Enter the amount.
2. UNIT OF MEASURE – For each amount entered in column B(1), enter the code from the list of unit measure codes below that describes the unit of measure used. Only the units of measure that are listed below should be used.

| PROCESS | PROCESS CODE | APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY |
|---|---|---|
| **Storage:** | | |
| CONTAINER *(barrel, drum, etc.)* | S01 | GALLONS OR LITERS |
| TANK | S02 | GALLONS OR LITERS |
| WASTE PILE | S03 | CUBIC YARDS OR CUBIC METERS |
| SURFACE IMPOUNDMENT | S04 | GALLONS OR LITERS |
| **Disposal:** | | |
| INJECTION WELL | D79 | GALLONS OR LITERS |
| LANDFILL | D80 | ACRE-FEET *(the volume that would cover one acre to a depth of one foot)* OR HECTARE-METER |
| LAND APPLICATION | D81 | ACRES OR HECTARES |
| OCEAN DISPOSAL | D82 | GALLONS PER DAY OR LITERS PER DAY |
| SURFACE IMPOUNDMENT | D83 | GALLONS OR LITERS |
| **Treatment:** | | |
| TANK | T01 | GALLONS PER DAY OR LITERS PER DAY |
| SURFACE IMPOUNDMENT | T02 | GALLONS PER DAY OR LITERS PER DAY |
| INCINERATOR | T03 | TONS PER HOUR OR METRIC TONS PER HOUR; GALLONS PER HOUR OR LITERS PER HOUR |
| OTHER *(Use for physical, chemical, thermal or biological treatment processes not occurring in tanks, surface impoundments or incinerators. Describe the processes in the space provided; Item III-C.)* | T04 | GALLONS PER DAY OR LITERS PER DAY |

| UNIT OF MEASURE | UNIT OF MEASURE CODE |
|---|---|
| GALLONS | G |
| LITERS | L |
| CUBIC YARDS | Y |
| CUBIC METERS | C |
| GALLONS PER DAY | U |
| LITERS PER DAY | V |
| TONS PER HOUR | D |
| METRIC TONS PER HOUR | W |
| GALLONS PER HOUR | E |
| LITERS PER HOUR | H |
| ACRE-FEET | A |
| HECTARE-METER | F |
| ACRES | B |
| HECTARES | Q |

**EXAMPLE FOR COMPLETING ITEM III** *(shown in line numbers X-1 and X-2 below)*: A facility has two storage tanks, one tank can hold 200 gallons and the other can hold 400 gallons. The facility also has an incinerator that can burn up to 20 gallons per hour.

C | DUP | T/A C 1

| LINE NUMBER | A. PROCESS CODE (from list above) | B. PROCESS DESIGN CAPACITY 1. AMOUNT (specify) | 2. UNIT OF MEASURE (enter code) | FOR OFFICIAL USE ONLY |
|---|---|---|---|---|
| X-1 | S02 | 600 | G | |
| X-2 | T03 | 20 | E | |
| 1 | S01 | 55000 | G | |
| 2 | S02 | 2000000 | G | |
| 3 | T01 | 1300000 | V | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| 10 | | | | |



CONTINUE ON REVERSE

...Copy this page before completing .. you have more than 26 wastes to list.

Form Approved OMB No. 158-S80004

EPA I.D. NUMBER (enter from page 1): N Y D 0 9 6 9 2 0 4 8 3 | T/A: 3 | C: 1

FOR OFFICIAL USE ONLY: W DUP | T/A C: 3 2 | DUP

## IV. DESCRIPTION OF HAZARDOUS WASTES (continued)

| LINE NO. | A. EPA HAZARD. WASTE NO. (enter code) | B. ESTIMATED ANNUAL QUANTITY OF WASTE | C. UNIT OF MEASURE (enter code) | D. PROCESSES 1. PROCESS CODES (enter) | | | | D. PROCESSES 2. PROCESS DESCRIPTION (if a code is not entered in D(1)) |
|---|---|---|---|---|---|---|---|---|
| 1 | F002 | 36000 | T | S01 | S02 | | | |
| 2 | F006 | 93000 | T | S01 | T01 | | | |
| 3 | F007 | 53000 | T | S01 | T01 | | | |
| 4 | F008 | 0000 | T | S01 | T01 | | | |
| 5 | F009 | 35000 | T | S01 | T01 | | | |
| 6 | | | | | | | | |
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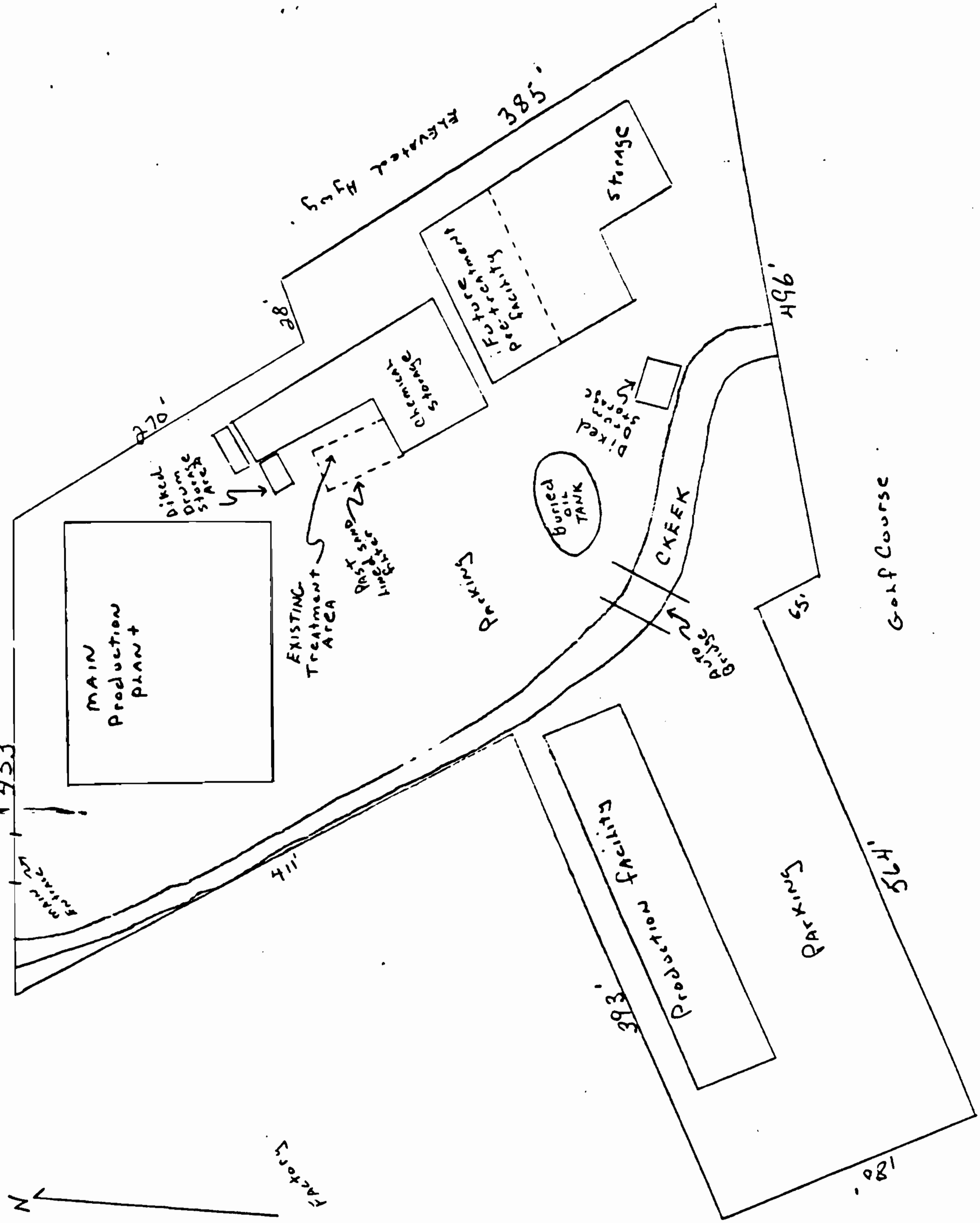
| 23 | | | | | | | | |
| 24 | | | | | | | | |
| 25 | | | | | | | | |
| 26 | | | | | | | | |

PHOTO CIRCUITS DIV / KOLLMORGEN

SEE ATTACHMENT B



Elevated Hwy
385'
28'
270'
Storage
Future pre-treatment facility
Chemical storage
Diked Drum Storage Area
EXISTING Treatment AREA
Past sand limestone filter
Parking
Buried oil TANK
Diked sod storage
CREEK
Auto bridge
496'
65'
Golf Course
MAIN Production PLANT
453'
411'
Main entrance
Production facility
Parking
564'
393'
180'
Factory
N

ATTACHMENT A

Existing Certificates to Operate Air Contamination Source:

Serial Numbers:

| | | | |
|---|---|---|---|
| 1-007089 | 1-006854 | 1-006862 | 1-007321 |
| 1-007090 | 1-006855 | 1-006863 | 1-007322 |
| 1-006849 | 1-006856 | 1-006867 | 1-007323 |
| 1-006850 | 1-006857 | 1-006868 | 1-007324 |
| 1-007316 | 1-006858 | 1-007317 | 1-007325 |
| 1-006851 | 1-009830 | 1-007318 | 1-007326 |
| 1-006852 | 1-006860 | 1-007319 | 1-007327 |
| 1-007091 | 1-006861 | 1-007320 | 1-007333 |
| | | | 1-007334 |

**REFERENCE NO. 3**

Initial Mailing 6/23/77 by DMQ
Initial Contact 7/14/77 by DMQ
Appointment Made / / by
Site or Phone Visit 7/26/77 by DMQ
Follow-up 3/3/78 by DMQ
Form Completed 3/3/78 by DMQ
Comments: Printed Circuits, Printed circuit motors Plating [illegible] w. [illegible]

Company Code 3 6 7 9 7 2 0 0 1 3
Company Name Photocircuits Div. Kollmorgen C
Address 31 Sea Cliff Ave
Glen Cove NY 11542
County Nassau Phone [illegible]
SIC Codes 1. 3679 3. 448-1048
1657 2. 3599 4.
(857000)

[illegible] S.F. Comp.

New York State Hazardous Waste Survey
Department of Environmental Conservation
Division of Solid Waste Management
50 Wolf Road, Albany, N.Y. 12233 Telephone: (518) 457-6605

## General Information

1. Company Name Photocircuits

 Mailing Address 31 Sea Cliff Ave. (Street) Glen Cove, (City) NY. (State) 11542 (Zip)

 Plant Location /X/ Same as above

 Street City State Zip

2. If Subsidiary, Name of Parent Company Kollmorgen Corp.

3. Individual Responsible for Plant Operations ~~Frank~~ Jim Swiggett (Name)

 Pres (Title) Phone

4. Individual Providing Information Mr. George Butter (Name)

 Plant Eng. (Title) Phone

5. Department of Environmental Conservation Interviewer Daniel H. Quackenbush

6. Standard Industrial Classification (SIC) Codes for Principal Products

| Group Name | SIC Code (4 Digit) | Approximate % of /X/ Production / / Value Added |
|---|---|---|
| a. Electronic Components | 36790 | 100 |
| b. | | |
| c. | | |
| d. | | |

7. Processes Used at Plant
 a. Etching
 b. Electroplating, Electroless Plating
 c. Image printing, silk screen
 d. Plastics Fabrication
 e. Chemical Formulation

8. Products
 a. Electronic component -
 b. printed circuit boards
 c. multi-wired "
 d. Machines for [illegible]
 e. [illegible]
 f. chemical products - additive bath

Company Code 3 6 7 9 7 - 0 0 1 3

Raw materials and other chemicals used in manufacturing processes.

a. Plastic laminate 2 oz Cu
b. Etchents - proprietary - $NH_3$ based
c. Cu, Ni, Au Plating, Electroplating
d. Solder Plating
e. Electroless Plating Cu Soln. [NaOH Formaldehyde, CuSO4 EDTA; NaCN] 2 Cu$^{+}$; 3 Au$^{++}$
f. Dupont Riston - Dry Film - Vinyls; epoxies;
g. HCl $H_2SO_4$
h. $NH_3$; Alcohol (alcohol)
i. Pyrophosphating bath. brightening
$CH_2Cl_2$; 111 Trichloroethane NU
cellosolve acetate
[NaBSO4 Etching Deionizing Bath]

10. a. On Site Waste Water Treatment /X/Yes / /No

b. On Site Waste Water Treatment by July 1977 / /Yes / /No N/A

c. On Site Waste Water Treatment by July 1983 / /Yes / /No N/A

d. Industrial Sewer Discharge /X/Yes / /No Name of Sewage Treatment Plant Glen Cove

e. SPDES No. ______ NPDES No. ______

11. a. Air Pollution Control Devices /X/Yes / /No Types Ammonia Scrubber;

b. To Be Built /X/Yes / /No by 8/ /77 Consultant

c. Air 100 Emission Point Registration Numbers 91 EPS.

12. a. Number of manufacturing employees 800 b. Manufacturing Floor Space 100,000 sq.ft.

13. Attach a plat or sketch of the facility showing the location of on-site process waste storage (if available).

14. Attach flow diagrams of chemical processes including waste flow outputs (if available).

15. In-house waste treatment capabilities: neutralize with caustic, reduce $Cr^{+6} \rightarrow Cr^{+3}$ ($NaHSO_3$); destroy CN electrolytically by reclaiming Cu.

16. Is there a currently used or abandoned landfill, dump or lagoon on plant property? / /Yes /X/ No

17. Industrial wastes produced or expected to be produced by plant.

1) Liquid Discharge - City Sewer, Monitored on the hour (See Attached)
01 2) heavy metal (OH'S) - THIS WWTP IS NOT IN OPN. YET. → Possibility that this will be WWTP slu.
FUTURE 3) $CuPO_4$; CuEDTA; CaF (INSOLUBLE) Possibility
02 4) $Cr^{3}(OH)$
03 5) Plastic trim
04 6) Conc. Baths
05 7) Chlorinated still bottoms
8) (Cu & Heavy metal S)

18. Comments: GLEN COVE IS CONSTRUCTING A WASTE WATER TREATMENT PLANT AND REQUESTING DRINKING H2O PRETREATMENT STDS. MR. BUTTER #(1) does not feel this is fair, #(2) feels the only way to possibly meet these standards is by precipitating the heavy metals as Sulfides - something the city does not want either. (#3) OF COURSE, the other problem is the expensive rate to dispose of

Company Code 3 6 7 9 7 2 0 0 / 3

## Waste Characterization and Management Practice

(Use separate form for each waste stream)

1. Waste Stream No. 2 (01) (from Form I, Number 17)

2. Description of process producing waste *Waste water treatment of plating and etching rinse $H_2O$'s generates heavy metal OH sludge (3 stage lime treatment to precipitate all metals).*

3. Brief characterization of waste *Metal OH sludge*

4. Time period for which data are representative *is presently being looked up to meet sewer re-quirements.*

5. a. Annual waste production ______ /_/tons/yr. /_/gal./yr. *NO WASTE AS OF 3/78*

   b. Daily waste production ______ /_/tons/day /_/gal./day

   c. Frequency of waste production: /_/seasonal /_/occasional /_/continual

   /_/other (specify) ______

6. Waste Composition

   a. Average percent solids ____% b. pH range __ to __

   c. Physical state: /_/liquid, /_/slurry, /_/sludge, /_/solid,

   /_/other (specify) ______

   d. Component

| Component | Average Concentration | /_/wet weight /_/dry weight | |
|---|---|---|---|
| 1. | | /_/wt.% | /_/ppm |
| 2. | | /_/wt.% | /_/ppm |
| 3. | | /_/wt.% | /_/ppm |
| 4. | | /_/wt.% | /_/ppm |
| 5. | | /_/wt.% | /_/ppm |
| 6. | | /_/wt.% | /_/ppm |
| 7. | | /_/wt.% | /_/ppm |
| 8. | | /_/wt.% | /_/ppm |
| 9. | | /_/wt.% | /_/ppm |
| 10. | | /_/wt.% | /_/ppm |

Company Code 3 6 7 4 7 1 0 0 1 3

e. Analysis of composition is /_/theoretical /_/laboratory /_/estimate (attach copy of laboratory analysis if available)

f. Projected /_/increase, /_/decrease in volume from base year: _____% by July 1977; _____% by July 1983.

g. Hazardous properties of waste: /_/flammable /_/toxic /_/reactive /_/explosive /_/corrosive /_/other (specify) ______________

7. On Site Storage

a. Method: /_/drum, /_/roll-off container, /_/tank, /X/lagoon, /_/other (specify) ________

b. Typical length of time waste stored ______ /_/days, /_/weeks, /_/months

c. Typical volume of waste stored _________ /_/tons, /_/gallons

d. Is storage site diked? /_/Yes /_/No

e. Surface drainage collection /_/Yes /_/No

8. Transportation

a. Waste hauled off site by /_/you /X/others (no one contracted yet)

b. Name of waste hauler ______________________________

Address ______________________________

Street City

( ) ______________________________

State Zip Code Phone

9. Treatment and Disposal

a. Treatment or disposal: /_/on site /X/off site

b. Waste is /_/reclaimed /_/treated /_/land disposed /_/incinerated

/_/other (specify) ______________

c. Off site facility receiving waste

Name of Facility ______________________________

Facility Operator ______________________________

Facility Location ______________________________

Street City

( ) ______________________________

State Zip Code Phone

Company Code 3 6 7 9 7 2 0 0 1 3

## Waste Characterization and Management Practice

(Use separate form for each waste stream)

1. Waste Stream No. 4 (02) (from Form I, Number 17)

2. Description of process producing waste Chrome waste go to tank for treatment with $NaHSO_3$ and precipitation as $Cr(OH)_3$ - as overloads some other heavy metal wastes go to lagoon as well

3. Brief characterization of waste $Cr(OH)_3$ slurry from lagoon

4. Time period for which data are representative ________ to ________

5. a. Annual waste production 4000 /_/tons/yr. /X/gal./yr. 20 yd$^3$/yr

   b. Daily waste production ________ /_/tons/day /_/gal./day

   c. Frequency of waste production: /_/seasonal /_/occasional /_/continual

   /_/other (specify) ________

6. Waste Composition

   a. Average percent solids ____% b. pH range __ to __

   c. Physical state: /_/liquid, /X/slurry, /_/sludge, /_/solid,

   /_/other (specify) ________

| d. Component | Average Concentration | /_/wet weight /_/dry weight |
|---|---|---|
| 1. $Cr(OH)_3$ | | /_/wt.% /_/ppm |
| 2. $H_2O$ | | /_/wt.% /_/ppm |
| 3. other heavy metal OHs | | /_/wt.% /_/ppm |
| 4. from overflow | | /_/wt.% /_/ppm |
| 5. | | /_/wt.% /_/ppm |
| 6. | | /_/wt.% /_/ppm |
| 7. | | /_/wt.% /_/ppm |
| 8. | | /_/wt.% /_/ppm |
| 9. | | /_/wt.% /_/ppm |
| 10. | | /_/wt.% /_/ppm |

Company Code 3 6 7 9 7 2 0 0 1 3

e. Analysis of composition is /_/theoretical /_/laboratory /_/estimate (attach copy of laboratory analysis if available)

f. Projected /_/increase, /_/decrease in volume from base year: ____% by July 1977; ____% by July 1983.

g. Hazardous properties of waste: /_/flammable /_/toxic /_/reactive /_/explosive /_/corrosive /_/other (specify) ____________

7. On Site Storage

a. Method: /_/drum, /_/roll-off container, /_/tank, /X/lagoon, /_/other(specify) ______

b. Typical length of time waste stored 12 /_/days, /_/weeks, /_/months

c. Typical volume of waste stored 4000 /_/tons, /X/gallons

d. Is storage site diked? /_/Yes /_/No

e. Surface drainage collection /_/Yes /_/No N/A

8. Transportation

a. Waste hauled off site by /_/you /X/others a trucker in N.J.

b. Name of waste hauler ____________

Address ____________
Street City
State Zip Code Phone ( )

9. Treatment and Disposal

a. Treatment or disposal: /_/on site /X/off site

b. Waste is /_/reclaimed /_/treated /_/land disposed /_/incinerated /_/other (specify) ____________ Disposal site in N.J.

c. Off site facility receiving waste

Name of Facility ____________

Facility Operator ____________

Facility Location ____________
Street City
State Zip Code Phone ( )

Company Code 3 6 7 9 7 2 0 0 1 3

## Waste Characterization and Management Practice
(Use separate form for each waste stream) 04.

1. Waste Stream No. 5 (03) (from Form I, Number 17)

2. Description of process producing waste Printed circuit boards are cut and trimmed producing waste

3. Brief characterization of waste Trimmed circuit boards with Cu coatings

4. Time period for which data are representative Current to ______

5. a. Annual waste production 11.25 /X/ tons/yr. /_/ gal./yr. 450 50 22500

   b. Daily waste production ______ /_/ tons/day /_/ gal./day

   c. Frequency of waste production: /_/ seasonal /_/ occasional /_/ continual

   /_/ other (specify) ______

6. Waste Composition

   a. Average percent solids 100 % b. pH range __ to __

   c. Physical state: /_/ liquid, /_/ slurry, /_/ sludge, /X/ solid,

   /_/ other (specify) ______

   d. Component — Average Concentration — /_/ wet weight /_/ dry weight

| d. Component | Average Concentration | | |
|---|---|---|---|
| 1. Printed circuit board | | /_/ wt.% | /_/ ppm |
| 2. Cu content | | /_/ wt.% | /_/ ppm |
| 3. | | /_/ wt.% | /_/ ppm |
| 4. | | /_/ wt.% | /_/ ppm |
| 5. | | /_/ wt.% | /_/ ppm |
| 6. | | /_/ wt.% | /_/ ppm |
| 7. | | /_/ wt.% | /_/ ppm |
| 8. | | /_/ wt.% | /_/ ppm |
| 9. | | /_/ wt.% | /_/ ppm |
| 10. | | /_/ wt.% | /_/ ppm |

Company Code 3 6 7 9 7 2 0 0 1 3

e. Analysis of composition is /_/theoretical /_/laboratory /_/estimate (attach copy of laboratory analysis if available)

f. Projected /_/increase, /_/decrease in volume from base year: _____% by July 1977; _____% by July 1983.

g. Hazardous properties of waste: /_/flammable /_/toxic /_/reactive /_/explosive /_/corrosive /_/other (specify) ?

7. On Site Storage

a. Method: /_/drum, /X/roll-off container, /_/tank, /_/lagoon, /_/other(specify) ________

b. Typical length of time waste stored 2 /X/days, /_/weeks, /_/months

c. Typical volume of waste stored 0.25 /_/tons, /_/gallons

d. Is storage site diked? /_/Yes /X/No

e. Surface drainage collection /_/Yes /X/No

8. Transportation

a. Waste hauled off site by /_/you /X/others

b. Name of waste hauler ________

Address ________
Street City
( )
State Zip Code Phone

9. Treatment and Disposal

a. Treatment or disposal: /_/on site /X/off site

b. Waste is /_/reclaimed /_/treated /X/land disposed /_/incinerated /_/other (specify) ________

c. Off site facility receiving waste

Name of Facility Glen Cove Municipal Landfill

Facility Operator ________

Facility Location ________
Street City
( )
State Zip Code Phone

Company Code 3 4 7 9 7 2 0 0 1 3

. Waste Characterization and Management Practice
(Use separate form for each waste stream)

1. Waste Stream No. 6 (OV) SF. (from Form I, Number 17)

2. Description of process producing waste Plating baths become contaminated through use; they are neutralized and heavy metals precipitated

3. Brief characterization of waste spent plating baths

4. Time period for which data are representative Current to ______

5. a. Annual waste production 100 [ ] tons/yr. [X] gal./yr.

b. Daily waste production ______ [ ] tons/day [ ] gal./day

c. Frequency of waste production: [ ] seasonal [ ] occasional [ ] continual

[ ] other (specify) ______

6. Waste Composition

a. Average percent solids ____ % b. pH range __ to __

c. Physical state: [X] liquid, [ ] slurry, [ ] sludge, [ ] solid,

[ ] other (specify) ______

| d. Component | Average Concentration | [ ] wet weight / [ ] dry weight |
|---|---|---|
| 1. Spent plating bath | | [ ] wt.% [ ] ppm |
| 2. unknown heavy metals | | [ ] wt.% [ ] ppm |
| 3. | | [ ] wt.% [ ] ppm |
| 4. | | [ ] wt.% [ ] ppm |
| 5. | | [ ] wt.% [ ] ppm |
| 6. | | [ ] wt.% [ ] ppm |
| 7. | | [ ] wt.% [ ] ppm |
| 8. | | [ ] wt.% [ ] ppm |
| 9. | | [ ] wt.% [ ] ppm |
| 10. | | [ ] wt.% [ ] ppm |

Company Code [ | | | | | | | | | ]

e. Analysis of composition is /_/theoretical /_/laboratory /_/estimate (attach copy of laboratory analysis if available)

f. Projected /_/increase, /_/decrease in volume from base year: ____% by July 1977; ____% by July 1983.

g. Hazardous properties of waste: /_/flammable /✓/toxic /_/reactive /_/explosive /✓/corrosive /_/other (specify) ____________

7. On Site Storage

a. Method: /_/drum, /_/roll-off container, /_/tank, /_/lagoon, /_/other (specify) ________

b. Typical length of time waste stored ______ /_/days, /_/weeks, /_/months

c. Typical volume of waste stored ________ /_/tons, /_/gallons

d. Is storage site diked? /_/Yes /_/No

e. Surface drainage collection /_/Yes /_/No

8. Transportation

a. Waste hauled off site by /_/you /X/others

b. Name of waste hauler Trucker from New Jersey

Address ______________________________

Street City

( )

State Zip Code Phone

9. Treatment and Disposal

a. Treatment or disposal: /✓/on site /_/off site

b. Waste is /_/reclaimed /_/treated /X/land disposed /_/incinerated

/_/other (specify) ____________

c. Off site facility receiving waste

Name of Facility NJ Landfill

Facility Operator ______________________________

Facility Location ______________________________

Street City

( )

State Zip Code Phone

Company Code 3 C 7 9 7 4 0 0 1 3

## II. Waste Characterization and Management Practice
(Use separate form for each waste stream)

1. Waste Stream No. 7 (C05) (from Form I, Number 17)

2. Description of process producing waste On-site still reclaims halogenated hydrocarbon solvent used in cleaning during wing formation operations

3. Brief characterization of waste Chlorinated still bottoms containing epoxies, methacrylates, polyvinylchlorides

4. Time period for which data are representative ______ to ______

5. a. Annual waste production 13,200 [ ] tons/yr. [X] gal./yr.

   b. Daily waste production ______ [ ] tons/day [ ] gal./day

   c. Frequency of waste production: [ ] seasonal [ ] occasional [X] continual

   [ ] other (specify) ______

6. Waste Composition

   a. Average percent solids ____% b. pH range __ to __

   c. Physical state: [ ] liquid, [X] slurry, [ ] sludge, [ ] solid,

   [ ] other (specify) ______

   d.

| Component | Average Concentration | [ ] wet weight / [ ] dry weight |
|---|---|---|
| 1. $CH_2Cl_2$ residual | | [ ] wt.% [ ] ppm |
| 2. Trichloroethane residual | | [ ] wt.% [ ] ppm |
| 3. epoxies | | [ ] wt.% [ ] ppm |
| 4. methacrylates | | [ ] wt.% [ ] ppm |
| 5. polyvinylchlorides | | [ ] wt.% [ ] ppm |
| 6. | | [ ] wt.% [ ] ppm |
| 7. | | [ ] wt.% [ ] ppm |
| 8. | | [ ] wt.% [ ] ppm |
| 9. | | [ ] wt.% [ ] ppm |
| 10. | | [ ] wt.% [ ] ppm |

Company Code [illegible]

e. Analysis of composition is /_/theoretical /_/laboratory /X/estimate (attach copy of laboratory analysis if available)

f. Projected /_/increase, /_/decrease in volume from base year: ____% by July 1977; ____% by July 1983.

g. Hazardous properties of waste: /X/flammable /X/toxic /_/reactive /_/explosive /_/corrosive /_/other (specify) ____________

7. On Site Storage

a. Method: /X/drum, /_/roll-off container, /_/tank, /_/lagoon, /_/other (specify) ________

b. Typical length of time waste stored 1 /_/days, /_/weeks, /X/months

c. Typical volume of waste stored 1100 /_/tons, /_/gallons

55
20
1100

d. Is storage site diked? /_/Yes /_/No

e. Surface drainage collection /_/Yes /_/No

8. Transportation

a. Waste hauled off site by /_/you /X/others

b. Name of waste hauler ____________________________

Address ____________________________
Street City
( )
State Zip Code Phone

9. Treatment and Disposal

a. Treatment or disposal: /_/on site /X/off site

b. Waste is /_/reclaimed /_/treated /_/land disposed /_/incinerated /_/other (specify) ____________

c. Off site facility receiving waste

Name of Facility ____________________________

Facility Operator ____________________________

Facility Location ____________________________
Street City
( )
State Zip Code Phone

III. [illegible]

*Note: This is a STORAGE area only.*

1. a. [illegible] [illegible] ✗

   b. [illegible] soil [illegible] [illegible], [illegible] and [illegible]

2. a. Does disposal site have a liner? /_/ Yes /_/ No

   b. Type of liner ______________________

   c. Thickness ______________________

3. a. Leachate collection? /_/ Yes /X/ No

   b. Leachate treatment? /_/ Yes /X/ No

   c. Type of treatment ______________________

4. a. Shallow depth to groundwater ______ ft.

   b. Classes of soils underlying site (correlate with site): *[illegible]*

5. a. Groundwater monitoring wells? /_/ Yes /X/ No

   b. Number of wells ______ c. Well down gradient? /_/ Yes /_/ No

6. Non-industrial wastes disposed of at site? /_/ Yes /X/ No

7. Are different waste(s) disposed in specially segregated areas of the site? /_/ Yes /_/ No

8. Is there security at disposal area (i.e. fences, signs)? /_/ Yes /_/ No

9. Are there contingency plans and equipment to handle possible emergency situations at the facility? /_/ Yes /_/ No Attach if available.

10. Industrial wastes disposed of at site:

| Waste Stream Number | Waste | Volume/Year (please specify tons, gallons, cubic yards) |
|---|---|---|
| *64* | *[illegible]* | *[illegible]* |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

3679720013

# EFFLUENT WATER ANALYSIS

| 1977 MARCH AVERAGE VALUES | WEEKLY RANGE | SENSITIVITY* | 1977 FEBRUARY AVERAGE VALUES | G.C.S.P LIMITS |
|---|---|---|---|---|
| Cr - 0.15 ppm | 0.10 - 0.20 | 10/4 | 0.45 ppm | 0.25 ppm |
| $Cr^{+6}$ - 0.02 ppm | 0.01 - 0.04 | - | 0.01 ppm | 0.05 ppm |
| Cu - 18.3 ppm | 13.5 - 26.0 | 10/9 | 20.2 ppm | 0.40 ppm |
| Fe - 0.90 ppm. | 0.7 - 1.1 | 5/2.5 | 0.45 ppm | 1.50 ppm |
| Pd - 0.1 ppm | 0.1 | 10/6 | 0.03 ppm | - |
| Pb - 3.8 ppm | 3.4 - 4.1 | 5/2 | 3.2 ppm | 1.0 ppm |
| Ni - 2.2 ppm | 1.5 - 2.8 | 10/4 | 4.0 ppm | 2.0 ppm |
| Zn - 1.5 ppm | 0.9 - 2.0 | 5/22 | 1.4 ppm | 0.60 ppm |
| Sr - 0.45 ppm | 0.40 - 0.60 | 10/3 | 0.85 ppm | - |
| Mn - 0.20 ppm | 0.10 - 0.30 | 10/28 | 0.13 ppm | 2.0 ppm |
| Sn - 6.0 ppm | 5.5 - 7.0 | 10/3 - $H_2$ | 7.8 ppm | - |
| Ca - 16.2 ppm | 14.2 - 18.6 | 10/24 - $N_2O$ | 16.3 ppm | - |
| AL - 0.28 ppm | 0.2 - 0.35 | 10/3 - N20 | 0.95 ppm | 1.3 ppm |
| $CL^-$ - 210.9 ppm | 155.0 - 242.5 | - | 135.6 ppm | 500 ppm |
| CL demand** -109.1 ppm | 77.8 - 181.0 | - | 209.7 ppm | 15 ppm |
| $NO_3^{=}$ - 16.7 ppm | 13.8 - 20.4 | - | 8.6 ppm | 20 ppm Total $N_2$ |
| $NH_3$ - 191.3 ppm | 128.6 - 274.5 | - | 247.9 ppm | |
| $CN^-$ - 0.025 | 0.018 - 0.032 | - | 0.045 ppm | 0.10 ppm |
| $SO_4^{=}$ - 1.76 gm/L | 1.5 - 2.1 | - | 2.25 gm/L | Eliminated |
| $F^-$ - 43.1 ppm | 38.8 - 52.4 | - | 43.5 ppm | 18.0 ppm |
| $PO_4^{=}$ - 349.0 ppm | 317.6 - 407.6 | - | 549.0 ppm | 150 ppm |
| $SO_3^{=}$ - 0.64 ppm | 0.64 | - | 0.96 ppm | - |
| B - 4.2 ppm | 3.8 - 4.6 | - | 3.5 ppm | Eliminated |
| ph - 6.7 | 6.0 - 7.3 | - | 4.7 | 5.5 - 9.5 |
| Set Sol.- 1.25 mL/L | - | - | 1.5 mL/L | - |
| Dis. Sol. - 2.3 gm/L | - | - | 2.0 gm/L | 1.0 gm/L |
| Sus. Sol. - 1.0 gm/L | - | - | 1.0 gm/L | - |
| Cond. - 31.0 mhos | 22.0 - 44.0 | - | 23.8 mhos | - |
| Water Consumption 12,314,424 gals. | - | - | 11,855,152 gals. | - |

*A.A. work only - std/max. deflection

**Reflects an excess of reducing agent.

## INCOMING WATER ANALYSIS

| MARCH VALUES* | | | SENSITIVITY** | FEBRUARY VALUES*** |
|---|---|---|---|---|
| $SO_4^{=}$ | - | 38.0 ppm | - | 40.0 ppm |
| $PO_4^{=}$ | - | 1.30 ppm | - | 1.50 ppm |
| $NO_3^{=}$ | - | 2.40 ppm | - | 5.70 ppm |
| Ca | - | 18.4 ppm | 10/24 - $N_2O$ | 16.6 ppm |
| Sr | - | 0.10 ppm | 10/3 | 0.10 ppm |
| Cr | - | <0.10 ppm | 10/4 | <0.10 ppm |
| Cu | - | 0.35 ppm | 10/9 | 0.55 ppm |
| Fe | - | 0.50 ppm | 5/3 | 0.15 ppm |
| Mn | - | <0.01 ppm | 10/28 | <0.01 ppm |
| Na | - | 15.8 ppm | 10/15 | 11.3 ppm |
| Ni | - | 0.20 ppm | 10/4 | 0.20 ppm |
| Pb | - | 0.45 ppm | 5/2 | 0.50 ppm |
| Sn | - | 1.0 ppm | 10/3 - $H_2$ | 1.5 ppm |
| Zn | - | 0.23 ppm | 5/22 | 0.15 ppm |
| ph | - | 6.4 | - | 5.9 |
| Hardness (EDTA) | - | 98.0 ppm as $CaCO_3$ | - | 95.0 ppm as $CaCO_3$ |
| Conductivity | - | 2100 $\mu$mhos | - | 1800 $\mu$mhos |

*Sample taken from CC-4 area.
**A.A. work only - std/max deflection
***Sample taken from Chemical Recovery

## INCOMING WATER BREAKDOWN

| | LARGE METER | SMALL METER (out of order) |
|---|---|---|
| 3-1-77 | 23,323,400 cu. ft. | 814,360 cu. ft. |
| 4-1-77 | 24,894,800 cu. ft. | 814,360 cu. ft. |
| Cons. cu. ft. | 1,571,400 | 0 |
| Cons. Gals. | 11,754,072 | 560,352 (July est.) |
| Total Consumption | 12,314,424 | |

## REFERENCE NO. 4

Reports monthly

County Nassau

W 2171
N 74520
N 74530

**ORIGINAL—TO COMMISSION**

State of New York
Department of Conservation
Division of Water Power and Control
COMPLETION REPORT—LONG ISLAND WELL

Well No. N 7427
(on preliminary report)
LOG
Ground Surf., El. ......ft. above sea
......ft.
Top of Well

Owner Photocircuits Corp.

Address Glen Cove

Location of well same

Depth of well below surface 155 feet

Depth to ground water from surface 6 feet

CASINGS:

Diameter 12 in. ...in. ...in. ...in.
Length 120'3" ft. ...ft. ...ft. ...ft.
Sealing ......
Casings removed none

SCREENS: Make Johnson S.S. Openings ~~30~~ #25 Slot slot

Diameter 12 in. ...in. ...in. ...in.
Length 40'9" ft. ...ft. ...ft. ...ft.
Depth to top from top of casing 120'3" ft.

PUMPING TEST: Date 5/13/63 Test or permanent pump? ......

Duration of Test ...... days 8 hours
Maximum Discharge 750 gallons ~~per minute~~
Static level prior to test 3 ft. ...... in. below top of casing
Level during Max. Pumping 16 ft. ...... in. below top of casing
Maximum Drawdown 13 ft.
Approx. time of return to normal level after cessation of pumping ...... hours ...... minutes

PUMP INSTALLED: At later date

Type DWT Make Worthington Model No. 10H75
Motive power Elec. Make U.S. H.P. 40
Capacity 750 g.p.m. against { 127 ft. of discharge head
No. bowls or stages ...... { 1.2 ft. of total head

DROP LINE: SUCTION LINE:

Diameter ...... in. ...... in.
Length ...... ft. ...... ft.

Use of water cooling

Work started 5/1/63 Completed 5/19/63

Date 5/22/63 Driller C.W. Lauman & Co., Inc.

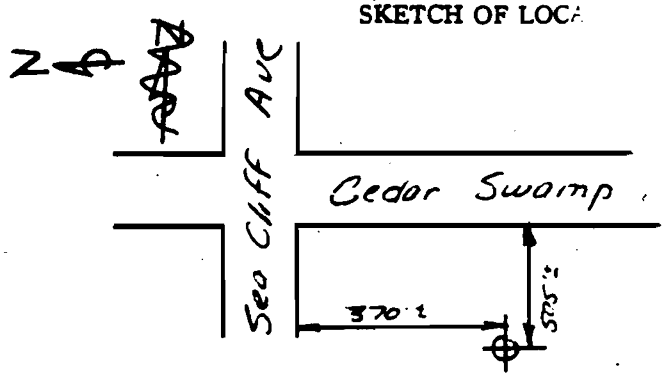
License No. 13

NOTE: Show log of well—materials encountered, with depth below ground surface, water bearing beds and water levels in each, casings, screens, pump, additional pumping tests and other matters of interest. Describe repair job.

See Instructions as to Well Drillers' Licenses and Reports—pp. 5-7.

MAY 23 1963

SKETCH OF LOC




Locate well with respect to at least two streets or roa
distance from corner and front of lot.
Show North Point

Photo mounts

N-7427

| | |
|---|---|
| 0-12 | Fill |
| 12-22 | Grits, grvl, lge stones, cl, bldrs |
| 22-60 | " " " " bldrs |
| 60-73 | Multi col sdy cl, grvl, bldrs |
| 73-83 | Multi col clayey sd, hdpn |
| 83-93 | Med to cse sd, grits, lumps cl |
| 93-95 | Fi brn sd some grvl |
| 95-98 | Lyrs multi col sdy cl & grits |
| 98-111 | Fi-med sd, hdpn, mica |
| 111-116 | Fi-cse sd, grits, some grvl, mica |
| 116-122 | Fi brn sd, mica, hdpn |
| 122-127 | Fi-med brn sd, mica, hdpn |
| 127-147 | Fi-cse sd, grits, hdpn, bits of cl |
| 147-161 | Fi-cse sd, grits, grvl |

?

**REFERENCE NO. 5**

Report Monthly

# ORIGINAL—TO COMMISSION

County NASSAU

Well No. N-8224
(no preliminary report)

State of New York
Department of Conservation
Division of Water Resources

w-2521

Scen N-7427 w-2171

N-39302
N-3931D

LOG

Ground Surf., El.........ft. above sea

.........ft.

Top of Well

## COMPLETION REPORT—LONG ISLAND WELL

Owner PHOTO CIRCUITS CORP.

Address 31 SEA CLIF AVE.

Location of well GLEN COVE

Depth of well below surface 155 feet

Depth to ground water from surface 11'-6" feet

CASINGS:

Diameter 12 in. ...in. ...in. ...in.

Length 104'-1 1/2 ft. ...ft. ...ft. ...ft.

Sealing ...

Casings removed ...

SCREENS: Make JOHNSON S.S. Openings 50 SLOT

Diameter 12 in. ...in. ...in. ...in.

Length 50'-10 1/2" ft. ...ft. ...ft. ...ft.

Depth to top from top of casing 104'-1 1/2" ft.

PUMPING TEST: Date 1-29-70 Test or permanent pump? T

Duration of Test ...days ...hours

Maximum Discharge 1016 gallons per minute

Static level prior to test 11 ft. 6 in. below top of casing

Level during Max. Pumping 16 ft. ...in. below top of casing

Maximum Drawdown 27'-6" ft.

Approx. time of return to normal level after cessation of pumping ...hours ...minutes

PUMP INSTALLED:

Type DWT Make WORTHINGTON Model No. 10H75

Motive power ELEC. Make U.S. H.P. 50

Capacity 1000 g.p.m. against { 173 ft. of discharge head

No. bowls or stages 5 { 198 ft. of total head

DROP LINE: SUCTION LINE:

Diameter 8 in. 8 in.

Length 40 ft. 10 ft.

Method of Drilling (Rotary, cable tool, etc.) ROTARY

Use of Water COOLING

Work started 12-15-69 Completed 1-29-70

Date MARCH 26, 1971 Driller THE LAUMAN CO., INC.

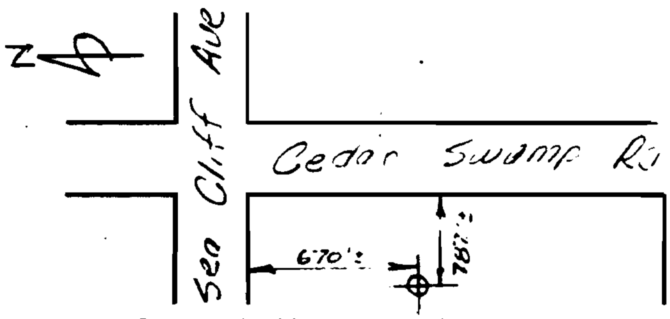
License No. 13

STATE OF NEW YORK
DEPT. OF ENV. CONS.
MAR 30 1971
RECEIVED

NOTE: Show log of well—materials encountered, with depth below ground surface, water bearing beds and water levels in each, casings, screens, pump, additional pumping tests and other matters of interest. Describe repair job.

See Instructions as to Well Drillers' Licenses and Reports—pp. 5-7.

**SKETCH OF LOCATION**




Locate well with respect to at least two streets or roads, show distance from corner and front of lot.

**Show North Point**

| | |
|---|---|
| 0-10 | Topsoil, clay |
| 10-55 | Fi-Cse sd, grit, grvl, lge b. |
| 55-74 | Fi-Cse sd, some grit |
| 74-104 | Fi Cse sd, grit, multi col cl, Ha |
| 104-114 | Med-Cse sd, grit, some cl, hdpn |
| 114-130 | Med-Cse sd, grvl, hdpn, some cl |
| 130-134 | Fi-Med multi col sdy cl, hdpn |
| 134-160 | Fi-med sd, grit, grvl, hdpn, some cl |
| 160-183 | Cse brn sd, grit, grvl, hdpn, lge stones, |

REFERENCE NO. 6

NVIRONMENTAL
EALTH
Continuation Sheet
assau County Health Department

Owner or Agent: Photocircuits Corporation

Address: Sea Cliff Avenue, Glen Cove

Inspector: John Welsch

| DATE | COMMENTS |
| --- | --- |
| 0/64 | Conference with George Sumner regarding a dark blue color in Glen Creek, Glen Cove, on Wednesday, March 20, 1964. Discussed problem and present situation. |
| | I then called Mr. C. Gerber who stated that a leak had occurred in the treatment tank and that two loads had been discharged to the sewer. I was informed by Mr. Gerber that the tank will be repaired and back in operation by Monday or Tuesday, March 23rd or 24th, 1964. Inspection will be made on March 23, 1964. |
| 23/64 | Conference with Plant Engineer and Chemist regarding waste treatment facilities. The waste treatment tank had been repaired over the weekend and was back in use today. I informed them that with the proposed water classification that the standard to be met for copper was 0.2 mg/L. Both the plant engineer and chemist stated that with their present waste treatment facilities and concentration of their waste this would be almost impossible to maintain such a low limit. The chemist stated he was trying to develop a new method of treatment due to the problems of copper removal. The concentrated waste contain over 60,000 mg/L. |
| | The stream was clear from Sea Cliff Avenue to the pond. The pond had a slight greenish color. Samples were collected from the weir, storm drain on Sea Cliff Avenue and the pond. |
| ** | The plant engineer and chemist were notified that should this situation occur again our office is to be notified immediately. Some discussion was also held as to the stoppage of this operation should this problem recur. |
| 2/64 | Inspection of the brook this date revealed a slight blue coloration coming from the storm drain. A sample was collected from the storm drain and one collected from the weir at Photocircuits and submitted to the laboratory. |
| 3/64 | Call received from Frank Gorman at 9:40 A.M. with the following information: |
| | Partially treated tank of copper waste has been discharged into the Brook. Copper reading taken by Photocircuits prior to the telephone call revealed the concentration to be 100 ppm. |

# REFERENCE NO. 7

**PHOTOCIRCUITS**
DIVISION

31 SEA CLIFF AVENUE • GLEN COVE, NEW YORK 11542 • TEL: (516) 676-8000 • TWX: 510-223-0800 • CABLE: PHOCIRCO, GLEN COVE, N

December 10, 1974

Mr. John Welch
Nassau County Dept. of Health
Rm. 501
240 Old Country Road
Mineola, New York

Dear John,

As per your suggestion and our concurrence with it, attached please find a copy of the memo the Executive Committee issued reaffirming Photocircuits policy that the creek running thru our property cannot be violated in any way. You will notice that the memo is printed on green stationery which at Photocircuits is reserved only for those memos of the highest importance.

As a company we are committed to keeping the creek clean and will take all the necessary steps to do so. The project for isolating the area where spills occur is continuing and barring any unforeseen circumstances it should be ready by December 16th as agreed.

Thank you for your co-operation in this matter.

Very truly yours,

Frank

Francis L. Fuggini
Technical Director
Printed Wiring
Standard Products

FLF:mas

[redacted]

**PHOTOCIRCUIT**
DIVISION

MEMORANDUM December 9, 1974

TO: All Employees

FROM: Executive Committee

The necessity to completely eliminate the discharge of any material into unauthorized facilities in the company must be adhered to as a matter of law and without exception.

There have been occasions where, either due to carelessness or deliberate disregard for rules involving handling of chemicals, [redacted]

The purpose of this memo is to inform all employees that in the future anyone found responsible for an unauthorized discharge, due to either carelessness or deliberate action, will be subject to immediate dismissal from the payroll.

If there is any question as to the rules regarding handling of chemicals, be certain to contact your supervisor so there are no misunderstandings on your behalf.

REFERENCE NO. 8

NASSAU COUNTY DEPARTMENT OF HEALTH

240 OLD COUNTRY ROAD
MINEOLA, N.Y. 11501

RALPH G. CASO
County Executive
JOHN J. DOWLING, M.D., M.P.H.
Commissioner
FRANCIS V. PADAR, P.E.
Asst. Deputy Commissioner
Div. of Environmental Health

# STATUS REPORT OF INVESTIGATION OF ORGANIC CONTAMINATION CARNEY STREET WELLFIELD, GLEN COVE

August 31, 1977

## Background

In response to the closure of public water supply wells at Glen Cove's Carney Street wellfield, the Department initiated an investigation into the source of contamination.

During the period June 30 to July 26, a series of ten samples were collected for organic analysis from various locations in the vicinity of Carney Street, including waste discharges, drains, groundwater, and Cedar Swamp Creek. Not included in this report are sample results from public and private wells located within and in the vicinity of the affected area.

## Results

Sampling results are included in the attached table.

## Interim Conclusions

1. The contamination of the Carney Street wellfield by trichloroethylene and tetrachloroethylene is due to past waste discharges originating in an industrial area possibly as recent as five to ten years ago. The groundwater in the area is generally contaminated with these solvents, with highest concentrations focused in the industrial area located 1,000 feet southeast of the Carney Street wellfield.

2. Presently only two industries in the area, Slater Electric Company and Photo Circuits Corporation, use solvents of the general type found in the wells, as follows: Slater, 4500 gallons per year tetrachloroethylene; and Photo Circuits, 71,000 and 11,200 gallons per year of dichloromethane* and 1,1,1 trichloroethane, respectively. No present waste disposal practices were found which could account for the extent of contamination found. Solvent waste discharges of significant magnitude from both of these industries are presently being discharged into the Glen Cove sewer system. These include 1200 ppb of tetrachloroethylene from Slater Electric Company and 480 ppb of methylenechloride from Photo Circuits Corporation. No groundwater samples have been analyzed for dichloromethane because

*Also known as methylene chloride

of State Health Department limited laboratory capability. It is recommended, now, that groundwater samples be collected and analyzed for dichloromethane. Photo Circuits Corporation is a large user of this substance. Miscellaneous drains in the vicinity of both industries, which empty into Cedar Swamp Creek, show small quantities of solvents. The source of these solvents warrants further investigation.

3. Past contamination cannot be attributed to any single industry because of changes in solvent usage, the industries themselves, and waste disposal practices.

4. The feasibility of purging the contaminated groundwater from the aquifer in the vicinity of Carney Street should be explored. This would include a hydrological investigation to determine the extent of contamination. Changes in water supply practices which may be required would include maximizing industrial pumpage and discharging of cooling water into Cedar Swamp Creek rather than groundwater recharging as presently required. The environmental consequences of further increasing solvent concentrations in Cedar Swamp Creek would also require investigation.

SOS:yk

Sheldon O. Smith, P.E., M.C.E.
Deputy Director
Division of Environmental Services

## SAMPLING RESULTS OF GLEN COVE INDUSTRIAL AREA

| | Sample | Trichloro-ethylene ppb | Tetrachloro-ethylene ppb | Dichloromethane (Methylene chloride) ppb | 1,1,1 Trichloro-ethane ppb |
|---|---|---|---|---|---|
| 1. | Photo Circuits, treated effluent to sewer | 2.1 | 3.0 | 480 | ** |
| 2. | Photo Circuits, parking lot drain to stream | 30 | 23 | N.D. | ** |
| 3. | Glen Head drain at stream | 25 | 77 | N.D. | ** |
| 4. | Slater, effluent to sewer | 22 | 1210 | N.D. | ** |
| 5. | Sewage from industrial area | 4.7 | 43 | 440 | ** |
| 6. | Groundwater at Well #20 | 52 | 5.3 | N.D. | ** |
| 7. | Pall Corp. A/C recharge | 16 | 5.2 | N.D. | ** |
| 8. | Keyco truck wash area | N.D. | N.D. | N.D. | ** |
| 9. | Stream at Glen Head Country Club | <5 | <2.5 | ** | 5 |
| 10. | Stream at Carney Street | 115 | 12 | ** | 6 |

**Not analyzed or reported

MBF:yk
(8/31/77)

REFERENCE NO. 9

Region 1

**New York State Department of Environmental Conservation**
50 Wolf Road, Albany, New York 12233

Peter A. A. Berle,
Commissioner

December 21, 1978

Kollmorgen Corporation
60 Washington Street
Hartford, Ct. 06106

Gentlemen:

Enclosed please find your certificates of registration, 1A-011, for Septic Tank Cleaner and Industrial Waste Collector Registration. Please note that this registration is for the wastes, disposal locations and conditions indicated on the certificates only. This office must be notified of any additions or changes.

Sincerely yours,

David L. Archibald
Sanitary Engineer
Bureau of Hazardous Waste

Enc.

cc: Regions 1, 2, 3

RECEIVED
DEC 22 ...
ENVIRONMENTAL QUALITY
REGION 1

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

## SEPTIC TANK CLEANER & INDUSTRIAL WASTE COLLECTOR CERTIFICATE OF REGISTRATION

| Registration No. | Vehicle License No. |
|---|---|
| 1A-011 | M73358 (New York) |

THIS IS TO CERTIFY THAT:

| Name of Registrant | Name of Business |
|---|---|
| | Kollmorgen Corporation |

| Address | City | State | Zip Code |
|---|---|---|---|
| 60 Washington Street | Hartford, Ct. | 06106 | |

having complied with the provisions of Environmental Conservation Law, §27-0301, is hereby authorized to engage in or carry on the business of septic tank cleaning or waste collecting within the State of New York in the manner described on the application.

This certificate of registration will expire on March 31, 1979, and is subject to revocation. Certificates are not transferable.

In witness whereof, the Department of Environmental Conservation has caused the certificate of registration to be executed on this 21st day of December, 1978.

By [signature]

47-06-1 (7/76) New York State Department of Environmental Conservation Representative

LANDS AND RECEIVING STATIONS APPROVED FOR DISPOSAL

| Type of Waste | Location and Manner of Disposal |
|---|---|
| bath & rinse | Kollmorgen Corp. |
| water containing | Glen Cove, NY & Aquebogue, NY |
| heavy metals | for recycling |

CONDITIONS: Additional sheet attached ☐ Yes ☒ No

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

# APPLICATION FOR SEPTIC TANK CLEANER AND INDUSTRIAL WASTE COLLECTOR REGISTRATION

PLICATE

| F BUSINESS | 2. LOCATION WHERE VEHICLES ARE GARAGED | 3. NO. OF VEHICLE |
|---|---|---|
| Kollmorgen Corporation | West Lane, Aquebogue, New York | 1 |

| NESS ADDRESS Street | City & State | Zip Code | Telephone No. | REGISTRATION NO. |
|---|---|---|---|---|
| 60 Washington Street | Hartford, Connecticut | 06106 | (203) 547 0600 | |

| VEHICLES | VEHICLE NO. 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| . MAKE | Polar | | | | | |
| . YEAR | 1978 | | | | | |
| . COLOR | Stainless Steel | | | | | |
| . LICENSE PLATE NO. | M 73358 | | | | | |
| . STATE OF REGISTRATION | New York | | | | | |
| . TYPE (Tank, open, etc.) | Tanker | | | | | |
| . TANK CAPACITY | 6500 gal. | | | | | |

OTE: For additional vehicles and/or information, please attach a supplemental sheet and check here ☐

HYSICAL AND CHEMICAL CHARACTER OF WASTES HANDLED — NOTE: If Industrial Wastes are handled, form SW-14 must also be completed.

CC-4 Bath -- Contains various amounts of copper sulfate, formaldehyde, EDTA, sodium cyanide, GAFAC 690 surfactant at a pH range of 10.5 to 11.5

CC-4 Rinse Water -- Contains various amounts of sodium sulfate, chrome, copper, iron, fluorides, sodium formate, at a pH range of 5.0 and 8.0

OCATION AND MANNER OF DISPOSAL

Glen Cove and Aquebogue, N. Y. will be recycling solutions and reusing their additive plating process.

LACE OR COMMUNITIES SERVED

Kearney, New Jersey - Aquebogue, New York

Attach a map or sketch showing the disposal area of receiving station — 10. $25.00 Annual Registration Fee attached ☒ Yes ☐ No

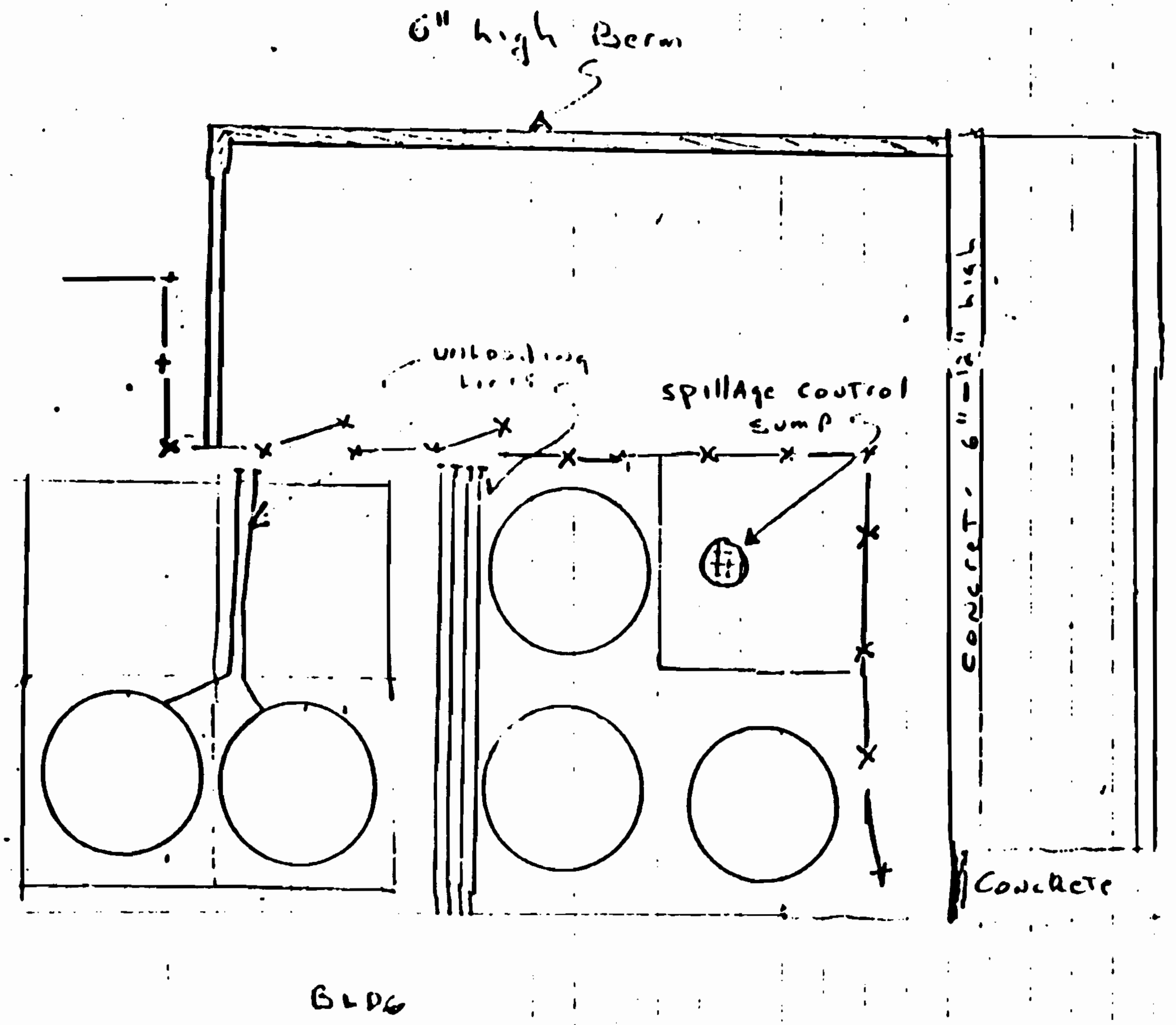
I hereby affirm under penalty of perjury that information provided on this form is true to the best of my knowledge and belief. False statements made herein are punishable as a Class A misdemeanor pursuant to Section 210.45 of the Penal Law.

| GNATURE OF APPLICANT | 12. PRINTED OR TYPED NAME | 13. DATE |
|---|---|---|
| Edward J. Patterson | EDWARD J. PATTERSON | 7/17/78 |

STATEMENT OF OWNERS OR OPERATORS OF DISPOSAL AREAS OR RECEIVING STATIONS

Permission is hereby granted to the above named applicant to dump the material stated in this application at site(s) listed below subject to the Rules and Regulations of the Department of Environmental Conservation governing disposal of such material at the designated area.

| E OF DISPOSAL SITE OR RECEIVING STATION (1) | | NAME OF DISPOSAL SITE OR RECEIVING STATION (2) | |
|---|---|---|---|
| Photocircuits Division of Kollmorgen Corp. | | | |
| ATURE | DATE | SIGNATURE | DATE |
| [signature] Vice President | July 17, 1978 | | |


6" high Berm
unloading lines
spillage control sump
Concrete, 6" high
Concrete
BLDG

REFERENCE NO. 10

New York State Department of Environmental Conservation
50 Wolf Road, Albany, New York 12233 Room 401
Division of Solid Waste Management

Robert F. Flacke
Commissioner

RECEIVED

- 2 1979

ENVIRONMENTAL QUALITY
REGION 1

December 27, 1979

Kollmorgen Corporation
Washington Street
Hartford, Connecticut 06106

Gentlemen:

*Enclosed please find your certificate(s) of registration,* M-73358 *, for Septic Tank Cleaner and Industrial Waste Collector Registration, 1979-80. The proper certificate must be carried in each vehicle being utilized in your operation. This certificate must be presented upon demand to any State/Provincial or Local Law Enforcement officer or representative of the Department of Environmental Conservation. It will also be necessary for you to display your registration number in a prominent location on the sides and rear of each vehicle. The numerals must be at least three inches high and of a color which will contrast sharply with the background.*

*Please note that this certificate of registration is only for the wastes, disposal locations and conditions indicated on the certificate(s). You must notify this office of any additions or changes that you may wish to make. Should you have any questions regarding this registration or the rules and regulations pertaining to it, please feel free to contact this office at 518/457-3254.*

*Sincerely yours,*

Daniel M. Quackenbush

Daniel M. Quackenbush
Chemical Engineer
Bureau of Hazardous Waste
Division of Solid Waste Management

Enc.
cc: Paul Lappano - Region 1
Joseph Harley, Nassau Co. Health Dept.
DMQ:bd

# SEPTIC TANK CLEANER & INDUSTRIAL WASTE COLLECTOR
## CERTIFICATE OF REGISTRATION

| Registration No. | Vehicle License No. |
| --- | --- |
| 1A-011 | M-73358 |

THIS IS TO CERTIFY THAT

| Name of Registrant | Name of Business |
| --- | --- |
| Kollmorgen Corp. | |

| Address | City | State | Zip Code |
| --- | --- | --- | --- |
| Washington Street, | Hartford | Connecticut | 06106 |

having complied with the provisions of Environmental Conservation Law, §27-0301, is hereby authorized to engage in septic tank cleaning or waste collecting within the State of New York in the manner described hereon.

This certificate of registration will expire on Dec. 31, 19 80, and is subject to revocation. Certificates are not transferable.

LANDS AND RECEIVING STATIONS APPROVED FOR DISPOSAL

| Type of Waste | Location and Manner of Disposal |
| --- | --- |
| Electroless | **Photocircuits**, Division of Kollmorgen, |
| Plating Bath | **Glen Cove**, NY for reclamation of copper |
| Solutions | and discharge to Glen Cove Sewer |
| | System |
| | |
| | |

CONDITIONS: Additional sheet attached ☐ Yes ☒ No

In witness whereof, the Department of Environmental Conservation has caused the certificate of registration to be executed on this 27th day of December, 19 79.

By ______________________

47-06-1 (1/79) New York State Department of Environmental Conservation Representative

**REFERENCE NO. 11**

Please print or type with ELITE type (12 characters/inch) in the unshaded areas only.

Form Approved OMB No. 158-S79016
GSA No. 0246-EPA-OT

EPA U.S. ENVIRONMENTAL PROTECTION AGENCY

# NOTIFICATION OF HAZARDOUS WASTE ACTIVITY

INSTALLATION'S EPA I.D. NO.: NYD096920483

I. NAME OF INSTALLATION: PHOTOCIRCUITS DIV

II. INSTALLATION MAILING ADDRESS: 31 SEA CLIFF AVE, GLEN COVE, NY 11542

III. LOCATION OF INSTALLATION: 31 SEA CLIFF AVE, GLEN COVE, NY 11542

INSTRUCTIONS: If you received a preprinted label, affix it in the space at left. If any of the information on the label is incorrect, draw a line through it and supply the correct information in the appropriate section below. If the label is complete and correct, leave Items I, II, and III below blank. If you did not receive a preprinted label, complete all items. "Installation" means a single site where hazardous waste is generated, treated, stored and/or disposed of, or a transporter's principal place of business. Please refer to the INSTRUCTIONS FOR FILING NOTIFICATION before completing this form. The information requested herein is required by law (Section 3010 of the Resource Conservation and Recovery Act).

## FOR OFFICIAL USE ONLY

COMMENTS: C

| INSTALLATION'S EPA I.D. NUMBER | APPROVED | DATE RECEIVED (yr., mo., & day) |
|---|---|---|
| F NYD096920483 3 1 | | 800813 |

## I. NAME OF INSTALLATION

## II. INSTALLATION MAILING ADDRESS

STREET OR P.O. BOX: 3

CITY OR TOWN / ST. / ZIP CODE: 4

## III. LOCATION OF INSTALLATION

STREET OR ROUTE NUMBER: 5

CITY OR TOWN / ST. / ZIP CODE: 6

## IV. INSTALLATION CONTACT

| NAME AND TITLE (last, first, & job title) | PHONE NO. (area code & no.) |
|---|---|
| 2 JOSEPH SHAULYS MGR CHEM RECOV | 516 448 1325 |

## V. OWNERSHIP

A. NAME OF INSTALLATION'S LEGAL OWNER: 8 KOLLMORGEN CORP

B. TYPE OF OWNERSHIP (enter the appropriate letter into box)
F = FEDERAL
M = NON-FEDERAL
M

## VI. TYPE OF HAZARDOUS WASTE ACTIVITY (enter "X" in the appropriate box(es))

- [X] A. GENERATION
- [ ] B. TRANSPORTATION (complete item VII)
- [X] C. TREAT/STORE/DISPOSE
- [ ] D. UNDERGROUND INJECTION

## VII. MODE OF TRANSPORTATION (transporters only – enter "X" in the appropriate box(es))

- [ ] A. AIR
- [ ] B. RAIL
- [ ] C. HIGHWAY
- [ ] D. WATER
- [ ] E. OTHER (specify):

## VIII. FIRST OR SUBSEQUENT NOTIFICATION

Mark "X" in the appropriate box to indicate whether this is your installation's first notification of hazardous waste activity or a subsequent notification. If this is not your first notification, enter your installation's EPA I.D. Number in the space provided below.

- [X] A. FIRST NOTIFICATION
- [ ] B. SUBSEQUENT NOTIFICATION (complete item C)

C. INSTALLATION'S EPA I.D. NO.: ~~NYD096~~920483

## IX. DESCRIPTION OF HAZARDOUS WASTES

Please go to the reverse of this form and provide the requested information.

EPA Form 8700-12 (6-80)

CONTINUE ON REVERSE

REFERENCE NO. 12

0052-P
02-8707-11

New York State Department of Environmental Conservation
50 Wolf Road, Albany, New York 12233

Robert F. Flacke
Commissioner

RECEIVED

9 1981

QUALITY

January 16, 1981

Photocircuits-Aquebogue, Division of Kollmorgen Corp.
West Lane
Aquebogue, NY 11931

Gentlemen:

Enclosed please find your Septic Tank Cleaner and Industrial Waste Collector permit, 1A-011 . This permit must be carried in each vehicle that is utilized in your operation and must be presented upon demand to any Law Enforcement officer or any representative of the Department of Environmental Conservation. The permit number must be displayed in a prominent location on both sides and the rear of each vehicle, with numerals at least three inches high and of a color that will contrast sharply with the background.

This permit is valid only for those wastes, disposal facilities, vehicles, and conditions listed on the permit. Our office must be notified of any additions or changes that you may wish to make; your permit will be modified accordingly if approved. Should you have any questions regarding this permit, please contact this office at (518) 457-3254.

Sincerely,

Bruce W. Knapp

Bruce W, Knapp
Chemical Engineer
Bureau of Hazardous Waste
Division of Solid Waste

BWK:ks
cc: REgion 1 and NJ

NOTE: THIS APPROVAL DOES NOT RELIEVE THE APPLICANT OF THE RESPONSIBILITY OF COMPLYING WITH ANY OTHER APPLICABLE FEDERAL, STATE OR LOCAL ORDINANCES, REGULATIONS AND LAWS.

# SEPTIC TANK CLEANER & INDUSTRIAL WASTE COLLECTOR PERMIT

| Permit No. | Vehicle License No. |
|---|---|
| 1A-011 | P 37788 |

THIS IS TO CERTIFY THAT

| Name of Permittee | Name of Business |
|---|---|
| Photocircuits-Aquebogue, Division of Kollmorgen Corp. | |

| Address | City | State | Zip Code |
|---|---|---|---|
| West Lane | Aquebogue | NY | 11931 |

having complied with the provisions of Environmental Conservation Law, §27-0301, is hereby authorized to engage in septic tank cleaning or waste collecting within the State of New York in the manner described hereon.

This permit will expire on December 31, 1981 and is subject to revocation. Permits are not transferable.

LANDS AND RECEIVING STATIONS APPROVED FOR DISPOSAL

| Type of Waste | Location and Manner of Disposal |
|---|---|
| electroless plating bath | --Photocircuits, West Lane Aquebogue, NY |
| sodium sulfate brine solution | --31 Sea Cliff Ave. GlenCove, NY |

CONDITIONS: Additional sheet attached ☐ Yes ☒ No

Disposal must be in compliance with all Federal, State, and local regulations.

In witness whereof, the Department of Environmental Conservation has caused this permit to be executed on this 16 day of January, 19 81

47-20-3 (1/80)
Formerly 47-06-1

By Bruce W. Knapp
New York State Department of Environmental Conservation Representative

REFERENCE NO. 13

Pericir, Kollmorgen Corp

RCRA TREATMENT, STORAGE AND DISPOSAL FACILITY INSPECTION FORM
FOR TSD FACILITIES ONLY

COMPANY NAME: Photocircuits EPA I.D. Number: NYD096920483

COMPANY ADDRESS: Glen Cove NY

COMPANY CONTACT OR OFFICIAL: Michelle Principe / Linda Van Reichl

OTHER ENVIRONMENTAL PERMITS HELD BY FACILITY: /_/ NPDES 427 /_/ AIR /_/ OTHER

TITLE: Regulatory Compliance Manager
JOE SHAULYS - PLANT ENGR.

INSPECTOR'S NAME: [illegible] — Jer. Austin

DATE OF INSPECTION: May 15, 1981

BRANCH/ORGANIZATION:

TIME OF DAY INSPECTION TOOK PLACE:

1) Is there reason to believe that the facility has hazardous waste on site?

a. If yes, what leads you to believe it is hazardous waste? Check appropriate box:

/X/ Company admits that its waste is hazardous during the inspection.

/X/ Company admitted the waste is hazardous in its RCRA notification and/or Part A Permit Application.

/X/ The waste material is listed in the regulations as a hazardous waste from a nonspecific source (§261.31) F002 F006

/_/ The waste material is listed in the regulations as a hazardous waste from a specific source (§261.32)

/_/ The material or product is listed in the regulations as a discarded commercial chemical product (§261.33)

/X/ EPA testing has shown characteristics of ignitability, corrosivity, reactivity or extraction procedure toxicity, or has revealed hazardous constituents (please attach analysis report)

/_/ Company is unsure but there is reason to believe that waste materials are hazardous. (Explain)

| | YES | NO | DON'T KNOW |
|---|---|---|---|
| b. Is there reason to believe that there are hazardous wastes on-site which the company claims are merely products or raw materials? | ___ | ___ | ___ |

Please explain: flash point 105°F

c. Identify the hazardous wastes that are on-site, and estimate approximate quantities of each.
still bottom - methylchloride / 1,1,1 trichlorethane — metal hydroxides 21 dr — solvent 4 drs

| | YES | NO | DON'T KNOW |
|---|---|---|---|
| ) Does the facility generate hazardous waste? | X | ___ | ___ |
| ) Does the facility transport hazardous waste? | ___ | X | ___ |
| ) Does the facility treat, store or dispose of hazardous waste? | X | ___ | ___ |

1A011 assigned to Aquebogue Plant

Aquebogue

6 days a week

## VISUAL OBSERVATIONS

| | YES | NO | DON'T KNOW |
|---|---|---|---|
| **(5) SITE SECURITY (§265.14)** | | | |
| a. Is there a 24-hour surveillance system? | X | | |
| b. Is there a suitable barrier which completely surrounds the active portion of the facility? | X | | |
| c. Are there "Danger-Unauthorized Personnel Keep Out" signs posted at each entrance to the facility? | X | | X Caution signs |
| (6) Are there ignitable, reactive or incompatible wastes on site? (§265.27) | X | | |
| a. If "YES", what are the approximate quantities? | 4 drums solvent for reclaim | | |
| b. If "YES", have precautions been taken to prevent accidential ignition or reaction of ignitable or reactive waste? | X | | [illegible] |
| c. If "YES", explain → | | | |
| d. In your opinion, are proper precautions taken so that these wastes do not: | | | |
| - generate extreme heat or pressure, fire or explosion, or violent reaction? | X | | |
| - produce uncontrolled toxic mists, fumes, dusts, or gases in sufficent quantities to threaten human health? | X | | |
| - produce uncontrolled flammable fumes or gases in sufficient quantities to pose a risk of fire or explosions? | X | | |
| - damage the structural integrity of the device or facility containing the waste? | X | | |
| - threaten human health or the environment? | X | | |

Please explain your answers, and comment if necessary.

e. Are there any additional precautions which you would recommend to improve hazardous waste handling procedures at the facility?

(7) Does the facility comply with preparedness and prevention requirements including maintaining: (§265.32)

Contingency Plan has been initiated

| | YES | NO | DON'T KNOW |
|---|---|---|---|
| - an internal communications or alarm system? | X | | |
| - a telephone or other device to summon emergency assistance from local authorities? | X | | |
| - portable fire equipment? | X | | |
| - adequate aisle space? | X | | |
| - in your opinion, do the types of wastes on site require all of the above procedures, or are some not needed? Explain. | X | X | |

Page Telephone

Sprinkler alarm

some waste (most) does not need fire ext.

In your opinion, do the types of wastes on site require all of the above procedures, or are some not needed? Explain.

| | YES | NO | DON'T KNOW |
|---|---|---|---|
| Have you inspected to verify that the groundwater monitoring wells (if any) mentioned in the facility's groundwater monitoring plan (see no. 19 below) are properly installed? | | X | |

If you have, please comment, as appropriate. Cooling wells used by plant 150 ft

| | YES | NO | DON'T KNOW |
|---|---|---|---|
| a. Is there any reason to believe that groundwater contamination already exists from this facility? If "YES", explain. | | X | |
| b. Do you believe that operation of this facility may affect groundwater quality? | | X | |

c. If "YES", explain. County has sampled wells in past 2 yrs ago.

RECORDS INSPECTION

| | YES | NO | DON'T KNOW |
|---|---|---|---|
| Has the facility received hazardous waste from an off-site source since Nov. 19, 1980 (effective date of the regulations)? | X | | |

Received will stop in 3 months

| | YES | NO | DON'T KNOW |
|---|---|---|---|
| a. If "YES", does it appear that the facility has a copy of a manifest for each hazardous waste load received? | X | | |

w[illegible] material is found to be [illegible]

b. How many post-November 19 manifests does it have? (If the number is large, you may estimate) "12" estimate

c. Does each manifest (or a representative sample) have the following information?

| | YES | NO | DON'T KNOW |
|---|---|---|---|
| - a manifest document number | X | | |

N.Y. manifest used

---

*is requirement applies only after November 19, 1981.

| | YES | NO | DON'T KNOW |
|---|---|---|---|
| [t]he generator's name, mailing address, telephone number, and EPA identification number | X | | |
| - the name, and EPA identification number of each transporter | X | | |
| - the name, address and EPA identification number of the designated facility and an alternate facility, if any; | X | X | |
| - a DOT description of the wastes | X | | |
| - the total quantity of each hazardous waste by units of weight or volume, and the type and number of containers as loaded into or onto the transport vehicle | X | | |
| - a certification that the materials are properly classified, described, packaged, marked, and labeled, and are in proper condition for transportation under regulations of the Department of Transportation and the EPA. | X | | |
| Are there any indications that unmanifested hazardous wastes have been received since November 19, 1980? If YES, explain. | | X | |

Handwritten beside the alternate-facility line: "no altern[ate]"

| | YES | NO | DON'T KNOW |
|---|---|---|---|
| [Do]es the facility have a written waste analysis [pla]n specifying test methods, sampling methods [and] sampling frequency? (§265.13) | X | | |

Handwritten: "SOP in Engr Bldg"

Does the character of wastes handled at the facility change from day to day, week to week, etc., thus requiring frequent testing? (You may check more than one)

Waste characteristics vary _____ X

All wastes are basically the same _____

Company treats all waste as hazardous _____

Don't Know _____

Handwritten: "Tested daily"

| | YES | NO | DON'T KNOW |
|---|---|---|---|
| Does hazardous waste come to this facility from off-site sources? | X | X | |
| If waste comes from an off-site source, are there procedures in the plan to insure that wastes received conform to the accompanying manifest? | X | | |

Handwritten beside the off-site sources question (pointing to the NO mark): "own waste"

[INS]PECTIONS (§265.15)

| | YES | NO | DON'T KNOW |
|---|---|---|---|
| Does the facility have a written inspection schedule? | X | | |
| Does the schedule identify the types of problems to be looked for and the frequency for inspections? | | X | |
| Does the owner/operator record inspections in a log? | X | | |
| Is there evidence that problems reported in the inspection log have not been remedied? If "YES," please explain. | X | | |

Handwritten: "Inspection log – look daily – its just standard proced. to look for leaks"

Handwritten: "Check maint Report Check"

Handwritten: "OK"

| | YES | NO | DON'T KNOW |
|---|---|---|---|

**[PER]SONNEL TRAINING (§265.16)**

a. Is there written documentation of the following:

| | YES | NO | DON'T KNOW | |
|---|---|---|---|---|
| - job title for each position at the facility related to hazardous waste management and the name of the employee filling each job? | X | | | → Ref of Contingency |
| - type and amount of training to be given to personnel in jobs related to hazardous waste management? | X | | | → OJT |
| - actual training or experience received by personnel? | X | | | → signed sheet shown to me |
| 4) Does the facility have a written contingency plan for emergency procedures designed to deal with fires, explosion or any unplanned release of hazardous waste? (§265.51) | X | | | |
| a. Does the plan describe arrangements made with local authorities? | X | | | |
| b. Has the contingency plan been submitted to local authorities? | | X | | not yet |
| How do you know? *She said so* → | | | | |
| c. Does the plan list names, addresses, and phone numbers of Emergency Coordinators? | X | | | |
| d. Does the plan have a list of what emergency equipment is available? | X | | | |
| e. Is there a provision for evacuating facility personnel? | X | | | part of coordinator + training |
| f. Was an Emergency Coordinator present or on call at the time of the inspection? | X | | | yes - Joe [illegible] Plant Engr |
| 5) Does the owner/operator keep a written operating record with: (§265.73) | | | | |
| - a description of wastes received with methods and dates of treatment, storage or disposal? | X | | | |
| - location and quantity of each waste? | X | | | |
| - detailed records and results of waste analysis and treatability tests performed on wastes coming into the facility? | X | | | |
| - detailed operating summary reports and description of all emergency incidents that required the implementation of the facility contingency plan? | X | | | yes - logged in reports & count |
| 6) Does the facility have written closure and post-closure plans? (§265.110) | X | | | |
| a. Does the written closure plan include: | | | | |
| - a description of how and when the facility will be partially (if applicable) and ultimately closed? | X | | | |

Effective date for this requirement is May 19, 1981.

| | YES | NO | DON'T KNOW | |
|---|---|---|---|---|
| - an estimate of the maximum inventory of wastes in storage or treatment at any time during the life of the facility? | X | | | |
| - a description of the steps necessary to decontaminate facility equipment during closure? | X | | | |
| - a schedule for final closure including the anticipated date when wastes will no longer be received and when final closure will be completed? | X | | | |
| b. What is the anticipated date for final closure? | X | | | 20 wks after closure |
| †c. Does the owner/operator have a written post-closure plan identifying the activities which will be carried on after closure and the frequency of these activities? | X | | | |
| d. Does the written post-closure plan include: — no need per | | | | |
| - a description of planned groundwater monitoring activities and their frequencies during post-closure? | | | | |
| - a description of planned maintenance activities and frequencies to ensure integrity of final cover during post-closure? | | | | |
| - the name, address and phone number of a person or office to contact during post-closure? | | | | |
| 7) Does the owner/operator have a written estimate of the cost of closing the facility? (§265.142) What is it? | X | | | |
| 8) Does the owner/operator have a written estimate of the cost for post-closure monitoring and maintenance? What is it? (§265.144) | | X | | NO NEED |
| 9) Has a groundwater monitoring plan been submitted to the Regional Administrator for facilities containing a surface impoundment, landfill or land treatment process? (This requirement does not apply to recycling facilities.) (§265.90) | NA | | | |
| a. Does the plan indicate that at least one monitoring well has been installed hydraulically upgradient from the limit of the waste mangement area? | | | | |
| b. Does the plan indicate that there are at least three monitoring wells installed hydraulically downgradient at the limit of the waste management area? | | | | |

s section applies only to disposal facilities.

fective date for this requirement is May 19, 1981.

## SITE-SPECIFIC

..se circle all appropriate activities and answer questions indicated pages for all activities circled. When you submit your report, .nclude only those site-specific pages that you have used.

| STORAGE | TREATMENT | DISPOSAL |
|---|---|---|
| Waste Pile p. 9 | Tank p. 8 | Landfill pp. 10-11 |
| Surface Impoundment p. 8 | Surface Impoundment pp. 8-9 | Land Treatment pp. 9, 10 off site |
| Container p. 7 drums | Incineration pp. 12-13 | Surface Impoundment p. 8 |
| Tank, above ground p. 8 | Thermal Treatment pp. 12-13 | Other ________ |
| Tank, below ground p. 8 | Land Treatment pp. 9-10 | |
| Other ________ | Chemical, Physical p. 13 and Biological Treatment (other than in tanks, surface impoundment or land treatment facilities) | |
| | Other ________ | |

| | YES | NO | DON'T KNOW |
|---|---|---|---|

### CONTAINERS (§265.170)

| | YES | NO | DON'T KNOW |
|---|---|---|---|
| . Are there any leaking containers? It "YES", explain. | | X | |
| Are there any containers which appear in danger of leaking? If "YES", explain. | | X | |
| . Do wastes appear compatible with container materials? | X | | |
| . Are all containers closed except those in use? | X | | |
| . Do containers appear to be opened, handled or stored in a manner which may rupture the containers or cause them to leak? | | X | |
| How often does the plant manager claim to inspect container storage areas? | daily | | |
| . Does it appear that incompatible wastes are being stored in close proximity to one another? If "YES", explain. | | X | |
| Are containers holding ignitable or reactive wastes located at least 15 meters (50 feet) from the facility's property line? | X | | |

What is the approximate number and size of containers with hazardous wastes?

55 gal drums - Total 40 drums
All 1st Year

| TANKS (§265.190) | YES | NO | DON'T KNOW | |
|---|---|---|---|---|
| Are there any leaking tanks? If "YES", explain. | | X | | |
| Are there any tanks which appear in danger of leaking. If "YES", explain. | | X | | |
| Are wastes or treatment reagents being placed in tanks which could cause them to rupture, leak, corrode or otherwise fail? If "YES", explain. | | X | | [illegible] |
| Do uncovered tanks have at least 2 feet of freeboard or an adequate containment structure? | X | | | [illegible] |
| Where hazardous waste is continuously fed into a tank, is the tank equipped with a means to stop this inflow? | X | | | [illegible] |
| Does it appear that incompatible wastes are being stored in close proximity to one another, or in the same tank? If "YES", explain. | | X | | |
| How often does the plant manager claim to inspect container storage areas? | Daily | | | |
| Are ignitable or reactive wastes stored in a manner which protects them from a source of ignition or reaction? If "YES", explain. | X | | | outside in special [illegible] |
| What is the approximate number and size of tanks containing hazardous wastes? | 1,300 gal treatment | | | |

| SURFACE IMPOUNDMENTS (§265.220) | YES | NO | DON'T KNOW |
|---|---|---|---|
| Is there at least 2 feet of freeboard in the impoundment? | | | |
| Do all earthen dikes have a protective cover to preserve their structural integrity? If "YES", specify type of covering. | | | |
| Is there reason to believe that incompatible wastes are being placed in the same surface impoundment? If "YES", explain. | | | |

| | YES | NO | DON'T KNOW |
|---|---|---|---|
| gnitable or reactive wastes being placed urface impoundments without being treated remove these characteristics? "YES", explain. | ___ | ___ | ___ |
| e there any leaks, failures or is there y deteriorization in the impoundments? "YES", explain. | ___ | ___ | ___ |
| ve the approximate size of surface poundments (gallons or cubic feet). | | | |

WASTE PILES (§265.250)

| | YES | NO | DON'T KNOW |
|---|---|---|---|
| the waste pile protected from wind osion? | ___ | ___ | ___ |
| Does it appear to need such protection? | ___ | ___ | ___ |
| Explain what type of protection exists. | | | |
| s it appear that incompatible wastes are ng stored in the same waste pile? "YES", explain. | ___ | ___ | ___ |
| leachate run-off from a pile a hazardous te? "YES", explain this determination and swer (a) and (b) below. | ___ | ___ | ___ |
| Is the pile placed on an impermeable base that is compatible with the waste? | ___ | ___ | ___ |
| Is the pile protected from precipitation and run-on? | ___ | ___ | ___ |
| your judgment, are ignitable or reactive tes managed in such a way that they are tected from any material or conditions ich may cause them to ignite? ease explain or indicate if no such wastes present. | ___ | ___ | ___ |
| e they placed on an existing pile so that y no longer meet the definition of ignitable reactive waste? ase explain. | ___ | ___ | ___ |
| many waste piles are on site, and approxi-ately how large are they? | | | |

LAND TREATMENT (§265.270)

| | YES | NO | DON'T KNOW |
|---|---|---|---|
| the facility operator demonstrate that hazardous waste has been made less or -hazardous by biological degradation or mical reactions occurring in or on the ? se explain. | ___ | ___ | ___ |

| | YES | NO | DON'T KNOW |
|---|---|---|---|
| run-on diverted away from the active portions of the land treatment facility? | ___ | ___ | ___ |
| Is run-off collected? | ___ | ___ | ___ |
| Are food chain crops being grown on the facility property? | ___ | ___ | ___ |
| a. If "YES", can the facility operator document that arsenic, lead and mercury: | | | |
| - will not be transferred to the crop or ingested by food chain animals or | ___ | ___ | ___ |
| - will not occur in greater concentrations in the crops grown on the land treatment facility than in the same crops grown on untreated soils. | ___ | ___ | ___ |
| b. Has notification of the growing of the food chain crops been made to the Regional Administrator? | ___ | ___ | ___ |
| Is there a written and implemented plan for unsaturated zone monitoring? | ___ | ___ | ___ |
| Are there records of the application dates, application rates, quantities and location of each hazardous waste placed in the facility? | ___ | ___ | ___ |
| Do the closure and post-closure plans address: | | | |
| a. control of migration of hazardous wastes into the groundwater? | ___ | ___ | ___ |
| b. control of run-off, release of airborne particulate contaminants? | ___ | ___ | ___ |
| c. compliance with requirements for the growth of food-chain crops (if they are present)? | ___ | ___ | ___ |
| Is ignitable or reactive waste immediately incorporated into the soil so the resulting waste no longer meets that definition? If "YES", explain. | ___ | ___ | ___ |
| Are incompatible wastes placed in the same land treatment area? If "YES", explain. | ___ | ___ | ___ |
| What is the area of the land receiving hazardous waste treatment? | ___ | ___ | ___ |

## LANDFILLS (§265.300)

| | YES | NO | DON'T KNOW |
|---|---|---|---|
| Is run-on diverted away from the active portions of the landfill? | ___ | ___ | ___ |
| Is run-off from active portions of the landfill collected? | ___ | ___ | ___ |

---

ective date for these requirements is May 19, 1981.

se requirements are effective November 19, 1981.

| | YES | NO | DON'T KNOW |
|---|---|---|---|
| waste which is subject to wind dispersal controlled? Explain. | | | |
| Does the owner/operator maintain a map with: | | | |
| - the exact location and dimensions of each cell. | | | |
| - the contents of each cell and approximate location of each hazardous waste type | | | |
| Do the closure and post-closure plans address: | | | |
| - control of pollutant migration via ground water? | | | |
| - control of surface water infiltration? | | | |
| - prevention of erosion? | | | |
| Is ignitable or reactive waste treated before being placed in the landfill? Explain how you know. | | | |
| Are precautions taken to insure that incompatible wastes are not placed in the same landfill cell? If"NO", explain. | | | |
| Are bulk or non-containerized wastes containing free liquids placed in the landfill? If "YES", | | | |
| a. Does the landfill have a liner which is chemically and physically resistant to the added liquid? | | | |
| b. Is the waste treated and stabilized so that free liquids are no longer present? | | | |
| Are containers holding liquid waste or waste containing free liquids placed in the landfill? | | | |
| Are empty containers (e.g. those containing less than 1/2 inch of liquid) placed in the landfills? | | | |
| If so, are they crushed flat, shredded or similarly reduced in volume before they are buried? | | | |

What is the approximate area of the hazardous waste landfill?

---

ffective date for this requirement is November 19, 1981.

## INCINERATORS AND THERMAL TREATMENT
## (§§265.340 and 265.379)

| | YES | NO | DON'T KNOW |
|---|---|---|---|
| What type of incinerator or thermal treatment is at the site (e.g. waterwall incinerator, boiler, fluidized bed, etc.)? | | | |
| ıs hazardous waste being incinerated or ıermally treated during your inspection? "YES", answer all following questions. "NO", answer only questions 3 and 7. | | | |
| ıs waste analysis been performed (and written records kept) to ıclude: | | | |
| heating value of the waste | | | |
| halogen content | | | |
| sulfur content | | | |
| concentration of lead | | | |
| concentration of mercury | | | |

Waste analysis need not be performed on each waste load if if there are documented data available to show waste characteristics that do not vary. If there are such documented data available, check here [ ].

| | YES | NO | DON'T KNOW |
|---|---|---|---|
| ɜs it appear that the owner/operator brings ; thermal treatment process to steady state ɔrmal) conditions of operation before :roducing hazardous wastes? | | | |
| ' it appear during your inspection that there was adequate ıitoring and inspection by owner/operator every 15 minutes ing hazardous waste incineration for: | | | |
| aste feed | | | |
| uxiliary fuel feed | | | |
| ir flow | | | |
| ncinerator temperature | | | |
| :rubber flow | | | |
| :rubber pH | | | |
| ·levant level controls | | | |
| ›ur for: | | | |
| ack plume (color and opacity) | | | |
| here open burning of hazardous e? | | | |

a. If "YES", what is being burned? (only burning or detonation of explosives is permitted)

b. If open burning or detonation of explosives is taking place, approximately what is the distance from the open burning or detonation to the property of others?

| | YES | NO | DON'T KNOW |
|---|---|---|---|
| Does the incinerator appear to be operating properly? (Do emergency shutdown controls and system alarms seem to be in good working order?) Please explain. | ___ | ___ | ___ |
| a. Is there any evidence of fugitive emissions? | ___ | ___ | ___ |
| Is the residue from the incinerator treated by the owner as a hazardous waste? Please explain. | ___ | ___ | ___ |

What types of air pollution control devices (if any) are installed on the incinerator?

CHEMICAL, PHYSICAL AND BIOLOGICAL TREATMENT (§265.400)

| | YES | NO | DON'T KNOW |
|---|---|---|---|
| oes the treatment process system show any signs of ruptures, leaks, or corrosion? Please explain. | ___ | (X) | ___ |
| s there a means to stop the inflow of continuously-fed hazardous wastes? | (X) | ___ | ___ |
| s there ignitable or reactive waste fed nto the treatment system? | (X) | ___ | ___ |
| If "YES", has it been treated or protected rom any material or conditions which may ause it to ignite or react? If so, xplain how. *pH controlled* | (X) | ___ | ___ |
| re the incompatible wastes placed in he same treatment process? If "YES", explain. | ___ | X | ___ |

escribe the treatment system at this facility.

*hemical (metal Hydrox) - pH adjust → form ppt*

*hysical (metal Hydrox) - filter press*

*astewater - pH adjusted - discharge to [illegible]*

Drums (empty) of [illegible], [illegible] stored outside in bermed area – [illegible] [illegible] [illegible]

New waste treatment process building now under construction should be operational Fall '81

General Comment – I found the plant well operated by a professional staff. Only area of concern was better marking (larger or more noticeable) labeling of drums & work areas for hazardous waste. Staff indicated that they would correct these problems.

J. [illegible] Moran 5/15/81

file

# RCRA INSPECTION REVIEW SHEET

427

Name of Facility - Photocircuits, Glen Cove, NY
RCRA ID# - NYD096920483
Date of Inspection - 5-15-81
Type of Inspection: Generator Transporter (TSD)
Name of EPA/State Inspector -
James Moran
Jeff Austin NYSDEC

Findings of Inspection:
No significant problems noted.

Action(s) Taken: none



Action(s) Recommended: none

J. Josephs 8/7/81

REFERENCE NO. 14

[illegible]

# RCRA INSPECTION FORM

Report Prepared for:

Generator X

Transporter _

HWM (TSD) facility X

Copy of report sent to the facility _

(6)

**Facility Information**

Name: PHOTOCIRCUITS

Address: 31 SEA CLIFF AVE.
GLEN COVE N.Y. 11542

EPA ID#: NYD096920483

Date of Inspection: JAN 7, 1983

**Participating Personnel**

State or EPA Personnel: AUGUST LaRUFFA (NYSDEC)

Facility Personnel: MICHELE PRINCIPE



Report Prepared by Name: AUGUST LaRUFFA

Agency: NYSDEC

Telephone #: (516) 751-7900

SCAN REVIEW BUT NO ENDORSEMENT OF FINDINGS ~~Approved~~ for the Director by: J. AUSTIN

## Summary of Findings

### Facility Description and Operations

PHOTOCIRCUITS, GLEN COVE FACILITY, PRODUCES PRINTED CIRCUIT BOARDS FOR THE COMPUTER & ELECTRONICS INDUSTRY. WASTE WATER TREATMENT IN ~~SEPARATE~~ ENCLOSED BLDG, BERMED CONCRETE FLOOR - CONTAINER, SACS & TANK STORAGE LOCATED OUTSIDE ON PALLETS, BERMED ENCLOSURE & DRAINAGE TO WASTE WATER TREATMENT PLANT. DRUM STORAGE ALSO IN WASTE TREATMENT BLDG.

Describe the activities that result in the generation of hazardous waste.

1. Strip & etch process generates spent etchant
2. metallic sulfide sludge generated from waste water pretreatment
3. Copper plating rinse water from copper bath
4. cellosolve acetate from screen cleaning
5. still bottoms from methylene chloride and 111 trichloroethane recovery operation

N.B. The etchant is shipped out as a waste, recycled and returned as virgin (spec) etchant. MacDermid Corp does the recycling.

Identify the hazardous waste located on site, and estimate the approximate quantities of each. (Identify Waste Codes)

metallic sulfide sludge - F006 - ~~[illegible]~~ 14 tons
spent etchant - basic ammonia/copper - D002 - 1000 gal.
copper reduction bath waste - D002 - 4000 gal.
still bottoms from recovery operation - F002 - 550 gals

Is there reason to believe that the facility has hazardous waste on-site? YES

a. If yes, what leads you to believe it is hazardous waste? Check appropriate boxes:

[X] Company admits that its waste is hazardous during the inspection.

[X] Company admitted the waste is hazardous in its RCRA notification and/or Part A Permit Application.

[X] The waste material is listed in the regulations as a hazardous waste from a nonspecific source (§261.31)

[ ] The waste material is listed in the regulations as a hazardous waste from a specific source (§261.32)

[ ] The material or product is listed in the regulations as a discarded commercial chemical product (§261.33)

[X] Testing has shown characteristics of ignitability, corrosivity, reactivity or extraction procedure toxicity, or has revealed hazardous constituents (please attach analysis report)

[ ] Company is unsure but there is reason to believe that waste materials are hazardous. (Explain)

Transporter Inspection Report Form

| 40 CFR Part 263 Transporter Standards | YES | NO | N/A |
|---|---|---|---|
| 263.10 - Does the transporter carry hazardous waste? | ___ | ___ | ___ |
| 263.12 - Does the transporter store hazardous waste at a transfer facility - if yes, how long?<br>______ 10 days or less<br>______ more than 10 days (complete TSD form) | ___ | ___ | ___ |
| 263.20 - Manifest System | | | |
| 1) Does the transporter have a copy for each manifest shipment of hazardous waste? | ___ | ___ | ___ |
| 2) Does a representative portion of the manifests show the following information (if no, circle the missing information) | ___ | ___ | ___ |
| o Generator's name, address, telephone and EPA I.D. numbers, signature and date of signature | ___ | ___ | ___ |
| o Transporter's name, EPA I.D. number, signature and date of signature | ___ | ___ | ___ |
| o TSDF's name, address and EPA I.D. Number | ___ | ___ | ___ |
| and either the signature and date of the TSDF or the name, EPA I.D., signature and date of the next transporter | ___ | ___ | ___ |
| o Manifest Document number | ___ | ___ | ___ |
| o Proper DOT shipping description | ___ | ___ | ___ |
| o Quantity & type of containers | ___ | ___ | ___ |
| (If no, to any of the above obtain copies of incomplete manifests). | | | |
| 3) Based on available information, do all manifests conform to the hazardous waste shipments made? If no, explain | ___ | ___ | ___ |
| 263.22 - Have records been kept since November 19, 1980? | ___ | ___ | ___ |
| 263.30 - Has there ever been a spill or discharge of hazardous waste during transportation? | ___ | ___ | ___ |
| If yes, was the incident report submitted to DOT? (obtain copy of the report) | ___ | ___ | ___ |
| 263.31 - If there was any spill or discharge of hazardous waste, was it cleaned up? If no, explain. | ___ | ___ | ___ |

General Comments:

## [illegible]

### Facilities Subject to 40 CFR 265 Standards

**40 CFR Part 265 Subpart B General Facility Standards**

| | YES | NO | N/A |
|---|---|---|---|
| **265.13–General Waste Analysis** | | | |
| 1) Is there a detailed chemical and physical analysis of a representative sample of the waste or each waste? (At a minimum this analysis must contain all the information necessary for proper management of the waste.) | ✓ | | |
| 2) Does the character of the waste handled at the facility change from day to day, week to week, etc., thus requiring frequent testing? You may check only one: Waste characteristics vary ____; All waste are basically the same ✓; Company treats all waste as hazardous ____ | | | |
| 3) Is there a written waste analysis plan at the facility? | | ✓ | |
| Does it contain the following: | | | |
| a) Parameters for each waste to be analyzed and the rationale for the selection of these parameters. | | | |
| b) Test methods used to test these parameters. | | | |
| c) Sampling methods to obtain a representative sample of the waste to be analyzed. | | | |
| d) Frequency of repeated analysis to ensure accurate and current information. | | | |
| 4) Does hazardous waste come to this facility from an outside source? e.g. another generator. | | ✓ | |
| 5) If waste comes from an outside source, are there procedures in the plan to insure that waste received conforms to the accompanying manifest? | | | ✓ |
| **265.14–Security** | | | |
| 1) Is there: a) a 24-hour surveillance system? or, b) a suitable barrier which completely surrounds the active portion of this facility? | ✓ | | |
| 2) Are there "Danger–Unauthorized Personnel Keep Out" signs posted at each entrance to the facility? | ✓ | | |
| If no, explain what measures are taken for security. | | | |
| **265.15 - General Inspections Requirements** | | | |
| 1) Does the facility have a written inspection schedule? | ✓ | | |
| 2) Does the schedule identify the types of problems to be looked for and the frequency of inspections? | ✓ | | |
| 3) Does the owner/operator record inspections in a log? | ✓ | | |
| 4) Is there evidence that problems reported in the inspection log have been remedied? | ✓ | | |
| If no, please explain. | | | |

| 265.16 - Personnel Training | YES | NO | N.A. |
|---|---|---|---|
| 1) Have facility personnel successfully completed a program of classroom instruction or on-the-job training within 6 months of having been employed? | ✓ | | |
| If yes, have facility personnel taken part in an annual review of training? | ✓ | | |
| 2) Is there written documentation of the following: | | | |
| —job title for each position at the facility related to hazardous waste management and the name of the employee filling each job? | ✓ | | |
| —type and amount of training to be given to personnel in jobs related to hazardous waste management? | ✓ | | |
| —actual training or experience received by personnel? | ✓ | | |
| 3) Are training records kept on all employees for at least 3 years? | ✓ | | |

| 265.17-General Requirements for Ignitable, Reactive or Incompatible Wastes | | | |
|---|---|---|---|
| 1) Are there ignitable, reactive or incompatible waste on site? | | ✓ | ✓ |
| If yes, what are the approximate types and quantities and location of the waste. | | | |
| 2) Have precautions been taken to prevent accidental ignition or reaction of ignitable or reactive waste? | | | |
| If no, please explain. | | | |
| 3) In your opinion, are proper precautions taken so that these wastes do not: | | | |
| — generate extreme heat or pressure, fire or explosion, or violent reaction? | | | |
| — produce uncontrolled toxic mist, fumes, dusts or gases in sufficient quantities to pose a risk of fire or explosions? | | | |
| — damage the structural integrity of the device or facility containing the waste? | | | |
| — threaten human health or the environment? | | | |

| 40 CFR 265 - Subpart C - Preparedness and Prevention | YES | NO | N/A |
|---|---|---|---|
| 265.32 Does the facility comply with preparedness and prevention requirements including maintaining: | | | |
| — An internal communications or alarm system? | ✓ | | |
| — A telephone or other device to summon emergency assistance from local authorities? | ✓ | | |
| — portable fire equipment? | ✓ | | |
| — water at adequate volume and pressure to supply water hose streams, foam producing equipment, etc. | ✓ | | |
| 265.33 Is equipment tested and maintained? | ✓ | | |
| 265.34 Is there immediate access to communications or alarm systems during handling of hazardous waste? | ✓ | | |
| 265.35 Adequate aisle space? | ✓ | | |
| If no, please explain storage pattern. | | | |
| In your opinion, do the types of waste on-site require all of the above procedures, or are some not needed: Explain. | ✓ | | |

| 40 CFR 265 - Subpart D - Contingency Plan and Emergency Procedures | YES | NO | N/A |
|---|---|---|---|
| Does the facility have a written contingency plan for emergency procedures designed to deal with fires, explosions or any unplanned release of hazardous waste? | ✓ | | |
| 1) Does the plan describe arrangements made with the local authorities? | ✓ | | |
| 2) Has the contingency plan been submitted to the local authorities? | ✓ | | |
| 3) Does the plan list names, addresses and phone numbers of Emergency Coordinators? | ✓ | | |
| 4) Does the plan have a list of what emergency equipment is available? | ✓ | | |
| 5) Is there a provision for evacuating facility personnel? | ✓ | | |
| 6) Was there an emergency coordinator present or on call at the time of the inspection? | ✓ | | |

| 40 CFR 265 Subpart E-Manifest System, Recordkeeping and Reporting | YES | NO | N/A |
|---|---|---|---|
| 265.71 - Use of the Manifest | | | |
| 1) Has the facility received hazardous waste from an off-site source since November 19, 1980? | ✓ | | |
| If no, skip to 265.73 - Operating Record | | | |
| Rec'd some waste water from Albuquerque facility in past, but no longer receive any wastes | | | |
| 2) If yes, does it appear that the facility has a copy of a manifest for each hazardous waste load received? | ✓ | | |
| If not, please explain. | | | |

3. How many (estimated number of) manifests does the facility have? (Estimate if the number is large) ≈ 80

| | | | |
|---|---|---|---|
| 4. Does each manifest have the following information? Circle missing information. | | | |
| — a manifest document number? | ✓ | | |
| — the generators name, mailing address, telephone number and EPA I.D. #? | ✓ | | |
| — the transporters name and EPA I.D. Number? | ✓ | | |
| — the TSD name, address, telephone number & EPA I.D. Number? | ✓ | | |
| — a description of the waste (DOT)? | ✓ | | |
| — the total quantity of each hazardous waste by units of weight or volume, and the type and number of containers as loaded into or onto the transport vehicle? | ✓ | | |
| — a certification that the materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation under regulations of the DOT and EPA? | ✓ | | |
| (Obtain a copy of the incomplete manifests) | | | |

265.72 - Manifest Discrepancies

| | | | |
|---|---|---|---|
| Have there been significant discrepancies between the quantity and type of waste received and the waste identified on the manifest? | | ✓ | |

Describe unreconciled discrepancies.

265.73 - Operating Record

| | | | |
|---|---|---|---|
| 1) Does the facility keep an operating record? | ✓ | | |
| 2) Does the record contain the following information: | | | |
| a. Description and quantity of waste on-site and the method(s) and date(s) of its Treatments, Storage & Disposal? | ✓ | | |
| b) The location and quantity of each hazardous waste at each location? | ✓ | | |
| c) Records and results of waste analysis and trial tests performed and identified in the waste analysis plan? | ✓ | | |
| d) Summary reports and details of all incidents that require implementing the contingency plan. | | | ✓ |
| e) Records and results of inspections for the past 3 years or November 19, 1980 which ever is less? | ✓ | | |
| f) Monitoring, testing or analytical data where required for: Groundwater, Land Treatment, Incinerators, and Thermal Treatment? | | | ✓ |

265.76 - Unmanifested Waste Report

| | | | |
|---|---|---|---|
| Has the facility accepted hazardous waste from off-site sources without a manifest? | | ✓ | |
| If yes, has the facility submitted an unmanifested waste report? | | | |

| | YES | NO | NA |
|---|---|---|---|
| **40 CFR 265 Subpart F - Groundwater Monitoring** | | | |
| (Applies only to surface impoundments, landfills and/or land treatment facilities.) | | | |
| Is a groundwater monitoring plan available at the facility? | | | ✓ |
| If yes, please fill out the appropriate Groundwater Monitoring Questionnaire and attach to this report. | | | |
| **40 CFR 265 Subpart G - Closure and Post-Closure** | | | |
| **265.111 Closure Performance Standard** | | | |
| Have any portions of the facility been closed since November 19, 1980? | | ✓ | |
| If yes, please explain | | | |
| **265.112 - Closure Plan** | | | |
| Does the facility have a written closure plan? (Applies to all types of TSD facilities) | ✓ | | |
| If yes, does the written plan include: | | | |
| 1. A description of how and when the facility will be partially (if applicable) and ultimately closed? | ✓ | | |
| 2. An estimate of the maximum inventory of wastes in storage or treatment at any time during the life of the facility? | ✓ | | |
| 3. A description of the steps necessary to decontaminate facility equipment during closure? | ✓ | | |
| 4. A schedule for final closure including the anticipated date when waste will no longer be received and when final closure will be completed? | ✓ | | |
| 5. Does the owner/operator have a written estimate of of the cost of closing the facility? | ✓ | | |
| If yes, what is it? ($) 50,000 | | | |
| **265.118 - Post Closure Plan** | | | |
| Does the facility have a written post-closure plan? (Applies only to disposal facilities) | | | ✓ |
| If yes, Does the Plan: | | | |
| 1. Identify the activities which will be carried on after closure and the frequency of these activities? | | | |
| 2. Include a description of planned groundwater monitoring activities and their frequency during post-closure? | | | |
| 3. Include a description of planned maintenance activities and frequency to insure integrity of final cover during post-closure? | | | |
| 4. Include the name, address and phone number of a person or office to contact during post-closure? | | | |
| 5. Does the owner/operator have a written estimate of the cost of post-closure for the facility? | | | |
| If yes, what is it? ($) | | | |

Please circle all appropriate activities and answer questions on indicated pages for all activities circled.

| Storage | Treatment | Disposal |
|---|---|---|
| (circled) Container - pg 6 | Tank - pg 7 | Landfill - pg 11 |
| (circled) Tank, above ground-pg 7 | Surface Impoundment-pg 8 | Land Treatment - pg 10 |
| Tank, below ground-pg 7 | Incineration - pg 10 | Surface Impoundments - pg 8 |
| Surface Impoundments-pg 8 | Thermal Treatment- pg 10 | Other ____________ |
| Waste Piles - pg 9 | Land Treatment - pg 10 | |
| Other ____________ | Chemical, Physical and Biological Treatment - pg 10 | |
| | Other ____________ | |

40 CFR 265 - Subpart I - Containers

| | YES | NO | N/A |
|---|---|---|---|
| (1) - What type of containers are used for storage. Describe the size, type, quantity and nature of waste (e.g. 10 fifty-five gallon drums of waste acetone) <br> *55 gal drums* <br> *Jumbo sac - polyethylene for metallic sulfide sludge* | | | |
| (2) - Is there a containment system for spills, leaks and precipitation? <br> If yes, describe. | ✓ | | |
| 265.171 - Do the containers appear to be in good condition, not in danger of leaking? <br> If not, please describe the type, condition and number of leaking or corroded containers. Be detailed and specific. | ✓ | | |
| 265.172 - Are hazardous waste stored in containers made of compatible materials? <br> If not, please explain. | ✓ | | |
| 265.173(a) - Are all containers closed except those in use? | ✓ | | |
| 265.173(b) - Do containers appear to be properly opened, handled or stored in a manner which will minimize the risk of the container rupturing or leaking? | ✓ | | |
| 265.174 - Is the storage area inspected at least weekly? | ✓ | | |
| 265.176 - Are containers holding ignitable and reactive waste located at least 50 feet (15 meters) away from the facility's property line? | | | ✓ |
| 265.177 - Are incompatible wastes stored separate from each other? <br> If no, explain | | | ✓ |

40 CFR 265 Subpart J - Tanks — YES NO N/A

265.190 1) What are the approximate number and size of tanks containing hazardous waste?

(2) 5000 gal above grnd (1) 4000 gal, (1) 5500 gals, (1) 2500 gal, (2) 1530 gal

2) Identify the waste treated/stored in each tank.

Copper plating wastes in (2) 5000 gal tank
etchant in (3) other tanks
still bottoms in (2) 1500 gal tanks

265.192 - General Operating Requirements

| Item | YES | NO | N/A |
|---|---|---|---|
| 1) Are the tanks maintained so that there is no evidence of past, present, or risk of future leaks? | ✓ | | |
| If no, please explain. | | | |
| 2) Are there leaking tanks? | ~~✓~~ | ✓ | |
| 3) Are all hazardous wastes or treatment reagents being placed in tanks compatible with the tank material so that there is no danger of ruptures, corrosion, leaks or other failures? | ✓ | | |
| 4) Do uncovered tanks have at least 2 feet of freeboard or an adequate containment structure? | | | ✓ |
| 5) If waste is continuously fed into a tank, is the tank equipped with a means to stop the inflow from the tank? e.g. bypass system to a standby tank | | | |

265.194 - Inspections

| Item | YES | NO | N/A |
|---|---|---|---|
| 1) Is the tank(s) inspected each operating day for a. discharge control equipment | ✓ | | |
| b) monitoring equipment | ✓ | | |
| c) level of waste in tank | ✓ | | |
| 2) Are the tanks and surrounding areas (e.g., dikes) inspected weekly for leaks, corrosion or other failures? | ✓ | | |
| 3) Are there underground tanks? | ~~✓~~ | ✓ | |
| If yes, how many and can they be entered for inspection? | | | |

| Item | YES | NO | N/A |
|---|---|---|---|
| 265.198 - Are ignitable or reactive wastes stored in a manner which protects them from a source of ignition or reaction? | | | ✓ |
| If no, please explain. | | | |
| 265.199 - Does it appear that incompatible wastes are being stored separate from each other? | | | ✓ |

<u>40 CFR 265 Subpart K - Surface Impoundments</u>      <u>YES</u> <u>NO</u> <u>N/A</u> ✓

Describe the design and operating features of the surface impoundment to prevent ground water contamination (e.g., liner leachate collection system).

265.220 - Give the approximate size of surface impoundments (gallons or cubic feet). Please specify the types of wastes stored and treated.

265.222 - Is there at least 2 feet of freeboard in the impoundment? ___ ___ ___

265.223 - Do all earthen dikes have a protective cover to preserve their structural integrity? ___ ___ ___

<u>If yes</u>, please specify the type of covering.

265.226 - 1) Is the free board level inspected daily? ___ ___ ___

2) Are the dikes surrounding the surface impoundment inspected for leaks, deterioration or failures inspected weekly? ___ ___ ___

265.229 - 1) Are any ignitable or reactive wastes placed in the impoundment? ___ ___ ___

2) If yes, is the waste treated immediately after placement in the impoundment to render the waste non-reactive and/or non-ignitable? ___ ___ ___

3) If no, to (2) explain.

265.230 - Are incompatible wastes placed in the impoundment? ___ ___ ___

If yes, explain.

YES NO N/A ✓

40 CFR 265 Subpart L - Waste Piles

265.250 - How many waste piles are on-site and approximately how large are they? (Please indicate size and height and types of wastes in piles.)

265.251 - Is the waste pile protected from wind erosion? ___ ___ ___

a) Does it appear to need such protection? ___ ___ ___

b) Explain what type of protection does exist.

265.252 Containment.

1) Is leachate run-off from the waste piles a hazardous waste? If no, skip down to 265.256. ___ ___ ___

2) Is the pile placed on an impermeable base? ___ ___ ___

3) Is run-on diverted away from the pile? ___ ___ ___

4) Is the leachate and run-off collected and treated? ___ ___ ___

If no to any of the above questions above then:

5) Is the pile protected from precipitation and run-on? ___ ___ ___

6) Are wastes containing free liquids placed in the pile? ___ ___ ___

265.256 - 1) Are ignitable or reactive wastes placed on the pile? If no, skip to §265.257 ___ ___ ___

2) Is the ignitable or reactive waste added to existing pile resulting in it no longer meeting the definition of ignitable and reactive? If no, explain. ___ ___ ___

3) Is the waste protected from any materials or condition that may cause it to ignite or react? If no, explain. ___ ___ ___

265.257 - Does it appear that a pile of incompatible wastes is being stored separate from other wastes or materials, or protected from them by means of a dike, berm, wall or other device? If no, explain. ___ ___ ___

40 CFR 265 Subpart M - Land Treatment

265.270 - Identify the types of waste and the size of the land treatment area? N/A

265.272 - General Operating Requirements — YES NO N/A

1) Can the facility operator demonstrate that the hazardous waste has been made less or non-hazardous by biological degradation or chemical reactions occurring in or on the soil? ___ ___ ___

Please explain how.

2) Is run-on diverted from the active portions of the land treatment facility? ___ ___ ___

3) Is run-off from the active portions of the facility collected? ___ ___ ___

If yes, is the run-off a hazardous waste? ___ ___ ___

265.276 - Food Chain Crops

1) Are food chain crops being grown on the facility property? ___ ___ ___
If yes, can the facility operator document that arsenic lead and mercury:

- will not be transferred to the crop or ingested by food-chain animals or ___ ___ ___

- will not occur in greater concentrations in the crops grown on the land treatment facility than in the same crops grown on the untreated soils. ___ ___ ___

2) Has notification of the growing of food chain crops been made to the Regional Administrator? ___ ___ ___

265.278 - Is there a written and implemented plan for unsaturated zone monitoring? ___ ___ ___

Make copy for office review.

265.279 - Are there records of the application dates, application rates, quantities and location of each hazardous waste placed at the facility? ___ ___ ___

265.281 - Is ignitable or reactive waste immediately incorporated into the soil so that the resulting waste no longer meets that definition? ___ ___ ___

If not, please explain.

265.282 - Are incompatible waste placed in separate land treatment areas? ___ ___ ___

If no, please explain.

40 CFR 265 Subpart N - Landfills | YES | NO | N/A

265.300 - Identify the types of waste and size of the landfill. N/A

265.302 - General Operating Requirements

1) Is run-on diverted away from the active portions of the landfill? ___ ___ ___

2) Is run-off from active portions of the landfill collected? ___ ___ ___

3) Is waste which is subject to wind dispersal controlled? ___ ___ ___

Please explain how.

265.309 - Does the owner/operator maintain a map with:

1) The exact location and dimensions of each cell? ___ ___ ___

2) The contents of each cell and approximate location of each hazardous waste type? ___ ___ ___

265.312 - Is ignitable or reactive waste treated so that it is not ignitable or reactive before being place in the landfill? ___ ___ ___

Explain how you know.

265.313 - Are precautions taken to ensure that incompatible waste are not placed in the same landfill cell? ___ ___ ___

If no, please explain.

265.314 Special Requirements for Liquid Waste

1) Are bulk or non-containerized wastes containing free liquids placed in the landfill? ___ ___ ___

If yes,

a) Does the landfill have a liner which is chemically and physically resistant to the added liquid? or ___ ___ ___

b) Is the waste treated and stabilized so that free liquids are no longer present? ___ ___ ___

2) Are containers holding liquid waste or waste containing free liquids placed in the landfill? ___ ___ ___

Please describe the types and contents of such containers placed in the landfill.

265.315 - Are empty containers placed in the landfill crushed flat, shredded or similarly reduced in volume before they are buried ? ___ ___ ___

265.316 - Are small containers of hazardous waste in overpacked drums placed in the landfill? ___ ___ ___

If yes, please describe precautions taken to prevent the release of the waste.

## [illegible] Subpart O / P - Incinerator and Thermal Treatment

N/A

1) What type of incinerator or thermal treatment is at the site e.g. rotary kiln incinerator, boiler, fluidized bed, etc.

2) List the types and quantities of HW incinerated or thermally treated.

3) Is the residue from the incinerator thermal treatment unit a hazardous waste? __ __ __

4) What types of air pollution control devices (if any) are installed in the incinerator/or thermal treatment unit?

5) Is energy recovered from the process? If yes, describe. __ __ __

6) What is the destruction and removal efficiency for the organic hazardous waste constituents?

265.341 and 265.375 - Does the operating record include additional analysis to determine types of pollutants which might be emitted including:

- heating value of the waste? __ __ __
- halogen and sulfur content? __ __ __
- concentrations of lead and mercury? __ __ __

If no to any of the above questions is there justification and documentation? __ __ __

265.345 and 265.373 - If operating, does it appear the incinerator/or thermal treatment unit is operating at steady state for conditions of operation, including temperature and air flow? __ __ __

265.347 and 265.377 - Monitoring and Inspection

1) Are existing instruments relating to combustion and emission controls monitored every 15 minutes? __ __ __

If no, explain

2) Does the incinerator/thermal treatment have all the following instruments for measuring: wastefeed, auxiliary fuel feed air flow, incinerator temperature scrubber flow, and scrubber pH? (Circle missing instruments) __ __ __

If no, explain.

3) Is the stack plume observed visually at least hourly for opacity and color? __ __ __

4) Are there any signs of leaks, spill and fugitive emissions associated with the pumps, valves, conveyors, pipes etc? If yes, describe. __ __ __

5) Are all emergency shutdown controls and system alarms checked to assure proper operation? __ __ __

6) Is there any reason to believe the incinerator is being operated improperly? i.e., steady state conditions are not maintained. If yes, explain. __ __ __

7) Is the incinerator/thermal treatment inspected daily?

| | YES | NO | N/A |
|---|---|---|---|
| 265.382 Is there open burning of hazardous waste? | ___ | ___ | ___ |
| a) If yes, what is being burned? (Only burning or detonation of explosives is permitted) | | | |
| b) If open burning or detonation of explosives is taking place approximately what is the distance from the open burning or detonation to the property of others? | | | |

<u>40 CFR 265 Subpart Q - Chemical, Physical and Biological Treatment</u> (other than in tanks, surface impoundments or land treatment facilities) N/A

1) Describe the treatment system at this facility and the the types of wastes treated.

| | YES | NO | N/A |
|---|---|---|---|
| 265.401 - Does the treatment process system show any signs of ruptures, leaks or corrosion? | ___ | ___ | ___ |
| If yes, describe. | | | |
| 265.401 - Is there a means to stop the inflow of continuously-fed hazardous wastes? | ___ | ___ | ___ |
| 265.403 - <u>Inspections</u> | | | |
| 1) Is the discharge control safety equipment (e.g. waste feed cut-off systems, by-pass systems, drainage systems and pressure relief systems) in good working order? | ___ | ___ | ___ |
| Are they inspected at least once each operation day? | ___ | ___ | ___ |
| 2) Does the data gathered from the monitoring equipment (e.g., pressure and temperature gauges) show treatment process is operating according to design? | ___ | ___ | ___ |
| Is data gathered at least once each operating day? | ___ | ___ | ___ |
| 3) Are construction materials of the treatment process inspected at least weekly to detect corrosion or leaking of fixtures and seams? | ___ | ___ | ___ |
| 4) Are the discharge confinement structures, (e.g. dikes) immediately surrounding the treatment unit inspected at least weekly to detect erosion or obvious signs of leakage (e.g. wet spots or dead vegetation? | ___ | ___ | ___ |
| 265.405 - Are ignitable or reactive waste fed into the waste treatment system treated or protected from any material or or conditions which may cause it to ignite or react? | ___ | ___ | ___ |
| If yes, explain how. | | | |
| 265.406 - Are the incompatible wastes placed in the same treatment process? | ___ | ___ | ___ |
| If yes, please explain. | | | |

# GENERATOR INSPECTION CHECKLIST

| 40 CFR 262 Subpart A-General | YES | NO | N/A |
|---|---|---|---|
| 262.11 - Hazardous waste determination | | | |
| 1) Did the generator test its waste to determine whether it is hazardous? | ✓ | | |
| Is the waste hazardous? | ✓ | | |
| 2) Is the generator determining that its waste exhibits a hazardous waste characteristic(s) based on its knowledge of the material(s) or processes used? | ✓ | | |
| **40 CFR 262 Subpart B-The Manifest** | | | |
| Has hazardous waste been shipped off-site since November 19, 1980? | ✓ | | |

If yes, approximately how many shipments, off-site, have been made and describe the approximate size of an average shipment made on a monthly basis. If facility is a small quantity generator, please explain.

≥80

| 262.21 Does each manifest (or representative sample) have the following information? Please circle the missing elements. | YES | NO | N/A |
|---|---|---|---|
| — a manifest document number? | ✓ | | |
| — the generator's name, mailing address, telephone number and EPA I.D. Number? | ✓ | | |
| — the transporter's name and EPA I.D. Number? | | | |
| — the name, address and EPA ID Number of the designated facility? | ✓ | | |
| — a description of the wastes (DOT)? | ✓ | | |
| — the total quantity of each hazardous waste by units of weight or volume, and the type and number of containers as loaded into or onto the transport vehicle? | ✓ | | |
| — a certification that the materials are properly classified, described, package, marked and labeled, and are in proper condition for transportation under regulations of the DOT and EPA? | ✓ | | |

(obtain a copy of the incomplete manifests)

| 40 CFR 262 - Subpart D - Recordkeeping and Reporting | YES | NO | N/A |
|---|---|---|---|
| 262.40 Has the generator maintained facility records since Nov. 19 1980? (manifest, exception report and waste analysis) | ✓ | | |
| 262.42 Has the generator received signed copies (from the TSD facility) of all the manifests for waste shipped off-site more than 35 days ago? | ✓ | | |
| If not, have Exception Reports been submitted to EPA covering any of these shipments made more than 45 days ago? | | | |

| | YES | NO | N/A |
|---|---|---|---|
| **40 CFR 262 - Subpart C - Pretransportation Requirements** | | | |
| 262.30-33 Before transporting or offering hazardous waste for transportation off-site does the generator: | | | |
| 1) Package the waste in accordance with applicable DOT regulations (i.e., 49 CFR Parts 173, 178 & 179) | ✓ | | |
| 2) Label each package according to DOT (i.e., 49 CFR 172) | ✓ | | |
| 3) Mark each package according to DOT (i.e., 49 CFR 172) | ✓ | | |
| 4) Mark each container of 110 gallons or less with the words "Hazardous Waste - Federal Law Prohibits Improper Disposal. If found, contact the nearest police or public safety authority or the U.S. EPA." and include the generators name, address and manifest document number. (i.e., 49 CFR 172.304) | ✓ | | |
| **262.34 Accumulation Time** | | | |
| 1) How is waste accumulated on-site?<br>[X] Containers<br>[X] Tanks<br>[ ] Surface impoundments (complete HWMF checklist)<br>[ ] Piles (complete HWMF checklist) | | | |
| 2) Is waste accumulated for more than 90 days?<br>If yes, complete HWMF checklist | ✓ | | |
| 3) Is each container clearly dated with each period of accumulation so as to be visible for inspection? | ✓ | | |
| 4) Is each container or tank marked or labeled with the words "Hazardous Waste" or in compliance with the DOT labeling requirements? | ✓ | | |

STOP HERE IF THE HAZARDOUS WASTE MGT FACILITY (TSD) CHECKLIST IS FILLED OUT

## 262.34 - SHORT TERM ACCUMULATION STANDARDS

(For generators who accumulate waste in tanks or containers for 90 days or less)

YES NO N/A

### 40 CFR 265 - Subpart I Containers

265.170 - What type of containers are used for storage. Describe the size, type and quantity and nature of waste (e.g., 10 fifty-five gallon drums of waste acetone).

265.171 - Do the containers appear to be in good condition, not in danger of leaking? ___ ___ ___

If not, please describe the type, condition and number of leaking or corroded containers. Be detailed and specific.

265.172 - Are hazardous waste stored in containers made of compatible materials? ___ ___ ___

If not, please explain.

265.173(a) - Are all containers closed except those in use? ___ ___ ___

265.173(b) - Do containers appear to be properly opened, handled or stored in a manner which will minimize the risk of the container rupturing or leaking? ___ ___ ___

265.174 - Is the storage area inspected at least weekly? ___ ___ ___

265.176 - Are containers holding ignitable and reactive waste located at least 50 feet (15 meters) away from the facility's property line? ___ ___ ___

265.177 - Are incompatible wastes stored separate from each other? ___ ___ ___

| 40 CFR 265 Subpart J - Tanks | YES | NO | N/A |
|---|---|---|---|
| 265.190 1) What are the approximate number and size of tanks containing hazardous waste? | ___ | ___ | ___ |
| 2) Identify the waste treated/stored in each tank. | | | |
| **265.192 - General Operating Requirements** | | | |
| 1) Are the tanks maintained so that there is no evidence of past, present, or risk of future leaks? | ___ | ___ | ___ |
| If no, please explain. | | | |
| 2) Are there leaking tanks? | ___ | ___ | ___ |
| 3) Are all hazardous wastes or treatment reagents being placed in tanks compatible with the tank material so that there is no danger of ruptures, corrosion, leaks or other failures? | ___ | ___ | ___ |
| 4) Do uncovered tanks have at least 2 feet of freeboard or an adequate containment structure? | ___ | ___ | ___ |
| 5) If waste is continuously fed into a tank, is the tank equipped with a means to stop the inflow from the tank? e.g. bypass system to a standby tank | ___ | ___ | ___ |
| **265.194 - Inspections** | | | |
| 1) Is the tank(s) inspected each operating day for | | | |
| a) discharge control equipment | ___ | ___ | ___ |
| b) monitoring equipment | ___ | ___ | ___ |
| c) level of waste in tank | ___ | ___ | ___ |
| 2) Are the tanks and surrounding areas (e.g., dike) inspected weekly for leaks, corrosion or other failures? | ___ | ___ | ___ |
| 3) Are there underground tanks? | ___ | ___ | ___ |
| If yes, how many and can they be entered for inspection? | ___ | ___ | ___ |
| 265.198 - Are ignitable or reactive wastes stored in a manner which protects them from a source of ignition or reaction? | ___ | ___ | ___ |
| If no, please explain. | | | |
| 265.199 - Does it appear that incompatible wastes are being stored separate from each other? | ___ | ___ | ___ |

YES NO N/A

265.16 - Personnel Training

1) Have facility personnel successfully completed a program of classroom instruction or on-the-job training within 6 months of having been employed? ___ ___ ___

If yes, have facility personnel taken part in an annual review of training? ___ ___ ___

2) Is there written documentation of the following:

—job title for each position at the facility related to hazardous waste management and the name of the employee filling each job? ___ ___ ___

—type and amount of training to be given to personnel in jobs related to hazardous waste management? ___ ___ ___

—actual training or experience received by personnel? ___ ___ ___

3) Are training records kept on all employees for at least 3 years? ___ ___ ___

40 CFR 265 - Subpart C - Preparedness and Prevention

265.32 Does the facility comply with preparedness and prevention requirements including maintaining:

— an internal communications or alarm system? ___ ___ ___

— a telephone or other device to summon emergency assistance from local authorities? ___ ___ ___

— portable fire equipment? ___ ___ ___

— water at adequate volume and pressure to supply water hose streams, foam producing equipment, etc. ___ ___ ___

265.33 Is equipment tested and maintained? ___ ___ ___

265.34 Is there immediate access to communications or alarm systems during handling of hazardous waste? ___ ___ ___

265.35 Adequate aisle space? ___ ___ ___

If no, please explain storage pattern.

In your opinion, do the types of waste on-site require all of the above procedures, or are some not needed: Explain. ___ ___ ___

40 CFR 265 - Subpart D - Contingency Plan and Emergency Procedures

Does the facility have a written contingency plan for emergency procedures designed to deal with fires, explosions or any unplanned release of hazardous waste? ___ ___ ___

1) Does the plan describe arrangements made with the local authorities? ___ ___ ___

2) Has the contingency plan been submitted to the local authorities? ___ ___ ___

3) Does the plan list names, addresses and phone numbers of Emergency Coordinators? ___ ___ ___

4) Does the plan have a list of what emergency equipment is available? ___ ___ ___

5) Is there a provision for evacuating facility personnel? ___ ___ ___

6) Was there an emergency coordinator present or on call at the time of the inspection? ___ ___ ___

REFERENCE NO. 15

HAZARDOUS MATERIAL COMPLAINT

| POLLUTION<br>)L<br>.INT<br>IGATION FORM<br><br>County<br>ment of | ORIGIN<br>☐ Citizen Complaint<br>☐ Department Referral<br>Unit ____<br>☐ Other ____ | Date opened<br>11-15-84<br>If reopened, date of last inspection<br><br>No. of mos. | Reinspection date(s)<br>1<br>2<br>3<br>4<br>5 | Date closed<br>☐ Placed under surv<br>Approved by<br><br>File |
|---|---|---|---|---|

| COMPLAINANT D.P.W. Director | | Name | ☐ Owner | ☐ Agent |
|---|---|---|---|---|
| ...T MANGAN | | | | |
| ...y of Glen Cove | Floor | Address | | |
| 16 Bridge ST | Tel 676 2000 | City or Town | | Tel |
| ...n of ...nt | | | | |

Block: Lot:

(516) 676-2000
EXT. 203

ROBERT J. MANGAN, P.E.
DIRECTOR OF PUBLIC WORKS

CITY HALL
GLEN COVE, N.Y.
11542

...MINATED WITH ACID (FLUOROBURIC ?)

...TION REPORT

| Violation | | V. N. Issued | Date Corrected |
|---|---|---|---|
| ☐ Yes | ☐ No | | |

...ENTS AND ACTION TAKEN — Inspected by

...stic Drums from Photocircuits
...s) ARE SUPPOSED to BE
CLEAN & EMPTY – CITY WORKERS cut off
tops & USE FOR REFUSE containers –
ONE SUCH DRUM was cut & worker Rec'd
BURNS FROM LIQUID (label indicated Fluoroboric ACID)
...MANGAN REQUESTS OUR ASSISTANCE
IN DETERMINING EXTENT OF PROBLEM –
IF ASKED, WE SHOULD SUGGEST PROPER
CLEANING & TESTING OF DRUMS PRIOR
to ACCEPTANCE BY CITY –

MARVIN B FLEISHER

MBF

REFERENCE NO. 16

DATE: 1/7/85

BILL TO: WRC PROCESSING CO.
Westgate Park.
1600 Anderson Rd.
McLean, Virginia, 22102

SHIP TO: WRC PROCESSING CO.

Prepaid ____ Collect ____ Ship Via Clements Bros ____ Weight ____

Purchase Order Number: Ltr., From Mike ~~Capner~~ Cappner

| QTY | UNITS | DESCRIPTION | UNIT PRICE | TOTAL |
|---|---|---|---|---|
| 20 | Jumbo Sacks | Waste Water Treatment Sludge from electro-plating operations ORM-E, NA 9189, Waste Type F006 | | |
| | | Weight 35400 Tons. 17.7 | $5.00 Per T | 88.50. |
| | | | | |
| | | | | |
| | | | | |

Special Instructions: Ret. to L Curcio Dept. 1793 when making payment refer to L853

Expected Date of Shipment: 1/15/85

Credit To: 1261

Requested By: Lawrence J Curcio

FOR ACCOUNTING USE ONLY
Invoice No. ____
Date ____

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. N Y D 0 9 6 9 2 0 4 8 3 | Manifest Document No.
2. Page 1 of 1
Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
Photocircuits
31 Sea Cliff Ave., Glen Cove, NY 11542
4. Generator's Phone (516) 674-1000

A. State Manifest Document Number PAB 0087573
B. State Gen. ID N/A

5. Transporter 1 Company Name: Clements Waste Services, Inc.
6. US EPA ID Number: P A D 0 0 0 4 1 4 6 1 5
C. State Trans. ID PA-AH 0078
D. Transporter's Phone (215) 376-7471

7. Transporter 2 Company Name: N/A
8. US EPA ID Number: N/A
E. State Trans. ID PA-AH N/A
F. Transporter's Phone N/A

9. Designated Facility Name and Site Address
MRC Processing Co.
Walnut Lane - RD# 1
Pottsville, PA 17901
10. US EPA ID Number: P A R 0 0 0 0 5 4 0 0 0 4
G. State Facility's ID: Not Required
H. Facility's Phone 717 622-4747

| 11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number) | 12. Containers No. | Type | 13. Total Quantity | 14. Unit Wt/Vol | I. Waste No. |
|---|---|---|---|---|---|
| a. Hazardous Waste Solid, n.o.s./ORM-E/NA9189 (waste water treatment sludge from electroplating) | 0 2 0 | B A | 3 5 4 0 0 | P | F 0 0 6 |
| b. | | | | | |
| c. | | | | | |
| d. | | | | | |

J. Additional Descriptions for Materials Listed Above (Include physical state and hazard code)
a. SOLID/T
b.
c.
d.

K. Handling Codes for Wastes Listed Above
a. T-23
b. T-59
c.
d.

15. Special Handling Instructions and Additional Information
NY DEC Hazardous Waste Trans. Permit PA 089 "For Reclamation"

17.7T

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national governmental regulations, and all applicable State laws/regulations.

| Printed/Typed Name | Signature | Date Month | Day | Year |
|---|---|---|---|---|
| Larry J. Curcio | Larry J Curcio | 01 | 15 | 85 |

17. Transporter 1 Acknowledgement of Receipt of Materials

| Printed/Typed Name | Signature | Date Month | Day | Year |
|---|---|---|---|---|
| WAYNE C MOHR | Wayne C Mohr | 01 | 15 | 85 |

18. Transporter 2 Acknowledgement of Receipt of Materials

| Printed/Typed Name | Signature | Date Month | Day | Year |
|---|---|---|---|---|
| | | | | |

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

| Printed/Typed Name | Signature | Date Month | Day | Year |
|---|---|---|---|---|
| SAMUEL J CACCAMISE | Samuel J Caccamise | 01 | 15 | 85 |

EPA Form 8700-22 (3-84) COPY 3 - Generator - Mailed by TSD Facility

REFERENCE NO. 17

[illegible]

[illegible] Higgins
[illegible]
[illegible] Cliff Avenue
[illegible] Cove, N.Y. [illegible]

Dear Mr. Higgins:

This is in reference to [illegible] Glen Cove Wastewater Treatment [illegible] violation of SPDES Permit.

The dates and times and concent[illegible] as follows:

January 17, 1986 - [illegible] Copper
January 20, 1986 - 9:00 P.M. [illegible] hours [illegible] Copper
January 21, 1986 - 2:30 P.M. 3 hours [illegible] Copper
January 22, 1986 - [illegible]:00 P.M. 2 hours [illegible] Mg/l Copper
January 2[illegible], 1986 - 5:30 P.M. 3 hours [illegible] Mg/l Copper
January 30, 1986 - 6:10 P.M. 3 hours 7.3 Mg/l Copper
February 18, 1986 - 8:00 P.M. 6 hours 9 Mg/l Copper
February 26, 1986 - 9:30 A.M. 5 hours [illegible] Copper

Please be advised that the limit for Copper is 2.0 Mg/l.

In accordance with the Sewer Use Ordinance of the City of Glen Cove, within five (5) days following an accidental discharge, Photocircuits is required to submit to the City a detailed written report describing the cause of the discharge and the measures to be taken in order to prevent similar future occurances.

Sincerely yours,

ROBERT J. MANGAN, P.E.
[illegible]

RJM:amm

cc: Alex [illegible], DHC
Joseph Floralliso, N.J. Cosulich
John Molloy, HZM

REFERENCE NO. 18

[illegible]

[illegible] the following days, the Glen Cove [illegible] Treatment [illegible] SPDES [illegible] 0026620.

Ultimate [illegible] Limit 52 Mg/l - [illegible]/Day 3470.

January [illegible], 1986 - 7[illegible] Mg/l
January [illegible], 1986 - 7[illegible] Mg/l
February [illegible], 1986 - 68 Mg/l
February [illegible], 1986 - 10[illegible] Mg/l - 3652 [illegible]
February 1[illegible], 1986 - 6[illegible] Mg/l

[illegible] Photocircuit one of our local industries went out [illegible] six times in the span of two weeks starting in mid January.

Dates and Times and Concentrations are as follows:

January 17, 1986 - 4:30 P.M. - 3 hours - 4 Mg/l Copper
January 20, 1986 - 9:00 P.M. - 2 hours - 4 Mg/l Copper
January 21, 1986 - 2:30 P.M. - 3 hours - 3.3 Mg/l Copper
January 22, 1986 - 4:00 P.M. - 2 hours - 3.1 Mg/l Copper
January 28, 1986 - 5:30 P.M. - 3 hours - 6.5 Mg/l Copper
January 30, 1986 - 6:10 P.M. - 3 hours - 2.3 Mg/l Copper

In February, Photocircuits was out of spec on the following dates:

February 18, 1986 - 8:00 P.M. - 6 hours - 9 Mg/l Copper
February 26, 1986 - 9:30 A.M. - 5 hours - 9 Mg/l Copper

RECEIVED
Public Works Office
Time 9:46
Date 3/18/86

REFERENCE NO. 19

ENVIRONMENTAL HEALTH
Continuation Sheet
Nassau County Health Department

RECEIVED

Owner or Agent: PHOTO-CIRCUITS CORP
Address: 31 SEA CLIFF AVE GLEN COVE

Inspector

SENT TO

| DATE | COMMENTS |
|---|---|
| 6/30/86 | IN RESPONSE TO A COMPLAINT FROM THE WATER POLLUTION SECTION REGARDING AN ALLEDGED ILLEGAL DISCHARGE, A JOINT INSPECTION OF THE PROPERTY WAS CONDUCTED BY MR WELCH + MYSELF. IT WAS NOTED THAT A 4 INCH PIPE WAS DISCHARGING INTO THE STREAM ON THE WEST SIDE OF THE BUILDING. THE DISCHARGE WAS CRYSTAL CLEAR + APPEARED TO BE SOME TYPE OF COOLING WATER. MR GENE KNECHT OF PHOTO-CIRCUITS STATED THAT IT WAS COOL. WATER FROM THE AIR CONDITIONING CIRCUIT BUT COULD NOT OFFER ANY FURTHER INFORMATION REGARDING THE SYSTEM. HE WAS INFORMED THAT IT IS ILLEGAL TO DISCHARGE INTO THE STREAM. HE ALSO INFORMED US THAT HE WOULD HAVE MR GEORGE BUTLER A FORMER ENGINEER WITH PHOTO-CIRCUITS WHO IS NOW ENGAGED AS A CONSULTING ENGINEER. A.F+HW |
| 7/1/86 | MR BUTLER CALLED + INFORMED ME THAT THE DISCHARGE IS NON-CONTACT COOLING WATER FROM THE AIR CONDITIONING SYSTEM. HE IS AWARE THAT THE DISCHARGE IS ILLEGAL + STATED THAT HE IS IN THE PROCESS OF CONTACTING [illegible] + OTHER PEOPLE [illegible] SITUATION. HE WILL KEEP ME INFORMED OF [illegible] BEING MADE TOWARD THE [illegible] |

REFERENCE NO. 20

AF — File

ENVIRONMENTAL HEALTH
Continuation Sheet
Nassau County Health Department

| Owner or Agent : | Photo Circuits | Inspector |
|---|---|---|
| Address: | Glen Cove | |

| DATE | COMMENTS |
|---|---|

7/14/86 Regarding discharge of Air Cond. cooling water to stream, called DEC to check on permit situation. Spoke to Doug Picha who is aware of problem now, probably because we notified Photocircuits they must cease discharge. The well driller, Naumann, called DEC and discussed problem; their reinjection wells (diffusion wells) are backing up because of high groundwater table. DEC's position is they will not agree to discharge to the stream.

There will be a meeting this week with well driller & Photocircuits to discuss alternatives. Meanwhile we will not have to take any action since DEC is working on it. There are permits for the well and these are being violated and DEC will work out solution with Photocircuits. If we get any complaints refer them to Doug Picha at DEC.

JP.

DH 109a 1/68
DH-1103, 9/71

REFERENCE NO. 21

02-8703-68

**NUS CORPORATION** — TELECON NOTE

| CONTROL NO: | DATE: | TIME: |
|---|---|---|
| 02-8703-68 | 3/12/87 | 1009 |

**DISTRIBUTION:**
Photocircuits Div. - Dave Grupp

| BETWEEN: | OF: | PHONE: |
|---|---|---|
| Receptionist | Kollmorgen Corp. | (203) 327-7222 |

**AND:** Joann Wagner (NUS)

**DISCUSSION:**

The Photocircuits Division is no longer associated with Kollmorgen Corporation; they bought out last summer. The person to contact is John Endee at (516) 674-1000. I called there but Mr. Endee was not in - I left a message for him to call me re SI to be conducted at Photocircuits Div. in Glen Cove, Nassau Co.

1134 Doris Sandic, John Endee's secretary, phoned me to say that a more appropriate person to speak with would be Warren Wagner, who was in a conference at the time. She left a message for him to call me.

**ACTION ITEMS:**

NUS 067 REVISED 0581

REFERENCE NO. 22

02-8703-68

**NUS CORPORATION** TELECON NOTE

| CONTROL NO: | DATE: | TIME: |
|---|---|---|
| 02-8703-68 | 3/16/87 | 0945 |

**DISTRIBUTION:**

Photocircuits Division - Dave Grupp

| BETWEEN: | OF: | PHONE: |
|---|---|---|
| Warren Wagner | Photocircuits Div. | (516) 674-1000 |

**AND:** Joann Wagner (NUS)

**DISCUSSION:**

Requested access to do SI as per message I left last week. Informed me that part of agreement of sale when they split from Kollmorgen was the collection and analysis of soil and well samples. If that is our only interest, they could provide the results of that sampling to us. Asked me to find out specifically what we'd be sampling so he can arrange to have the appropriate people accompany us during the SI.

1035 Mr. Wagner asked if we could reschedule SI for April 6, as the site representatives (including the company's president) will not be available the week of March 31. I told him I would get back to him.

**ACTION ITEMS:**

02-8703-68

**NUS CORPORATION** — *TELECON NOTE*

| CONTROL NO: | DATE: | TIME: |
|---|---|---|
| 02-8703-68 | 3/16/87 | 1525 |

**DISTRIBUTION:**

Photocircuits Division

| BETWEEN: | OF: | PHONE: |
|---|---|---|
| Warren Wagner | Photocircuits | (516) 674-1000 |

**AND:** Joann Wagner (NUS)

**DISCUSSION:**

Agreed to rescheduled SI date of April 6, 1987. I asked if we could do a recon of the site prior to SI on 3/31/87 - he said that would be OK, technical people wouldn't have to be there if we are just going to walk around - he will show us around site. I asked if he could provide the PM a copy of the property blueprint at time of recon - he said he would. I gave him Dave Grupp's name as PM and sample types to consist of soils, well water, and sw/sed samples from Cedar Swamp Creek. He asked that I send him a letter of our request to do SI. mail to:

31 Sea Cliff Avenue
Glen Cove, NY 11542

**ACTION ITEMS:**

NUS 067 REVISED 0581

REFERENCE NO. 23

PHOTOCIRCUTS DIVISION/~~R~~KOLLMORGEN CORP.
TDD# 02-8703-68
PROJECT MANAGER: D. GRUPP
LOGBOOK# 0052
MARCH 30, 1987

**Martin P. Higgins**
Controller
Tel: (516) 674-1073

**Photocircuits**
Glen Cove

~~Div. of Kollmorgen Corporation~~
31 Sea Cliff Avenue
Glen Cove, New York 11542

**Bill Blackford**
Maintenance Superintendent
Tel: (516) 674-1032

**hotocircuits**
Glen Cove

Div. of Kollmorgen Corporation
31 Sea Cliff Avenue
Glen Cove, New York 11542

**Photocircuits**
CORPORATION

3 ea Cliff Avenue
n Cove, New York 11542
WX 510-223-0609

**Warren W. Wagner**
Regulatory Compliance
Safety Administrator
Tel: (516) 674-1310

**JOHN J. MOLLOY, P.E.**
VICE PRESIDENT
(516) 752-9060

**HOLZMACHER, McLENDON and MURRELL, P.C.**
CONSULTING ENGINEERS, ENVIRONMENTAL SCIENTISTS and PLANNERS
125 BAYLIS ROAD, MELVILLE, N.Y. 11747

Photocircuits
GLEN COVE, NE
1250 Called Pho
over and

1300 NUS Person
NUS

I was the
sure I w

1305 Meeting i

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④ S

Photocircuits Div | Kollmorgen Corp 02-8703-68 3/31/87
GLEN COVE, NASSAU County NewYork

1250 Called Photocircuits spoke with Mr. Higgins, he said to come over and meet with and discuss insurance issue.

1300 NUS Personnel arrive on-site weather - Raining heavily, temp. ≈50°F.
NUS Personnel: David Gripp Project Manager / Documentation
Diane Trube Site Safety
Mike Gentils Air Monitoring.
I was the only person to sign register book, 1st checked to make sure I was not signing something I should not.

1305 Meeting with: Marty Higgins - Vice President / Controller - Photocircuits
Warren Wagner - Regulatory Compliance Safety Admin. - Photocircuits
Bill Blackford - Maintenance Superintendent - Photocircuits
Awaiting their consultant.

They wanted to know how they got put on EPA's list. I informed them about CECLIS LIST and that it was likely the result of notification requirements under CERCLA and RCRA.

They wanted to know samples we were anticipating taking. I explained areas of concern which included:

① CEDAR SWAMP CREEK which flows through property, now known as Glen Cove Brook

② Storm drain in which past illegal discharges were made in 1974, if it still exists.

③ unlined sludge lagoon area. They acknowledged this area but not in time frame noted in background information. The area is ~~not~~ now (DT) a chemical tank storage area, properly cement lined (DT) & bermed. Said lagoon was excavated drummed and disposed of off-site. ~~supposedly~~ (DT) The exact time frame is not known but it was prior to 1974. They are searching their records to try & get better information.

④ Sampling their wells and Carney st. wells.

[signature] 4/2/87

Diane Trube 4/9/87

Photocircuits Div / Kollmorgen Corp. 02-8703-68 3/31/87 

(see site access points)

1315 Two ~~areas~~ points of concern will have to be cleared up before they will allow us on-site to do sampling proposed for 4/6/87.

① They want proof of insurance before they will allow us back on-site. Although access agreement letter states what our coverage is, there is no proof of coverage. I explained our position concerning certificates of insurance, and that we are not able to furnish them. ~~with~~ I also informed him that if something cannot be worked out it will be turned over to EPA Legal Counsel, if necessary a warrant or consent order would have to be issued. Mr. Higgins said if it comes to that fine, but there is no way we will be allowed to work on-site without the certificate of insurance or other proof of our insurance.

② the other point of concern addressed the access agreement. On advice of their legal department, they feel it is too open ended, and that we could come in any time. I explained to him that under the statutes we work under EPA or its authorized agent has the right to inspect the site, with their cooperation. They understand that, they are concerned with NUS access to the site, and would like to put a time limit into the access agreement addressing the time limits they will allow NUS Corp. on site. The exact conditions were not specified at this time. He asked who was ~~the~~ (DF) authorized to sign access agreement. I told him as Project Manager I was, but I would not sign if any changes were made. Changes to access agreement would have to be cleared through the office.

1325 Photocircuits consultant arrives
John Molly - $H_2M$ Engineering consultants.

[signature] 4/2/87 Diane Fruebe 4/9/87

Photocircuits Corp. 02-8703-68 3/31/87



1325 We explained what had been discussed so far. In addition we went over HRS process. He voiced concern over groundwater samples because Carney St. (Av) wells are already contaminated. Since other industries in area use similar solvents, they don't want to end up on NPL List and be fully responsible for clean-up. Mr Malloy asked about the possibility of a miniature RI/FS type study, using their lab for analysis rather than CLP. I told him he would have to contact EPA and gave him Diana Messina's telephone number.
They inquired about taking split samples. We said there would be no problem providing they supplied their own sample bottles. Their analysis would be performed by $H_2M$ Laboratories.

1400 Mr Higgins wanted know what we could get done today. I told him I'd like to do our Level B recon. to determine sample locations and identify areas that may have to be sampled on level D. He gave us permission to do this work today. I told him I would have to call the office concerning Insurance and time limitation on access agreement.
1405 Photocircuits representatives left meeting room to discuss situation while I called the office. I spoke with Ron Naman. He said to have them send us a letter outlining exactly what they wanted. See if they wanted to be named on certificate of insurance, which we are not allowed to do. Changes in Access agreement would have to be conducted & reviewed through corporate office (ZPMO).
1410 Lost Power at photocircuits.
1415 Reconvened with Photocircuits Representatives and told Mr Higgins to send us letter outlining what was needed for access. They agreed to let us do Recon., they will accompany us around site. They also said they want the sludge lagoon area sampled and would be willing to drill

[signature] 4/2/87 Diane [signature] 4/9/87

1415 through concrete for us.
1420 Ended meeting and went to conduct Level B recon. It is still raining very hard!

Mike Gentils & Diane Trube will conduct level B recon. I will be in modify ed level B for emergency purposes.

SCBA#s
Mike 307174
Diane 192035
Dave 192084

OVA B #307134 calibrated 3/25/87
HNu H #469746 calibrated 3/20/87

OVA & HNu were used earlier in day at Mergenthaler Linotype.

1445 Diane and Mike on air, begin screening waste & chemical storage area. 1 PPM reading on drums of raw materials 3 PPM in area near generator, no readings near sludge storage sacks, which contain sulfide sludges. All hazardous wastes containers are labelled and stored on wooden pallets. Storage area is bermed and curbed with drainage to pretreatment plant. Storage areas are labelled as to what is stored in that area.
1451 Monitoring tank storage area. This is adjacent to chemical reclamation and solvent recovery building. Tanks contain both raw materials and wastes - each tank is labelled. 1.5 ppm in bermed area, 5.0 PPM readings over drums in area. On the OVA.
1455 Walk down building towards acid storage building. No readings in the area.
1500 Mike and Diane off air. Walked stream. High flow rate from heavy rain & heavy sediment load. Note 2, 3-4" diameter discharge pipes - most likely roof water. Also 2 wells and diffusion wells.
1530 Left site. Tentatively agreed to sample site on April 6, 1987 depending on Insurance & Access Questions.

[signature] 4/2/87 Diane Trube 4/9/87

REFERENCE NO. 24

**NUS CORPORATION AND SUBSIDIARIES** **TELECON NOTE**

| CONTROL NO: | DATE: | TIME: |
|---|---|---|
| 02-8908-02 NYR5 | September 8, 1989 | 1340 |

**DISTRIBUTION:** Photocircuits/Kollmorgen

| BETWEEN: | OF: | PHONE: |
|---|---|---|
| Mike Gentile | H2M | (516) 756-8000 x412 |

**AND:** Sue Lenczyk

**DISCUSSION:**

H2M is unable to release its report on Photocircuits to us, due to a confidentiality agreement it made with the client.

**ACTION ITEMS:**

Sue Lenczyk 9/8/89

NUS 067 REVISED 0685

REFERENCE NO. 25

TRUBE

R-584-03-88-01
Rev. No. 0

# DRAFT WORK PLAN
# EXPANDED SITE INSPECTION
# PHOTOCIRCUITS CORPORATION
# GLEN COVE, NEW YORK

PREPARED UNDER
TECHNICAL DIRECTIVE DOCUMENT NO. 02-8709-11
CONTRACT NO. 68-01-7346

FOR THE

ENVIRONMENTAL SERVICES DIVISION
U.S. ENVIRONMENTAL PROTECTION AGENCY

MARCH 29, 1988

NUS CORPORATION
SUPERFUND DIVISION

SUBMITTED BY:

SUSAN KENNEDY
SITE MANAGER

REVIEWED/APPROVED BY:

Timothy Minnich for
RONALD M. NAMAN
FIT OFFICE MANAGER

# TABLE OF CONTENTS

# TABLES

# FIGURES

# 1.0 INTRODUCTION AND OBJECTIVES

This section presents an introduction and defines project objectives for an Expanded Site Inspection (ESI) at the Photocircuits Division/Kollmorgen Corporation Site, located in Glen Cove, Long Island, New York.

The Hazard Ranking System (HRS) model is currently undergoing revision and testing and is not expected to be finalized until after this ESI is completed. The revised HRS (HRS-2) is available as a Proposed Rule (dated November 11, 1987). This ESI will attempt to fulfill the data requirements and the intent of the Proposed Rule. However, further modifications of the HRS model may necessitate that additional studies be done at a later date in order to score this site. The actual completion of an HRS-2 model is not within the scope of work of this ESI.

## 1.1 INTRODUCTION

The Photocircuits Division/Kollmorgen Company (Photocircuits) has been operating in Glen Cove, New York since the late 1950s. The company manufactures printed circuit boards for the electronics industry and their processes include metal plating, stripping, and etching. These processes not only produce hazardous waste, but require the use of hazardous substances as feedstock material.

The various types of waste produced on site pass through the company's own treatment plant before they are disposed of. Recent inspections of the facility have found storage and disposal methods at Photocircuits to be in compliance with the Resource Conservation and Recovery Act (RCRA). However, it was past disposal practices that attracted the attention of the Nassau County Health Department (NCHD). These practices included unauthorized discharges to Glen Cove Creek, which flows through the site property; the on-site storage of metal-laden sludge in an unlined lagoon; discharges to the Glen Cove Wastewater Treatment Plant that contained excessive levels of heavy metals; and the improper cleaning of empty drums, resulting in the injury of a city employee.

In 1977, three of Glen Cove's public supply wells, located on Carney Street, 1000 feet northeast and downgradient of Photocircuits, had to be closed due to organic contamination. The NCHD initiated an investigation to discover the source of contamination and concluded that Photocircuits was a possible responsible party. In 1987, NUS Corporation Region 2 FIT was tasked by the U.S. EPA Region 2 to conduct a site inspection at the facility. Information compiled while preparing for the site inspection prompted the EPA to reevaluate the task assignment, and in 1988, NUS Corporation was tasked to conduct an Expanded Site Inspection (ESI) at Photocircuits. The following were considered in determining the necessity for an expanded inspection at the facility:

- Since the closing of the three Carney Street wells, the Glen Cove Water Department is barely able to meet its peak demand capacity, and cannot retain the 25 percent reserve capacity required. In addition, their Kelly Street well, located 2000 feet northeast and downgradient of Carney Street, is currently in danger of being closed due to similar contamination. There is no alternative source of water readily available.

- The aquifers underlying Long Island have been designated as sole source aquifers under the Safe Drinking Water Act. The City of Glen Cove depends on this source to supply water to over 25,000 people. Nineteen public supply wells, serving 116,000 people, have been identified within 3 miles of the site.

- Glen Cove Creek flows northwest into the Hempstead Harbor, located approximately 2.3 stream miles from the site. The harbor has been designated as a significant coastal fish and wildlife habitat and is considered one of the 10 most important water fowl wintering areas on the north shore of Long Island.

## 1.2 OBJECTIVES

The objectives of the ESI are to

- Collect data necessary for the accurate characterization of the site for eventual development of an HRS-2 score by

    1. characterization of on-site waste sources;

    2. identification of potential migratory pathways (groundwater, surface water, air, and on-site exposure);

    3. documentation of observed releases, if any, via the four migratory pathways.

- Provide all information in an organized package to facilitate eventual transfer of data to a remedial contractor.

Existing data relevant to the ESI are presented in this report. Information on the Photocircuits Site and surrounding region was collected through literature and file searches, and communications with representatives of Photocircuits. A site reconnaissance was conducted on March 31, 1987, enabling conditions existing on site at that time to be evaluated.

# 2.0 EXISTING DATA

This section provides a summary of general site information including the site location, description, history, and land use of the site and surrounding properties. Data were gathered from various sources including Nassau County Health Department files, topographic maps, aerial photography, and the NUS Corporation Region 2 FIT site reconnaissance.

## 2.1 BACKGROUND DATA

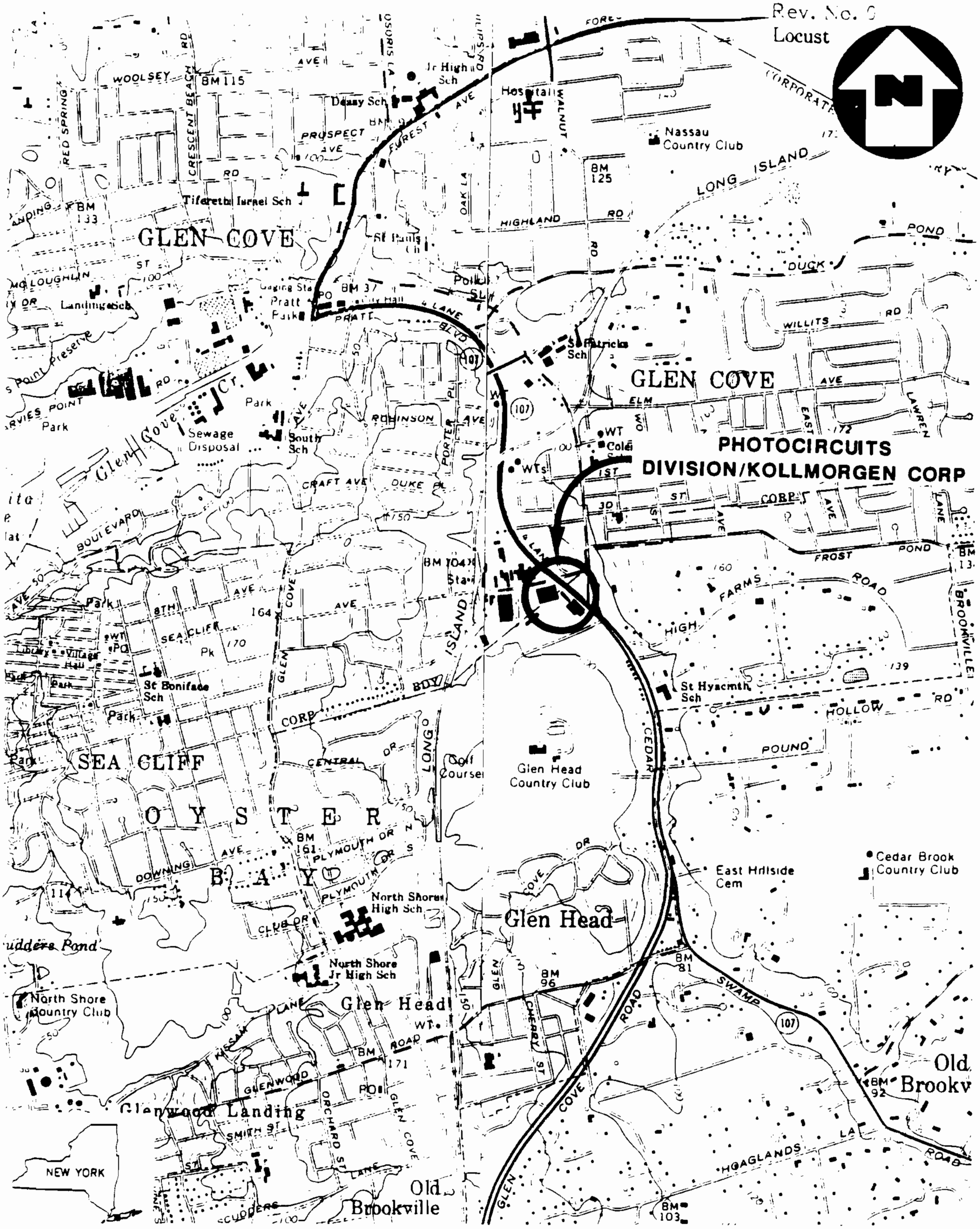
### 2.1.1 Site Location and Description

Figures 2-1 and 2-2 are a site location map and a site map, respectively, for the Photocircuits Site. The Photocircuits Division/Kollmorgen Corporation Site is located in a small industrial park in Glen Cove, Nassau County, New York. It covers approximately 10.8 acres at a latitude of 45° 51′ 06″ N and longitude of 73° 37′ 24″ W. Two sides of the property are bordered by roadways: the north by Sea Cliff Avenue, and the east side by State Route 107. Slater Electric Company occupies the property immediately west of the site, and the Glen Head Country Club covers an extensive area to the south.

There are four buildings on site, two which are production facilities and two which house the waste treatment and maintenance operations. A portion of one of the buildings is designated as storage space, and is augmented by a small storage shed located next to it. Various containers of feedstock material are kept on a bermed, concrete pad between two of the buildings. Containers of waste material are also stored here temporarily, prior to their removal for off-site disposal. There are two production wells, each with a pump house, and three diffusion wells on site.

Most of the property's surface is paved over and a majority of this is designated as parking areas. Glen Cove Creek, sometimes referred to as Cedar Swamp Creek, flows through the western half of the site property in a northerly direction. The creek separates the three larger buildings on site from the fourth, but their respective parking areas are adjoined by a car bridge and a smaller pedestrian bridge. There is a narrow grass-covered strip of land on either side of the creek with a few trees scattered along its length. The only other vegetated areas are along the north and east edges of the property, parallel to the bordering roadways.

R-584-03-88-01
Rev. No. 0




(QUAD) HICKSVILLE, N.Y.

FIGURE 2-1

**SITE LOCATION MAP**
**PHOTOCIRCUITS DIVISION/KOLLMORGEN CORP.,**
**GLEN COVE, N.Y.**

SCALE: 1"=2000'

NUS CORPORATION
A Halliburton Company

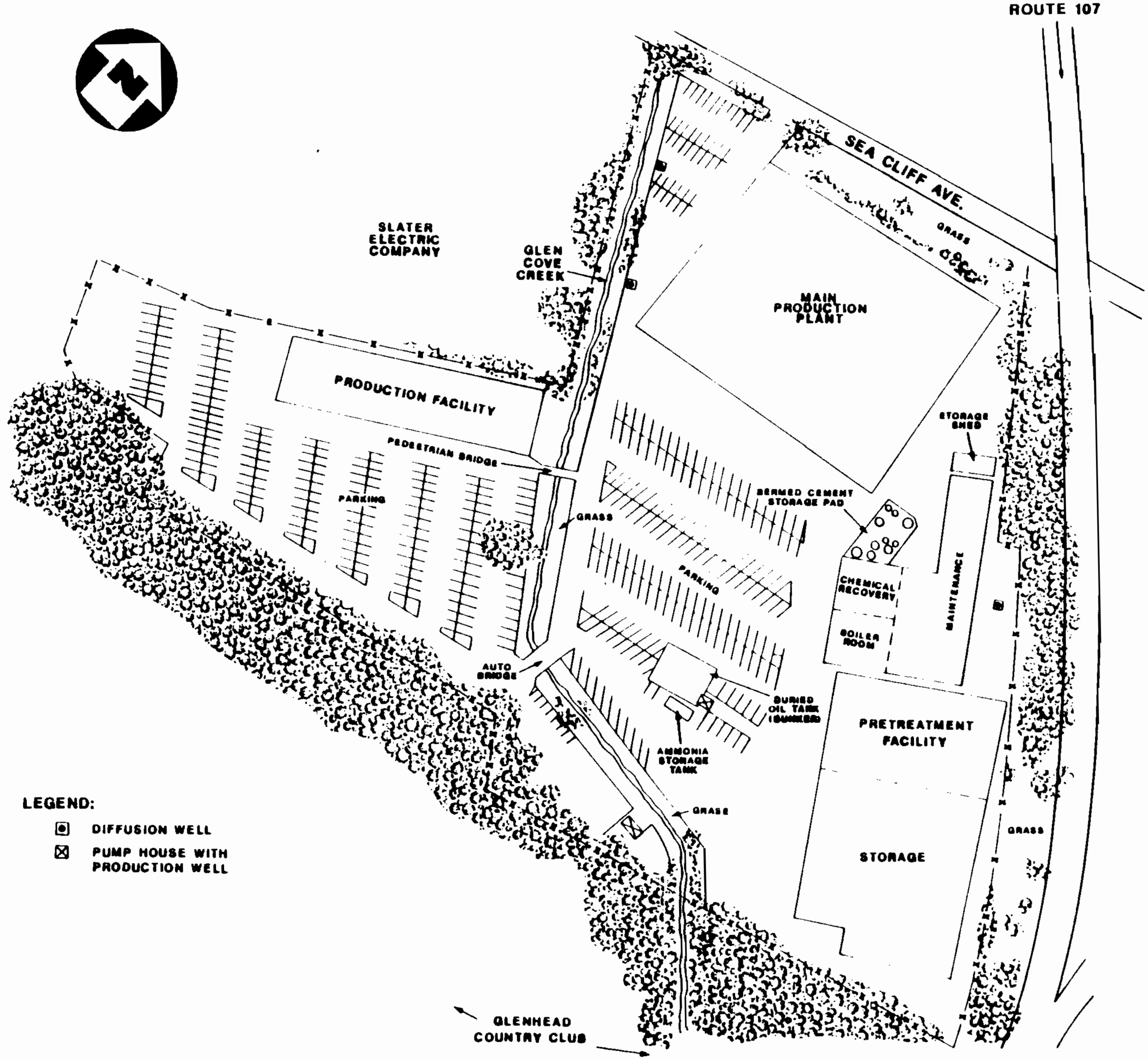



FIGURE 1-2

NUS CORPORATION

## SITE MAP

## PHOTOCIRCUITS DIVISION/KOLLMORGEN CORP., GLEN COVE, N.Y.

(NOT TO SCALE)

### 2.1.2 Site History

The Photocircuits Division/Kollmorgen Company, hereafter referred to as "Photocircuits", is an active facility that produces printed circuit boards for the electronics industry. It has been operating at this location since the late 1950s and utilizes several processes on site, including metal plating, stripping, and etching as well as solvent and metal recovery systems. Table 2-1 depicts a concise historical chronology of the Photocircuits Division/Kollmorgen Company, and is located at the end of this subsection. Photocircuits first came to the attention of the Nassau County Health Department (NCHD) on March 20, 1964, when they received a complaint of dark blue discoloration in Glen Cove Creek. An NCHD inspector contacted Photocircuits on this matter and was told by the plant engineer that a leak had occurred in their metal recovery treatment tank. The leak resulted in the accidental discharge of untreated waste to a storm drain which empties into the creek. The blue color was due to the high concentration of copper present in the waste (NCHD, 1964).

On April 22, 1964, the NCHD inspector returned to the site and observed blue liquid entering the creek from the storm drain. A representative of Photocircuits called the NCHD the following morning and stated that partially treated copper waste had been discharged from a tank into the creek. Analysis by Photocircuits revealed that the waste contained 100 ppm of copper (NCHD, 1964).

In December 1974, the Executive Committee of Photocircuits issued an internal memorandum regarding some of the disposal methods utilized by the company. It acknowledged that unauthorized discharges to Glen Cove Creek had occurred through a parking lot storm drain. The memorandum, a copy of which was sent to the NCHD, went on to explain that any such occurrences in the future would be grounds for immediate dismissal.

In 1977, three of the City of Glen Cove's ten potable supply wells were closed due to trichloroethylene (TCE) and tetrachloroethylene contamination. These three wells constitute the Carney Street well field and are located approximately 1000 feet northeast of Photocircuits. That same year, the NCHD initiated an investigation to discover the source of the contamination. Ten samples were collected from various locations in the Carney Street vicinity, including waste discharges, drains, groundwater, and surface water from Glen Cove Creek. The NCHD concluded that the contamination of the Carney Street well field was due to past waste discharges occurring as recently as five or ten years ago and that these discharges originated in the industrial park within which Photocircuits is located. It was also noted that only two industries in the area, Slater Electric Company and Photocircuits, use solvents of the general type found in the well (NCHD, 1977).

On November 15, 1984, city workers collected what were supposed to be clean, empty plastic drums from Photocircuits to be reused as refuse containers. While cutting the top off of one of the drums, a worker received burns from liquid remaining inside. The label on the drum indicated it had been used to hold fluoboric acid. As a result of this incident, the Director of Public Works requested an investigation to discover the extent of the problem and suggested that, if necessary, the drums should be tested prior to their acceptance by the city (NCHD, 1984).

From January 17, 1986 through February 26, 1986, discharge to the Glen Cove Wastewater Treatment Plant exceeded the copper standard on eight different occasions. As a result, the treatment plant violated its SPDES permit five times within that same time frame (Department of Public Works, Glen Cove, 1986). In March 1986, the Director of Public Works sent a letter to Photocircuits pointing out this situation and reminding them that a written report must be submitted to the city within five days of an accidental discharge. The Director added that since Photocircuits was notified of this requirement prior to the February discharges, the letter served as a Notice of Violation, and the company was subjected to a $1,000 fine for each violation in February.

On June 30, 1986, inspectors from the NCHD visited Photocircuits following a complaint of illegal discharge at the facility. While on site, they noted a 4-inch pipe discharging into Glen Cove Creek. After speaking with representatives of Photocircuits, it was determined that the discharge was non-contact cooling water from the air conditioning system. A consultant for the company stated that they were aware that the discharge was illegal, but their regular system of diffusion wells was inoperable at the time. The NCHD contacted the New York State Department of Environmental Conservation (NYSDEC) and discovered that Photocircuits had permits for the wells, but that these permits were also being violated. Further investigation of this problem was left up to the NYSDEC (NCHD, 1986).

In October, 1986, the U.S. Environmental Protection Agency (U.S. EPA) generated a preliminary report assessing the hazards at Photocircuits and their potential to affect the population and environment. Utilizing available background information, the report concluded that further investigation of the site was necessary. On March 16, 1987, NUS Corporation Region 2 FIT (NUS FIT 2) was tasked by the U.S. EPA Region 2 to conduct a site inspection at the facility. NUS attempted to carry out this task in April, 1987, but difficulties acquiring access to the property prevented the inspection from taking place. A site reconnaissance was conducted on March 31, 1987, enabling NUS FIT 2 to assess the conditions existing on site at that time. Information compiled while preparing for the site inspection prompted the EPA to reevaluate the task assignment, and on February 3, 1988, NUS Corporation was tasked to conduct an Expanded Site Inspection (ESI) at Photocircuits.

TABLE 2-1

# HISTORY OF THE PHOTOCIRCUITS DIVISION/KOLLMORGEN SITE AND CHRONOLOGY OF RESPONSE ACTIONS

| | |
|---|---|
| 4/01/56 | Photocircuits began operations. Date taken from RCRA Hazardous Waste Permit Application. |
| 5/01/63 | Work is started on the site for 155-foot deep well to be used for cooling purposes. |
| 5/19/63 | Work is completed on the 155-foot deep well. |
| 3/20/64 | A leak occurred in the waste treatment tank at Photocircuits, discharging untreated waste to a parking lot storm drain. The storm drain leads to Glen Cove Creek, and caused a dark blue discoloration in the creek. |
| 3/21-22/64 | The waste treatment tank undergoes repairs. |
| 3/23/64 | The waste treatment tank is back in operation. Samples were collected by the Nassau County Health Department (NCHD) from the weir, the pond, and storm drain on Sea Cliff Avenue. The results indicated the presence of heavy metals and solvents. The NCHD notified Photocircuits Corporation to contact them immediately should another discharge occur. A discussion was held regarding the stoppage of operation should the problem recur. |
| 4/22/64 | An inspection of the creek by NCHD revealed blue liquid emanating from the storm drain. A sample was collected from the weir at Photocircuits Corporation. |
| 4/23/64 | The NCHD received a call from Photocircuits Corporation stating a partially treated tank of copper waste was discharged into the creek causing the blue coloration. A copper reading taken by Photocircuits Corporation revealed copper concentrations of 100 ppm. |
| 12/15/69 | Work is started on site for the second 155-foot deep well to be used for cooling purposes. |
| 01/29/70 | Work is completed on the second 155-foot deep well. |

TABLE 2-1 (Cont'd)

## HISTORY OF THE PHOTOCIRCUITS DIVISION/KOLLMORGEN SITE AND CHRONOLOGY OF RESPONSE ACTIONS

| | |
|---|---|
| 12/09/74 | Photocircuits Corporation circulates an internal memorandum stating company policy for discharge of any material to unauthorized facilities. |
| 7/77 | The Carney Street well field in Glen Cove is closed. |
| 8/31/77 | A status report of the investigation of organic contamination at the Carney Street well field is prepared by the NCHD. The interim conclusion indicates Photocircuits as a potential responsible party. Sampling results show the presence of solvents. |
| 12/21/78 | A New York State Department of Environmental Conservation (NYSDEC), Septic Tank Cleaner and Industrial Waste Collector Certificate of Registration is issued to the Kollmorgen Corporation, Reg. No. A1-001, expiration date, 3/31/79. |
| 12/27/79 | A NYSDEC, Septic Tank Cleaner and Industrial Waste Collector Certificate of Registration is issued to the Kollmorgen Corporation Reg. No. A1-011, expiration date, 12/31/80. |
| 8/13/80 | A RCRA 3001 permit is received by Photocircuits. |
| 1/16/81 | A NYSDEC, Septic Tank Cleaner and Industrial Waste Collector Certificate of Registration is issued to Photocircuits Corporation, Reg. No. A1-001, expiration date, 12/31/81. |
| 5/15/81 | A RCRA inspection of Photocircuits Corporation is conducted by the NYSDEC, RCRA I.D. No. NYD096920483. |
| 1/07/83 | A RCRA inspection of Photocircuits corporation is conducted by the NYSDEC, RCRA I.D. No. NYD096920483. |

# TABLE 2-1 (Cont'd)

## HISTORY OF THE PHOTOCIRCUITS DIVISION/KOLLMORGEN SITE AND CHRONOLOGY OF RESPONSE ACTIONS

| | |
|---|---|
| 11/15/84 | While collecting what were supposed to be empty, clean drums from Photocircuits, a city worker is burned by liquid remaining inside one of them. This prompted the Director of Public Works in Glen Cove, to file a Hazardous Materials Complaint against Photocircuits. |
| 1/15/85 | 17.7 tons of wastewater treatment sludge from electroplating operations were shipped to WRC Processing, Pottsville, Pa, under Permit No. PA 089 "For Reclamation". |
| 12/11/85 | An inspection of Photocircuits Corporation is conducted by the NYSDEC under the New York State Industrial Hazardous Waste Management Act. |
| 1/17/86<br>1/20/86<br>1/21/86<br>1/22/86<br>1/28/86<br>1/30/86<br>2/18/86<br>2/26/86 | Photocircuits discharge to the Glen Cove wastewater treatment plant exceeds the copper standard on each of these dates, violating their SPDES permit number 0026620. |
| 1/20/86<br>1/29/86<br>2/05/86<br>2/11/86<br>2/13/86 | As a direct result of the Photocircuits' violations, the Glen Cove wastewater treatment plant violates its SPDES permit five times during the same time frame. |
| 3/24/86 | The Director of Public Works in Glen Cove, sends a letter to Photocircuits pointing out the fact that the Glen Cove wastewater treatment plant violated its SPDES permit because of Photocircuits' negligence. The letter also serves as a Notice of Violation and subjects Photocircuits to a $1,000 fine for each violation in February. |

TABLE 2-1 (Cont'd)

## HISTORY OF THE PHOTOCIRCUITS DIVISION/KOLLMORGEN SITE AND CHRONOLOGY OF RESPONSE ACTIONS

| | |
|---|---|
| 5/30/86 | A permit is issued to Photocircuits Corporation authorizing the discharge of industrial waste water to the City of Glen Cove sewer system in compliance with Chapter 46 of Municipal Code. The application filed on 4/16/86, and the permit, No. GCI, expires on 5/30/89. |
| Summer 1986 | The Kollmorgen Corporation sells its interest in Photocircuits Division. |
| 6/30/86 | An inspection of Photocircuits property is conducted by Mr. Welsh of the NCHD in response to a complaint from the Water Pollution Section regarding an alleged illegal discharge by Photocircuits. The discharge was noncontact cooling water from the air conditioning circuit. Photocircuits was notified that this was an illegal discharge. |
| 7/1/86 | The Consulting Engineer to Photocircuits, is informed of the illegal discharge. He states that he is aware the discharge was illegal and is in the process of remediating the situation. |
| 7/14/86 | The NYSDEC is made aware of the illegal air conditioning discharge caused by a problem with Photocircuits' diffusion wells. The NCHD turns the issue over to the NYSDEC. |
| 10/01/86 | A Potential Hazardous Waste Site Preliminary Assessment of Photocircuits is prepared by the U.S. Environmental Protection Agency. The site is assigned a medium priority for further assessment. |
| 3/16/87 | NUS Corporation requests access to Photocircuits to perform a Site Inspection. Photocircuits requests rescheduling the Site Inpsection for April 6, 1987 due to the absence of their key technical personnel. NUS Corporation agrees to April 6, 1987, and a site reconnaissance is scheduled for March 31, 1987. |

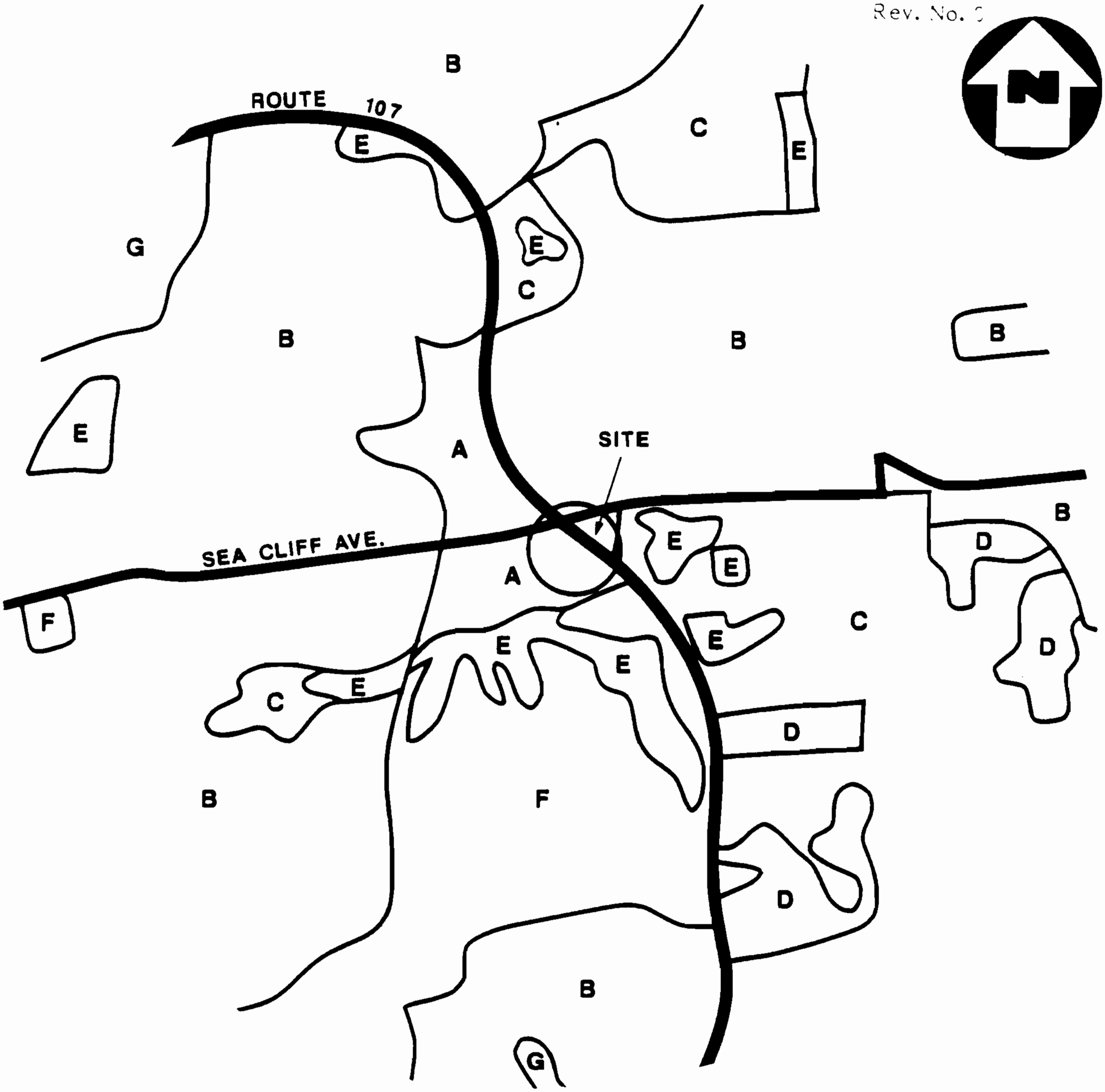
TABLE 2-1 (Cont'd)

## HISTORY OF THE PHOTOCIRCUITS DIVISION/KOLLMORGEN SITE AND CHRONOLOGY OF RESPONSE ACTIONS

| | |
|---|---|
| 3/31/87 | NUS Corporation conducts an on-site reconnaissance of Photocircuits' property. |
| 11/17/87 | NUS Corporation and Photocircuits do not reach an acceptable access agreement and the site inspection is not conducted. The Photocircuits Site is proposed as an Expanded Site Inspection (ESI). Sampling at the site will not be conducted until the ESI/SI status has been determined. |
| 2/3/88 | NUS Corporation is tasked by U.S. EPA Region 2 to conduct an ESI at the Photocircuits facility. |

### 2.1.3 Land Use

Figure 2-3 depicts land use patterns within 1 mile of the Photocircuits Site. The facility is located in a small industrial park, approximately 1.5 miles due east of Hempstead Harbor, near the center of the City of Glen Cove. The majority of the land surrounding the industrial park is densely populated, urban property, with the exception of that directly south and southeast. This area is occupied by the Glen Head Country Club and additional residential properties, although these are relatively rural, wooded, and sparsely populated. Similar rural residential communities are found east of the city and along Long Island's north shore. The only other industrial property in the vicinity is located just over 1 mile west of the site, where Glen Cove Creek enters the harbor. There are several parks, country clubs, and small unpopulated woodlands for the recreational needs of the approximately 14,190 residents living within 1 mile of Photocircuits. In addition, within a 2-, 3-, and 4-mile radius of the site there are 34,761 residents, 48,764 residents, and 71,848 residents, respectively. These populations greatly increase during the summer months.




**LAND USE CLASSIFICATIONS:**

A - INDUSTRIAL
B - URBAN-DENSE POPULATION
C - URBAN-SPARSE POPULATION
D - WOODED-SPARSE POPULATION
E - WOODED-UNPOPULATED
F - PARK LAND
G - WATER

FIGURE 2-3

NUS CORPORATION

**LAND USE PATTERNS**
**PHOTOCIRCUITS DIVISION/KOLLMORGEN CORP.,**
**GLEN COVE, N.Y.**

(NOT TO SCALE)

## 2.2 ENVIRONMENTAL DATA

### 2.2.1 Climate

The climate of Long Island is humid continental. It is dominated by air masses and weather systems originating primarily from the North American land mass, but can also be significantly affected by the Atlantic Ocean. The prevailing wind direction is generally west to east. Southwesterly winds become prevalent during the warmer months, while a northwest component is evident during the colder half of the year.

Table 2-2 presents average monthly temperature and precipitation data for Mineola, New York. Data from this weather station, located approximately 9 miles southwest of Glen Cove, are representative of the Photocircuits Site. The data presented in Table 2-2 are based on records of the 30-year period 1951- 1980, inclusive. Mean monthly temperature ranges from 82.8°F in July to 37.3°F in January. Record high temperatures of greater than 100°F have occurred in Mineola in June, July, and August, while record lows of 2°F or lower have occurred in January and February during this period.

The average annual total precipitation in Mineola is 43.65 inches, with March (4.44 inches) the wettest month, and June (2.93 inches) the driest. Precipitation is generally evenly distributed throughout the year. Most of the precipitation is derived from regional storms during the winter, whereas in the summer the majority of the precipitation is associated with local thunderstorms.

TABLE 2-2

AVERAGE MONTHLY TEMPERATURE AND PRECIPITATION

Mineola, New York
(1951 - 1980)

| Month | Temperature | | | Precipitation |
|---|---|---|---|---|
| | Average daily maximum | Average daily minimum | Average daily | Average |
| | °F | °F | °F | In. |
| January | 37.3 | 25.5 | 31.4 | 3.31 |
| February | 38.7 | 26.1 | 32.4 | 3.37 |
| March | 46.4 | 33.1 | 39.8 | 4.44 |
| April | 58.0 | 41.8 | 49.9 | 4.01 |
| May | 68.3 | 51.2 | 59.8 | 3.46 |
| June | 77.5 | 60.5 | 69.0 | 2.93 |
| July | 82.8 | 66.4 | 74.6 | 3.17 |
| August | 81.5 | 65.5 | 73.5 | 4.06 |
| September | 74.2 | 58.7 | 66.5 | 3.63 |
| October | 63.7 | 48.5 | 56.1 | 3.38 |
| November | 52.3 | 39.8 | 46.1 | 3.97 |
| December | 41.4 | 29.8 | 35.6 | 3.92 |
| Yearly: | | | | |
| Average | 60.2 | 45.6 | 52.9 | --- |
| Total | --- | --- | --- | 43.65 |

Source: Soil Survey of Nassau County, New York, February 1987.

### 2.2.2 Topography and Drainage

The Photocircuits Site is approximately 80 feet above mean sea level (MSL), with a site slope of less than 1 percent in a northwesterly direction. The surrounding topography is relatively flat to gently sloping to the northwest. The nearest significant increase in elevation occurs approximately 3800 feet northeast of the site at 170 feet above MSL. Glen Cove Creek flows northward through the site and empties into Hempstead Harbor, located approximately 2.3 stream miles away. Hempstead Harbor is classified as a significant coastal zone under the New York State Coastal Zone Management Program.

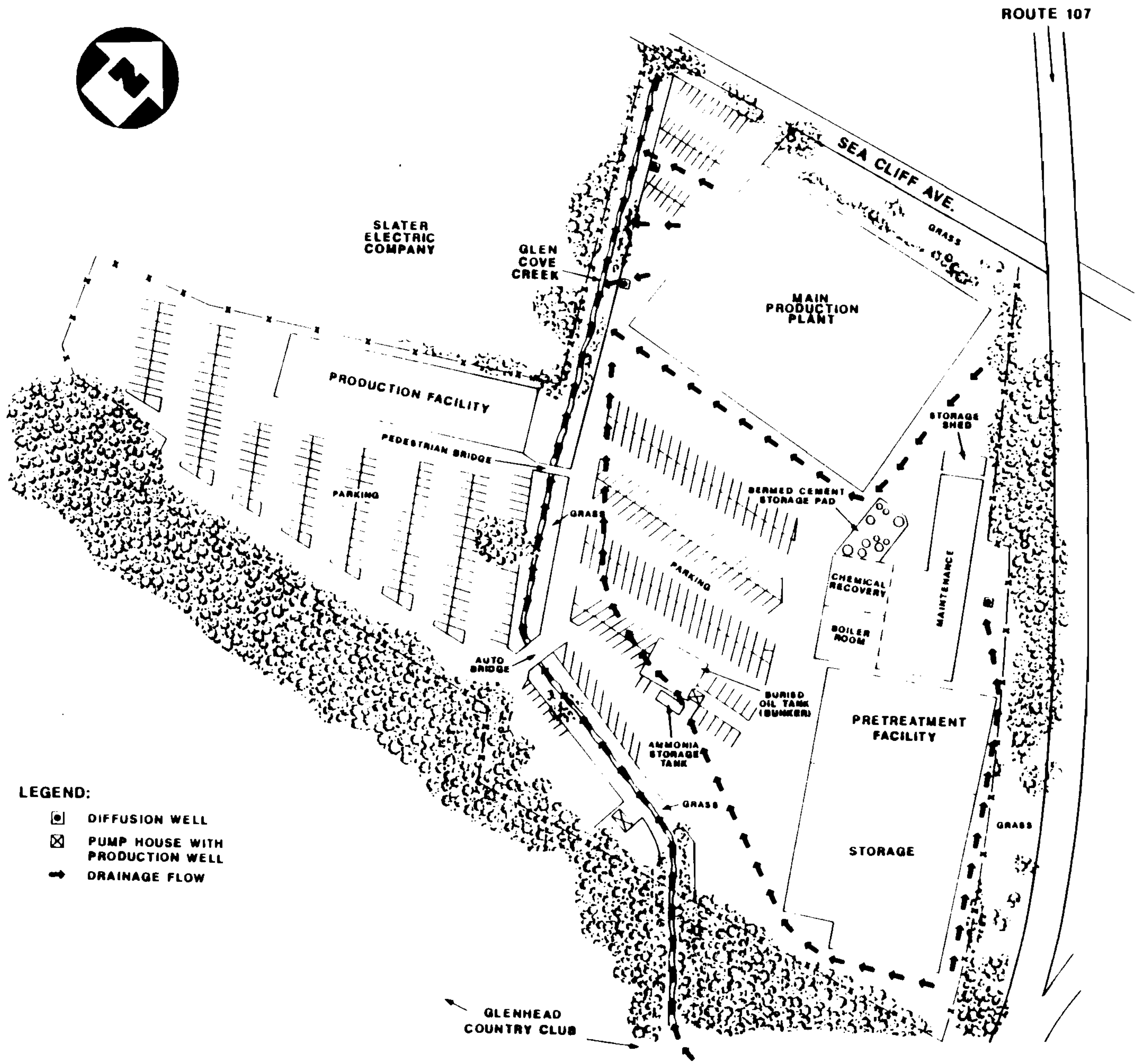
Surface drainage (Figure 2-4) on site generally flows northwest across the paved portions of the site. However, in the northeast portion of the site, surface drainage flows south for a short distance before turning back to the west toward the creek. Subsurface storm drains under the parking lot channel runoff to Glen Cove Creek.

### 2.2.3 Soils

Figure 2-5 presents a soils map derived from the U.S. Department of Agriculture soil survey maps for Nassau County, New York (USDA, 1987). The majority of the site property is covered by Urban Land, although there are three other soil types in the vicinity. The southwest corner of the site is partially comprised of Riverhead sandy loam, while a small portion of the southeast corner is made up of the Urban Land Riverhead Complex. The area near Glen Cove Creek consists of rarely flooded soils known as Udifluvents.

The term Urban Land describes areas where at least 85 percent of the surface is covered with asphalt, concrete, or other impervious building material. Most such surfaces are nearly level or gently sloping, and are located adjacent to main thoroughfares. The remaining 15 percent of the Urban Land consists of small grassy areas, such as lawns, that are for the most part well drained. However, in the event of severe rainstorms, rapid runoff cannot be adequately discharged to safe outlets, and urban flooding occurs.

The Riverhead Sandy Loam is very deep, gently sloping, and well drained soil. In general, Riverhead soils consist of sandy loam that ranges from yellow to brown in color, and extends to a depth of approximately 60 inches. From 0 to 35 inches permeability is moderately high, and increases to



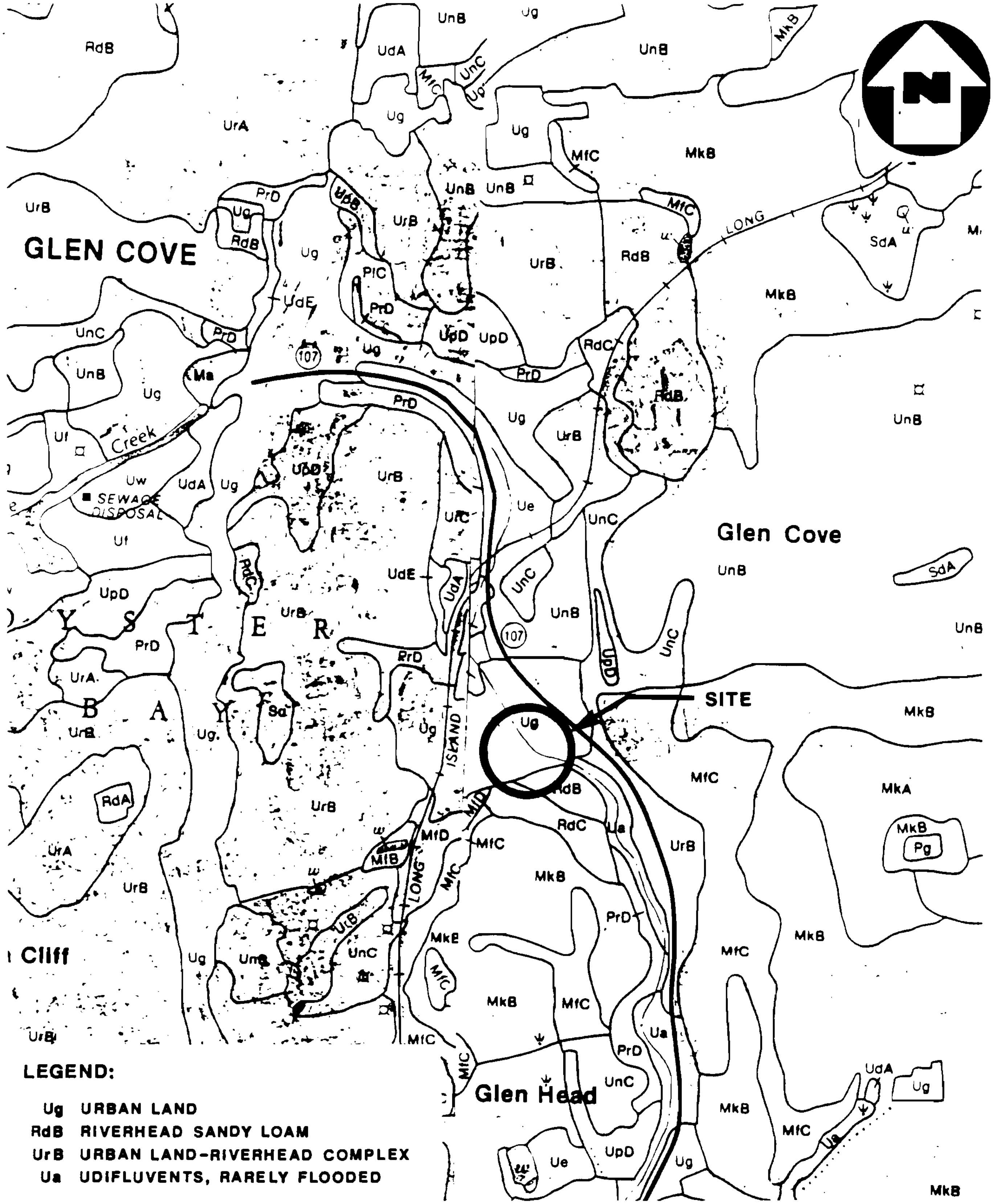

**SURFACE DRAINAGE PATTERNS**

**PHOTOCIRCUITS DIVISION/KOLLMORGEN CORP., GLEN COVE, N.Y.**

(NOT TO SCALE)

**FIGURE 2-4**

NUS CORPORATION




**LEGEND:**

Ug URBAN LAND
RdB RIVERHEAD SANDY LOAM
UrB URBAN LAND-RIVERHEAD COMPLEX
Ua UDIFLUVENTS, RARELY FLOODED

SOURCE: SOIL SURVEY OF NASSAU COUNTY, N.Y.
U.S.D.A., FEB., 1987

FIGURE 2-5

SOILS MAP

PHOTOCIRCUITS, GLEN COVE, N.Y.

NUS CORPORATION

SCALE: 1" = 1500'

very high throughout the lower 25 inches. Slope ranges from 3 to 8 percent, and both surface runoff and erosion hazard are slight. This soil type ranges from strongly acidic to very strongly acidic throughout.

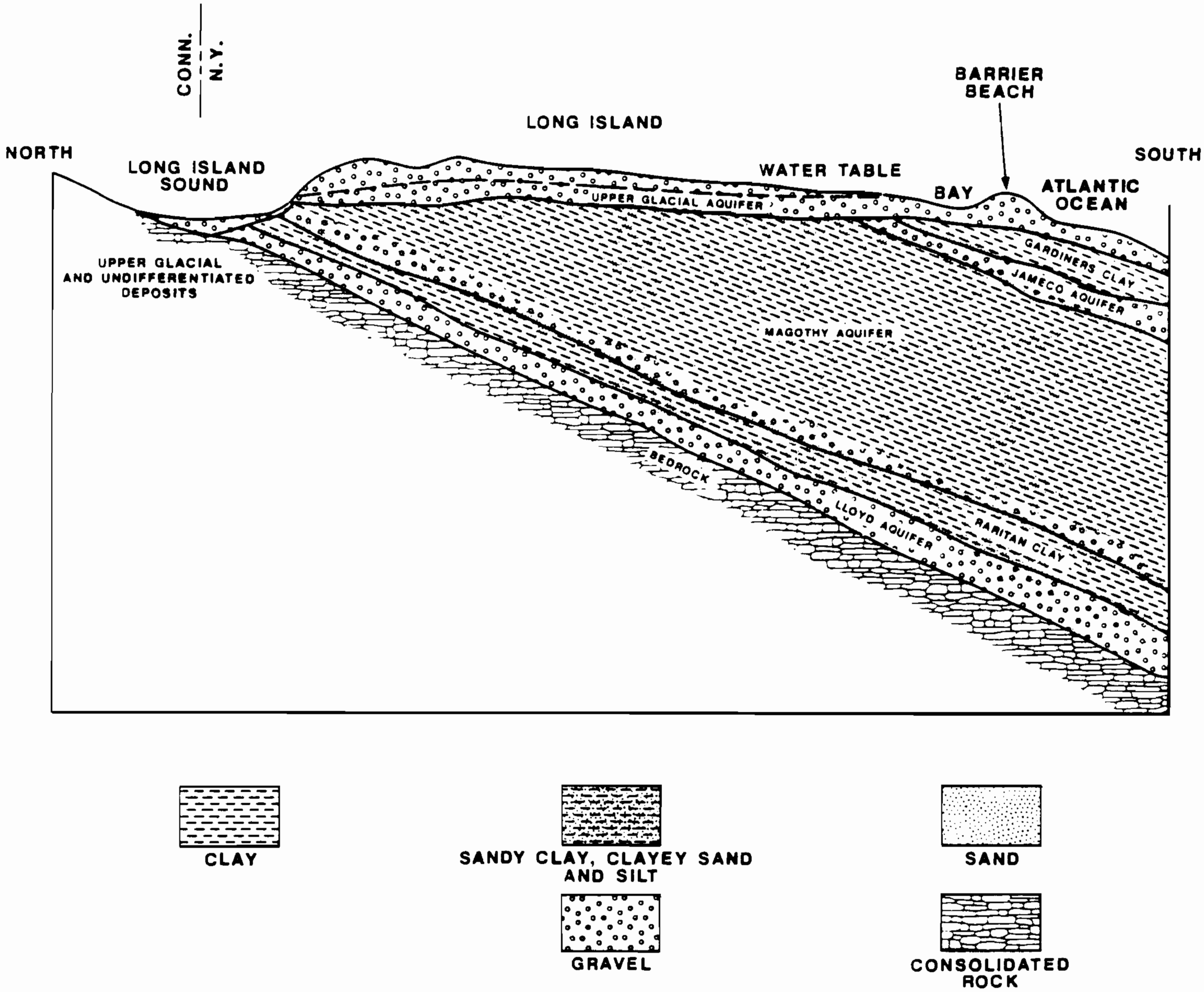
The Udifluvents consist of very deep, well drained soils and are located on flood plains situated along larger drainage channels. Most of these channels drain toward the north shore of Long Island, and subsequently, into Long Island Sound. Udifluvents are generally near or adjacent to Enfield, Montauk or Riverhead soils, all of which are at higher elevations. Slope ranges from 0 to 3 percent.

Generally, Udifluvents consist of a layer of dark brown silty loam that extends from 0 to 14 inches, yellowish-brown sandy loam from 14 to 26 inches and pale brown sand and gravel from 26 inches to a depth of 5 feet or more. Permeability is moderately high from 0 to 26 inches, below which it increases to very high. Runoff is very slow and soil reactivity is strongly acidic to very strongly acidic throughout.

### 2.2.4 Hydrogeology

On June 12, 1978, the aquifers underlying Long Island were designated as sole source aquifers under the 1974 Safe Drinking Water Act. The Photocircuits Site is located in northern Nassau County, just north of the Harbor Hill and Ronkonkoma Moraines. The area is considered a segment of the Atlantic Coastal Plain physiographic province. Figure 2-6 presents a general cross section of the geologic units on Long Island. The coastal plain consists of unconsolidated deposits of sand, gravel, and clay that dip to the south and thicken toward the Atlantic Ocean. The two terminal moraines south of the site are composed of boulders, gravel, sand, and clay, and were deposited during the Pleistocene Epoch. The Harbor Hill and Ronkonkoma Terminal Moraines are natural groundwater divides along Long Island. North of these moraines, in the area of the site, groundwater flows north toward Long Island Sound.

Three water bearing units or aquifers have been identified in the vicintiy of the site. They are the Upper Pleistocene deposits (otherwise known as the Upper Glacial Aquifer), the Magothy Aquifer, and the Lloyd Aquifer. The Upper Glacial Aquifer has a maximum thickness of 600 feet and is composed of poorly permeable till containing boulders, gravel, sand, and clay. In the area of the site, the top of the Upper Glacial Aquifer is approximately 150 feet below MSL and is overlain by soil and surficial deposits. The Magothy Formation, the primary source of drinking water in the area,




**CROSS-SECTION OF THE GEOLOGIC FEATURES OF LONG ISLAND PHOTOCIRCUITS, GLEN COVE, N.Y.**

(NOT TO SCALE)

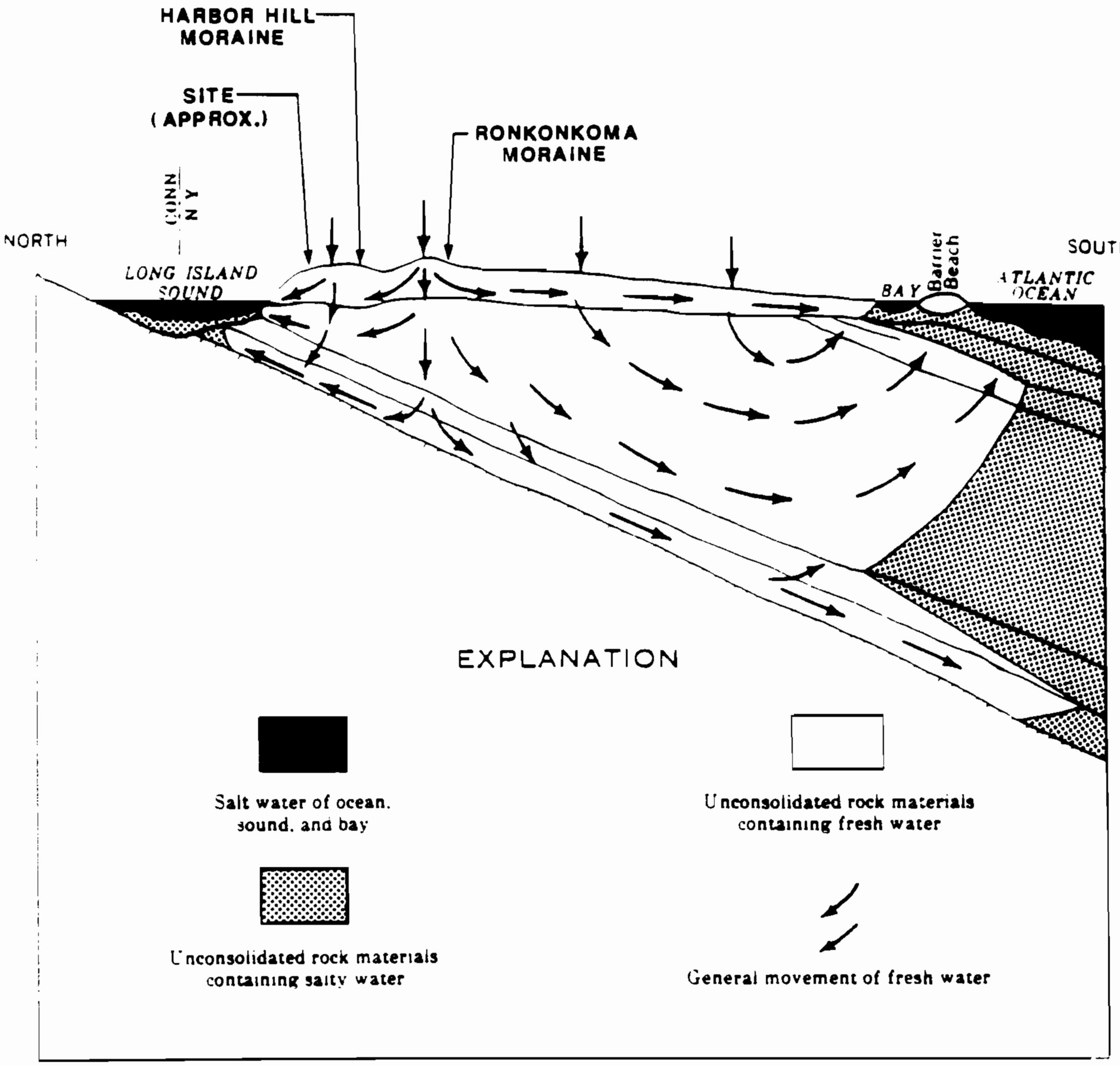
FIGURE 2-6

NUS CORPORATION

reaches a maximum thickness of approximately 1100 feet. It is composed of fine to medium grain sand interbedded with lenses and layers of coarse sand, sandy clay, and solid clay. Gravel is common in the basal portion of the unit. The top of the Magothy Aquifer is at a depth of approximately 300 feet below MSL near the site, but within a 4-mile radius, there are areas where it may be only 100 feet below MSL. The Magothy is underlain by the Raritan Formation, which is subdivided into two members: The Raritan Clay and the Lloyd Sand, also known as the Lloyd Aquifer. The Raritan Clay has a maximum thickness of 300 feet, and is comprised primarily of clay and silty clay. It has few lenses and layers of sand, little gravel, and the permeability ranges from poor to very poor. The Raritan Clay overlies the Lloyd Aquifer, which has a maximum thickness of 500 feet, and is comprised of fine to coarse grain sand and gravel. This aquifer commonly has a clayey matrix and contains some layers and lenses of solid and silty clay. Permeability of the Lloyd ranges from poor to moderate, and the water is confined under artesian pressure by the overlying Raritan Clay. In the area of the site, the top of the Lloyd Aquifer is at an approximate depth of 350 feet below MSL.

Most municipal supply wells within a 4-mile radius of the site are installed into the Magothy Aquifer at depths ranging from 100 to 300 feet. At these depths, greater amounts of coarse gravels are present and higher yields are achieved. Many private wells are screened in the Upper Glacial Aquifer. Water level measurements and pump test data for the region indicate there is a hydraulic connection between the Magothy and Upper Glacial Aquifers. Hydraulically, the Raritan Clay is a leaky confining layer for the Lloyd Aquifer, retarding, but not preventing, vertical leakage of water to and from the Lloyd Aquifer. There are few wells in the Lloyd Aquifer at present, due not only to its greater depth, but to the fact that legal restrictions have been imposed on its use.

Figure 2-7 illustrates the flow of groundwater in the aquifers on Long Island. The Ronkonkoma Terminal Moraine acts as a divide for regional flow direction. Depth to groundwater at the site is approximately 8 to 10 feet below the ground surface, and north of the divide, flow is generally northward toward Long Island Sound. Regional groundwater flow direction and velocity in both the Upper Glacial and Magothy Aquifers may be greatly affected by heavy pumping from the numerous supply wells in the area. Groundwater is recharged in the area by precipitation, the use of recharge basins, and diffusion wells.




SOURCE: THE CHANGING PATTERN OF GROUND-WATER DEVELOPMENT ON LONG ISLAND, N.Y., 1966 USGS CIRCULAR 524.

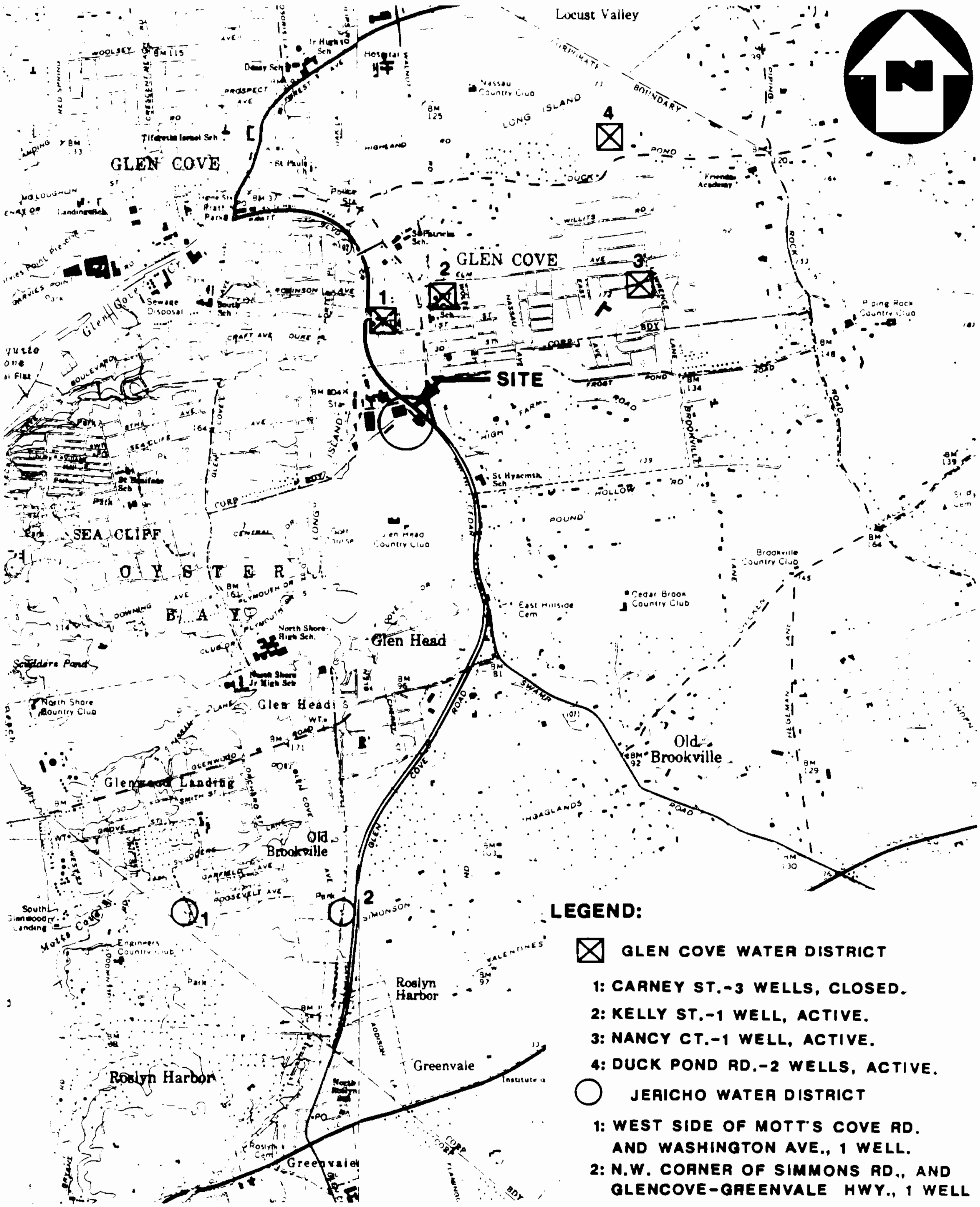
**GROUNDWATER MOVEMENT ON LONG ISLAND, N.Y.**
**UNDER NATURAL CONDITIONS**
**PHOTOCIRCUITS, GLEN COVE, N.Y.**

**FIGURE 2-7**

NUS CORPORATION

(NOT TO SCALE)

Figure 2-8 gives the locations of public supply wells in the immediate vicinity of the site. There are approximately 27,000 people serviced by wells in the City of Glen Cove and 64,000 people in the Jericho Water District. All public supply wells are interconnected between municipalities. The nearest public supply wells, a cluster of three, are located on Carney Street, approximately 1,000 feet northeast of the site. These wells have been closed since 1977 due to solvent contamination. The nearest active public supply well is located on Kelly Street, 2000 feet northeast of the Carney Street wells. Routine analysis by the NCHD has shown a steady increase of 1,1,1-trichloroethane in the well. The New York State Department of Health is in the process of lowering the public drinking water standard for 1,1,1-trichloroethane from 50 ppb to 5 ppb. Based on the levels detected in past analyses, it is anticipated that, under this new standard, the Kelly Street well may have to be closed.




(QUAD) HICKSVILLE, N.Y.

**FIGURE 2-8**

**PUBLIC SUPPLY WELLS**

**PHOTOCIRCUITS, GLEN COVE, N.Y.**

NUS CORPORATION

SCALE: 1"=3400'

## 2.3 WASTE CHARACTERIZATION

### 2.3.1 Hazardous Waste Quantity

The total amount of hazardous waste at Photocircuits has not been determined, although additional information is expected to be revealed during the ESI. Historical data do provide some information as to the types and quantities of substances involved in the company's processes. Table 2-3 shows the amounts of chemicals and solvents purchased by Photocircuits in 1985 and their uses. Table 2-4 shows the components and total tank capacities of the various cleaning, etching, stripping, and bathing solutions used on site. Table 2-5 lists the feedstock materials stored outside on a bermed cement pad.

Resource Conservation and Recovery Act (RCRA) reports completed by the New York State Department of Environmental Conservation (NYSDEC) give an indication of the amount of waste found on site at any one time. A RCRA report written following a January 7, 1983 inspection at Photocircuits estimated the waste on site to be 14 tons of metallic sludge, 4000 gallons of spent plating bath rinse water, 550 gallons of still bottoms, and 1000 gallons of spent etchant solutions. However, hazardous waste shipping manifests state that as much as 4000 gallons of spent etchant solution have been collected from Photocircuits at one time, indicating that the amount of waste on site varies. Manifests also show that 20 containers of sludge at a time, equaling roughly 17 tons, are collected for disposal, but the frequency of these collections is not specified.

In addition to the waste produced on site, Photocircuits accepted 1,916,037 gallons of sodium sulfate brine solution per year from a related facility in Aquebogue, New York. The solution was pH adjusted and discharged to the Glen Cove wastewater treatment system. Available information does not specify how many years this waste was accepted by the Glen Cove facility, but this operation was discontinued in 1981.

An analysis of historical aerial photographs of Photocircuits was conducted by the U.S. EPA Environmental Monitoring Systems Laboratory (EMSL) in 1988. The study covers the period from 1963 to 1987, and shows that the number of drums, tanks, and other containers on site has varied greatly over the years. The most recent photograph was taken on July 15, 1987, and shows the presence of 18 vertical tanks, 8 horizontal tanks, 228 drums, a large open-topped vat-like container, and approximately 25 other containers on site. A pool of brown standing liquid near a storm drain in the parking lot and an oil storage bunker are also visible in the photograph.

**TABLE 2-3**

**PHOTOCIRCUITS**
**FEEDSTOCK MATERIAL PURCHASED IN 1985**

| CHEMICAL/SOLVENT | USE | QUANTITY PURCHASED |
|---|---|---|
| HYDROCHLORIC ACID | Plating Bath Make Up | 12,400 Gallons |
| SULFURIC ACID | pH Adjustment<br>Wastewater Treatment | 18,000 Gallons |
| PM ACETATE | Screen Cleaning | 13,110 Gallons |
| HYDROSULFIDE SODIUM | Wastewater Treatment | 23,500 Gallons |
| HYDROGEN PEROXIDE | Sulfuric Destruction<br>Wastewater Treatment | 6,000 Gallons |
| CALCIUM CHLORIDE | Wastewater Treatment | Unknown |
| TRICHLOROETHANE 111 | Panel Development | 29,000 Gallons |
| FORMALDEHYDE | Plating Bath Make Up | 6,320 Gallons |
| ANHYDROUS AMMONIA | pH Adjustment in<br>Etching Process | 26,000 Pounds |
| AMMONICAL ETCHANT | Copper Stripping | 221,650 Gallons |
| METHYLENE CHLORIDE | Dissolves Ink | 94,500 Gallons |
| CAUSTIC SODA | Wastewater Treatment | 73,500 Gallons |

**TABLE 2-4**

**PHOTOCIRCUITS
BATHING, ETCHING, AND STRIPPING SOLUTIONS**

| CHEMICAL PROCESS | COMPONENTS | TANK CAPACITY |
|---|---|---|
| ACID COPPER BATH | Copper Sulfate<br>Sulfuric Acid<br>Hydrochloric Acid<br>PC 667 Brightener | 1, 367 Gallons |
| SOLDER BATH | Stannous Fluoborate<br>Lead Fluoborate<br>Fluoboric Acid<br>Peptone | 1, 367 Gallons |
| TIN BATH | Stannous Sulfate<br>Sulfuric Acid<br>Tin-Brite Makeup<br>Tin-Brite Replenisher | 683.5 Gallons |
| NICKEL BATH | Nickel Sulfite<br>Boric Acid<br>Nickel Chloride | 1, 367 Gallons |
| ETCHING SOLUTION | Sodium Persulfite | 355 Gallons |
| RACK STRIPPING SOLUTION | Nitric Solution | 1, 367 Gallons |

**TABLE 2-5**

**PHOTOCIRCUITS
OUTDOOR MATERIAL STORAGE-BERMED CEMENT PAD**

| SUBSTANCE | TANK CAPACITY (GALLONS) |
|---|---|
| ACETATE | 2,000 |
| ACETATE | 2,000 |
| COPPER CHLORIDE | 5,000 |
| 1,1,1-TRICHLOROETHANE | 6,000 |
| DICHLOROMETHANE | 5,000 |
| HYDROCHLORIC ACID | 5,000 |
| HYDROCHLORIC ACID | 2,000 |
| COPPER BATH SOLUTION* | 8,000 |
| COPPER BATH SOLUTION | 8,000 |
| COPPER BATH SOLUTION | 4,000 |
| NUMBER 2 FUEL OIL | 20,000 |
| ANHYDROUS AMMONIA | 8,400 |
| HYDROGEN PEROXIDE | 8,000 |
| WATER | 10,000 |

* Refer to Table 2-3 for components.

### 2.3.2 Waste Types, Treatment, and Disposal

Photocircuits utilizes several production methods on site, including metal plating, stripping and etching, image printing, plastic fabrication, and limited chemical formulation. To carry out these processes, potentially hazardous substances such as metals, acids, and solvents, are needed in large amounts, as described in Table 2-3. Much of the resulting waste is treated on site either for reclaiming purposes or to meet current discharge standards.

The primary waste treatment system includes a 4000-gallon flocculating tank, a 15,000-gallon main settling tank, a 7500-gallon sludge thickening and decanting tank, and approximately 1200 square feet of sludge drying and filter beds. All process wastes pass through this system, but cyanide rinses are first treated with calcium hypochlorite and sodium hydroxide. Additional treatment consists of solvent recovery via an on-site still and a three-stage lime treatment method that both neutralizes spent plating rinse waters and precipitates heavy metals. Solutions containing high levels of copper are kept in a 2000-gallon holding tank prior to preliminary treatment. These solutions may contain as much as 60,000 mg/L copper.

Following these treatment methods, there is still a considerable amount of waste remaining. Table 2-6 shows the waste types produced on site and the potentially affected migration pathways. Because there are many types of waste produced, Photocircuits must utilize several different disposal methods. Sludges are dewatered on a filter press and stored in plastic sacks while the still bottoms and spent solutions are placed in drums. These wastes, along with tanks of liquid feedstock materials, are stored temporarily on a bermed cement pad prior to their collection for off-site disposal. The cement pad drains directly into the Photocircuits treatment plant should any leakage occur.

Recent inspections by the New York State Department of Environmental Conservation have found the current storage and disposal methods practiced by Photocircuits to be in compliance with RCRA regulations. However, past disposal practices, as highlighted below, are of concern as possible sources of contamination to surface water and groundwater.

- Prior to the company's hook-up with the Glen Cove Wastewater Treatment Plant, plating rinse waters were discharged to Glen Cove Creek.
- Heavy metal sludges were stored in an unlined lagoon on site for unknown periods of time prior to off-site disposal.
- Highly concentrated copper waste was discharged to Glen Cove Creek when the treatment tanks malfunctioned.

- An inter-office memorandum was issued acknowledging unauthorized discharges to Glen Cove Creek via a parking lot storm drain.

- A Glen Cove city worker received acid burns while collecting what were supposed to be empty, clean, plastic drums from Photocircuits.

- The Glen Cove Wastewater Treatment Plant was in violation of its SPDES permit on five different occasions as a direct result of receiving discharge from Photocircuits at illegal concentrations.

- Local groundwater contamination has been documented, causing three public supply wells 1000 feet northeast of Photocircuits to be closed. The Nassau County Health Department investigated the matter and concluded it was due to waste discharge from the industrial park, and that only two industries in the area, Photocircuits and Slater Electric, use solvents of the type found in the wells.

**TABLE 2-6**

**SUMMARY OF WASTE TYPES AND POTENTIAL MIGRATION PATHWAYS**

| Hazardous Substance | Process Waste | Potentially Affected Migration Pathway: Ground Water | Surface Water | Sediment | Air | Soil |
|---|---|---|---|---|---|---|
| CHROMIUM * | Sludge, Spent Plating, Stripping, Bath Solutions | | X | X | | X |
| COPPER * | Sludge, Spent Plating, Stripping, Bath Solutions | | X | X | | X |
| CYANIDE | Sludge, Spent Plating, Stripping, Bath Solutions | | X | X | | X |
| IRON | Sludge, Spent Plating, Stripping, Bath Solutions | | X | X | | X |
| LEAD * | Sludge, Spent Plating, Stripping, Bath Solutions | | X | X | | X |
| NICKEL | Sludge, Spent Plating, Stripping, Bath Solutions | | X | X | | X |
| ZINC * | Sludge, Spent Plating, Stripping, Bath Solutions | | X | X | | X |
| ACETATE | Spent Cleaning Solutions | | | | X | |
| AMMONIA | Spent Cleaning Solutions | | X | | X | |
| EPOXIES | Still Bottom Residue | | | | X | |
| METHACRYLATES | Still Bottom Residue | | | | X | |
| METHYLENE CHLORIDE | Spent Ink Dissolving Solution, Cleaning Solutions, Still Bottom Residue | X | | | X | |
| POLYVINYL-CHLORIDE | Still Bottom Residue | | | | X | |
| 1,1,1-TRICHLORO-ETHANE | Spent Panel Development Solution, Cleaning Solutions, Still Bottom Residue | X | | | X | |

* Substance is bioaccumulative.

### 2.3.3 Areas of Known or Suspected Contamination

The disposal methods utilized by Photocircuits may have had serious adverse effects on the environment. Local groundwater contamination has already been documented and may be attributable to the site. Other migration routes (surface water, sediments, soil, and air) may have also been affected by contaminants attributable to Photocircuits.

Groundwater

In 1977, three public supply wells, located 1000 feet northeast of Photocircuits, were closed due to trichloroethylene and tetrachloroethylene contamination. The NCHD investigated the matter and concluded that the contamination was due to discharges, occurring as recently as 5 or 10 years ago, that originated in the industrial park. In their investigative report, the NCHD also noted that only two industries in the area, Slater Electric and Photocircuits, use solvents of the general type found in the supply wells.

The City of Glen Cove supplies drinking water to over 25,000 people. Without the Carney Street wells, the water department is just able to meet its peak demand capacity, but it is not capable of retaining the 25 percent reserve capacity required of public suppliers. Should one of the remaining wells become unuseable, no alternative supply is readily available, and the current peak demand would not be met. Such was the case in 1986, when one of the remaining wells was closed for repairs, and the city was forced to purchase water from neighboring suppliers. But other suppliers may no longer be willing to sell their water since the NYSDEC imposed caps on the amount of water each may withdraw from the groundwater sources.

The City of Glen Cove has noticed increasing levels of trichloroethylene in their Kelly Street supply well, located 2000 feet northeast and downgradient of the Carney Street wells. The water quality of this well, along with that of other Glen Cove public supply wells, is tested on a quarterly basis. As of March 1988, the levels of trichloroethylene have not exceeded the State standard of 50 ppb, but the New York State Department of Health is currently lowering the standard to 5 ppb. This new standard will become effective in June 1988, at which time the Kelly Street well will be retested. Members of the NCHD have stated that, based on past analyses, the well will not be able to meet the new State requirements. This could result in the closing of the Kelly Street well, further decreasing Glen Cove's supply, with no alternative service available.

Surface Water

Glen Cove Creek flows through the western half of the site and has been the recipient of unauthorized discharges from Photocircuits on at least two occasions. On March 20, 1974, a waste treatment tank malfunctioned, resulting in the discharge of untreated waste to a storm drain that empties into the creek. The waste, which contained high levels of copper, caused dark blue discoloration in the creek. On April 20, 1974, the treatment tanks malfunctioned again and, as before, partially treated waste was discharged to the creek. Analysis of the waste by Photocircuits revealed that it contained 100 mg/L of copper.

That spring and summer, the NCHD collected surface water samples from the creek and storm drains in the vicinity of Photocircuits. No contamination was detected upstream but high levels of copper and chromium were detected both at Photocircuits' property and downstream of the facility. One of the contaminated creek samples was collected directly opposite the Carney Street well field.

The high levels of copper and chromium discharged into Glen Cove Creek may have had immediate toxic effects on the aquatic life. This contamination may continue on a long-term basis as metals have a tendency to adhere to sediments. Contaminated sediment may migrate downstream, and both copper and chromium are bioaccumulative.

Glen Cove Creek flows northwest into Hempstead Harbor, which is located approximately 2.3 stream miles away. The harbor has been designated as a significant coastal fish and wildlife habitat and is considered one of the 10 most important water fowl wintering areas on the north shore of Long Island. It is not only noted for scaup, canvasback, and black ducks, but also provides a nursery and feeding habitat for striped bass, bluefish, Atlantic silverside, menhaden, winter flounder, and blackfish.

Air

A 1987 aerial photograph of the Photocircuits' property revealed the presence of 18 vertical tanks, 8 horizontal tanks, 228 drums, a large open vat-like container, and approximately 25 miscellaneous containers. The exact content of these containers is unknown, but it is known that much of the feedstocks stored and waste produced on site are both hazardous and volatile (refer to Tables 2-2, 2-3, and 2-5). During the NUS Corporation FIT 2 site reconnaissance, portions of the site property were screened utilizing an HNu photoionization detector and an organic vapor analyzer. Readings up to 5 ppm were detected in one of the drum storage areas.

Soil

The majority of the site property is paved over, and vegetated areas are restricted to narrow strips of land along Glen Cove Creek and the site borders. However, before the construction of its own treatment plant, Photocircuits stored metal-laden sludge on site in a lagoon. The sludge produced by Photocircuits contained high levels of copper, chromium, zinc, nickel, and cyanide, and was present on site in amounts of up to 17 tons at a time. It is possible that some of this material migrated from the lagoon and contaminated the surrounding soil. Such migration could cause further contamination to both Glen Cove Creek and local groundwater, as the water table is only 8 to 10 feet below the ground surface.

### 2.3.4 Existing Analytical Data

Environmental samples have been collected from the Photocircuits' vicinity on numerous occasions over the past 25 years. Historical data, respresenting the period from 1964 to 1986, are presented in Table 2-7 and indicate that the Nassau County Health Department is responsible for the collection of most of these samples. Table 2-8 summarizes the study of the industrial area conducted by the NCHD in June and July of 1977. This study was prompted by the contamination and subsequent closing of the Carney Street well field.

TABLE 2-7

DATA SUMMARY FROM PHOTOCIRCUITS' VICINITY: 1964-1986

| DATE | SAMPLE LOCATION | COLLECTED BY | ANALYSES |
|---|---|---|---|
| 4/23/64 | Partially treated waste from Photocircuits' metal recovery tanks prior to its unauthorized discharge into Glen Cove Creek. | Photocircuits | Copper - 100 mg/L |
| 7/24/64 | From weir on Photocircuits' property that empties into parking lot storm drain and subsequently to Glen Cove Creek. | NCHD | pH - 11.93<br>Nickel - 1.5 mg/L |
| 8/15/64 | Glen Cove Creek opposite Carney Street well field. | NCHD | pH - 9.79<br>Copper - 240 mg/L<br>Total Solids - 1,627 mg/L |
| 8/15/64 | From weir on Photocircuits' property. | NCHD | pH - 9.93<br>Copper (dissolved) - 576 mg/L<br>Copper (total) - 640 mg/L<br>Total Solids - 3,533 mg/L |
| 8/22/64 | Glen Cove Creek opposite Carney Street well field. | NCHD | Chromium - 16 mg/L |
| 1964 | Storm drain in Photocircuits' parking lot that empties into Glen Cove Creek. | NCHD | Chromium - 28 mg/L |
| 11/12/75 | Photocircuits' discharge to the Glen Cove Wastewater Treatment Plant; collected from buried pipe on Photocircuits' property. | Glen Cove Department of Public Works | Copper - 31.80 mg/L<br>Chromium - 0.42 mg/L<br>Zinc - 2.10 mg/L<br>Sulphate - 10,360 mg/L |
| 1/17/86 | Photocircuits' discharge to the Glen Cove Wastewater Treatment Plant; collected from buried pipe on Photocircuits' property. | Glen Cove Department of Public Works | Copper - 4 mg/L |
| 1/20/86 | Photocircuits' discharge to the Glen Cove Wastewater Treatment Plant; collected from buried pipe on Photocircuits' property. | Glen Cove Department of Public Works | Copper - 4 mg/L |
| 1/21/86 | Photocircuits' discharge to the Glen Cove Wastewater Treatment Plant; collected from buried pipe on Photocircuits' property. | Glen Cove Department of Public Works | Copper - 3.3 mg/L |

TABLE 2-7 (Cont'd)

DATA SUMMARY FROM PHOTOCIRCUITS' VICINITY: 1964-1986

| DATE | SAMPLE LOCATION | COLLECTED BY | ANALYSES |
|---|---|---|---|
| 1/22/86 | Photocircuits' discharge to the Glen Cove Waste-water Treatment Plant; collected from buried pipe on Photocircuits' property. | Glen Cove Department of Public Works | Copper - 3.1 mg/L |
| 1/28/86 | Photocircuits' discharge to the Glen Cove Waste-water Treatment Plant; collected from buried pipe on Photocircuits' property. | Glen Cove Department of Public Works | Copper - 6.5 mg/L |
| 1/30/86 | Photocircuits' discharge to the Glen Cove Waste-water Treatment Plant; collected from buried pipe on Photocircuits' property. | Glen Cove Department of Public Works | Copper - 2.3 mg/L |
| 2/18/86 | Photocircuits' discharge to the Glen Cove Waste-water Treatment Plant; collected from buried pipe on Photocircuits' property. | Glen Cove Department of Public Works | Copper - 9.0 mg/L |
| 2/26/86 | Photocircuits' discharge to the Glen Cove Waste-water Treatment Plant; collected from buried pipe on Photocircuits' property. | Glen Cove Department of Public Works | Copper - 9.0 mg/L |

TABLE 2-8

SAMPLING RESULTS OF GLEN COVE INDUSTRIAL AREA: 6/30/77-7/26/77

| Sample Location | Trichloroethylene | Tetrachloroethene | Dichloromethane | 1,1,1-Trichloroethane |
|---|---|---|---|---|
| Photocircuits' discharge to the Glen Cove Wastewater Treatment Plant. | 2.1 ug/L | 3.0 ug/L | 480 ug/L | * |
| Photocircuits' parking lot storm drain emptying into Glen Cove Creek. | 30 ug/L | 23 ug/L | N.D. | * |
| Glen Head Country Club storm drain emptying into Glen Cove Creek. | 25 ug/L | 77 ug/L | N.D. | * |
| Slater Electric Company's discharge to the Glen Cove Wastewater Treatment Plant. | 22 ug/L | 1210 ug/L | N.D. | * |
| Sewage from industrial area. | 4.7 ug/L | 43 ug/L | 440 ug/L | * |
| Groundwater from Carney Street Well No. 20. | 52 ug/L | 5.3 ug/L | N.D. | * |
| Pall Corporation air conditioning. discharge. | 16/ug/L | 5.2 ug/L | N.D. | * |
| Keyco Motor Freight truck wash area. | N.D. | N.D. | N.D. | * |
| Glen Cove Creek at Glen Head Country Club | < 5 ug/L | < 2.5 ug/L | * | 5 ug/L |
| Glen Cove Creek at Carney Street | 115 ug/L | 12 ug/L | * | 6 ug/L |

* Not analyzed for this contaminant.

REFERENCE NO. 26

Env. Conservation Law
ENVIRONMENTAL HEALTH Article 27, Title 7
Continuation Sheet
Nassau County Health Department

Owner or Agent: Kollmorgen Corp. - Photo Circuits
Address: 31 Sea Cliff Avenue, Glen Cove N.Y.
Inspector: (HW)

DATE | COMMENTS

Permit No. 10-82-1112
July 29, 1983 to 9/30/86

11/15/84 Inspection of facility revealed no violation @ this time.
Toured facility with / Michele Principe - Personnel Mgr.
Geo. Butler - Plant Eng.
Larry Curcio - Security Dir.
Lorenzo Petruzziello - Safety Director
Drum washing, rinsing procedure satisfactory @ this time of inspection.
Effluent from drum washing discharges back into treatment system.
According to Photo Circuits management, since March 1982 approx. 900 drums have been sent to City of Glen Cove for use as refuse containers.
The last time the City of Glen Cove accepted drums from Photo Circuits 10/22/84 → 52 Drums (Bill of lading)

Visited City of Glen Cove - office - spoke with BoB Mangan D.P.W. Director.
Employee allegedly burned Mr. Amato Famiglietti as of this date. Checked D.P.W. yard with Mr. Mangan and Gerald Quinn (Gen. Foreman).
Several drums had not been detached which

VIRONMENTAL
EALTH
Continuation Sheet
Nassau County Health Department

Owner or Agent: Kall Morgan Corp.- Photo Circuits
Address: 31 Sea Cliff Avenue, Glen Cove NY (?)
Inspector

DATE (Continued) COMMENTS

11/15/84

The writer advised Mr. R. Mangan that the city should check drums regarding proper cleaning and rinsing before accepting same.

It may be worthwhile for the City to rewash drums after acceptance to insure the safety of employees.

The writer also suggested to Mr. Mangan that employees use proper safety equipment while handling and cutting plastic drums.

Herbert Walch

11/19/84

Telecon with Michele Principe of Photo Circuits. Advised Ms. Principe that several drums were noted @ Glen Cove - DPW yard to still have labels intact on 11/15/84.

Labels read "Fluoboric Acid - Allied Chemical."

Ms. Principe will check to insure that all plastic drums are properly delabeled when washed & rinsed @ photo circuits.

Telecon with Robert Mangan DPW- Glen Cove.

Mr. Mangan was unable to ascertain [illegible] of

REFERENCE NO. 27

PHOTOCIRCUITS CORPORATION

MAIN OFFICE AND PLANT
GLEN COVE, NEW YORK

May 23, 1963

Nassau County Department of Health
Nassau County Office Building
Old Country Road & County Seat
Drive
Mineola, New York

Attn: Mr. John F. Welsch

Dear Mr. Welsch:

Please excuse the delay in supplying the information requested on our present and planned method of industrial waste treatment. A broken sludge drain valve on our large settling tank had reduced the effectiveness of our waste treatment and we wished to wait until it was replaced before attempting to evaluate our system.

How long was it broken?

Our primary waste treating system includes a 4000 gallon floculating tank, a 15000 gallon main settling tank, a 7500 gallon sludge thickening and decanting tank, and approximately 1200 square feet of sludge drying and filter beds. All process wastes pass through this system, however, our cyanide rinses are continuously treated with calcium hypochlorite and sodium hydroxide to convert the cyanide before entering the main floculating tank. A pH recorder controller is used in conjunction with a lime slurry feed to control pH and to add lime for floculation.

The only etchant which we dispose of through our waste treating system is spent ammonium persulfate. As with the cyanide rinses, preliminary treatment is incorporated to improve the condition of the etchant before entering the main system. This consists of a holding tank and batch treatment with soda ash. The precipitate is discharged over the filter beds and cycles back to the main system. Although this is now done manually we will within a month be set up to automatically control this procedure.

As a further step towards improvement of our waste treatment capability we plan to install a 2000 gallon holding tank which will be adequate to handle two days' volume of all solutions which contain sufficient copper to warrant preliminary treatment.

— what are the concentrations of copper which require prelim treatment?

REFERENCE NO. 28

Trube

# Water-Transmitting Properties of Aquifers on Long Island, New York

By N. E. McCLYMONDS and O. L. FRANKE

HYDROLOGY AND SOME EFFECTS OF URBANIZATION ON LONG ISLAND, NEW YORK

GEOLOGICAL SURVEY PROFESSIONAL PAPER 627-E

*Prepared in cooperation with the New York State Department of Conservation, Division of Water Resources; the Nassau County Department of Public Works; the Suffolk County Board of Supervisors; and the Suffolk County Water Authority*

UNITED STATES GOVERNMENT PRINTING OFFICE, WASHINGTON : 1972

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# TABLES

# WATER-TRANSMITTING PROPERTIES OF AQUIFERS ON LONG ISLAND, NEW YORK

By N. E. McClymonds and O. L. Franke


## ABSTRACT

Data on the aquifers of Long Island, N.Y., have been collected for the past 30 years as part of a series of studies conducted by the U.S. Geological Survey in cooperation with New York State and county agencies. Since 1900, more than 50,000 wells have been constructed on Long Island. For at least 2,500 of these wells, some information was recorded that is of value in interpreting the hydrologic character of one or more of the four principal aquifers—the upper glacial, the Jameco, the Magothy, and the Lloyd. Although the data for the deeper aquifers—the Magothy and Lloyd—are concentrated largely in the western part of Long Island, enough information is available to make a general interpretation of the hydraulic conductivity and the transmissivity of all aquifers throughout most of the island.

Estimates of the average hydraulic conductivity of the screened interval in the aquifers were obtained by multiplying the specific capacity of the well by the inverse of the well-screen length and by a constant which was estimated from the Theis nonequilibrium formula. Based on the estimated average hydraulic conductivities of different lithologies in many screened intervals, a value of hydraulic conductivity was assigned to each lithology in each aquifer. Using these values, an average aquifer hydraulic conductivity was obtained from drillers' logs, and maps of average hydraulic conductivity were developed for each aquifer on Long Island. Maps of total aquifer transmissivity were developed by combining maps of average aquifer hydraulic conductivity and total aquifer thickness.

The estimated average hydraulic conductivity values obtained in this study were about 1,700 gpd per sq ft (gallons per day per square foot), for the upper glacial aquifer, about 1,300 gpd per sq ft for the Jameco, about 420 gpd per sq ft for the Magothy, and about 360 gpd per sq ft for the Lloyd. Average transmissivity values were about 200,000 gpd per ft (gallons per day per foot) for the upper glacial aquifer, about 100,000 gpd per ft for the Jameco, about 240,000 gpd per ft for the Magothy, and about 90,000 gpd per ft for the Lloyd.


## INTRODUCTION

### BACKGROUND, PURPOSE, AND SCOPE OF THE WATER-BUDGET STUDY

Long Island, which extends from the southeastern part of the mainland of New York State eastward about 120 miles into the Atlantic Ocean, has a total area of about 1,400 square miles (fig. 1). Kings and Queens Counties, which are part of New York City, occupy slightly less than 200 square miles of the western part of the island and have a combined population of about 4.5 million people. Nassau and Suffolk Counties, with areas of about 290 and 920 square miles, respectively, had a population of about 2.5 million people in 1965.

Although Kings and Queens Counties obtain most of their water supply from New York City's system, which is derived from parts of the Delaware and Hudson River basins in upstate New York, Nassau and tapping the underlying ground-water reservoir. Because of present large demands on the local ground-water system and because of the prospect of increased demands as the population of Long Island continues to grow, knowledge about the hydrologic system—with special emphasis on that needed for water conservation and management purposes—is a matter of vital concern now as well as in the future.

Considerable information on the water resources of Long Island is available as a result of more than 30 years of study by the U.S. Geological Survey in cooperation with New York State and county agencies. Although the studies met many of the needs for information on specific problems and areas of Long Island, more quantitative information about the island-wide hydrologic system and the relations between the various components of the system is needed for water-management purposes. To provide that information, a comprehensive water-budget study presently is being made by the Geological Survey in cooperation with the New York State Department of Conservation, Division of Water Resources; the Nassau County Department of Public Works; the Suffolk County Board of Supervisors; and the Suffolk County Water Authority.

The major objectives of the water-budget study are (1) to summarize and interpret pertinent existing in-

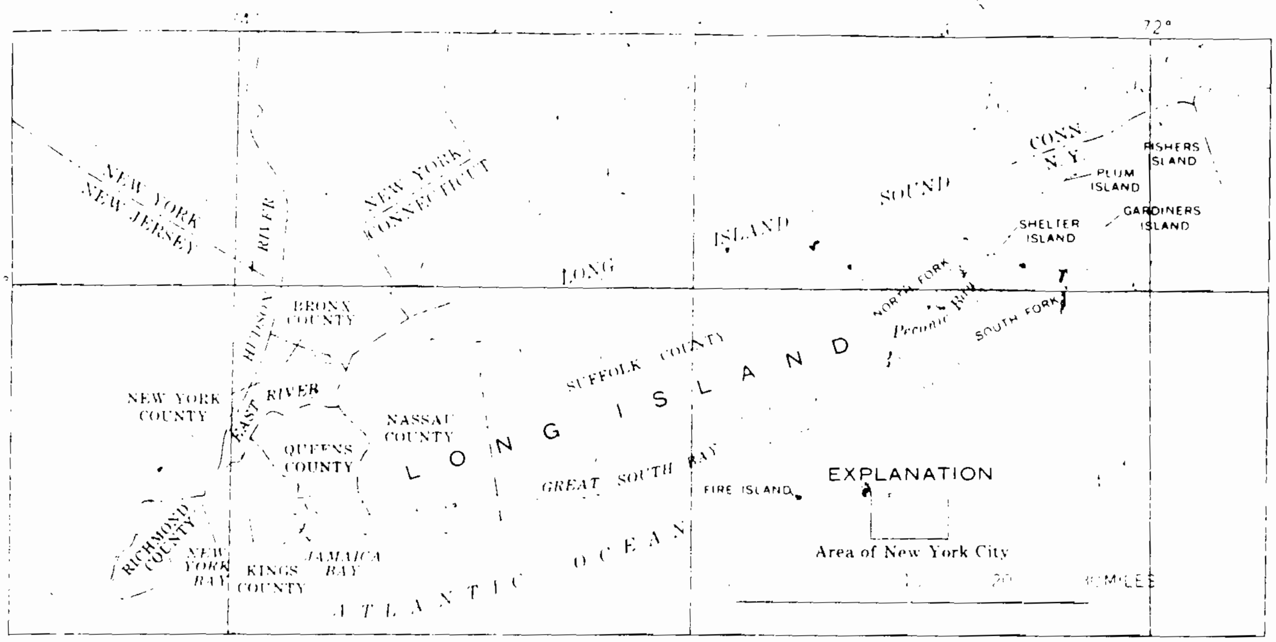



**Figure 1.—Location and political boundaries of Long Island.**

formation about the hydrologic system of Long Island and (2) to fill several gaps in the knowledge of the hydrologic system. The results of these studies are being published in a series of coordinated reports. In some of the reports, including this one, information is developed for all of Long Island; in others the primary area of concern is limited to Nassau and Suffolk Counties.

## PURPOSE AND SCOPE OF THIS REPORT

To evaluate, by means of mathematical or physical models, the response of a ground-water flow system to either natural or manmade changes in the hydrologic regimen, a knowledge of the three-dimensional variation in transmissivity is essential. In addition, a knowledge of transmissivity is necessary to calculate the quantities of ground water flowing in the subsurface. Calculating subsurface flow is particularly important on Long Island because a significant percentage of the total natural outflow of water from the hydrologic system occurs as subsurface outflow to the sea.

The purpose of this report is (1) to summarize existing information on the transmissivity and hydraulic conductivity of Long Island's aquifers and (2) to prepare, for the first time, preliminary maps showing the estimated average hydraulic conductivity and transmissivity of each of the principal aquifers.

## LOCATION AND GENERAL GEOGRAPHIC FEATURES OF THE AREA

Long Island is bounded on the north by Long Island Sound, on the east and south by the Atlantic Ocean, and on the west by New York Bay and the East River (fig. 1). Several smaller islands are included in the political boundaries of Long Island; the larger of these are Shelter, Gardiners, Fishers, and Plum Islands. The total land area of Long Island is about 1,400 square miles, including the smaller islands within the political boundaries of the island. The four counties—Kings, Queens, Nassau, and Suffolk—have areas of 78 square miles, 115 square miles, 291 square miles, and 922 square miles, respectively.

Several barrier beaches extend along the south shore of Long Island; the longest of these is Fire Island in southern Suffolk County. The northern and eastern coast lines of the island are indented by deep bays that form excellent harbors. Peconic Bay, which is about 30 miles long, divides the eastern end of the island into two long, narrow peninsulas that are locally referred to as the north and south forks.

## PHYSIOGRAPHIC FEATURES

Most of the major features of the present-day topography of Long Island (fig. 2) are related to Pleistocene glaciation. The most prominent physiographic features are (1) the east-trending hills in the northern and central parts of the island and their eastward extensions, which form the north and south forks, (2) the gently sloping plain that extends southward from the hills, (3) the deeply eroded headlands along the north shore, and (4) the barrier beaches along the south shore.

The Harbor Hill Moraine forms the northern line of east-trending hills, which extend from Kings County to northern Nassau County and eastward to the north fork. The Ronkonkoma Moraine forms the southern line of

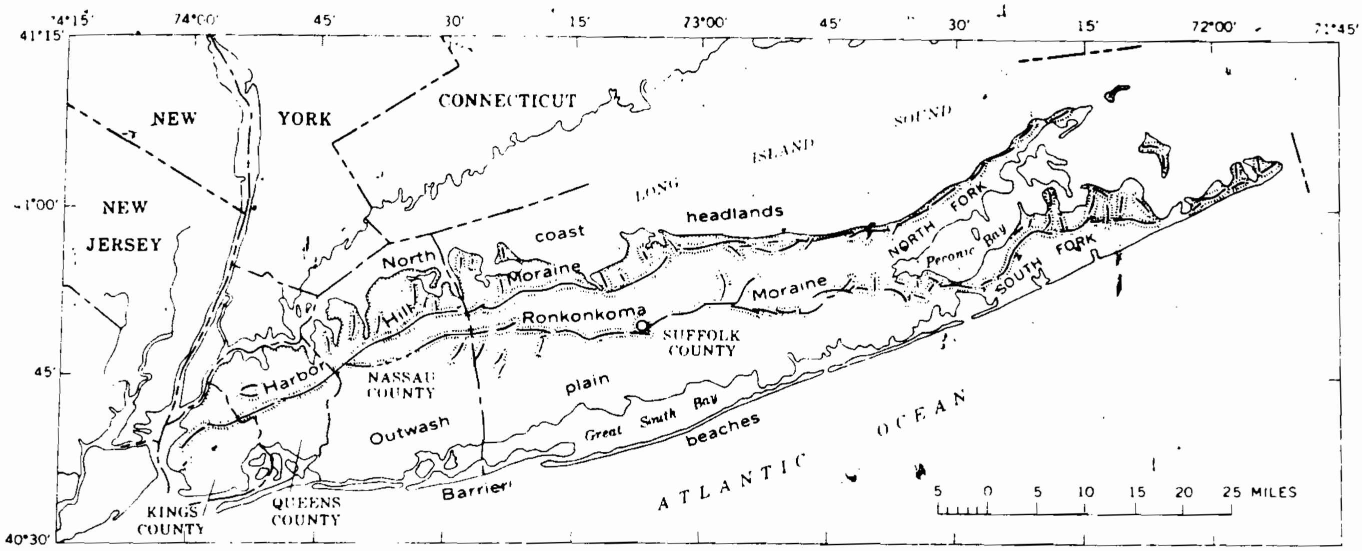



FIGURE 2.—Major physiographic features.

hills and extends from northwestern Nassau County eastward across central Suffolk County to the south fork. These moraines were deposited at the southernmost extension of the glacial ice sheets and have an altitude of about 200 to 300 feet in most of Long Island. The Ronkonkoma Moraine has a maximum altitude of about 400 feet in western Suffolk County.

The moderately even, gently sloping surface that extends southward to the south-shore bays from the Harbor Hill Moraine in Kings and Queens Counties and from the Ronkonkoma Moraine in Nassau and Suffolk Counties is underlain by glacial outwash deposits. This surface has an altitude of about 100 to 150 feet along its inland border and slopes southward at about 20 feet per mile.

The eroded headlands along the north coast are composed mainly of sand, gravel, and clayey till of glacial origin. Wave action has steepened the slopes and cut into the headlands, so that nearly vertical bluffs now exist, some as much as 100 feet high. The bays and harbors of the western part of the north shore were formed during glacial advance and retreat (fig. 2).

Along the south shore, waves and ocean currents formed offshore bars (barrier beaches). Sand and silt, as well as organic deposits, have partly filled and are continuing to fill the shallow bays behind the barrier beaches.

## ACKNOWLEDGMENTS

Most of the lithologic and well data in this report were obtained from the files of the New York Water Resources Commission. The authors wish to express their thanks to Walter G. Waterman, associate engineer of the Water Resources Commission, and his colleagues for making these records available.

The report was prepared under the immediate supervision of B. L. Foxworthy, former hydrologist-in-charge, and Philip Cohen, hydrologist-in-charge of the Geological Survey subdistrict office on Long Island; and under the general supervision of Ralph C. Heath and Garald G. Parker, former district chiefs, and Robert J. Dingman, district chief, U.S. Geological Survey, Albany, N.Y.

## HYDROGEOLOGIC SETTING

The hydrogeologic setting of Long Island was described in comprehensive reports by several authors (Veatch and others, 1906; Fuller, 1914; Suter and others 1949). In addition, the geology and hydrology of several smaller areas of Long Island were studied in detail by Isbister (1966), Lubke (1964), Lusczynski and Swarzenski (1966), Perlmutter and Geraghty (1963), Pluhowski and Kantrowitz (1964), and Swarzenski (1963). The general hydrologic situation on Long Island was reviewed by Cohen, Franke, and Foxworthy (1968).

Long Island is underlain by consolidated bedrock (fig. 3), which in turn is overlain by a wedge-shaped mass of unconsolidated sedimentary materials. The top of the bedrock, which is at or near the land surface in the northwestern part of the island, slopes to the southeast to a depth of about 2,000 feet below sea level in south-central Suffolk County (fig. 4). The average slope of the bedrock surface is about 65 feet per mile.

The materials that overlie the bedrock and constitute the ground-water reservoir consist of Pleistocene deposits and Cretaceous unconsolidated fluvial and deltaic deposits composed of gravel, sand, silt, clay, and mixtures thereof. The Cretaceous deposits were moderately

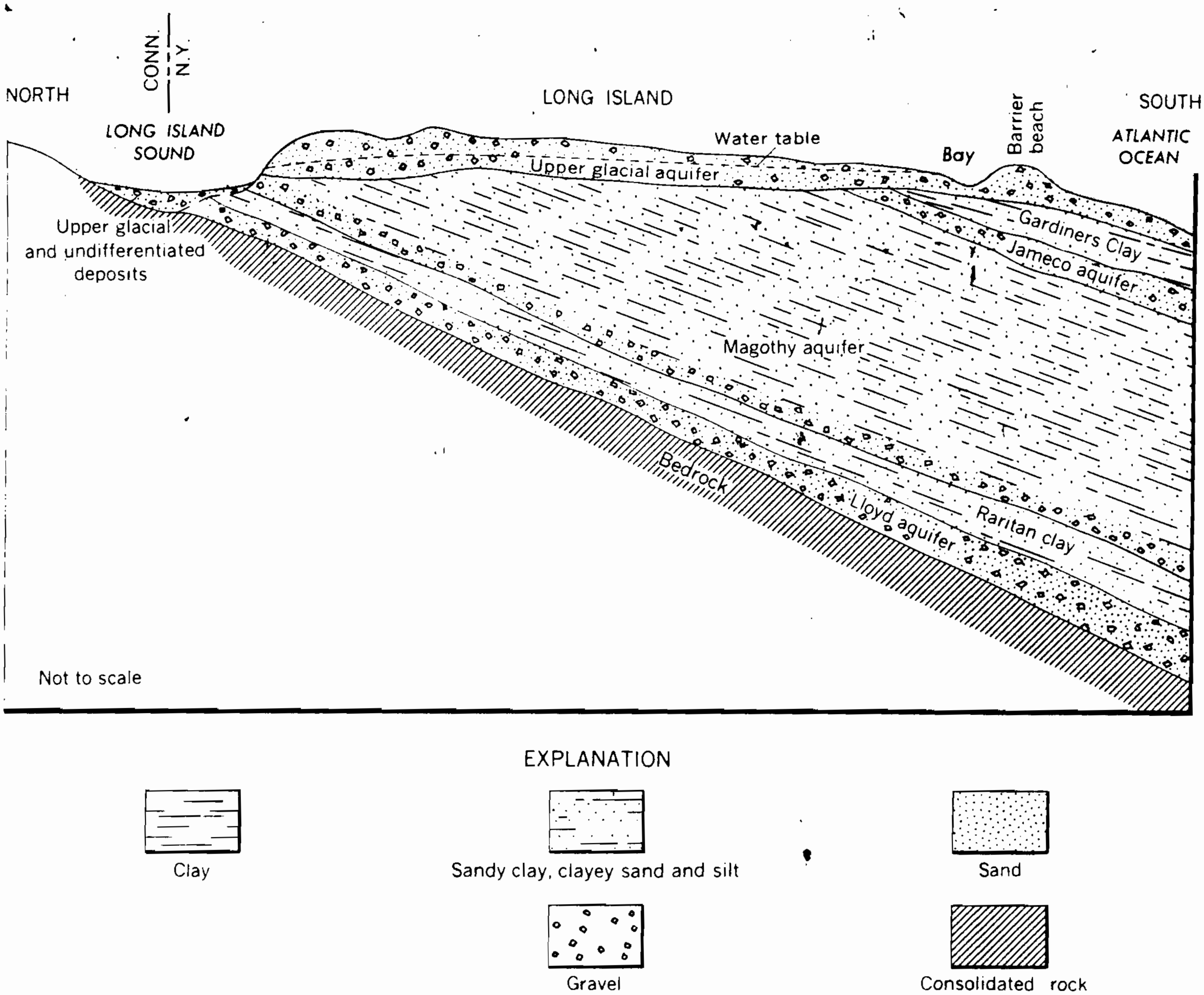



FIGURE 3.—Generalized geologic section showing relative positions of four principal aquifers.

to deeply eroded by streams and glaciers, and therefore, the Pleistocene materials were deposited on an irregular surface that locally was characterized by moderate relief. Data from the numerous wells drilled in Kings, Queens, Nassau, and northwestern Suffolk Counties are sufficient to define the general outlines of the preglacial valleys. In central and eastern Suffolk County, however, the valleys are less well defined.

The upper surface of the Cretaceous deposits generally is below sea level except in several areas in northeastern Nassau and northwestern Suffolk Counties. In all but a few small areas the Pleistocene deposits cover the Cretaceous deposits.

Pertinent information concerning the principal hydrogeologic units of Long Island's ground-water reservoir is summarized in table 1.

Ground water in the uppermost part of the zone of saturation on Long Island, mainly in the upper glacial aquifer but locally also in the Magothy aquifer, is generally under water-table (unconfined) conditions. Artesian (confined) conditions predominate in most of the other parts of the ground-water reservoir of Long Island, where the saturated deposits are overlain by silty and clayey layers of low hydraulic conductivity. Locally, the hydraulic head in the confined aquifers ranges from 30 to 40 feet below the water table in the central part of the island to nearly 20 feet above the water table near the margins of the island. At places along the north and south shores and on the barrier beaches, the head in the Lloyd aquifer is high enough to cause wells that tap the aquifer to flow.

The most significant confining layers in the groundwater reservoir are the Raritan clay, which overlies the Lloyd aquifer; the many discontinuous clay and silt

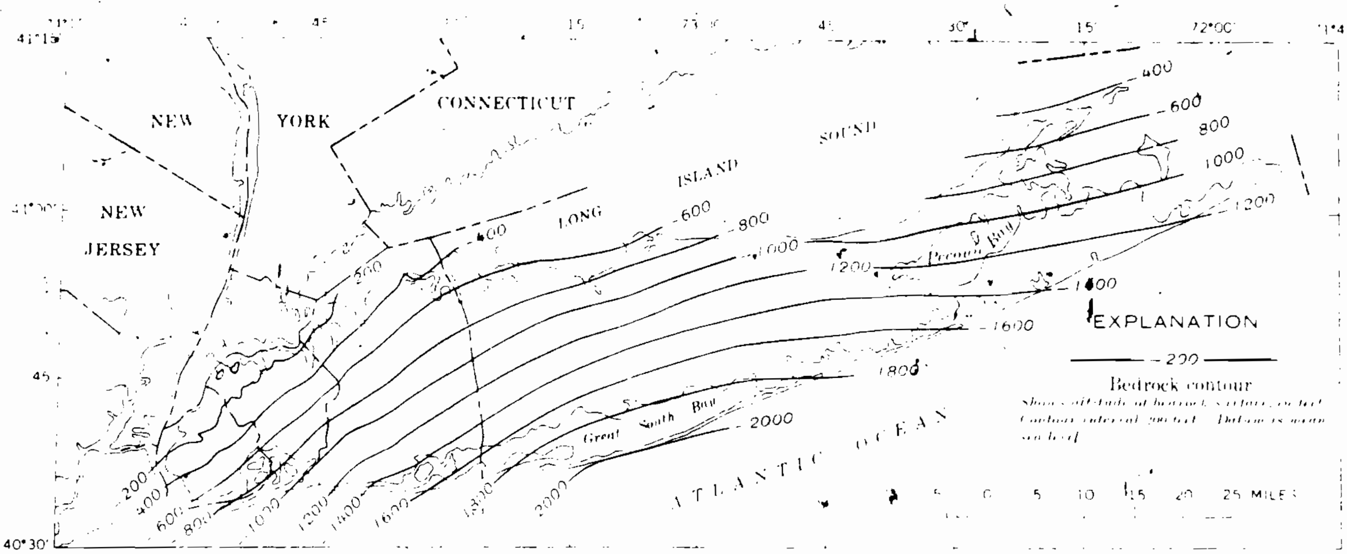



FIGURE 4.—Contour map of the bedrock surface. (Modified from Suter and others, 1949, pls. 8, 9, and 10.)

TABLE 1.—*Summary of the rock units and their water-bearing properties, Long Island*

| System | Series | Geologic unit [1] | Hydro-geologic unit | Approximate maximum thickness (feet) | Depth from land surface to top (feet) | Character of deposits | Water-bearing properties |
|---|---|---|---|---|---|---|---|
| Quaternary | Holocene | Recent deposits: Artificial fill, salt marsh deposits, stream alluvium, and shoreline deposits. | Recent deposits | 50 | 0 | Sand, gravel, clay, silt, organic mud, peat, loam, and shells. Colors are gray, brown, green, black, and yellow. Recent artificial-fill deposits of gravel, sand, clay, and rubbish. | Permeable sandy beds beneath barrier beaches yield fresh water at shallow depths, brackish to salty water at greater depth. Clay and silt beneath bays retard salt-water encroachment and confine underlying aquifers. Stream floodplain and marsh deposits may yield small quantities of water but are generally clayey or silty and much less permeable than the underlying upper glacial aquifer. |
| | Pleistocene | Upper Pleistocene deposits | Upper glacial aquifer | 600 | 0–50 | Till (mostly along north shore and in moraines) composed of clay, sand, gravel, and boulders forms Harbor Hill and Ronkonkoma terminal moraines. Outwash deposits (mostly between and south of terminal moraines, but also interlayered with till) consist of quartzose sand, fine to very coarse, and gravel, pebble to boulder sized. Glaciolacustrine deposits (mostly in central and eastern Long Island) and marine clay (locally along south shore) consist of silt, clay, and some sand and gravel layers; includes the "20-foot clay" in southern Nassau and Queens Counties. Colors are mainly gray, brown, and yellow; silt and clay locally are grayish green. Contains shells and plant remains, generally in finer grained beds; also contains Foraminifera. Contains chlorite, biotite, muscovite, hornblende, olivine, and feldspar as accessory minerals; "20-foot clay" commonly contains glauconite. | Till is poorly permeable; commonly causes perched-water bodies and impedes downward percolation of water to underlying beds. Outwash deposits are moderately to highly permeable; specific capacities of wells tapping them range from about 10 to more than 200 gpm per ft (gallons per minute per foot) of drawdown. Good to excellent infiltration characteristics. Glaciolacustrine and marine clay deposits are mostly poorly permeable but locally have thin, moderately permeable layers of sand and gravel, generally retard downward percolation of ground water. Contains fresh water except near the shore lines. Till and marine deposits locally retard salt-water encroachment. |
| | | — Unconformity? — | | | | | |
| | | Gardiners Clay | Gardiners Clay | 300 | 50–400 | Clay, silt, and few layers of sand and gravel. Colors are grayish green and brown. Contains marine shells, Foraminifera, and lignite; also locally contains glauconite. Altitude of top generally is 50–80 feet below mean sea level. Occurs in Kings, Queens, and southern Nassau and Suffolk Counties; similar clay occurs in buried valleys near north shore. | Poorly permeable; constitutes confining layer for underlying Jameco aquifer. Locally, sand layers yield small quantities of water. |
| | | — Unconformity? — | | | | | |
| | | Jameco Gravel | Jameco aquifer | 300 | 50–550 | Sand, fine to very coarse, and gravel to large-pebble size; few layers of clay and silt. Gravel is composed of crystalline and sedimentary rocks. Color is mostly dark brown. Contains chlorite, biotite, muscovite, hornblende, and feldspar as accessory minerals. Occurs in Kings, Queens, and southern Nassau Counties; similar deposits occur in buried valleys near north shore. | Moderately to highly permeable; contains mostly fresh water, but brackish water and water with high iron content occurs locally in southeastern Nassau and southern Queens Counties. Specific capacities of wells in the Jameco range from about 20 to 150 gpm per ft of drawdown. |

See footnotes at end of table.

TABLE 1.—*Summary of the rock units and their water-bearing properties, Long Island*—Continued

| System | Series | Geologic unit [1] | | Hydrogeologic unit | Approximate maximum thickness (feet) | Depth from land surface to top (feet) | Character of deposits | Water-bearing properties |
|---|---|---|---|---|---|---|---|---|
| | | Unconformity | | | | | | |
| Tertiary (?) | Pliocene(?) | Mannetto Gravel | | (Commonly included with upper glacial aquifer.) | 300 | 0-120 | Gravel, fine to coarse, and lenses of sand; scattered clay lenses. Colors are white, yellow, and brown. Occurs only near Nassau-Suffolk County border near center of island. | Highly permeable, but occurs mostly above water table. Excellent infiltration characteristics. |
| | | Unconformity | | | | | | |
| Cretaceous | Upper Cretaceous | Magothy(?) Formation [2] | | Magothy aquifer | 1,100 | 0-600 | Sand, fine to medium, clayey in part; interbedded with lenses and layers of coarse sand and sandy and solid clay. Gravel is common in basal 50-200 feet. Sand and gravel are quartzose. Lignite, pyrite, and iron oxide concretions are common; contains muscovite, magnetite, rutile, and garnet as accessory minerals. Colors are gray, white, red, brown, and yellow. | Most layers are poorly to moderately permeable; some are highly permeable locally. Specific capacities of wells in the Magothy generally range from 1 to about 30 gpm per ft of drawdown, rarely are as much as 80 gpm per ft of drawdown. Water is unconfined in uppermost parts, elsewhere is confined. Water is generally of excellent quality but has high iron content locally along north and south shores. Constitutes principal aquifer for public-supply wells in western Long Island except Kings County, where it is mostly absent. Has been invaded by salty ground water locally in southwestern Nassau and southern Queens Counties and in small areas along north shore. |
| | | Unconformity | | | | | | |
| | | Raritan Formation | Clay member | Raritan clay | 300 | 70-1,500 | Clay, solid and silty; few lenses and layers of sand; little gravel. Lignite and pyrite are common. Colors are gray, red, and white, commonly variegated. | Poorly to very poorly permeable; constitutes confining layer for underlying Lloyd aquifer. Very few wells produce appreciable water from these deposits. |
| | | | Lloyd Sand Member | Lloyd aquifer | 500 | 200-1,800 | Sand, fine to coarse, and gravel, commonly with clayey matrix; some lenses and layers of solid and silty clay; locally contains thin lignite layers and iron concretions. Locally has gradational contact with overlying Raritan clay. Sand and most of gravel are quartzose. Colors are yellow, gray, and white; clay is red locally. | Poorly to moderately permeable. Specific capacities of wells in the Lloyd generally range from 1 to about 25 gpm per ft of drawdown, rarely are as much as 50 gpm per ft of drawdown. Water is confined under artesian pressure by overlying Raritan clay; generally of excellent quality but locally has high iron content. Has been invaded by salty ground water locally in necks near north shore, where aquifer is mostly shallow and overlying clay is discontinuous. Called "deep confined aquifer" in some earlier reports. |
| | | Unconformity | | | | | | |
| Precambrian | | Bedrock | | Bedrock | | 0-2,700 | Crystalline metamorphic and igneous rocks; muscovite-biotite schist, gneiss, and granite. A soft, clayey zone of weathered bedrock locally is more than 100 feet thick. | Poorly permeable to virtually impermeable; constitutes virtually the lower boundary of ground-water reservoir. Some hard, fresh water is contained in joints and fractures but is impractical to develop at most places; however, a few wells near the western edges of Queens and Kings Counties obtain water from the bedrock. |

[1] Names are those used in reports by the Geological Survey.
[2] The use of the term "Magothy(?) Formation" has been abandoned. The post-Raritan Cretaceous deposits are divided into the Magothy Formation and Matawan Group undifferentiated and the Monmouth Group undifferentiated.

lenses in the Magothy deposits; and the Gardiners Clay, which overlies the Jameco aquifer and locally overlies the Magothy aquifer. The clayey and silty layers in the Magothy aquifer become increasingly effective as confining layers with depth, particularly in the southern part of Long Island where the Magothy reaches its maximum thickness—about 1,100 feet in southern Suffolk County. Clayey beds in the upper glacial aquifer are found mainly in the northern part of the island and in parts of central Suffolk County; some are interbedded with glacial outwash deposits near the south shore.

## DEFINITION OF HYDRAULIC CONDUCTIVITY AND TRANSMISSIVITY

The hydraulic conductivity, *K*, of material comprising an aquifer is a measure of the material's capacity to transmit water. In units of meinzers, commonly used by the Geological Survey, hydraulic conductivity is defined as the rate of flow of water in gallons per day through a cross-sectional area of 1 square foot under a hydraulic gradient of 1 foot per foot at a temperature of 60° F. In field practice the adjustment to the standard temperature of 60° F commonly is ignored, and hydraulic conductivity is then understood to be related to the prevailing water temperature.

The transmissivity of material comprising an aquifer is defined as the number of gallons of water that will move in 1 day through a vertical strip of the aquifer having a width of 1 foot and having the height of the aquifer, when the hydraulic gradient is unity. It is equal to the hydraulic conductivity multiplied by the thickness of the aquifer in feet, and it is expressed by the following equation:

$$T = Km, \qquad (1)$$

in which $T$ = transmissivity of the aquifer, in gallons per day per foot,
$K$ = hydraulic conductivity of the aquifer, in gallons per day per square foot, and
$m$ = thickness of the aquifer, in feet.

Strictly speaking, the preceding definition of transmissivity applies only to a homogeneous and isotropic aquifer. Under these ideal conditions the transmissivity is constant at all times and places within the aquifer. A generalization of this definition that is useful for defining the transmissivity of multilayered sequences in which both thickness and hydraulic conductivity vary widely in adjacent layers is

$$T = \sum_{i=1}^{n} K_i m_i, \qquad (2)$$

in which $T$ = total transmissivity of $i$ layers, in gallons per day per foot,
$K_i$ = hydraulic conductivity of the $i$th layer, in gallons per day per square foot, and
$m_i$ = thickness of the $i$th layer, in feet.

With reference to equations 1 and 2, the average hydraulic conductivity $\overline{K}$ of a sequence of layers may be defined as

$$\overline{K} = \frac{T}{M} \qquad (3)$$

in which $\overline{K}$ = average hydraulic conductivity of a multilayered sequence, in gallons per day per square foot,
$T$ = total transmissivity, in gallons per day per foot, and
$M$ = total thickness of the sequence of layers, in feet.

The definitions of hydraulic conductivity and transmissivity in equations 1, 2, and 3 are strictly valid only for the hydraulic conductivity in the direction parallel to the direction of flow, which, for most of Long Island, is parallel to the bedding or stratification of the aquifers. This direction commonly corresponds to the direction of greatest hydraulic conductivity and transmissivity in nature. Thus, where the bedding is horizontal or almost so, as on Long Island, equations 1, 2, and 3 are used to define the horizontal hydraulic conductivity and transmissivity.

## PREVIOUS ESTIMATES OF HYDRAULIC CONDUCTIVITY AND TRANSMISSIVITY OF LONG ISLAND'S AQUIFERS

Previous investigators estimated transmissivity and hydraulic conductivity values for parts of individual aquifers on Long Island primarily from data derived from aquifer tests and driller's well-acceptance tests (specific-capacity tests). Pertinent data concerning the aquifer tests for which information is available are listed in table 2, and the locations of the wells that were tested are shown in figure 5. In most of the tests, it was assumed that the thickness of the aquifer tested was equal to the thickness of the material between the first well-defined clay layer below and above the screened interval or the first well-defined clay layer below the screened interval and the water table.

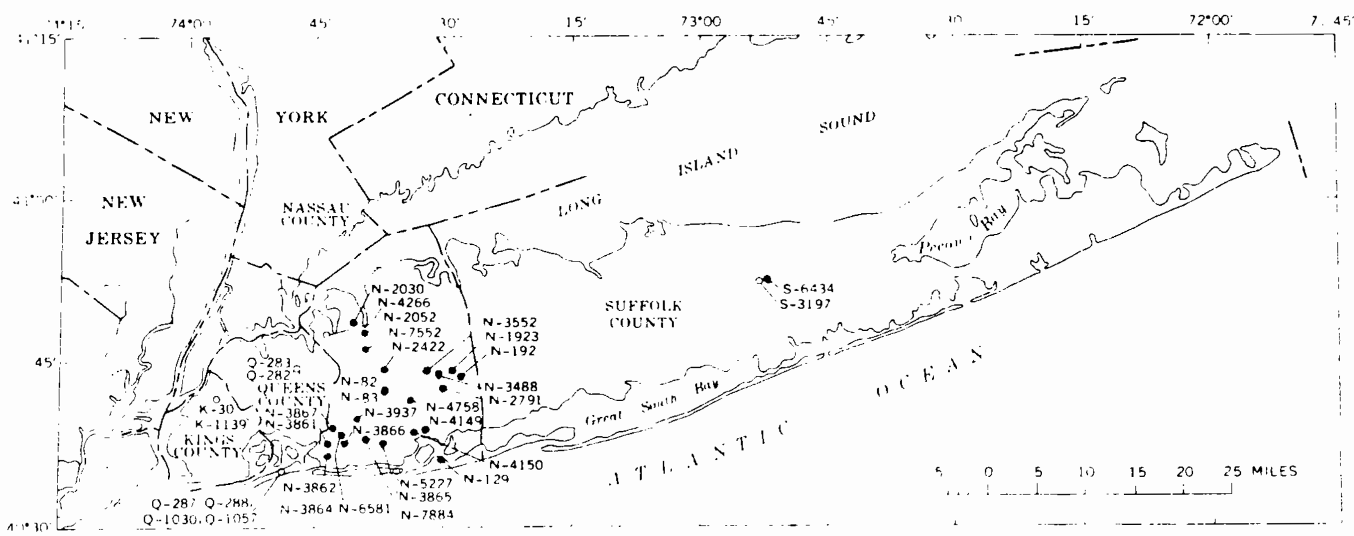



FIGURE 5.—Location of wells for which aquifer-test data are available. Data summarized in table 2.

TABLE 2.—*Estimates of transmissivity and hydraulic conductivity of Long Island's aquifers derived from aquifer tests*

| Aquifer | Well | Date of test | Well discharge (gpm) | Drawdown in pumped well (feet) | Screen length (feet) | Estimated thickness of interval tested (feet) | Transmissivity (gpd per ft) | Hydraulic conductivity (gpd per sq ft) | Source of information[1] |
|---|---|---|---|---|---|---|---|---|---|
| Upper glacial | K-30 | 1947 | | | | | 375,000 | | U.S.G.S. file. |
| | S-3197 | Dec. 1950 | 460 | 50 | 20 | 145 | 190,000 | 1,300 | M. A. Warren and N. Lusczynski. |
| Jameco | K-1139 | June 1941 | 220 | | | 80 | 110,000 | 1,400 | J. G. Ferris. |
| Magothy | N-82 | Sept. 1935 | 1,000 | 28 | 50 | 50 | 140,000 | 2,800 | U.S.G.S. file. |
| | N-83 | Sept. 1935 | 1,010 | 34 | 60 | 60 | 140,000 | 2,300 | Do. |
| | N-129 | Nov. 1953 | 1,220 | 54 | 50 | 50 | 50,000 | 1,000 | Do. |
| | N-192 | Dec. 1940 | 530 | | 50 | 100 | 350,000 | 3,500 | C. E. Jacob. |
| | N-1923 | Aug. 1943 | 1,360 | 70 | 55 | 70 | 60,000 | 850 | Do. |
| | N-2030 | Apr. 1946 | 540 | 87 | 25 | 32 | 115,000 | 3,600 | Do. |
| | N-2052 | Aug. 1947 | 920 | 39 | 20 | 20 | 30,000 | 1,500 | W. V. Swarzenski. |
| | N-2422 | Oct. 1947 | 205 | 40 | 31 | 50 | 240,000 | 4,800 | N. J. Lusczynski. |
| | N-2791 | Sept. 1949 | 790 | 20 | 31 | 100 | 240,000 | 2,400 | Do. |
| | N-3488 | July 1950 | 1,120 | 35 | 52 | 100 | 150,000 | 1,500 | Do. |
| | N-3552 | Sept. 1950 | 1,150 | 24 | 53 | 100 | 360,000 | 3,600 | Do. |
| | N-3861 | Oct. 1952 | 130 | 21 | 11 | 155 | 150,000 | 1,000 | Do. |
| | N-3862 | Oct. 1952 | 82 | 19 | 10 | 45 | 40,000 | 900 | Do. |
| | N-3864 | Oct. 1952 | 95 | 91 | 11 | 145 | 30,000 | 200 | Do. |
| | N-3865 | Oct. 1952 | 86 | 91 | 10 | 80 | 24,000 | 300 | Do. |
| | N-3866 | Oct. 1952 | 113 | 31 | 10 | 60 | 100,000 | 1,700 | Do. |
| | N-3867 | Dec. 1952 | 83 | 10 | 11 | 60 | 80,000 | 1,300 | Do. |
| | N-3937 | Sept. 1952 | 1,600 | 60 | 73 | 67 | 140,000 | 2,100 | Do. |
| | N-4149 | Oct. 1953 | 140 | 23 | 16 | 180 | 300,000 | 1,600 | Do. |
| | N-4150 | Feb. 1954 | 120 | 9 | 16 | 70 | 140,000 | 2,000 | Do. |
| | N-4758 | Dec. 1954 | 1,300 | | 62 | 100 | 220,000 | 2,200 | N. M. Perlmutter and J. J. Geraghty. |
| | N-6581 | Oct. 1958 | 130 | 38 | 10 | 60 | 30,000 | 500 | N. J. Lusczynski. |
| | N-7552 | Aug. 1964 | 1,500 | 114 | 95 | 95 | 70,000 | 740 | U.S.G.S. file. |
| | N-7884 | Apr. 1967 | 1,000 | 32 | 62 | 50 | 60,000 | 1,200 | Do. |
| | S-6434 | Jan. 1949 | 410 | 33 | 20 | 100 | 40,000 | 400 | M. A. Warren and N. J. Lusczynski. |
| Lloyd | Q-282 | Jan. 1942 | | | 84 | 80 | 50,000 | 600 | C. E. Jacob. |
| | Q-283 | Jan. 1942 | | | 85 | 80 | 50,000 | 600 | Do. |
| | Q-287 | Feb. 1940 | 2,100 | | | 100 | 160,000 | 1,600 | Do. |
| | Q-288 | Feb. 1940 | 2,100 | | | 100 | 180,000 | 1,800 | Do. |
| | Q-1030 | Feb. 1940 | 2,100 | 52 | 65 | 100 | 160,000 | 1,600 | Do. |
| | Q-1057 | Feb. 1940 | 2,100 | | | 100 | 170,000 | 1,700 | Do. |
| | N-4266 | Sept. 1954 | 78 | 41 | 15 | 15 | 10,000 | 660 | N. J. Lusczynski. |
| | N-5227 | June 1955 | 1,200 | 50 | 60 | 60 | 30,000 | 500 | N. J. Lusczynski and W. V. Swarzenski. |
| | S-6434 | June 1949 | 460 | 185 | 80 | 65 | 12,500 | 200 | M. A. Warren and N. J. Lusczynski. |

[1] From original data in the files of the U.S. Geological Survey, Mineola, N.Y.; some interpretive results based on these data were later published.

Estimates of hydraulic conductivity by previous investigators, which were derived from specific-capacity data obtained from drillers' acceptance tests, are listed in table 3, and the locations of the wells that were studied are shown in figure 6. Usually one of two methods was used to calculate the transmissivity of part of the aquifer. The first method was developed by Theis, Brown, and Meyer (1954) for water-table aquifers. The second method, devised by R. R. Meyer (Bentall, 1963), is also based on the method developed by Theis, but it provides a technique for estimating the transmissivity of both artesian and water-table aquifers. The hydraulic conductivity was in turn calculated by dividing the transmissivity by an estimated value of the thickness of aquifer material that was tested at the well site.

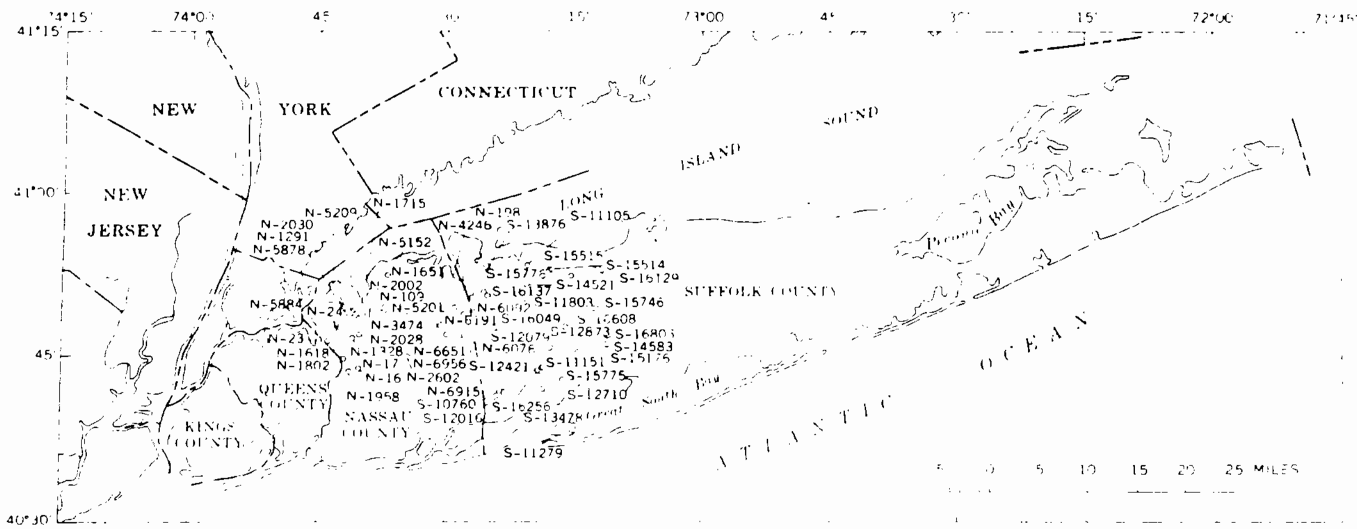



FIGURE 6.—Location of wells for which specific-capacity data are available. Data summarized in table 3.

TABLE 3.—*Estimates of average hydraulic conductivity for parts of Long Island's aquifers derived from specific-capacity data*

| Aquifer | Well | Screen length (feet) | Estimated thickness of interval tested (feet) | Estimated average hydraulic conductivity of interval tested (gpd per sq ft) | Source of information |
|---|---|---|---|---|---|
| Upper glacial | S-10760 | 22 | 73 | 800 | Pluhowski and Kantrowitz (1964, p. 16). |
| | S-11105 | 48 | 48 | 900 | Lubke (1964, p. 19). |
| | S-11151 | 11 | 84 | 300 | Pluhowski and Kantrowitz (1964, p. 16), |
| | S-11803 | 53 | 53 | 1, 500 | Lubke (1964, p. 19). |
| | S-12016 | 35 | 67 | 2, 200 | Pluhowski and Kantrowitz (1964, p. 16). |
| | S-12421 | 21 | 70 | 1, 000 | Do. |
| | S-12710 | 30 | 75 | 1, 600 | Do. |
| | S-12873 | 25 | 91 | 1, 100 | Do. |
| | S-13478 | 25 | 70 | 900 | Do. |
| | S-15746 | 41 | 41 | 900 | Lubke (1964, p. 19). |
| | S-15776 | 63 | 63 | 1, 200 | Do. |
| | S-16049 | 62 | 62 | 1, 000 | Do. |
| | S-16137 | 62 | 62 | 750 | Do. |
| | S-16176 | 36 | 85 | 1, 200 | Pluhowski and Kantrowitz (1964, p. 16). |
| | S-16608 | 30 | 88 | 1, 200 | Do. |
| | S-16803 | 5 | ---------- | 700 | Pluhowski and Kantrowitz (1964, p. 17). |
| Average | | | | 1, 080 | |
| Magothy | N-16 | 60 | 150 | 280 | Swarzenski (1963, p. 17). |
| | N-17 | 60 | 80 | 350 | Do. |
| | N-198 | 50 | 70 | 1, 200 | Isbister (1966, p. 24). |
| | N-2028 | 60 | 190 | 400 | Swarzenski (1963, p. 17). |
| | N-2030 | 25 | 80 | 440 | Do. |
| | N-3474 | 60 | 70 | 1, 000 | Isbister (1966, p. 24). |
| | N-4246 | 50 | 100 | 700 | Do. |
| | N-5209 | 40 | 100 | 540 | Swarzenski (1963, p. 17). |
| | N-5876 | 70 | 110 | 270 | Do. |
| | N-5884 | 71 | 110 | 870 | Do. |
| | N-6076 | 62 | 70 | 1, 200 | Isbister (1966, p. 24). |
| | N-6092 | 70 | 110 | 1, 100 | Do. |
| | N-6191 | 99 | 130 | 600 | Do. |
| | N-6651 | 50 | 60 | 1, 100 | Do. |
| | N-6915 | 53 | 90 | 1, 100 | Do. |
| | N-6956 | 62 | 110 | 800 | Do. |
| | S-11279 | 30 | 59 | 400 | Pluhowski and Kantrowitz (1964, p. 18), |
| | S-12079 | 72 | 72 | 550 | Lubke (1964, p. 19). |
| | S-13876 | 52 | 52 | 450 | Do. |
| | S-14521 | 62 | 62 | 750 | Do. |
| | S-14583 | 26 | 89 | 400 | Pluhowski and Kantrowitz (1964, p. 18). |
| | S-15514 | 60 | 60 | 650 | Lubke (1964, p. 19). |
| | S-15515 | 40 | 40 | 450 | Do. |
| | S-15775 | 40 | 88 | 800 | Pluhowski and Kantrowitz (1964, p. 18). |
| | S-16129 | 76 | 76 | 650 | Lubke (1964, p. 19). |
| | S-16256 | 52 | 76 | 1, 200 | Pluhowski and Kantrowitz (1964, p. 18). |
| Average | | | | 700 | |
| Lloyd | N-23 | 30 | 140 | 200 | Swarzenski (1963, p. 15). |
| | N-24 | 68 | 150 | 270 | Do. |
| | N-109 | 70 | 128 | 400 | Isbister (1966, p. 20). |
| | N-1291 | 25 | 40 | 300 | Swarzenski (1963, p. 15). |
| | N-1328 | 90 | 210 | 330 | Do. |
| | N-1618 | 80 | 150 | 380 | Do. |
| | N-1651 | 80 | 210 | 300 | Isbister (1966, p. 20). |
| | N-1715 | 50 | 140 | 210 | Swarzenski (1963, p. 15). |
| | N-1802 | 50 | 190 | 260 | Do. |
| | N-1958 | 60 | 150 | 560 | Do. |
| | N-2002 | 31 | 80 | 370 | Do. |
| | N-2602 | 40 | 230 | 100 | Isbister (1966, p. 20). |
| | N-5152 | 50 | 220 | 100 | Do. |
| | N-5201 | 70 | 126 | 500 | Do. |
| Average | | | | 310 | |

As shown in table 2, only two estimates of transmissivity derived from aquifer tests were available for the upper glacial aquifer. Neither of the two wells tested penetrates the highly permeable outwash deposits that cover most of the southern half of Long Island. The only available estimate of the hydraulic conductivity of the upper glacial aquifer based on aquifer-test data (well S3197, table 2) is from an area where morainal till and lakebed clay deposits are part of the upper glacial aquifer. Therefore, the hydraulic conductivity value obtained from this test is probably less than the average hydraulic conductivity of the aquifer.

Well K1139 in eastern Kings County is the only well tapping the Jameco aquifer for which aquifer-test data were available (table 2). The calculated transmissivity of the Jameco at this well is about 110,000 gpd per ft (gallons per day per foot). If the thickness of the aquifer that was tested is assumed to be 80 feet, the average hydraulic conductivity for that interval would be about 1,400 gpd per sq ft (gallons per day per square foot).

More estimates of transmissivity have been obtained from aquifer tests for the Magothy aquifer than for any other aquifer on Long Island (table 2). However, these estimates are of small thicknesses of the aquifer, and these materials probably include the more permeable parts of the aquifer penetrated by the well. Therefore, the estimates of average hydraulic conductivity obtained from these tests are undoubtedly higher than the average hydraulic conductivity of the whole aquifer. Most of the estimates of transmissivity of the Magothy aquifer based on data from aquifer tests range from 30,000 to more than 300,000 gpd per ft (table 2). Most values of hydraulic conductivity for the materials tested range from about 1,000 to 3,000 gpd per sq ft, and the average hydraulic conductivity is about 1,700 gpd per sq ft.

Average hydraulic conductivities of the intervals tested in the Magothy aquifer, as computed by previous investigators from specific-capacity data (table 3), are considerably less than the hydraulic conductivities calculated from aquifer-test data (table 2). Computed hydraulic conductivities of the aquifer in northern Nassau and western Suffolk Counties range from about 300 to 1,200 gpd per sq ft and average about 700 gpd per sq ft. These hydraulic conductivities were derived from estimated transmissivities divided by estimated thicknesses of the aquifer determined from lithologic logs. Because most of these wells probably were also screened in the most permeable zones, the apparent discrepancy between the average hydraulic conductivity values calculated from specific-capacity data (700 gpd per sq ft) and the values calculated from aquifer-test data (1,700 gpd per sq ft) probably is related to the different methods of evaluation that were used rather than to actual differences in hydraulic conductivity.

Data were available for nine aquifer tests using wells that were screened in the Lloyd aquifer (table 2). Lithologic logs of the Lloyd aquifer suggest that the percentage of clay in the aquifer increases eastward. This, however, does not explain the large difference between the hydraulic conductivities calculated in several wells in Queens County and well S6434 in central Suffolk County. Lusczynski and Swarzenski (1966, p. 19) report that a reevaluation of the test for well Q1030 indicated that the average hydraulic conductivity was probably only about 500 gpd per sq ft. Furthermore, well S6434 possibly was not sufficiently developed to obtain a meaningful value for the transmissivity and hydraulic conductivity of the Lloyd aquifer from an aquifer test. The average hydraulic conductivity of the Lloyd aquifer calculated from specific-capacity data (table 3) was about 300 gpd per sq ft in Nassau County.

## DERIVATION OF HYDRAULIC CONDUCTIVITY AND TRANSMISSIVITY VALUES IN THE PRESENT INVESTIGATION

One of the major objectives of this investigation was to prepare maps showing the average hydraulic conductivity and transmissivity of Long Island's aquifers. The method used to develop the hydraulic conductivity and transmissivity values mainly involved an analysis of specific-capacity and lithologic data.

### THEORY

Theis and others (1954) suggested procedures for using specific-capacity data to estimate transmissivity of aquifers by means of the Theis nonequilibrium equation. A convenient form of that equation for this purpose (expressed in units used by the Geological Survey) is

$$\frac{Q}{s}=\frac{T}{114.6W(u)}, \qquad (4)$$

where $Q/s$ = specific capacity of the well, in gallons per minute per foot of drawdown,

$Q$ = discharge of the pumping well, in gallons per minute,

$s$ = drawdown in the pumping well, in feet,

$T$ = transmissivity of the aquifer, in gallons per day per foot,

$W(u)$ = well function of $u = 1.87\ r^2\ S/Tt$,
$r$ = distance from the pumping well to the point of observation, in feet,
$S$ = coefficient of storage, expressed as a decimal fraction, and
$t$ = time since pumping started, in days.

The assumptions made in deriving this formula and the sensitivity of the various parameters to changes in the magnitude of other parameters are discussed at length by Bredehoeft (1963).

In this report, equation 4 was used in a modified form that was more amenable to the direct use of well data. By substituting $\overline{K}L$ for $T$ and rearranging terms, then

$$\overline{K} = 114.6W(u)\ \frac{Q}{sL}, \qquad (5)$$

where $\overline{K}$ = average hydraulic conductivity of the materials opposite the well screen, in gallons per day per square foot, and
$L$ = length of well screen, in feet.

Implicit in this substitution is the assumption that the length of the well screen is equal to the thickness of aquifer material that contributes all the water to the well.

The factor $Q/sL$ is the specific capacity of the well per foot of well screen. Because this factor takes into account the length of the well screen, its value for different wells commonly can be compared more meaningfully than can specific-capacity values, particularly where the lengths of well screens differ considerably.

Most aquifers are highly anisotropic to fluid flow, and the average hydraulic conductivity of an aquifer parallel to the bedding generally is many times greater than the average hydraulic conductivity perpendicular to the bedding. Therefore, in horizontally bedded deposits, such as those of the Long Island ground-water reservoir, most of the flow into a well commonly is derived from the materials directly opposite the well screen. Thus, the length of well screen, $L$, generally is a reasonable estimate of the thickness of aquifer that contributes most of the water to the well. However, because of some across-bed flow originating in beds above or below a well screen and because some wells are packed with gravel which forms a conduit for water from above and below the screen, equation 5 may give values of $\overline{K}$ that are somewhat greater than the average hydraulic conductivity of the materials opposite the well screen. In general, the error involved in using equation 5 decreases as the length of the well screen increases. Except for wells with very short screens (for example, less than 15 feet), the error in average hydraulic conductivity determination due to water entering the well from above and below the well screen is generally less than 25 percent.

To apply equation 5, a value for the factor $114.6W(u)$ must also be estimated. By inserting, for the variables in the expression $114.6W(u)$ in equation 4, the most extreme values for conditions that might occur in Long Island's aquifers, this expression was found to range from 1,500 to 2,500 and to average about 2,000. In other words,

$$\overline{K} \approx 2{,}000\ Q/sL \qquad (6)$$

is a valid approximation. Equation 6, therefore, was used to estimate the average hydraulic conductivity of the materials opposite the screened interval of most wells analyzed for this report.

As outlined in the previous paragraphs, the method of pumping-test analysis used in this report differs from the approach of previous investigators, who assumed that the tested thickness of the aquifer comprised the interval between the first "well-defined" clay layers above and below the well screen. The approach by previous investigators was not adopted because only a fraction of the wells on Long Island have geophysical logs, core data, or sufficiently detailed lithologic logs to make such an approach generally feasible on an island-wide basis. In addition, the present method has the advantage that it is quick and requires no judgment regarding the nature and extent of "well-defined" clay layers.

In the simplest case, if the lithology of the entire screened interval of each well was the same and if many wells were screened throughout all the different lithologies in an aquifer, then a compilation of values calculated from equation 6 would give a good estimate of the average hydraulic conductivity for the aquifer. In many areas, however, the screened intervals commonly are comprised of several layers of different lithology and, therefore, of different hydraulic conductivity. Jenkins (1963) developed a technique using multiple-regression analysis to deal with the problem of multiple lithologies in the screened interval. In this investigation, as is described subsequently in the report, a sufficiently large number of screened intervals in each aquifer on Long Island are characterized by a single lithologic type, so that Jenkins' procedure was not used.

The lithologic descriptions of the screened intervals used in this study were derived mainly from drillers' lithologic logs. Therefore, the validity of the procedures described in the following section and the accuracy of the analysis are, at least partly, contingent upon the validity of the assumption that the drillers were consistent in their descriptions of the materials.

## GENERAL PROCEDURE

Completion reports were available for about 45,000 wells on Long Island in 1967. However, most of these wells are shallow-driven well points, and no lithologic and very little hydrologic information is available for them. For the purpose of this study, data were recorded according to the format shown in table 4 for about 2,500 wells for which pertinent data were available. These wells include about 70 percent of all the wells that tap the upper glacial and Jameco aquifers for which pertinent hydrologic information is available and more than 80 percent of all known wells that tap the Magothy and Lloyd aquifers. Furthermore, these 2,500 wells included nearly all the large-yield (500 gallons per minute or more) wells on Long Island.

TABLE 4.—*Information recorded for each well*

| *Information* | *Remarks* |
|---|---|
| Well number | Number assigned by the New York State Water Resources Commission. The initial letter designates the appropriate county—that is, K, Q, N, and S refer to Kings, Queens, Nassau, and Suffolk Counties, respectively. This numbering system has no relation to location. |
| Date of well-acceptance test | Generally well was drilled several months prior to the test. |
| Aquifer in which well is screened. | One of four principal aquifers on Long Island—upper glacial, Jameco, Magothy, or Lloyd. |
| Location of well | An arbitrary numbering system was assigned to the latitude-longitude grid which permitted each well to be located within a 2½ minute rectangle. This rectangle is approximately 2.2 miles by 2.9 miles or nearly 6.4 square miles. |
| Source of information | The source of information was usually a bulletin of the New York State Department of Conservation, Division of Water Resources, the files of the Division, or the files of the U.S. Geological Survey. |
| Screen diameter, in inches | Inside diameter. |
| Screen length, in feet | The "$L$" of the $Q/sL$ number. |
| Screened interval, in feet below land-surface datum. | The depths of the top and bottom of the well screen. |
| Acceptance test data: | |
| Duration of test, in hours | |
| Drawdown in pumping well, in feet. | The drawdown is generally measured at the end of the test; the "$s$" of the $Q/sL$ number. |
| Discharge of pumping well, in gallons per minute. | Discharge generally maintained as constant as possible throughout the test; the "$Q$" of the $Q/sL$ number. |
| $Q/sL$ number, in gallons per minute (per) square foot. | Computed from tabulated data. |
| Lithologic description(s) of the screened interval. | Complete drillers' description of the screened interval, and unit thicknesses. |
| Depth of well, in feet | Drilled depth is sometimes considerably greater than bottom of the well screen. |
| Approximate elevation of land-surface datum at well location, in feet above mean sea level. | Taken mostly from topographic maps; generally accurate to within 5 feet, except where location of well is not known exactly. |
| Elevation of aquifer boundaries, in feet above or below mean sea level. | Estimated from the drillers' log and regional geologic correlations. |

The procedures used in this report to obtain estimated values of transmissivity and average hydraulic conductivity from well data were somewhat similar to those described by Bredehoeft (1963). Although the analytical procedures varied slightly for each of the four major aquifers, hydraulic conductivity and transmissivity maps were prepared for the aquifers in accordance with the following major steps. First, the numerous lithologic descriptions of the screened intervals were grouped into three general classes: (1) Gravel, sand and gravel, and coarse sand, (2) medium to very fine sand, and sand with silt or clay layers, and (3) clay, sandy, clay, and silty clay. Initially, the lithologic descriptions were divided into six classes, but the differences between the median $Q/sL$ numbers of each of these classes were insignificant; therefore, the broader grouping was adopted. Only wells that had sufficient information to calculate $Q/sL$ numbers were used in this phase of the analysis. The median values for the $Q/sL$ numbers were determined for each of the three lithologic classes for each aquifer, as shown in tables 5, 7, 9, and 11.

The second step in the procedure involved assigning hydraulic conductivity values to all the materials encountered by wells that penetrated or nearly penetrated the entire thickness of each major aquifer. In this step, all wells with drillers' logs were used, whether or not $Q/sL$ data were available. Each lithologic type in a well log was grouped into one of the three lithologic classes, each class was assigned a $Q/sL$ number within the range set for each aquifer, and a corresponding approximate hydraulic conductivity value was calculated using equation 6. The range assigned to each lithologic class for all aquifers, except for class 1 of the Magothy and Lloyd aquifers, is purposely less than the median $Q/sL$ values determined from the lithologic analysis of the screened intervals, partly in an effort to reflect the fact that many of the drillers' descriptions seem to overestimate the coarseness and degree of sorting of the materials and partly because the drillers commonly placed the screen in one of the most permeable intervals. Also, the use of a range provided latitude for judgment in interpreting the hydrologic significance of the individual lithologic descriptions in the drillers' logs. Finally, the range applied to each class emphasized $Q/sL$ values from logs with the best available information, in contrast to the computed median values, which did not take into account the quality of the logs.

Inasmuch as virtually no wells were screened in the materials assigned to class 3, $Q/sL$ and hydraulic conductivity values could not be determined for these materials. However, the very fine materials in this class contribute only slightly to the total transmissivity of the aquifers, and accordingly, the hydraulic conductivity of class 3 was assumed to be zero. The error involved in this assumption was considered to be well within the error involved in the overall computations of transmissivity.

In the third step, the average hydraulic conductivity of the materials penetrated by each well (average point hydraulic conductivity) was computed by means of equations 2 and 3. Where a well did not penetrate the entire thickness of the aquifer but did penetrate a substantial part, the computed average hydraulic conductivity was assumed to equal that of the total thickness of the aquifer at the well site.

The average point hydraulic conductivities then were plotted and contoured in the fourth and final step (pls. 1*B*, 2*B*, 3*B*, and fig. 14). Commonly, the point hydraulic conductivities ranged widely, even between nearby wells. Thus, the contour lines were drawn to follow the general trend of the plotted data; however, their positions were also influenced by available information on the areal changes in lithologic character of the aquifers in various parts of Long Island.

Regional transmissivity maps of each aquifer (pls. 1*C*, 2*C*, 3*C*, and fig. 15) were developed from the average hydraulic conductivity and thickness maps by multiplying the aquifer thickness by the average hydraulic conductivity at a network of points and contouring the resulting values.

## HYDRAULIC CONDUCTIVITY AND TRANSMISSIVITY OF THE PRINCIPAL AQUIFERS

### UPPER GLACIAL AQUIFER

The $Q/sL$ numbers of wells screened in the upper glacial aquifer range from less than 0.1 to more than 4.0 gpm per sq ft (gallons per minute per square foot) (fig. 7). About three-fourths of the $Q/sL$ numbers in figure 7 are between 0.5 and 2.5 gpm per sq ft, and

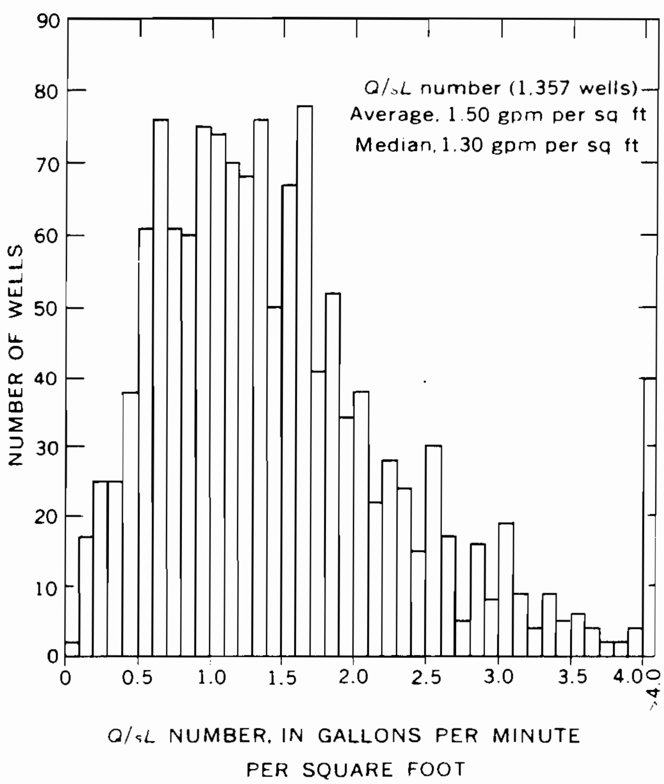



FIGURE 7.—Distribution of $Q/sL$ numbers of wells screened in the upper glacial aquifer. (Average hydraulic conductivity of screened intervals approximates 2,000 $Q/sL$; see text discussion.)



the median $Q/sL$ number for all wells tabulated is about 1.3 gpm per sq ft. $Q/sL$ numbers greater than 2.5 gpm per sq ft were commonly determined for wells with short screen lengths (15 feet or less) of which the upper glacial aquifer (fig. 8) has a larger proportion than

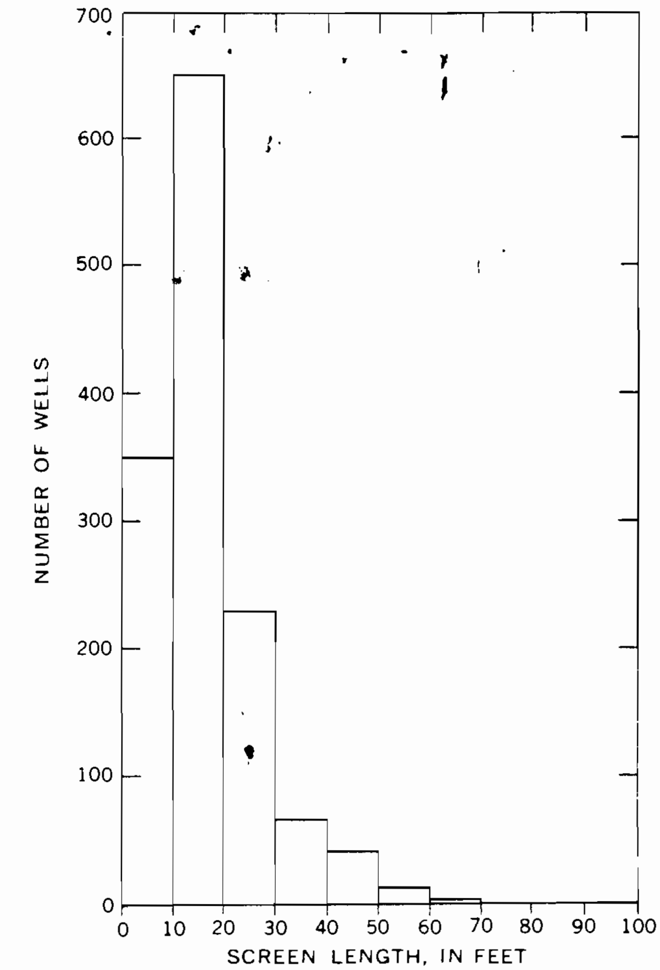



FIGURE 8.—Distribution of screen lengths of wells in the upper glacial aquifer.

any other aquifer on Long Island. (Compare figs. 8, 11, 17, and 20.) Vertical flow components probably account for an appreciable part of the discharge from these wells.

Lithologic descriptions of the screened intervals were available for most wells that were screened in the upper glacial aquifer and for which test data were available. Moreover, most of the screened intervals were either described as one lithology or the different lithologic descriptions belonged to a single lithologic class as defined earlier. The median $Q/sL$ numbers determined for each lithologic class are listed in table 5, along with the range in $Q/sL$ numbers assigned to each litho-

TABLE 5.—*Assigned range of Q/sL numbers and calculated hydraulic conductivity values for selected lithologic classes in the upper glacial aquifer*

| Lithologic class | | Number of wells | Median *Q/sL* number of screened intervals (gpm per sq ft) | Assigned range of *Q/sL* numbers (gpm per sq ft) | Calculated range of hydraulic conductivity (gpd per sq ft) |
|---|---|---|---|---|---|
| No. | Description | | | | |
| 1 | Gravel, sand and gravel, and coarse sand | 924 | 1.5 | 1.0–1.5 | 2,000–3,000 |
| 2 | Medium, fine, and very fine sand, and sand with silt or clay layers. | 408 | 1.1 | 0.2–0.9 | 400–1,800 |
| 3 | Clay, sandy clay, and silty clay | | | [1] 0 | 0 |

[1] Assumed; see text discussion.

logic class and the corresponding range of calculated hydraulic conductivity values for each class.

Lithologic logs from about 620 wells penetrating the upper glacial aquifer were analyzed to determine point values of average aquifer hydraulic conductivity. These wells were fairly well distributed in the subareas of Long Island (fig. 9). Although in Kings, Queens, and Nassau Counties most wells that were analyzed completely penetrated the aquifer, progressively fewer wells penetrated the entire aquifer toward eastern Suffolk County.

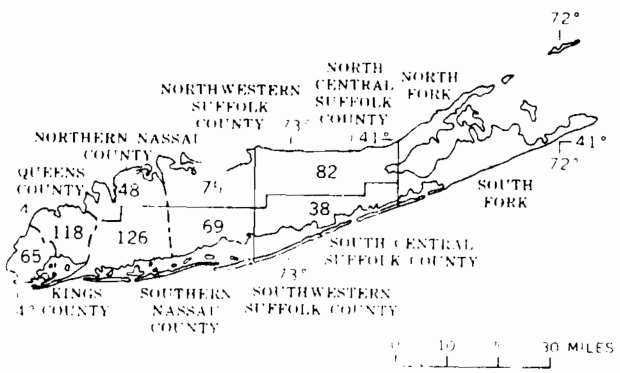



FIGURE 9.—Number of wells for which lithologic logs were available for the upper glacial aquifer in the indicated subareas in 1967.

A map showing thickness of the saturated upper glacial aquifer[1] (pl. 1*A*) was prepared from an unpublished map of the September 1965 water table, from well logs, and from maps and data contained in several reports (Isbister, 1966; Lubke, 1964; Perlmutter and Geraghty, 1963; Pluhowski and Kantrowitz, 1964; Swarzenski, 1963; Julian Soren, written commun., 1968). Maps showing lines of equal average hydraulic conductivity (pl. 1*B*) and equal transmissivity (pl. 1*C*) were constructed according to the procedures outlined previously.

Noteworthy features of the map showing thickness of the saturated upper glacial aquifer (pl. 1*A*) are (1) the areas near the north shore of the island in which the aquifer locally is more than 500 feet thick, and (2) the increasing thickness of the aquifer in eastern Suffolk County. The great thickness near the north shore reflects buried valleys in the underlying Cretaceous deposits. Buried valleys are not as pronounced near the south shore of Long Island.

The distribution of the lines of equal average hydraulic conductivity (pl. 1*B*) reflects to some extent the geologic origin of the glacial material on Long Island. Average hydraulic conductivities of 2,000 gpd per sq ft and higher occur through much of the outwash-plain deposits in southern Queens, Nassau, and Suffolk Counties. Beds of lower average hydraulic conductivity (about 1,000 gpd per sq ft) are found in north-central Nassau and Suffolk Counties, where the glacial deposits contain more silt and clay.

The trends of the lines of equal transmissivity in the upper glacial aquifer (pl. 1*C*) are similar to the trends of the lines of equal saturated thickness (pl. 1*A*). This similarity reflects the fact that the variation in thickness of the aquifer is generally greater than the variation in estimated average hydraulic conductivity (pl. 1*B*). The highest values of transmissivity in plate 1*C* are associated with the greatest aquifer thicknesses, which occur in the buried valleys along the north shore of the island and in central Suffolk County.

The average thickness, hydraulic conductivity, and transmissivity of the upper glacial aquifer in subareas of Long Island, as derived from plate 1*A*, *B*, and *C*, are listed in table 6.

[1] In numerous places on Long Island, deep channels were cut into the Cretaceous deposits and subsequently filled with Pleistocene deposits. Along the north shore, the basal deposits have been included in the Jameco Gravel by some workers (Isbister, 1966; Swarzenski, 1963) and in the upper glacial deposits by others (Lubke, 1964; Julian Soren, oral commun., 1968). In this report, all the deep buried-valley deposits along the north shore have been included in the upper glacial aquifer.

TABLE 6.—*Average thickness, hydraulic conductivity and transmissivity of the upper glacial aquifer in subareas of Long Island*

| Subarea | Area (sq mi) | Average total thickness (feet) | Average hydraulic conductivity (gpd per sq ft) | Average transmissibility (gpd per ft) |
|---|---|---|---|---|
| Kings County | 69 | 130 | 1,400 | 180,000 |
| Queens County | 97 | 80 | 1,600 | 120,000 |
| Northern Nassau County | 72 | 120 | 1,700 | 210,000 |
| Southern Nassau County | 138 | 50 | 1,900 | 95,000 |
| Northwestern Suffolk County | 135 | 160 | 1,400 | 230,000 |
| Southwestern Suffolk County | 110 | 100 | 1,900 | 190,000 |
| North central Suffolk County | 254 | 160 | 1,500 | 240,000 |
| South central Suffolk County | 141 | 120 | 1,900 | 230,000 |
| Subareas studies | 1,016 | 120 | 1,700 | 200,000 |

## JAMECO AQUIFER

About 75 wells are screened in the Jameco aquifer. $Q/sL$ numbers of wells screened in this aquifer range from less than 0.1 to more than 4.0 gpm per sq ft, and the median $Q/sL$ number is about 1.0 gpm per sq ft (fig. 10). About one-third of the well screens in the compilation (fig. 11) are short (15 feet or less), which suggests that vertical flow components probably contribute measurably to the discharge of such wells.

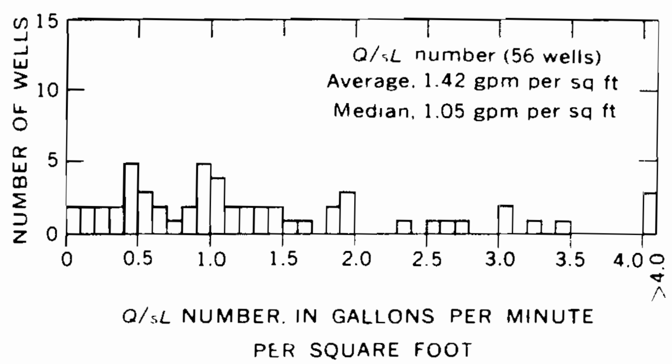



FIGURE 10.—Distribution of $Q/sL$ numbers for wells screened in the Jameco aquifer. (Average hydraulic conductivity of screened intervals approximates 2.000 $Q/sL$; see text discussion.)

Lithologic descriptions of the screened interval were available for 56 of the wells for which test data were available. Generally the material in individual screened intervals belonged to a single lithologic class. The median $Q/sL$ numbers determined for each lithologic class, the range in $Q/sL$ numbers assigned to each class, and the corresponding range of calculated hydraulic conductivity values for each class are listed in table 7.

Lithologic logs describing the Jameco aquifer in 109 wells were analyzed to determine point values of average hydraulic conductivity. These wells were almost evenly distributed in the three counties in which the Jameco occurs and include more than 90 percent of the wells that completely or almost completely penetrate the aquifer. The distribution by subarea is shown in figure 12.

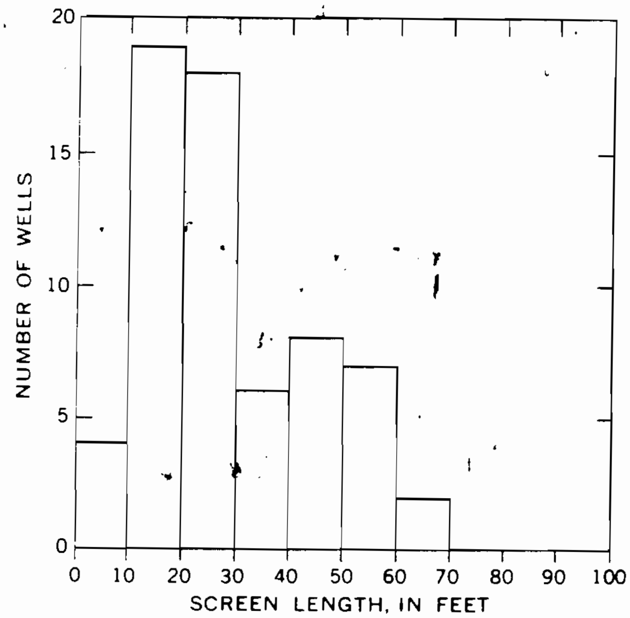



FIGURE 11.—Distribution of screen lengths of wells in the Jameco aquifer.

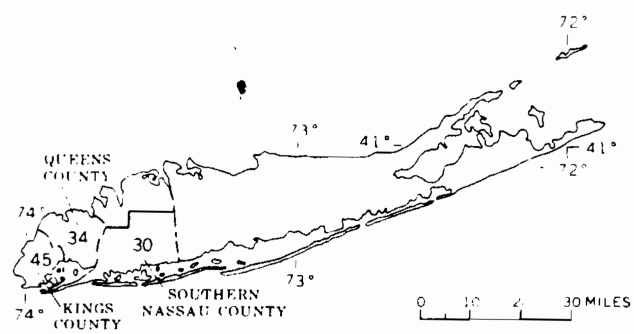
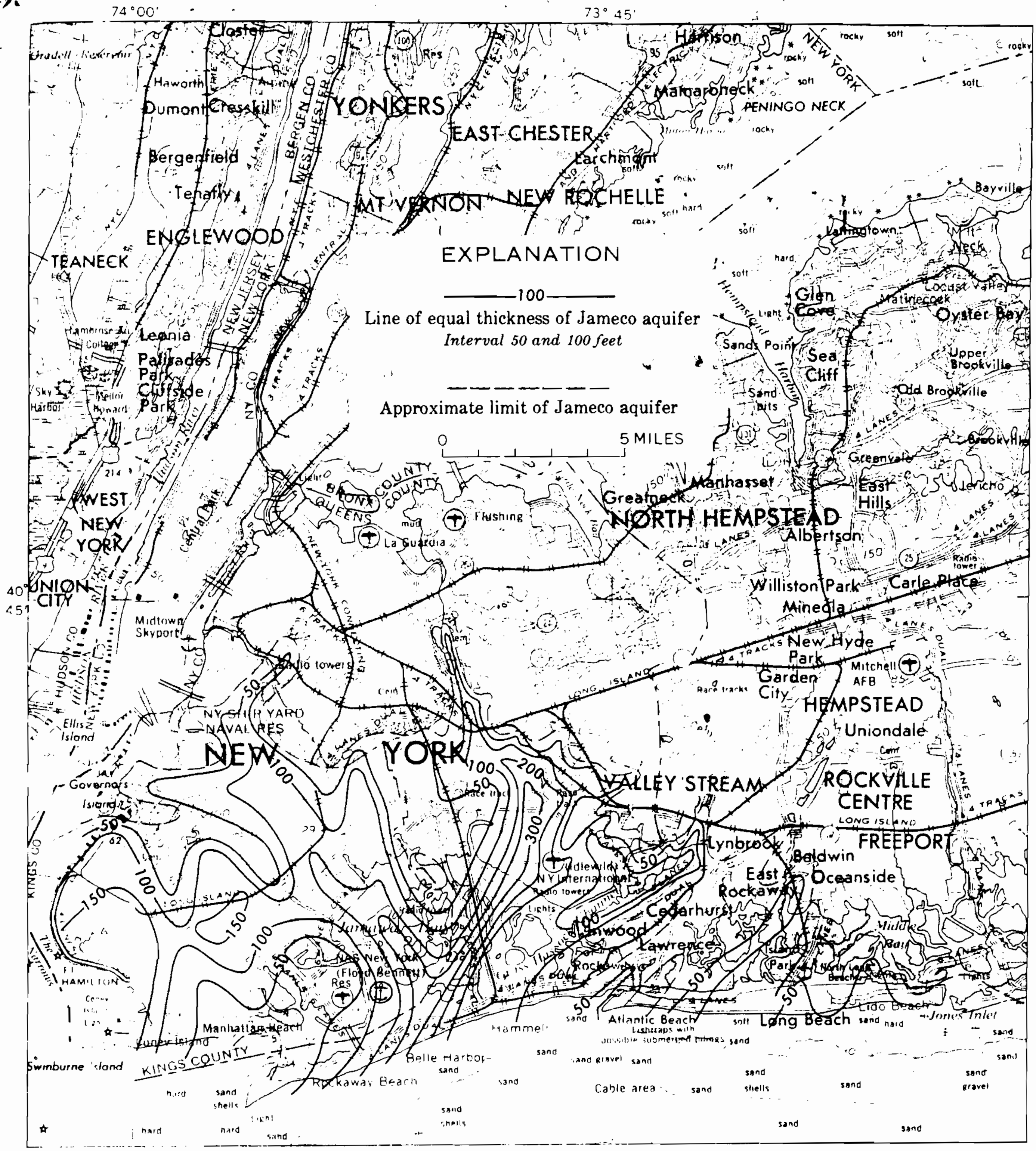



FIGURE 12.—Number of wells for which lithologic logs were available for the Jameco aquifer in the indicated subareas in 1967.

A map showing thickness of the Jameco aquifer (fig. 13) was prepared from well logs and maps and data contained in two reports (Perlmutter and Geraghty, 1963; Julian Soren, written commun., 1968). Maps showing lines of equal average hydraulic conductivity (fig. 14) and equal transmissivity (fig. 15) were constructed according to the procedures outlined previously.

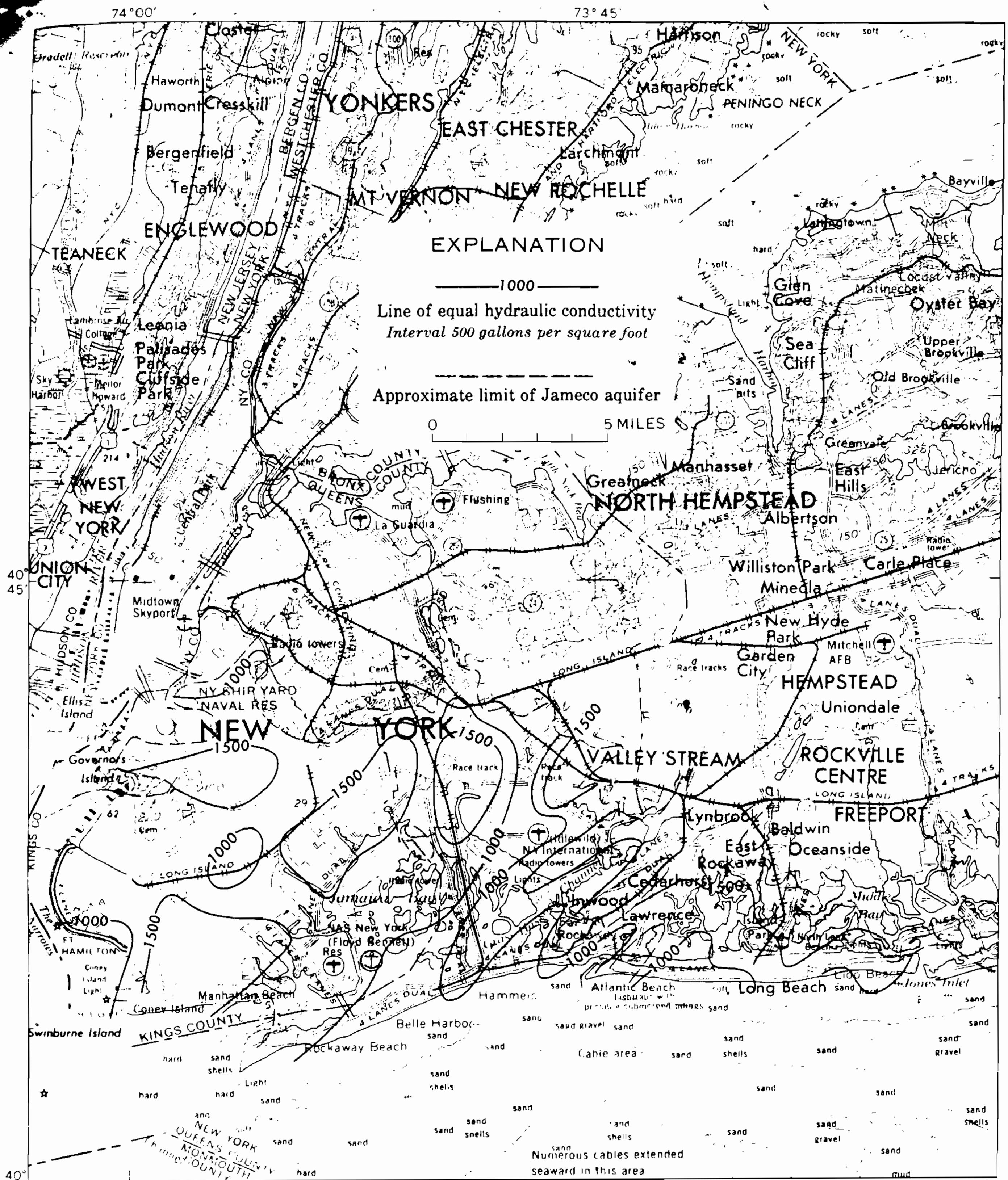
The Jameco aquifer attains its maximum thickness of more than 300 feet in a buried valley cut into the underlying Cretaceous deposits in southwestern Queens County (fig. 13). Generally, the aquifer is thicker in




Base from U.S. Geological Survey, 1:250 000 series: New York, 1957; Newark, 1947

Hydrology by N. E. McClymonds, 1968; in part adapted from John Isbister (written commun., 1968), Perlmutter and Geraghty (1963), and Julian Soren (written commun., 1968)

FIGURE 13.—Thickness of the Jameco aquifer.




Base from U.S. Geological Survey, 1:250 000 series: New York, 1957; Newark, 1947

Hydrology by N. E. McClymonds, 1968

FIGURE 14.—Estimated average hydraulic conductivity of the Jameco aquifer.

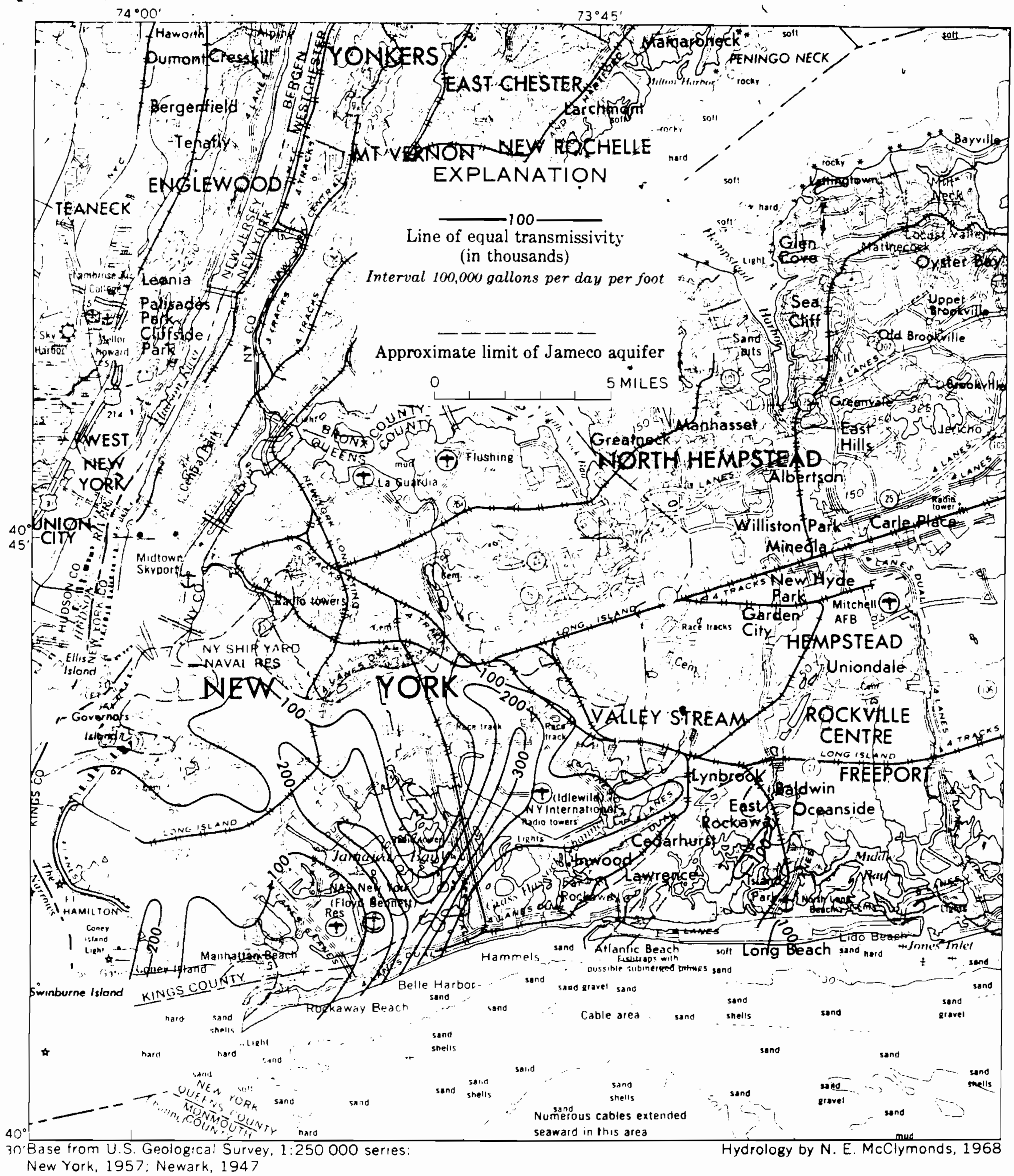



FIGURE 15.—Estimated transmissivity of the Jameco aquifer Transmissivity lines on this map were developed by combining data from figures 13 and 14. The high degree of detail shown for the transmissivity lines is not meant to imply a high degree of accuracy for transmissivity at any specific location. Rather it largely reflects a fairly high degree of accuracy in the information shown in figure 13 and only a moderate degree of accuracy in the information shown in figure 14.

TABLE 7.—*Assigned range of Q/sL numbers and calculated hydraulic conductivity values for selected lithologic classes in the Jameco aquifer*

| Lithologic class No. | Lithologic class Description | Number of wells | Median *Q/sL* number of screened intervals (gpm per sq ft) | Assigned range of *Q/sL* numbers (gpm per sq ft) | Calculated range of hydraulic conductivity (gpd per sq ft) |
|---|---|---|---|---|---|
| 1 | Gravel, sand and gravel, and coarse sand | 37 | 1.1 | 0.8–1.1 | 1,600–2,200 |
| 2 | Medium, fine, and very fine sand, and sand with silt or clay layers. | 19 | .9 | 0.1–0.7 | 200–1,400 |
| 3 | Clay, sandy clay, and silty clay | | | [1] 0 | 0 |

[1] Assumed; see text discussion.

central and eastern Kings County than in southeastern Queens and southwestern Nassau Counties.

The computed average hydraulic conductivity of the Jameco aquifer (fig. 14) generally is slightly more than 1,000 gpd per sq ft. However, in several small areas near the northern boundary of the aquifer, the average hydraulic conductivity is about 1,500 gpd per sq ft. These areas with more permeable material probably reflect the somewhat coarser materials deposited in the narrower part of the buried valley.

Because the estimated average hydraulic conductivity of the Jameco aquifer shows very little areal variation, the gross pattern of the lines of equal transmissivity (fig. 15) closely reflects the pattern of the thickness map (fig. 13). The maximum transmissivity is about 300,000 gpd per ft and occurs in southwestern Queens County.

The average thickness, hydraulic conductivity, and transmissivity of the Jameco aquifer in subareas of Long Island, derived from figures 13, 14, and 15, are listed in table 8. The greatest average thickness and greatest average transmissivity of the Jameco aquifer occur in Kings County, although the maximum transmissivity occurs in Queens County.

TABLE 8.—*Average thickness, hydraulic conductivity, and transmissivity of the Jameco aquifer in subareas of Long Island*

| Subarea | Area (sq mi) | Average total thickness (feet) | Average hydraulic conductivity (gpd per sq ft) | Average transmissivity (gpd per ft) |
|---|---|---|---|---|
| Kings County | 60 | 95 | 1,300 | 120,000 |
| Queens County | 28 | 80 | 1,200 | 100,000 |
| Southern Nassau County | 14 | 35 | 1,400 | 50,000 |
| Three subareas | 102 | 80 | 1,300 | 110,000 |

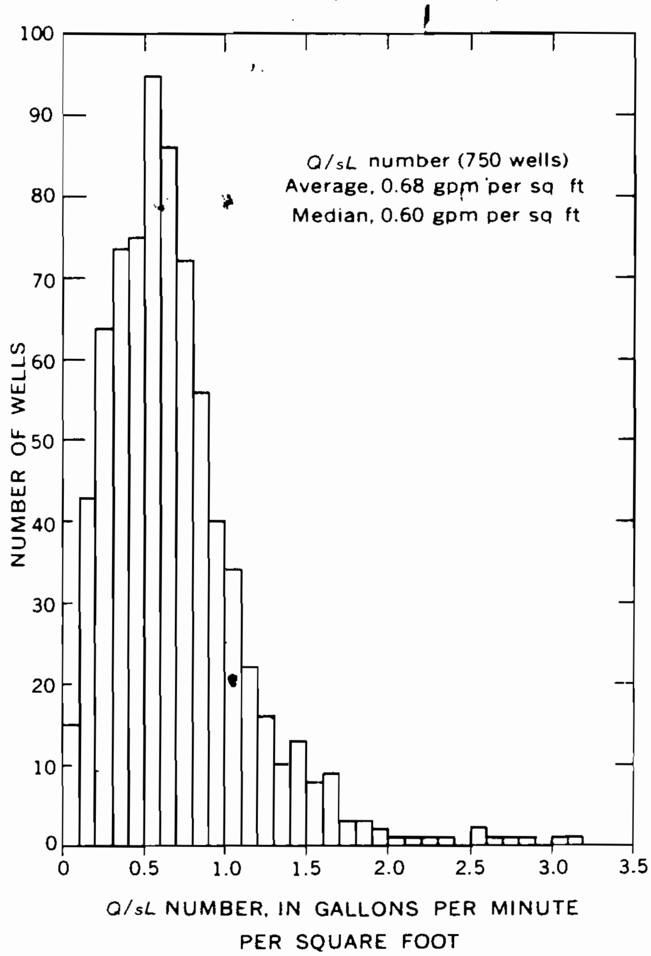



FIGURE 16.—Distribution of *Q/sL* numbers for wells screened in the Magothy aquifer. (Average hydraulic conductivity of screened intervals approximates 2,000 *Q/sL*; see text discussion.)

## MAGOTHY AQUIFER

*Q/sL* numbers of wells screened in the Magothy aquifer range from less than 0.1 to 3.2 gpm per sq ft (fig. 16). This compilation includes more than 85 percent of all wells screened in the Magothy aquifer for which test data are available. More than 90 percent of the *Q/sL* numbers are less than 1.7 gpm per sq ft, and the median *Q/sL* number is 0.6 gpm per sq ft. The screen lengths in many of the Magothy wells are greater than 50 feet (fig. 17), and the average screen length is about 40 feet. Therefore, the effects of across-bed flow on the *Q/sL* numbers of most wells screened in this aquifer are probably less than in the upper glacial aquifer.

Lithologic descriptions of the screened intervals were available for all 750 Magothy wells with test data. More than half of these descriptions consisted of a single lithology, and many of the remaining screened intervals

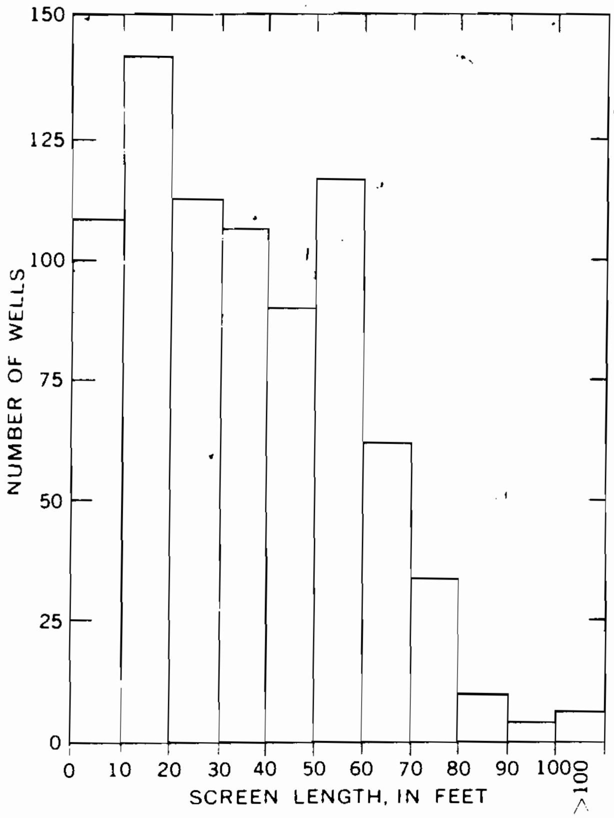



FIGURE 17.—Distribution of screen lengths of wells in the Magothy aquifer.

were described as predominantly one lithology. The median $Q/sL$ numbers determined for each lithologic class from the descriptions of the screened intervals, the range in $Q/sL$ numbers assigned to each lithologic class, and the corresponding range of calculated hydraulic conductivity values for each class are listed in table 9.

Lithologic logs describing the Magothy aquifer in 300 wells were analyzed to determine point values of average hydraulic conductivity. The distribution of these wells (fig. 18) was fairly uniform in Queens, Nassau, and western Suffolk Counties, but the number of wells for which logs were available is much less in central Suffolk County. In addition, the proportion of wells penetrating the entire Magothy aquifer becomes progressively smaller proceeding eastward in Suffolk County.

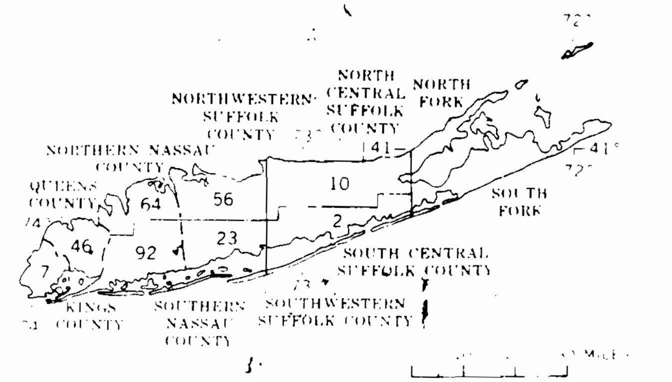



FIGURE 18.—Number of wells for which lithologic logs were available for the Magothy aquifer in the indicated subareas in 1967.

A map showing thickness of the saturated Magothy aquifer (pl. 2*A*) was prepared from an unpublished map of the September 1965 water table, from well logs, and from maps and data contained in several reports (Isbister, 1966; Lubke, 1964; Perlmutter and Geraghty, 1963; Pluhowski and Kantrowitz, 1964; Swarzenski, 1963; Julian Soren, written commun., 1968). Maps showing lines of equal average hydraulic conductivity (pl. 2*B*) and equal transmissivity (pl. 2*C*) were constructed according to the procedures outlined previously.

The Magothy aquifer thickens gradually toward the southeast and attains its maximum recorded thickness of about 1,000 feet beneath the barrier beaches in south-central and southeastern Suffolk County (pl. 2*A*). The aquifer thins markedly and locally is absent in buried valleys along the northern shore and in western Long Island.

The lines designating the highest values of estimated average hydraulic conductivity generally occur in the northern and northwestern parts of the island (pl. 2*B*) where the aquifer is thinnest and where a basal gravel deposit makes up most of the section. The smallest values of average hydraulic conductivity occur in the south-central and southeastern parts of the island, where the aquifer is thickest. The decrease in average hydraulic conductivity towards the southeast is related to an increase in the percentage of fine materials such as silt and clay in the aquifer in those areas.

TABLE 9.—*Assigned range of Q/sL numbers and calculated hydraulic conductivity values for selected lithologic classes in the Magothy aquifer*

| Lithologic class: No. | Lithologic class: Description | Number of wells | Median $Q/sL$ number of screened intervals (gpm per sq ft) | Assigned range of $Q/sL$ numbers (gpm per sq ft) | Calculated range of hydraulic conductivity (gpd per sq ft) |
|---|---|---|---|---|---|
| 1 | Gravel, sand and gravel, and coarse sand | 219 | 0.7 | 0.6–0.8 | 1,200–1,600 |
| 2 | Medium, fine, and very fine sand, and sand with silt or clay layers. | 531 | .5 | 0.1–0.5 | 200–1,000 |
| 3 | Clay, sandy clay, and silty clay | | | [1] 0 | 0 |

[1] Assumed; see text discussion.

The transmissivity of the Magothy aquifer (pl. 2*C*) tends to increase towards the south and southeast. Although the estimated average hydraulic conductivity tends to decrease in this direction, the greater percentage increase in aquifer thickness results in an increased transmissivity. The estimated maximum transmissivity of the Magothy aquifer is about 400,000 gpd per ft near the barrier beach in south-central Suffolk County.

Average thickness, hydraulic conductivity, and transmissivity of the Magothy aquifer in subareas of Long Island are derived from plate 2*A*, *B*, and *C* and are listed in table 10. The average hydraulic conductivity for each subarea is lowest in south-central Suffolk County (360 gpd per sq ft) and is highest in Kings County (over 600 gpd per sq ft). The average transmissivity by subarea is highest in south-central Suffolk County (320,000 gpd per ft), where the Magothy aquifer is thickest.

TABLE 10.—*Average thickness, hydraulic conductivity, and transmissivity of the Magothy aquifer in subareas of Long Island*

| Subarea | Area (sq mi) | Average total thickness (feet) | Average hydraulic conductivity (gpd per sq ft) | Average transmissivity (gpd per ft) |
|---|---|---|---|---|
| Kings County | 18 | 140 | 630 | 85,000 |
| Queens County | 61 | 170 | 460 | 80,000 |
| Northern Nassau County | 93 | 300 | 450 | 140,000 |
| Southern Nassau County | 154 | 600 | 420 | 250,000 |
| Northwestern Suffolk County | 150 | 430 | 420 | 180,000 |
| Southwestern Suffolk County | 115 | 770 | 410 | 320,000 |
| North central Suffolk County | 254 | 650 | 400 | 260,000 |
| South central Suffolk County | 141 | 900 | 360 | 320,000 |
| Subareas studied | 986 | 580 | 410 | 240,000 |

## LLOYD AQUIFER

*Q/sL* numbers of wells screened in the Lloyd aquifer range from less than 0.1 to 2.1 gpm per sq ft (fig. 19). This compilation includes virtually all the wells screened in the Lloyd aquifer for which test data are available. About four-fifths of the *Q/sL* numbers are between 0.1 and 0.6 gpm per sq ft and the median *Q/sL* number for all wells is 0.35 gpm per sq ft. Screens of wells in this aquifer range from less than 10 to 90 feet in length (fig. 20). About one-third of the screens are short (15 feet or less), which suggests that vertical flow components may have materially affected the discharge of some of these wells.

Lithologic descriptions of the screened interval were available for all 94 Lloyd wells with test data. Almost half the screened intervals were described as one lithology, and most of the remaining screened intervals were described as predominantly one lithology. The



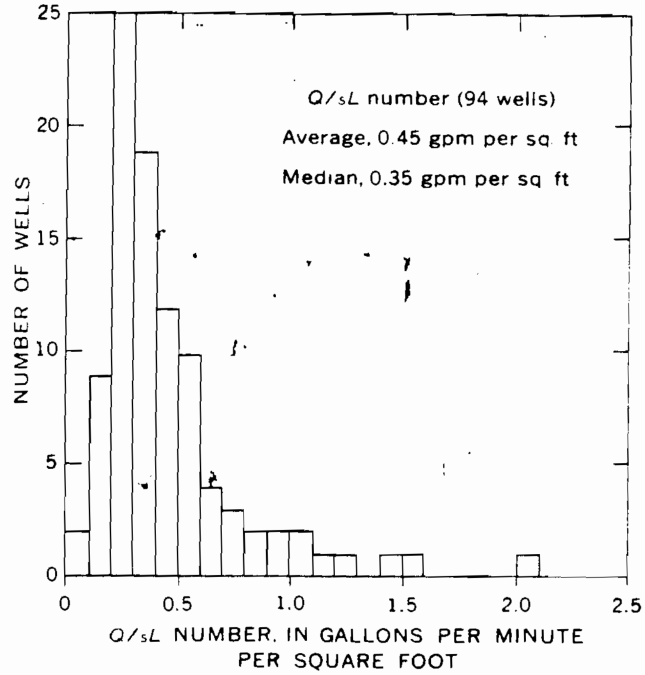



FIGURE 19.—Distribution of *Q/sL* numbers for wells screened in the Lloyd aquifer. (Average hydraulic conductivity of screened intervals approximates 2,000 *Q/sL*; see text discussion.)

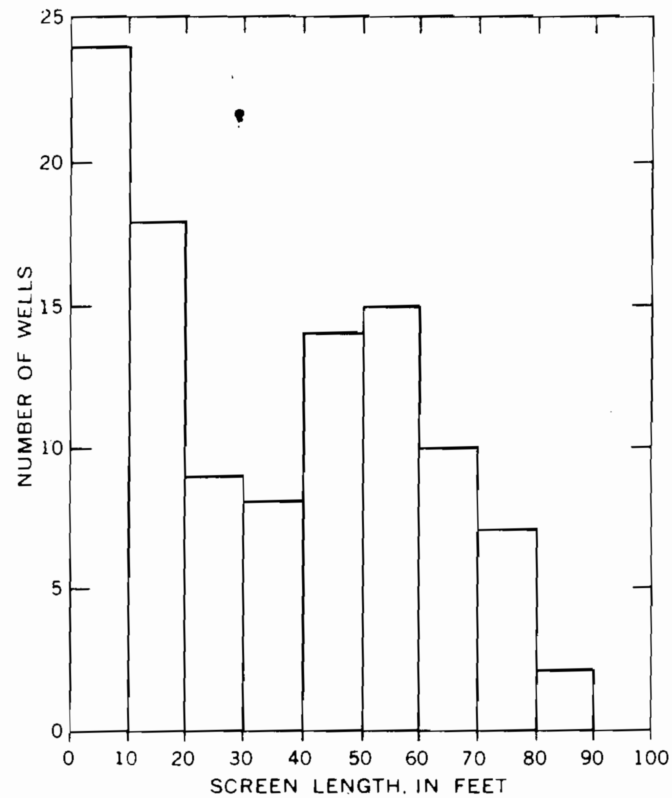



FIGURE 20.—Distribution of screen lengths of wells in the Lloyd aquifer.

TABLE 11.—*Assigned range of Q/sL numbers and calculated hydraulic conductivity values for selected lithologic classes in the Lloyd aquifer*

| Lithologic class No. | Lithologic class Description | Number of wells | Median $Q/sL$ number of screened (gpm per sq ft) | Assigned range of $Q/sL$ numbers intervals (gpm per sq ft) | Calculated range of hydraulic conductivity (gpd per sq ft) |
|---|---|---|---|---|---|
| 1 | Gravel, sand and gravel, and coarse sand | 48 | 0.35 | 0.3–0.4 | 600–800 |
| 2 | Medium, fine, and very fine sand, and sand with silt or clay layers. | 46 | .30 | 0.05–0.2 | 100–400 |
| 3 | Clay, sandy clay, and silty clay | | | [1] 0 | 0 |

[1] Assumed; see text discussion.

median $Q/sL$ numbers determined for each lithologic class, the range in $Q/sL$ numbers assigned to each class, and the corresponding range of calculated hydraulic conductivity values for each class are listed in table 11.

Lithologic logs in 132 wells tapping the Lloyd aquifer were analyzed to obtain point values of average hydraulic conductivity, and most of these wells almost completely penetrated the aquifer (fig. 21). Logs from only 10 Lloyd wells are available for all of Suffolk County, and most of these are in the northwestern part of the county. Furthremore the Llyod wells in Nassau County are concentrated near the shorelines.

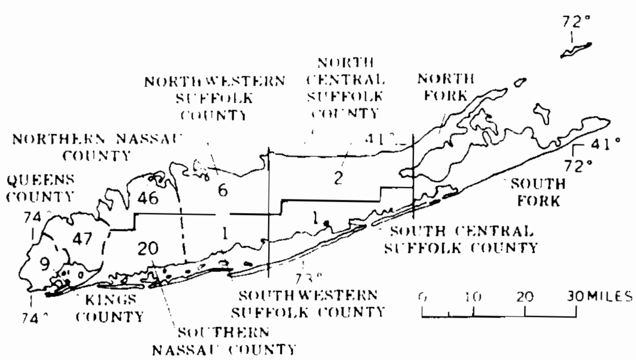



FIGURE 21.—Number of wells for which lithologic logs were available for the Lloyd aquifer in the indicated subareas in 1967.

A thickness map of the Lloyd aquifer (pl. 3*A*) was prepared from well logs and maps and data contained in several reports (Isbister, 1966; Lubke, 1964; Perlmutter and Geraghty, 1963; Pluhowski and Kantrowitz, 1964; Swarzenski, 1963; and Julian Soren, written commun., 1968). Maps showing lines of equal average hydraulic conductivity (pl. 3*B*) and equal transmissivity (pl. 3*C*) were constructed according to the procedures outlined previously.

The Lloyd aquifer thickens gradually to the south and southeast (pl. 3*A*). The maximum recorded thickness of about 450 feet occurs beneath the barrier beaches in southern Nassau County. The irregular pattern of the northern boundary of the aquifer in Queens and Nassau Counties indicates erosion of the aquifer before deposition of the overlying glacial materials.

The lines of estimated equal average hydraulic conductivity indicate that the material in the Lloyd aquifer (pl. 3*B*) is less permeable toward the southeast; however, the position of these lines is based on very little well data.

The lines of equal transmissivity (pl. 3*C*) exhibit the same gross pattern as the lines on the map showing thickness and exhibit increasing values toward the south. This similarity in pattern reflects the fact that the percentage increase in the thickness of the aquifer (pl. 3*A*) is greater than the percentage decrease in estimated average hydraulic conductivity (pl. 3*B*). The maximum estimated transmissivity, 140,000 gpd per ft, occurs where the aquifer is thickest in southern Nassau County.

Average thickness, hydraulic conductivity, and transmissivity of the Lloyd aquifer in subareas of Long Island are derived from plate 3*A*, *B*, and *C* and are listed in table 12. As noted previously, many of the values in table 12 are based on very few well data.

TABLE 12.—*Average thickness, hydraulic conductivity, and transmissivity of the Lloyd aquifer in subareas of Long Island*

| Subarea | Area (sq mi) | Average total thickness (feet) | Average hydraulic conductivity (gpd per sq ft) | Average transmissivity (gpd per ft) |
|---|---|---|---|---|
| Kings County | 39 | 80 | 420 | 35,000 |
| Queens County | 81 | 140 | 430 | 60,000 |
| Northern Nassau County | 106 | 200 | 440 | 90,000 |
| Southern Nassau County | 154 | 300 | 400 | 120,000 |
| Northwestern Suffolk County | 160 | 220 | 410 | 90,000 |
| Southwestern Suffolk County | 115 | 320 | 280 | 90,000 |
| North central Suffolk County | 254 | 240 | 320 | 75,000 |
| South central Suffolk County | 141 | 300 | 270 | 80,000 |
| Subareas studied | 1,050 | 240 | 360 | 90,000 |

## COMPARISON OF THE PRINCIPAL AQUIFERS

The curves representing the distribution of $Q/sL$ numbers of the four principal aquifers (fig. 22) are of roughly comparable slope, but vary in position with respect to the ordinate, owing to the different ranges and distributions of $Q/sL$ numbers in the different aquifers. Because the $Q/sL$ number is related to the hydraulic conductivity of the deposits near the well screen, the curves in figure 22 provide a visual comparison of the distribution of average hydraulic conductivities of what are, in general, the more permeable zones in the respective aquifers.

## CONCLUSIONS

The principal results of this investigation are a series of island-wide maps of estimated average hydraulic conductivity and transmissivity for each of the aquifers on Long Island (figs. 14 and 15, and pls. 1*B*, *C*, 2*B*, *C*, and 3*B*, *C*). Average values, derived from these maps for the mainland of Long Island, of thickness, hydraulic conductivity, and transmissivity for the aquifers are listed in table 13. The Magothy aquifer has the highest average transmissivity (240,000 gpd per ft) and the greatest average thickness (580 feet) of any of Long Island's aquifers, although the upper glacial aquifer has the greatest average hydraulic conductivity (1,700 gpd per sq ft). The Lloyd aquifer has the lowest average hydraulic conductivity (360 gpd per sq ft) and lowest average transmissivity (90,000 gpd per ft) of the four principal aquifers. The possible errors in these values locally may be on the order of plus or minus 50 percent, and in certain areas, such as the deep buried valleys near the north shore of Long Island, the possible error in the estimates may be greater than 50 percent. Despite these possible errors, the mapped values are believed to represent a reasonable initial definition of the average hydraulic conductivity and transmissivity of Long Island's aquifers.

TABLE 13.—*Average thickness, hydraulic conductivity, and transmissivity of the principal aquifers of Long Island*

[Values were determined for the mainland of Long Island excluding the forks]

| Aquifer | Average thickness (feet) | Average hydraulic conductivity (gpd per sq ft) | Average transmissivity (gpd per ft) |
|---|---|---|---|
| Upper glacial | 120 | 1, 700 | 200, 000 |
| Jameco | 80 | 1, 300 | 100, 000 |
| Magothy | 580 | 420 | 240, 000 |
| Lloyd | 240 | 360 | 90, 000 |

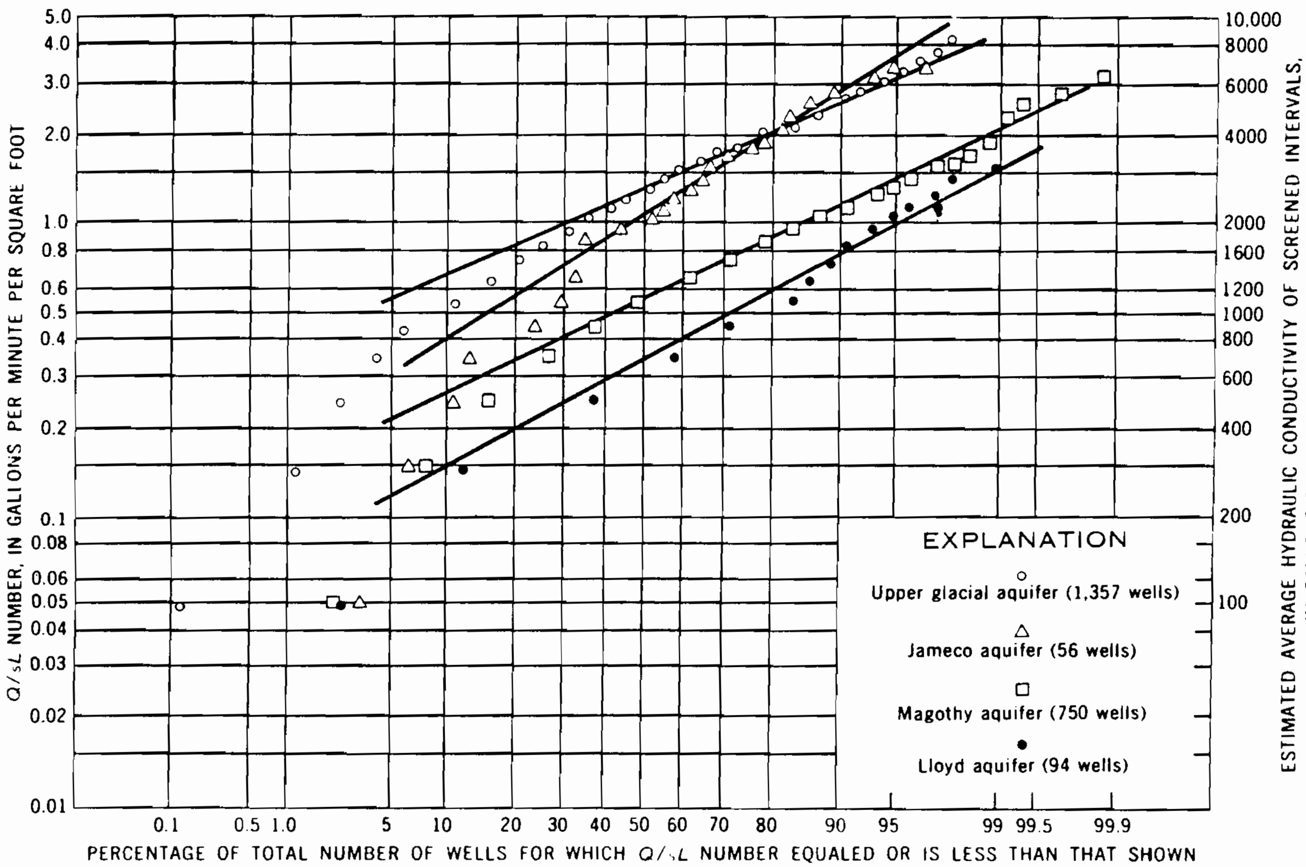



FIGURE 22.—Relation between $Q/sL$ numbers and percentage of total number of wells for the four principal aquifers. (Average hydraulic conductivity of screened intervals approximates 2,000 $Q/sL$; see text discussion.)

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U.S. GOVERNMENT PRINTING OFFICE:1972 O—428-752

REFERENCE NO. 29

THOMAS S. GULOTTA
COUNTY EXECUTIVE

JOHN J. DOWLING, M.D., M.P.H.
COMMISSIONER

FRANCIS V. PADAR, P.E., M.C.E.
DEPUTY COMMISSIONER
DIVISION OF ENVIRONMENTAL HEALTH

NASSAU COUNTY
DEPARTMENT OF HEALTH
240 OLD COUNTRY ROAD
MINEOLA, NEW YORK 11501

RECEIVED
MAR 20 1987
NUS CORPORATION
REGION II
SENT TO ___________

March 17, 1987

Miss. Diane Trube
NUS Corp.
Raritan Plaza Three
Fieldcrest Ave.
Edison, N.J. 08837

Re: Public Supply Wells Information

Dear Ms. Trube:

Enclosed is the information which you requested regarding public supply wells in Plainview and Glen Cove.

The information for the wells within the three mile radius located on the Hagstrom maps is given by the water supply information sheets. A map of water districts in the county is included to assist you in determining which supply serves the various areas.

If I can be of any further assistance, do not hesitate to contact me.

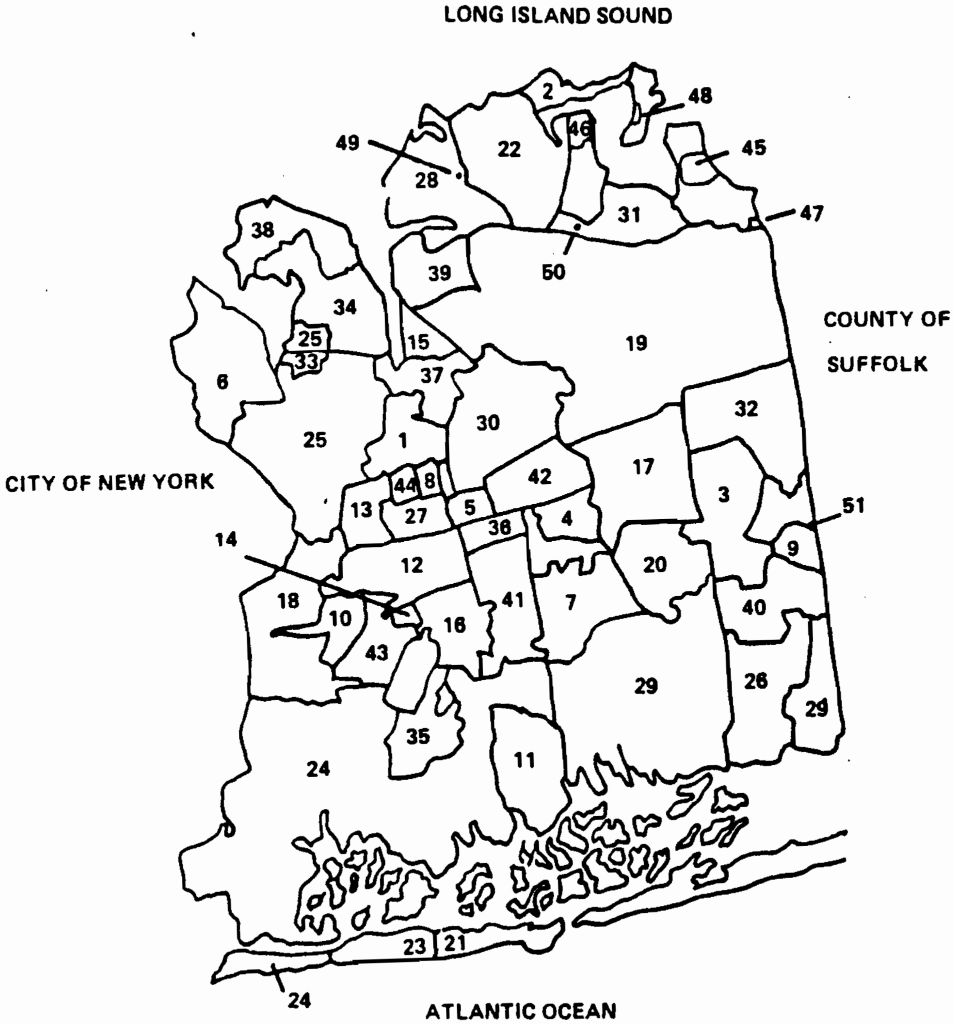
Very truly yours,

Donald H. Myott

Donald H. Myott, P.E.
Chief, Office of
Groundwater Management
Bureau of Public Water Supply

DHM:da
Enc.

NASSAU COUNTY DEPARTMENT OF HEALTH




1. Albertson Water District
2. Bayville Village
3. Bethpage Water District
4. Bowling Green Water District
5. Carle Place Water District
6. Citizens Water Supply Company
7. East Meadow Water District
8. East Williston Village
9. Farmingdale Village
10. Franklin Square Water District
11. Freeport Village
12. Garden City Village
13. Garden City Park Water District
14. Garden City South Water District
15. Glenwood Water District
16. Hempstead Village
17. Hicksville Water District
18. Jamaica Water Supply Company
19. Jericho Water District
20. Levittown Water District
21. Lido-Point Lookout Water District
22. Locust Valley Water District
23. Long Beach City
24. Long Island Water Corporation
25. Manhasset-Lakeville Water District
26. Massapequa Water District
27. Mineola Village
28. Glen Cove City
29. New York Water Service - Merrick Division
30. Old Westbury Village
31. Oyster Bay Water District
32. Plainview Water District
33. Plandome Village
34. Port Washington Water District
35. Rockville Centre Village
36. Roosevelt Field Water District
37. Roslyn Water District
38. Sands Point Village
39. Sea Cliff Water Division
40. South Farmingdale Water District
41. Uniondale Water District
42. Westbury Water District
43. West Hempstead-Hempstead Gardens Water District
44. Williston Park Village
45. Sel-Bra Acres Water Supply (Cove Neck)
46. Mill Neck Estates Water Supply
47. DeForest Drive Association
48. Split Rock Water Supply
49. Glen Cove Community Hospital Water Supply
50. Planting Fields Arboretum Water Supply
51. Northeast Farmingdale Water District

Blank Areas - Parks, Lakes or Served by Private Wells

12/86

THOMAS S. GULOTTA
COUNTY EXECUTIVE

JOHN J. DOWLING, M.D., M.P.H.
COMMISSIONER

FRANCIS V. PADAR, P.E., M.C.E.
DEPUTY COMMISSIONER
DIVISION OF ENVIRONMENTAL HEALTH

NASSAU COUNTY
DEPARTMENT OF HEALTH
240 OLD COUNTRY ROAD
MINEOLA, NEW YORK 11501

March 23, 1987

Miss. Diane Trube
NUS Corp.
Raritan Plaza Three
Fieldcrest Ave.
Edison, N.J. 08837

Re: Public Supply Well Information

Dear Ms. Trube:

Enclosed is the information which you requested for the Village of Farmingdale water supply.

As soon as available, I will send you this information for all public water supplies in Nassau County. In the meantime, if I can be of any further assistance, do not hesitate to contact me.

Very truly yours,

Donald H. Myott

Donald H. Myott, P.E.
Chief, Office of
Groundwater Management
Bureau of Public Water Supply

DHM:da
Enc.

RECEIVED
MAR 25 1987
NUS CORPORATION
REGION II
SENT TO ........

FARMINGDALE VILLAGE (09) CHS-0[illegible] TOB

361 Main Street
Farmingdale, NY 11735

Official: Willis Cerman [illegible] Consult: H2M
Mayor

[illegible] Lab: H2M

Population: [illegible] (1981)

Treatment: [illegible] Soda(#I-1), Lime(#I-1), Polyphosphate,
Chlorination(F)

WELLS(3)

| Address | Village | Local Num | N-Num | Depth (Ft) | Strata | Capacity (GPM) |
|---|---|---|---|---|---|---|
| N/S Eastern Pwy | Farmingdale | 1-3 | 7852 | 450 | M | 1000 |
| N/S Ridge Rd | Farmingdale | 2-1 | 1937 | 146 | M | 800 |
| | Farmingdale | 2-2 | 6644 | 222 | M | 1400 |

STORAGE TANKS(2)

| Address | Village | Capacity (MG) | Type |
|---|---|---|---|
| Ridge Rd | Farmingdale | 0.4 | Ground |
| N/S Eastern Pwy | Farmingdale | 0.5 | Elevated |

4 Dean Street
Hicksville,NY 11802

Official: Nicholas Bricandi,Chairman Consult: H2M
Bd. of Commissioners

Superintendent: Richard Woodwell Lab: H2M

Population: 57,000 (1981)

Treatments: Chlorination(E),Polyphosphate,Lime,Caustic Soda,
OR(Packed Tower Aeration)(#1-5)

WELLS(19)

| Address | Village | Local Num | N-Num | Depth (Ft) | Strata | Capacity (GPM) |
|---|---|---|---|---|---|---|
| E/S Bethpage Rd | Hicksville | 1-4 | 7562 | 545 | M | 1400 |
| | Hicksville | 1-5 | 8249 | 490 | M | 1400 |
| | Hicksville | 1-6 | 9488 | 575 | M | 1380 |
| W/S Newbridge Rd | Hicksville | 2-2 | 5326 | 523 | M | 1200 |
| Jerusalem Ave | Hicksville | 7-2 | 9525 | 503 | M | 1400 |
| W S Newbridge Rd | Hicksville | 4-2 | 8526 | 601 | M | 1400 |
| N/S Stewart Ave | Hicksville | 5-2 | 7561 | 550 | M | 1400 |
| | Hicksville | 5-3 | 9212 | 604 | M | 1400 |
| W/S Kunl Ave | Hicksville | 6-1 | 3953 | 419 | M | 1200 |
| | Hicksville | 6-2 | 3878 | 428 | M | 1200 |
| E S Miller Pl | Hicksville | 7-1 | 6190 | 600 | M | 1200 |
| | Hicksville | 7-2 | 6191 | 550 | M | 1200 |
| Dean St | Hicksville | 8-1 | 6192 | 626 | M | 1400 |
| | Hicksville | 8-2 | 6193 | 467 | M | 1450 |
| | Hicksville | 8-3 | 9180 | 630 | M | 1400 |
| Alicia St | Hicksville | 9-1 | 8778 | 590 | M | 1400 |
| | Hicksville | 9-2 | 8779 | 585 | M | 1400 |
| | Hicksville | 9-3 | 10208 | | M | |
| Barclay St | Hicksville | 10-1 | 9463 | 638 | M | 1390 |

HICKSVILLE WATER DISTRICT (Continued)

STORAGE TANKS(5)

| Address | Village | Capacity (MG) | Type |
|---|---|---|---|
| Bethpage Rd | Hicksville | 1.[illegible]5 | Elevated |
| [illegible] St | Hicksville | 1.[illegible] | Ground |
| [illegible] | Hicksville | 2.0 | Ground |
| Newbridge Rd and Baxter La | Hicksville | 0.5 | Elevated |
| Newbridge Rd | Hicksville | [illegible] | Ground |

BETHPAGE WATER DISTRICT ([illegible]) WD ID [illegible] TOP

35 Adams Avenue
Bethpage, NY 11714

Official: Sal Greco, Jr., Chairman Bd. of Commissioners — Consult: H2M

Superintendent: Ron Krumholz — Lab: H2M

Population: 27,450 (19[illegible])

Treatment: Chlorination(F), Polyphosphate, Lime, Caustic Soda(ABO-[illegible])

WELLS(9)

| Address | Village | Local Num | N-Num | Depth (Ft) | Strata | Capacity (GPM) |
|---|---|---|---|---|---|---|
| E/S Broadway | Bethpage | 5-1 | 8064 | 740 | M | 1400 |
| N/S [illegible] La | Bethpage | 6-1 | 3276 | 386 | M | 1400 |
| | Bethpage | 6-2 | 8741 | 770 | M | 1400 |
| E/S Adams Avenue | Bethpage | 7A | 8767 | 640 | M | 1400 |
| | Bethpage | 8A | 8769 | 675 | M | 1400 |
| | Bethpage | 9 | 6078 | 275 | M | 1400 |
| Sophia St | Bethpage | 10 | 6915 | 608 | M | 1400 |
| | Bethpage | 11 | 6916 | 611 | M | 1400 |
| Broadway | Bethpage | BPG-1 | 9591 | 592 | M | 1300 |

STORAGE TANKS(2)

| Address | Village | Capacity (MG) | Type |
|---|---|---|---|
| Adams Avenue | Bethpage | 1.25 | Elevated |
| Sophia Street | Bethpage | 1.50 | Ground |

125 Convent Road
Syosset, NY 11791

Official: Edward F. Braclen, Jr. Consult: Sidney Bowne and Son
Chairman, Bd. of Commissioners

Superintendent: Len Martillaro Lab: Nytest

Population: 64,500 (1981)

Treatment: Chlorination(E), Caustic Soda

WELLS (20)

| Address | Village | Loca Num | N-Num | Depth (Ft) | Strata | Capacity (GPM) |
|---|---|---|---|---|---|---|
| N/S Convent La | Syosset | 3 | 198 | 617 | M | 1150 |
| | Syosset | 4 | 199 | 600 | M | 1120 |
| | Syosset | 5 | 570 | 600 | M | 1200 |
| N/S Wheatley Rd | Brookville | 6 | 3474 | 511 | M | 1200 |
| | Brookville | 7 | 3475 | 482 | M | 1200 |
| | Brookville1 | 16 | 7446 | 493 | M | 1200 |
| W/S Motts Cove Rd | Roslyn Harbor | 11 | 5201 | 504 | L | 1200 |
| W/S Cypress Dr | Woodbury | 12 | 6092 | 631 | M | 1200 |
| | Woodbury | 17 | 6093 | 604 | M | 1200 |
| N/S Tobie La | Jericho | 14 | 6651 | 610 | M | 1200 |
| S/S Jericho Tpk | Jericho | 9 | 4245 | 565 | M | 1200 |
| Cantiague Rock | Jericho | 15 | 7030 | 530 | M | 1200 |
| Cold Spring Rd | Laurel Hollow | 10 | 7593 | 468 | M | 1200 |
| W/S Split Rock Rd | Syosset | 18 | 7772 | 567 | M | 1200 |
| | Syosset | 19 | 7773 | 560 | M | 1200 |
| | | 20 | 10149 | | M | |

JERICHO WATER DISTRICT (Continued)

WELLS (Continued)

| Address | Village | Local Num. | N-Num | Depth (Ft.) | Strata | Capacity (GPM) |
|---|---|---|---|---|---|---|
| East Norwich Rd | Jericho | 22 | 7781 | 451 | M | 1200 |
| W. Jones Rd | Woodbury | 27 | 9043 | 688 | M | 1200 |
| [illegible] La | Muttontown | 27 | 8755 | 590 | M | 1400 |
| N. B. Simonson Rd | O. Brookville | 27 | 8713 | 372 | M | 1400 |

STORAGE TANKS(6)

| Address | Village | Capacity (MG) | Type |
|---|---|---|---|
| Pine La | Muttontown | 3.0 | Ground |
| Wheatley Rd | Brookville | 1.0 | Elevated |
| Crescent La | Syosset | 1.5 | Elevated |
| Jericho Tpke | Jericho | 1.5 | Elevated |
| Orchard Dr | Woodbury | 2.0 | Stand Pipe |
| Split Rock Rd | Syosset | 3.4 | Stand Pipe |

PLAINVIEW WATER DISTRICT [illegible] WE1-6469 101

10 Manetto Hill Road
Plainview,NY 11803

Official: John Edwards,Chairman Bd. of Commissioners — Consult: H2M

Superintendent: Samuel Pancirola — Lab: H2M

Population: 40,000 (1981)

Treatment: Chlorination,Polyphosphate,Lime

WELLS(11)

| Address | Village | Local Num | N-num | Depth (Ft) | Strata | Capacity (GPM) |
|---|---|---|---|---|---|---|
| W/S Manetto Hill Rd | Plainview | 1-1 | 4095 | 490 | M | 1200 |
| | Plainview | 1-2 | 4096 | 494 | M | 1200 |
| S/S Donna Dr | Plainview | 2-1 | 7526 | 688 | M | 1400 |
| S/S Orchard St | Plainview | 3-1 | 4097 | 463 | M | 1200 |
| | Plainview | 3-2 | 6580 | 596 | M | 1200 |
| Southern Pkwy | Plainview | 4-1 | 6076 | 358 | M | 1200 |
| | Plainview | 4-2 | 6077 | 460 | M | 1200 |
| S/S Winding Rd | Plainview | 5-1 | 6956 | 557 | M | 1400 |
| | Plainview | 5-2 | 7421 | 559 | M | 1400 |
| | Plainview | 5-3 | 8054 | 580 | M | 1400 |
| | Plainview | 5-4 | 8595 | 610 | M | 1350 |

STORAGE TANKS(3)

| Address | Village | Capacity (MG) | Type |
|---|---|---|---|
| S/S Donna Dr | Plainview | 1.25 | Elevated |
| Southern Pkwy | Plainview | 1.5 | Ground |
| Winding Rd | Plainview | 2.0 | Ground |


HICKSVILLE STA
GRUMMAN
AIRPORT
BETHPAGE
LEVITTOWN
PLAINEDGE
HEMPSTEAD
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22
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18
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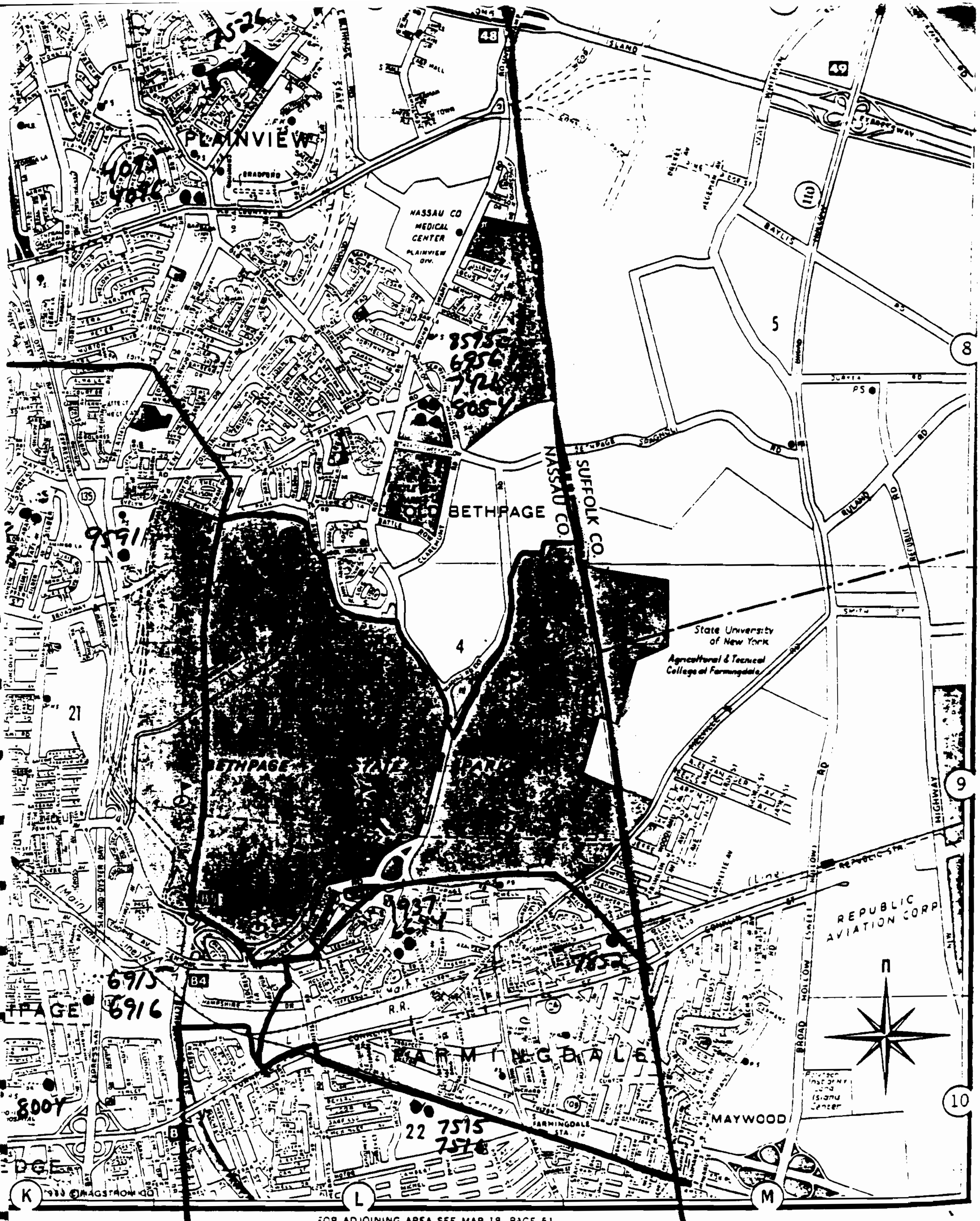
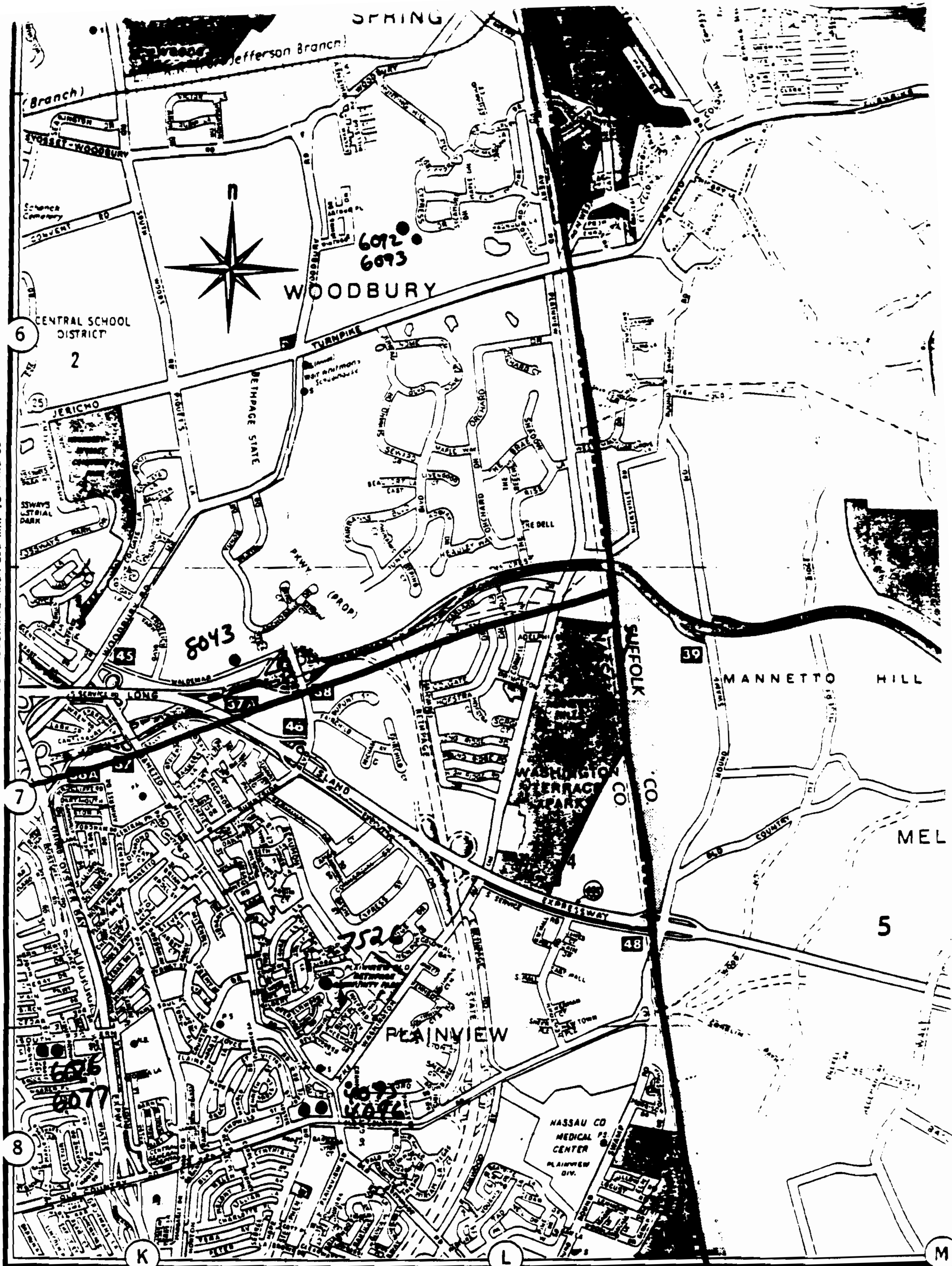
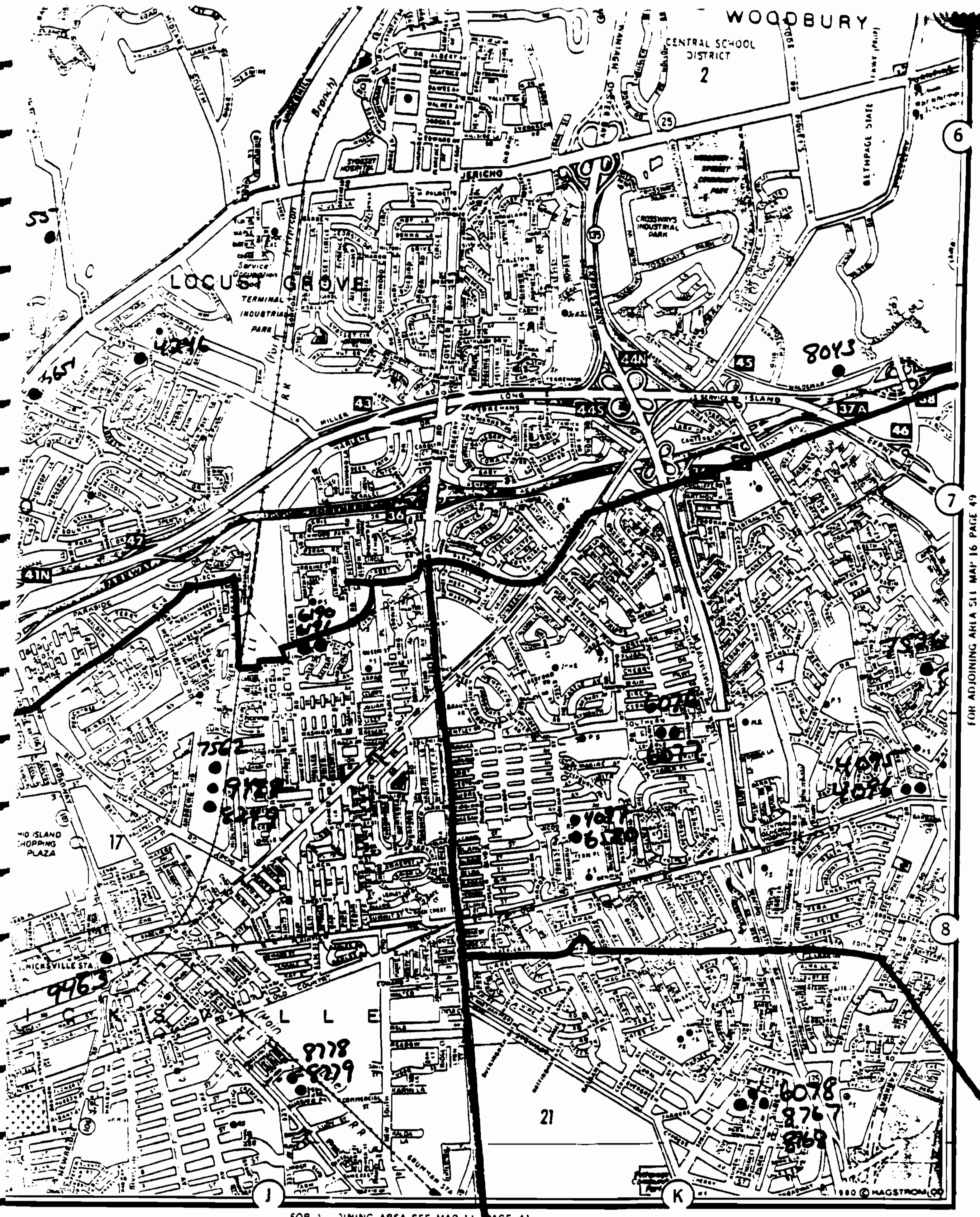
9
10
J
K
FOR ADJOINING AREA SEE MAP 17 PAGE 50
FOR ADJOINING AREA SEE MAP 12 PAGE 43
1990 © HAGSTROM CO




FOR ADJOINING AREA SEE MAP 19 PAGE 51




FOR ADJOINING AREA SEE MAP 17 PAGE 50




FOR A... JINING AREA SEE MAP 11 PAGE 41

CITY OF GLEN COVE (28) [illegible] [illegible]

City Hall
Bridge Street
Glen Cove, NY 11542

Official: Vincent A. Suozzi
Mayor

Consult: Sidney Bowne and Son

Superintendent: Angelo Martino

Lab: [illegible]

Population: 24,600 (1980)

Treatment: Chlorination(G),Caustic Soda,Polyphosphate

WELLS (10)

| Address | Village | Local Num | N-Num | Depth (Ft) | Strata | Capacity (GPM) |
|---|---|---|---|---|---|---|
| Morgan Island | Glen Cove | M | 835 | 300 | L | 550 |
| Crane St | Glen Cove | 20 | [illegible] | 177 | M | 485 |
| | Glen Cove | 21 | 8326 | 165 | M | 1400 |
| | Glen Cove | 22 | 8327 | 165 | M | 1400 |
| Seaman Rd | Glen Cove | 19 | 3892 | 146 | G | 700 |
| | Glen Cove | 28 | 5261 | 230 | G | 1400 |
| Roxbury | Glen Cove | F | 5762 | 280 | M | 1400 |
| Duck Pond Rd | Glen Cove | 30 | 9210 | 275 | M | 1400 |
| | Glen Cove | 31 | 9211 | 269 | M | 1400 |
| Kelly St | Glen Cove | K | 9334 | 298 | M | 1200 |

STORAGE TANKS (3)

| Address | Village | Capacity (MG) | Type |
|---|---|---|---|
| Leech Cir | Glen Cove | 0.25 | Elevated |
| McLoughlin St | Glen Cove | 1.0 | Elevated |
| Duck Pond Rd | Glen Cove | 3.0 | Ground |

SEA CLIFF WATER SUPPLY CO (39)    OPS files    1OF

725 Prospect Avenue
Sea Cliff, NY 11579

Official: Andrew Dwyer, President    Consult: Carl Becker, P.E.
(Jamaica WS Co.)

Superintendent: Anthony Grella    Lab: H2M and JWSCo

Population: 17,850 (1981)

Treatment: Chlorination, Polyphosphate

WELLS (3)

| Address | Village | Local Num | N-num | Depth (Ft) | Strata | Capacity (GPM) |
|---|---|---|---|---|---|---|
| Roslyn Dr | Glen Head | GH | 5792 | 295 | M | 1050 |
| Reservoir St | Sea Cliff | SC | 7857 | 614 | L | (300) |
| Prospect Ave | Sea Cliff | Diesel | 901 | 68 | G | ----- |

STORAGE TANKS (2)

| Address | Village | Capacity (MG) | Type |
|---|---|---|---|
| Roslyn Dr | Glen Head | 0.5 | Elevated |
| Reservoir St | Sea Cliff | 0.25 | Stand Pipe |

MAY 12, 1984

GLEN COVE COMMUN[illegible] HOSPITAL (49) [illegible]

St. Andrews Lane
Glen Cove, NY 1154[illegible]

Official: Joseph Turner, Exec V.P. Consult:

Superintendent: Pat Vollero Lab: Nytest
Chief Engineer

Population: [illegible]

Treatment: Chlorination

WELLS (1)

| Address | Village | Local Num | N-num | Depth (Ft) | Strata | Cap (GPM) |
|---|---|---|---|---|---|---|
| St. Andrews La | Glen Cove | 1 | 5[illegible]4 | [illegible] | [illegible] | 10[illegible] |

STORAGE TANKS (2)

| Address | Village | Capacity (Gal) | [illegible] |
|---|---|---|---|
| St. Andrews La | Glen Cove | 40,000 | Ground (2 tanks) |

OCTOBER 1 1985

LOCUST VALLEY WATER DISTRICT (22)    0F1-1782    TOB

Buckram Road
Locust Valley,NY 11560

Official: Allen Schlotzhauer,Chrm    Consult: Sidney Bowne and Son
Bd. of Commissioners

Superintendent: David McCoy    Lab: H2M

Population: 9,500 (1981)

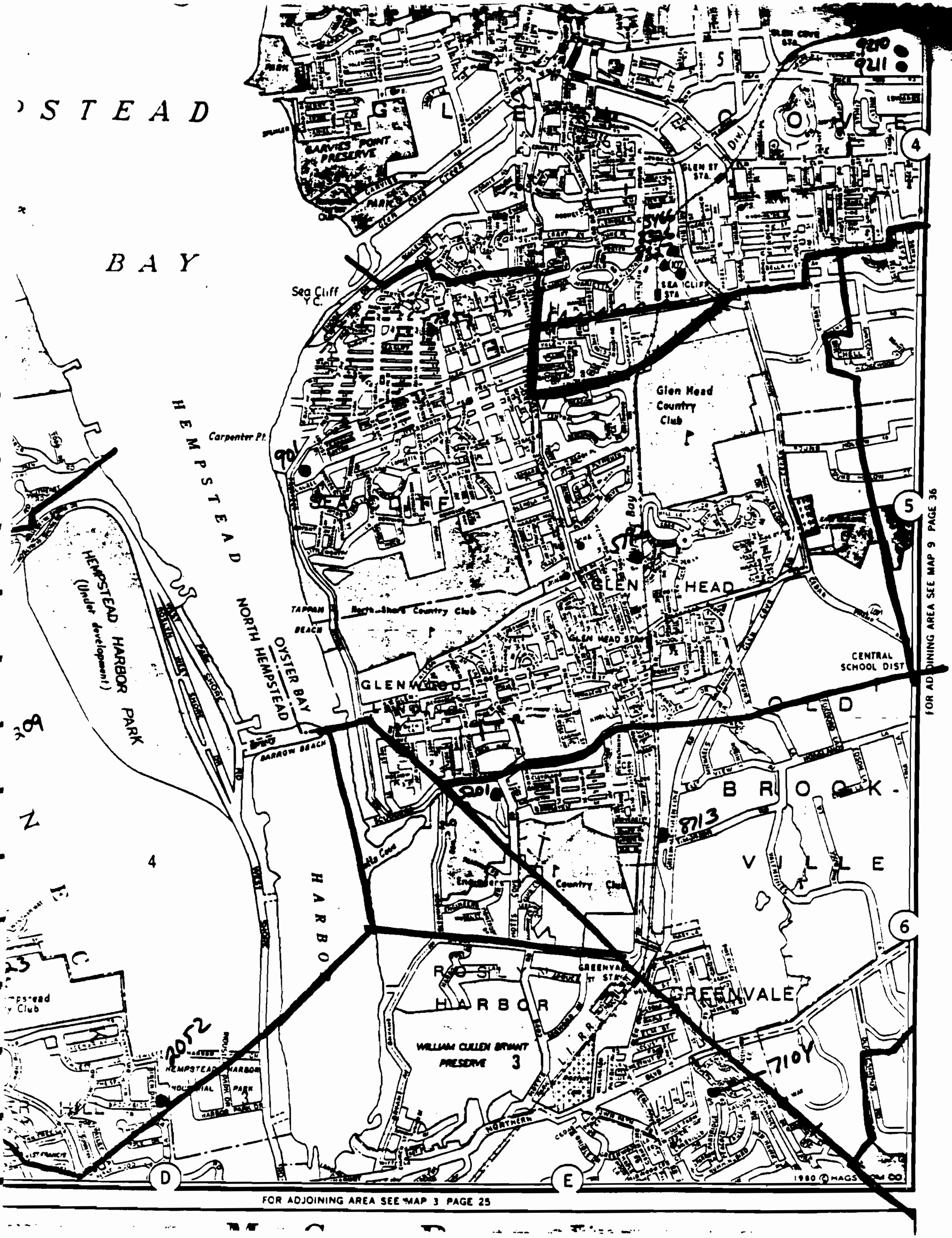
Treatment: Chlorination(E)

WELLS(5)

| Address | Village | Local No. | N-num | Depth (Ft) | Strata | Capacity (GPM) |
|---|---|---|---|---|---|---|
| S/S Buckram Rd | Locust Valley | 4 | 118 | 471 | L | 1100 |
| | Locust Valley | 5 | 119 | 571 | L | 1600 |
| W/S 10th St | Locust Valley | 6 | 1651 | 465 | [illegible] | 800 |
| W/S Bayville Rd | Lattingtown | 7 | 5152 | 355 | L | 1100 |
| S/S Duck Pond Rd | Matinecock | 8 | 7605 | 170 | M | 1200 |

STORAGE TANKS(1)

| Address | Village | Capacity (MG) | Type |
|---|---|---|---|
| Duck Pond Rd | Matinecock | 1.0 | Elevated |


STEAD
BAY
GARVIES POINT PRESERVE
GLEN COVE
9210
9211
GLEN ST STA.
5766
K17
SEA CLIFF STA
Sea Cliff Y.C.
HEMPSTEAD
Carpenter Pt.
901
SEA CLIFF
Glen Head Country Club
GLEN HEAD
GLEN HEAD STA
TAPPAN BEACH
North Shore Country Club
HEMPSTEAD HARBOR PARK
(Under development)
NORTH HEMPSTEAD
OYSTER BAY
GLENWOOD LANDING
CENTRAL SCHOOL DIST
OLD
BROOK
VILLE
309
BARROW BEACH
2201
8713
Engineers
Country Club
HARBOR
4
ROSLYN HARBOR
GREENVALE ST STA
GREENVALE
WILLIAM CULLEN BRYANT PRESERVE
3
7104
2052
HEMPSTEAD HARBOR INDUSTRIAL PARK
NORTHERN
D
E
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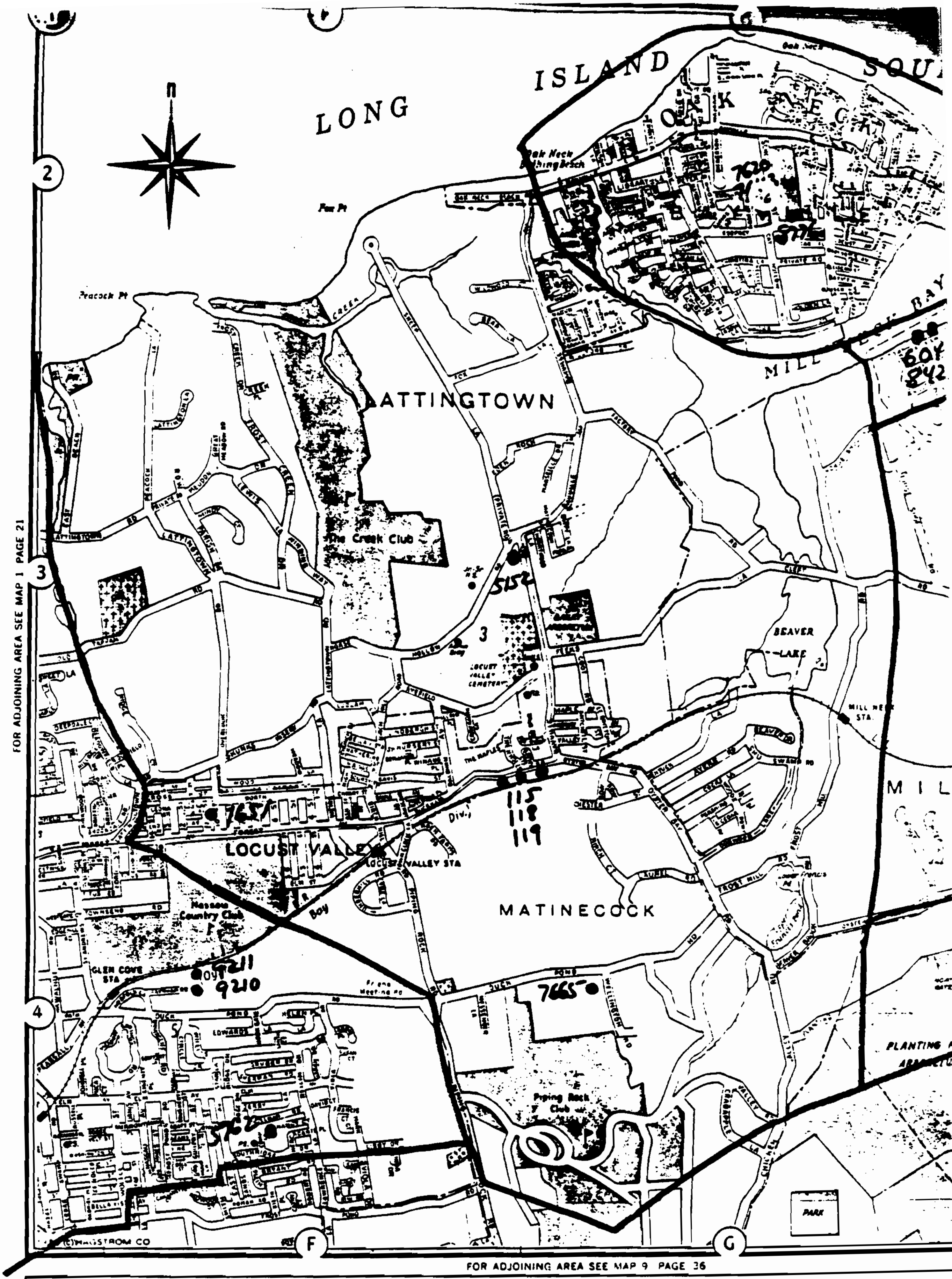
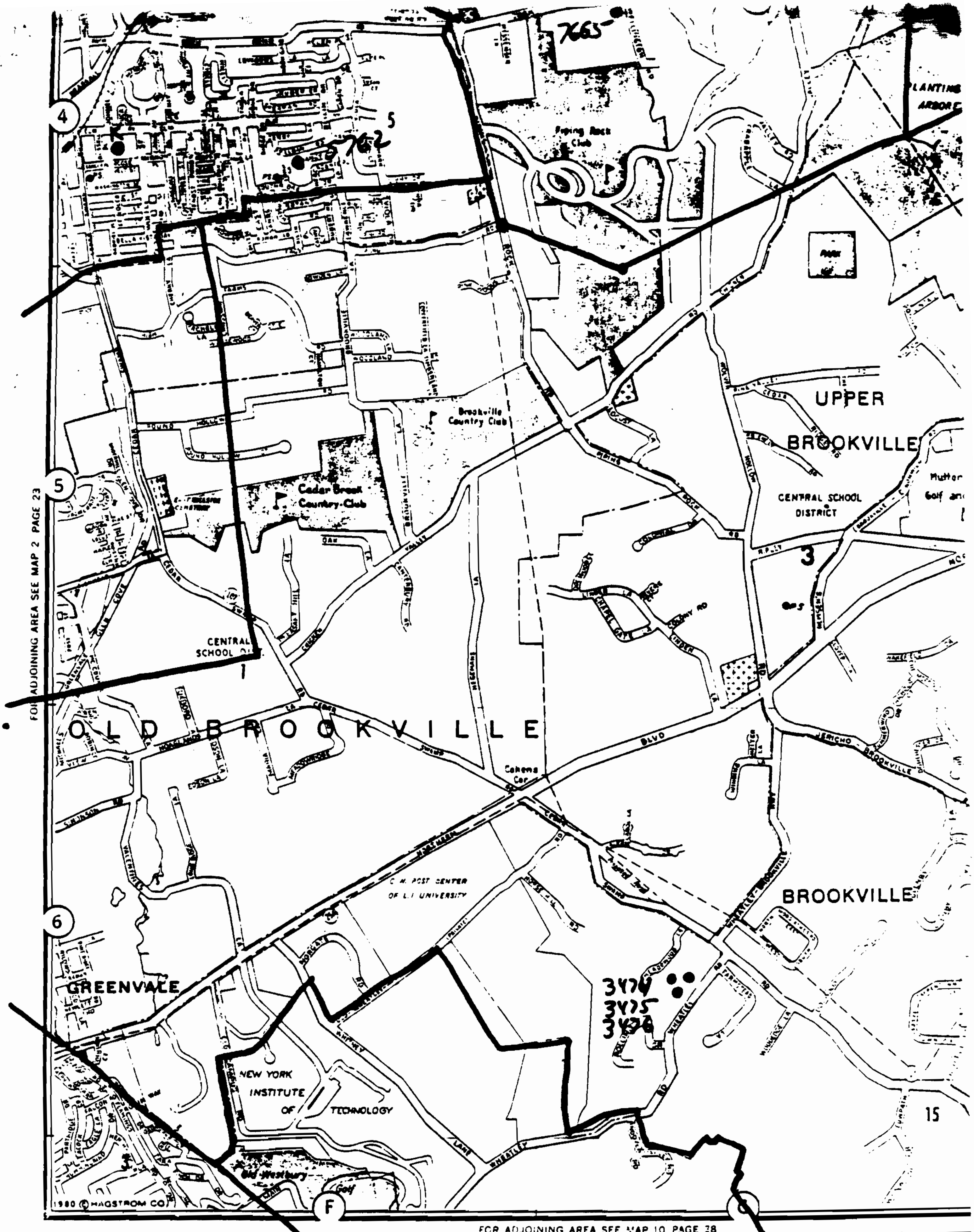
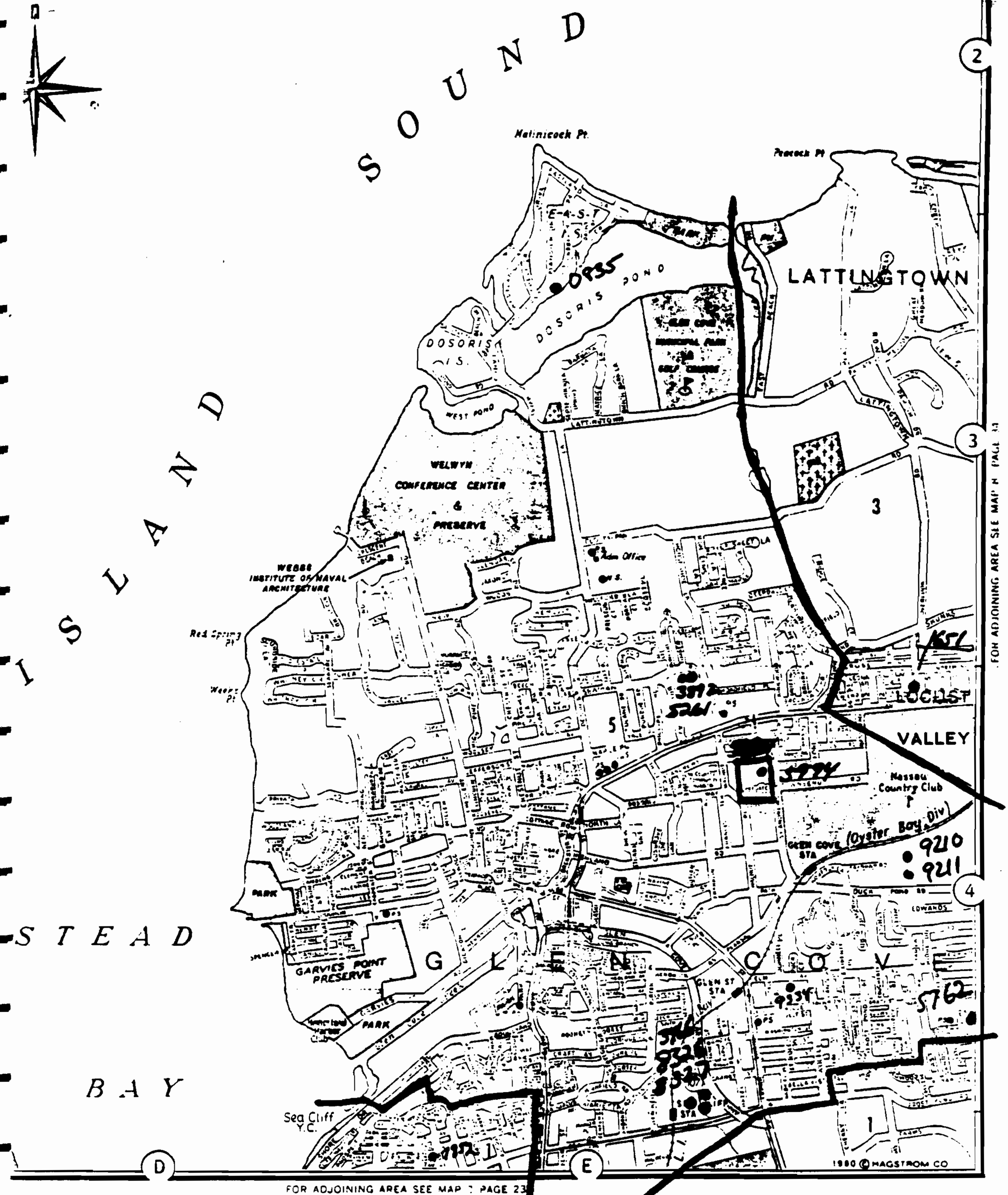
5
6
FOR ADJOINING AREA SEE MAP 9 PAGE 36
1980 © HAGSTROM CO
FOR ADJOINING AREA SEE MAP 3 PAGE 25



FOR ADJOINING AREA SEE MAP 1 PAGE 21
FOR ADJOINING AREA SEE MAP 9 PAGE 36


FOR ADJOINING AREA SEE MAP 2 PAGE 23
UPPER BROOKVILLE
CENTRAL SCHOOL DISTRICT
3
OLD BROOKVILLE
CENTRAL SCHOOL
1
Brookville Country Club
Cedar Brook Country-Club
Piping Rock Club
BROOKVILLE
GREENVALE
C. W. POST CENTER OF L.I. UNIVERSITY
NEW YORK INSTITUTE OF TECHNOLOGY
Old Westbury Golf
Cedar
BLVD
JERICHO - BROOKVILLE
WHEATLEY
7663
7662
3474
3475
3476
4
5
6
F
15
1980 © HAGSTROM CO
FOR ADJOINING AREA SEE MAP 10 PAGE 38

Hollow Prop

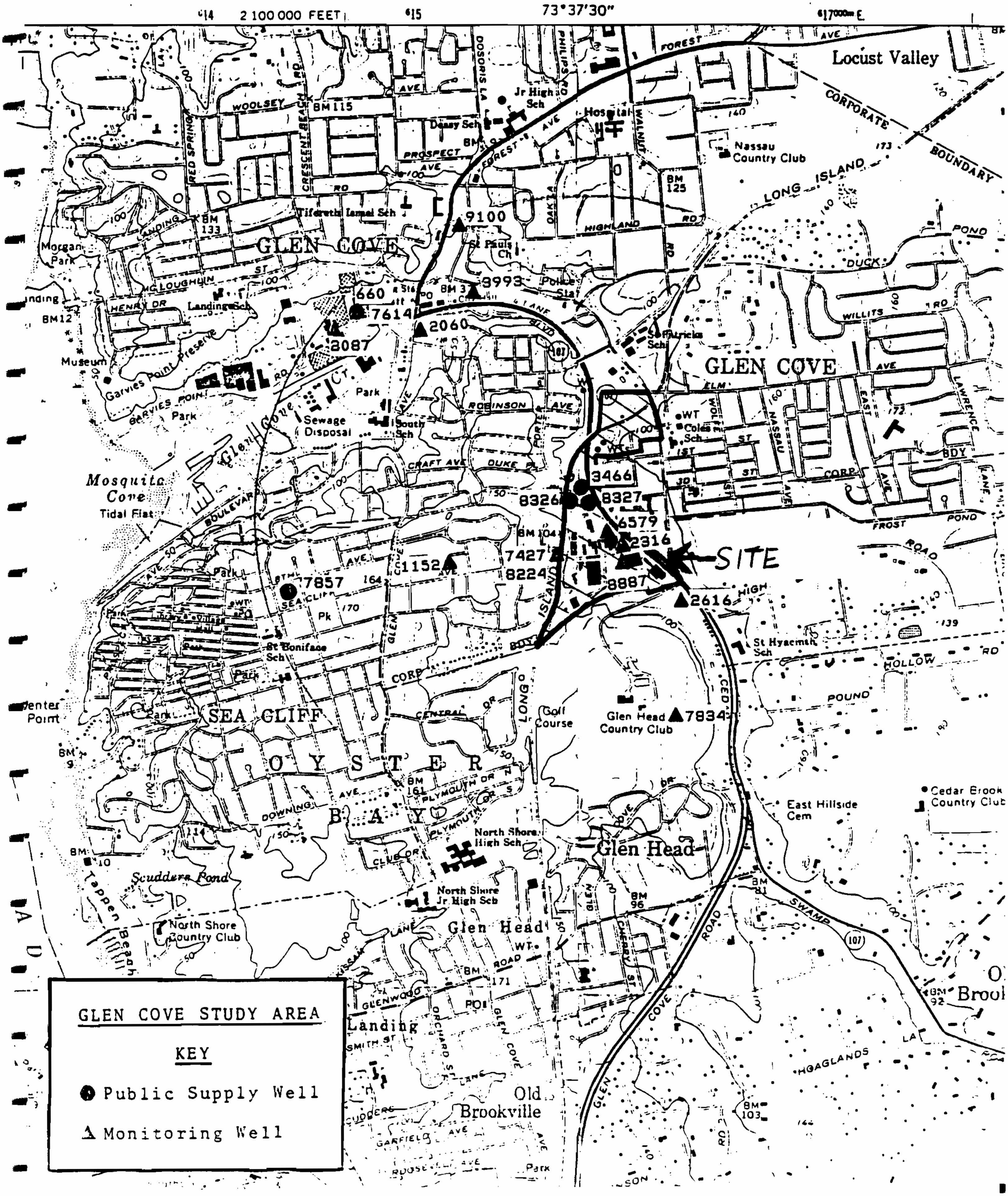



# ...oldberg Bros. Realtors

REFERENCE NO. 30

SEA CLIFF QUADRANGLE
NEW YORK
7.5 MINUTE SERIES (TOPOGRAPHIC)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY



REFERENCE NO. 31

02-8703-68

**NUS CORPORATION** **TELECON NOTE**

| | | |
|---|---|---|
| CONTROL NO: 02-8703-68 | DATE: 3/24/87 | TIME: 3:20 PM. |

DISTRIBUTION:

File: Photocircuits

| | | |
|---|---|---|
| BETWEEN: Mr. Hendrickson - Office Manager | OF: Jericho Water Dist. | PHONE: (516) WA1-8280 |

AND: David Grupp (NUS)

DISCUSSION:

Called concerning 2 public Supply wells within 3 mile radius.
- #5201 Roslyn Harbor - Screened LLOYDS
- #8713 OLD Brookville - Screened Magothy
- Both wells go directly into distribution system, system is totally interconnected. These wells do not serve a set population. Total population served ≈ 65,000

David J. Grupp
3/24/87

ACTION ITEMS:

NUS 067 REVISED 0681

REFERENCE NO. 32

**NUS CORPORATION AND SUBSIDIARIES** TELECON NOTE

| CONTROL NO: | DATE: 3/8/88 | TIME: 1340 |
|---|---|---|

DISTRIBUTION: Photocircuits

| BETWEEN: Ron Buschiolano | OF: U.S.G.S. Syosset | PHONE: (516) 938-8830 |
|---|---|---|

AND: John Ducar

DISCUSSION:

Concerning Carney St. Wells in Glen Cove.

- Well # 8326 was drilled to 508' and initially used as a test well date unknown when drilled or backfilled
- Well # 8327 was drilled to 362' and initially used as a test well. date unk.
- Well # 3466 was drilled to 181' and used as test well, date unknown.

wells 8326 + 8327 drilled into the Lloyd Aquifer.

Kelly Street well # 9334 was drilled to 631' initially and also used as a test well. drilled into Lloyd, also.

They were probably backfilled with sand

~~ACTION ITEMS~~:

and gravel for supply well use.

* Long Island Water Resource, Bulletin 12 "Hydrology of the town of North Hempstead, Nassau County, New York, 1979" - their office has on file, area in this study ~~is out of~~ doesn't include Glen Cove well district.

NUS 067 REVISED 0685

REFERENCE NO. 33

02-8709-11

**NUS CORPORATION AND SUBSIDIARIES** TELECON NOTE

| CONTROL NO: | DATE: 2-23-88 | TIME: 1530 |
|---|---|---|

DISTRIBUTION: Photocircuits 02-8709-11

| BETWEEN: Paul B. Stevens | OF: Sidney Bowne + Son well contractor for City of Glen Cove | PHONE: (516) 746-2350 |
|---|---|---|

AND: John Ducar

DISCUSSION: I spoke to Mr. Stevens concerning depth of Carney St. wells. He told me that:

well # 8326 : screened at 120'-165' below ground surface

well # 3466 : screened at 147'-173' below ground surface

well # 8329 : screened at 115'-165' below ground surface

He said all wells were installed into what was then classified as the Magothy Formation.

He will send us the well logs for all three wells.

ACTION ~~ITEMS~~: He didn't know of a confining layer between the upper glacial & the Magothy in the area of the site.

NUS 067 REVISED 0685

REFERENCE NO. 34

**NUS CORPORATION** — **TELECON NOTE**

| CONTROL NO: | DATE: | TIME: |
|---|---|---|
| 02-8709-11/NYRSEIW | 2/18/88 | 1030 |

DISTRIBUTION:

PHOTOCIRCUITS

| BETWEEN: | OF: | PHONE: |
|---|---|---|
| JOHN LOVEJOY | NASSAU CTY. HEALTH | (516) 535-2573 |

AND:

SUSAN KENNEDY (NUS)

DISCUSSION:

RE: CURRENT GLEN COVE PUBLIC WATER SUPPLY

J.L. STATED THAT THE CITY OF GLEN COVE STARTED OUT WITH 10 SUPPLY WELLS; 3 AT CARNEY STREET SHUT DOWN BECAUSE OF CONTAMINATION (ORGANICS) AND 1 (ONE) ON SEAMAN ROAD SHUT DOWN FOR SAME REASON. HE DOES NOT BELIEVE THE ONE ON SEAMAN ROAD WAS CONTAMINATED BY THE SAME SOURCE AS THOSE ON CARNEY STREET, AND THAT THEY ARE UNRELATED INCIDENTS. THESE WERE CLOSED BECAUSE LEVELS EXCEEDED 50 PPB, WHICH WAS THE N.Y. STATE HEALTH DEPT. DRINKING WATER STANDARD. THIS ~~LEVEL~~ STANDARD HAS SINCE BEEN LOWERED TO 5 PPB, EFFECTIVE 1/1/88. PUBLIC SUPPLY WELLS WILL BE SAMPLED IN MARCH, 1988 FOR THE FIRST TIME SINCE THIS NEW STANDARD HAS BEEN SET. J.L. SAYS THAT WITH THE LEVELS THEY HAVE GOTTEN FROM ~~ON~~ GLEN COVES PUBLIC WELL ON KELLY

ACTION ITEMS:

STREET IN THE PAST, THIS WILL MOST LIKELY HAVE TO BE SHUT DOWN DUE TO TCE CONTAMINATION. IN ADDITION, TWO OTHER PUBLIC WELLS WERE SHUT DOWN DUE TO PROBLEMS WITH TOO MUCH SAND, LEAVING GLEN COVE WITH ONLY 4 WELLS, INCLUDING KELLY ST. J.L. WILL SEND ANY DATA, INFO., ETC. ON WELLS ASAP.

SK

REFERENCE NO. 35

May, 1980

# REMOVAL OF ORGANIC CONTAMINANTS

# FROM DRINKING WATER SUPPLY

# AT

# GLEN COVE, N.Y.

by

Nebolsine Kohlmann Ruggiero Engineers P.C.
Consulting Engineers
New York, N.Y.

U.S. EPA Cooperative Agreement No. CR 806355-01

Walter A. Feige
Drinking Water Research Division
Municipal Environmental Research Laboratory
Cincinnati, Ohio

MUNICIPAL ENVIRONMENTAL RESEARCH LABORATORY
DRINKING WATER RESEARCH DIVISION
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
CINCINNATI, OHIO

[illegible]

[illegible]

[illegible]

[illegible]

## INTRODUCTION

The City of Glen Cove, New York, located on the north shore of Nassau County, Long Island, receives its drinking water supply from a series of wells located throughout the City. Even though Long Island is part of New York State and parallels the southern coast of New England it is separated from the mainland by a salt water body, Long Island Sound. Therefore, the water supply to most of the communities on the Island is limited to wells since they do not have easy access to the watersheds on the mainland. Communities such as the City of Glen Cove, which depend on underground aquifers as the sole source of their water supplies, are greatly affected by contamination of these underground supplies.

The Glen Cove water supply system, which has a normal demand of approximately 3 million gallons per day (11,355 $m^3$/day) and 8 million gallons per day (mgd) (30,280 $m^3$/day) during peak summer months, consisted of nine (9) wells designated as Duck Pond Rd. Wells Nos. 1 and 2, Seaman Rd. Wells Nos. 1 and 2, Morgan Island Well, Roxbury Well and Carney Street Wells Nos. [illegible]. These wells were capable of delivering more than an ample supply to meet peak requirements. However, analyses performed in the summer of 1977 by the Nassau County Department of Health, indicated that the water from Seaman Rd. Well No. 1 and Carney Street Wells Nos. 20, 21 and 22 contained trichloroethylene and tetrachloroethylene concentrations above New York State's maximum allowable limits of 50 micrograns per liter (ug/l) for any one organic contaminant and a total allowable limit of 100 ug/l for all such compounds. Therefore, the use of these wells was restricted by the County Health Department.

Faced with the problem of reduced water supply, the City of Glen Cove began evaluating methods to augment their reduced supply to a normal capacity level, and arranged to purchase water from adjoining communities until an adequate supply could be reestablished. To regain a sufficient supply of well water, the City decided on two approaches: the drilling of new wells in a non-contaminated area, and the definition of a treatment system which would render the water in contaminated wells usable.

The City retained the consulting engineering firm of Nebolsine Kohlmann Ruggiero Engineers, P.C. (NKRE) for the determination of a feasible and economical treatment system. Through consultation with the U.S. EPA's Drinking Water Research Division, Municipal Environmental Research Laboratory

REFERENCE NO. 36

# Uncontrolled Hazardous Waste Site Ranking System

## A Users Manual
(HW-10)

Originally Published in
the July 16, 1982, *Federal Register*

United States
Environmental Protection
Agency

1984

TABLE 2

PERMEABILITY OF GEOLOGIC MATERIALS*

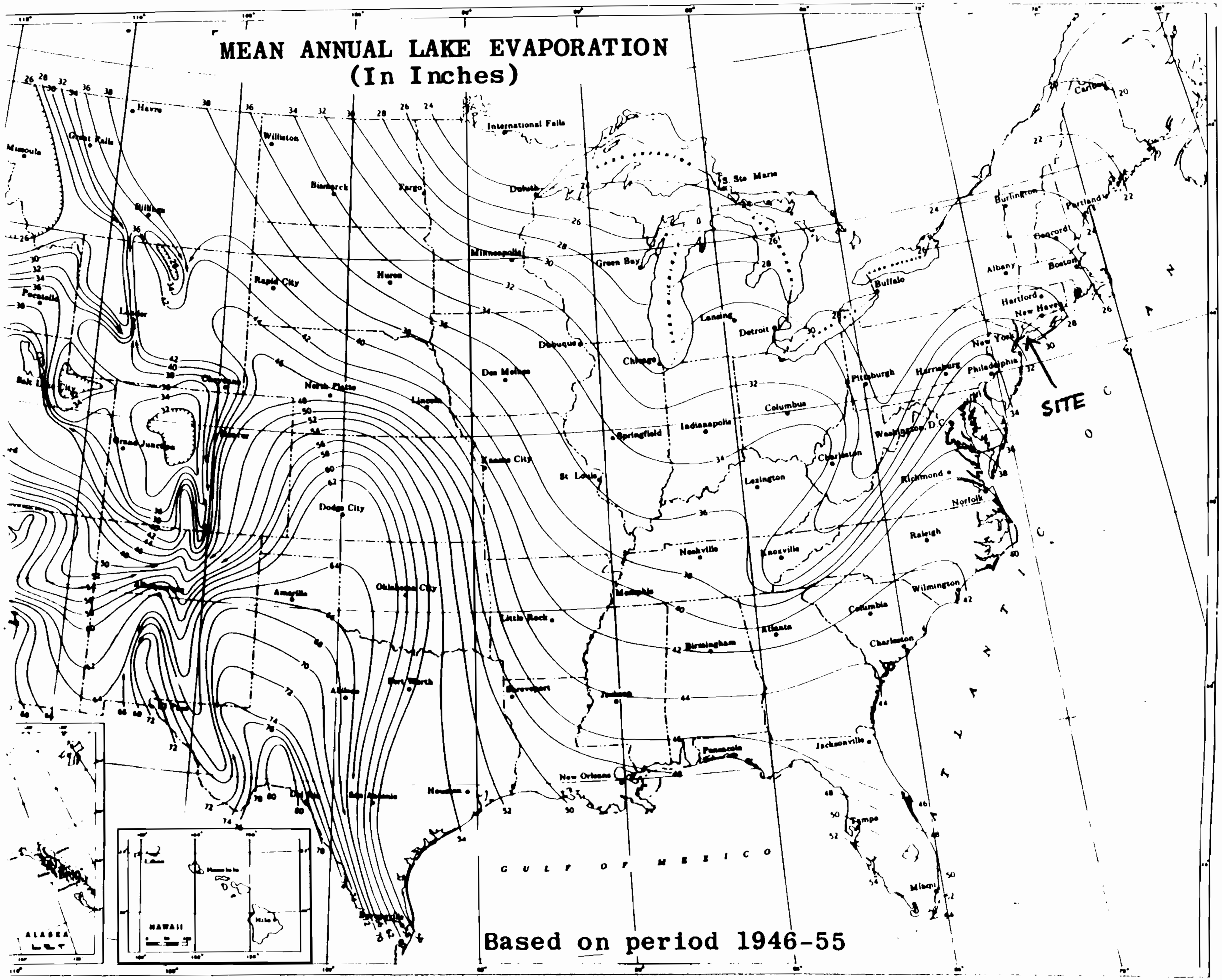
| Type of Material | Approximate Range of Hydraulic Conductivity | Assigned Value |
|---|---|---|
| Clay, compact till, shale; unfractured metamorphic and igneous rocks | $<10^{-7}$ cm/sec | 0 |
| Silt, loess, silty clays, silty loams, clay loams; less permeable limestone, dolomites, and sandstone; moderately permeable till | $10^{-5}$ - $10^{-7}$ cm/sec | 1 |
| Fine sand and silty sand; sandy loams; loamy sands; moderately permeable limestone, dolomites, and sandstone (no karst); moderately fractured igneous and metamorphic rocks, some coarse till | $10^{-3}$ - $10^{-5}$ cm/sec | 2 |
| Gravel, sand; highly fractured igneous and metamorphic rocks; permeable basalt and lavas; karst limestone and dolomite | $>10^{-3}$ cm/sec | 3 |

*Derived from:

Davis, S. N., Porosity and Permeability of Natural Materials in Flow-Through Porous Media, R.J.M. DeWest ed., Academic Press, New York, 1969

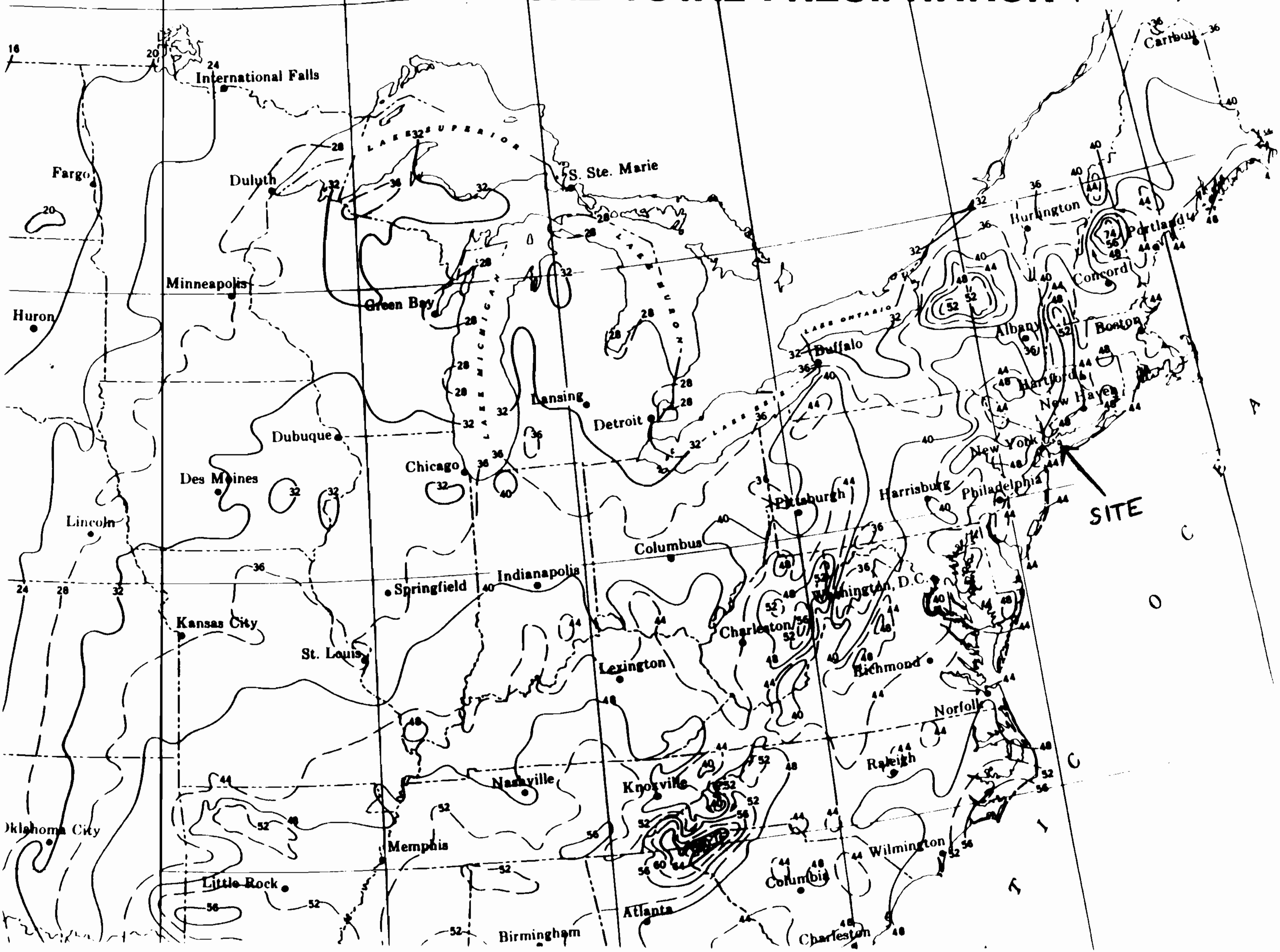
Freeze, R.A. and J.A. Cherry, Groundwater, Prentice-Hall, Inc., New York, 1979

# MEAN ANNUAL LAKE EVAPORATION
## (In Inches)

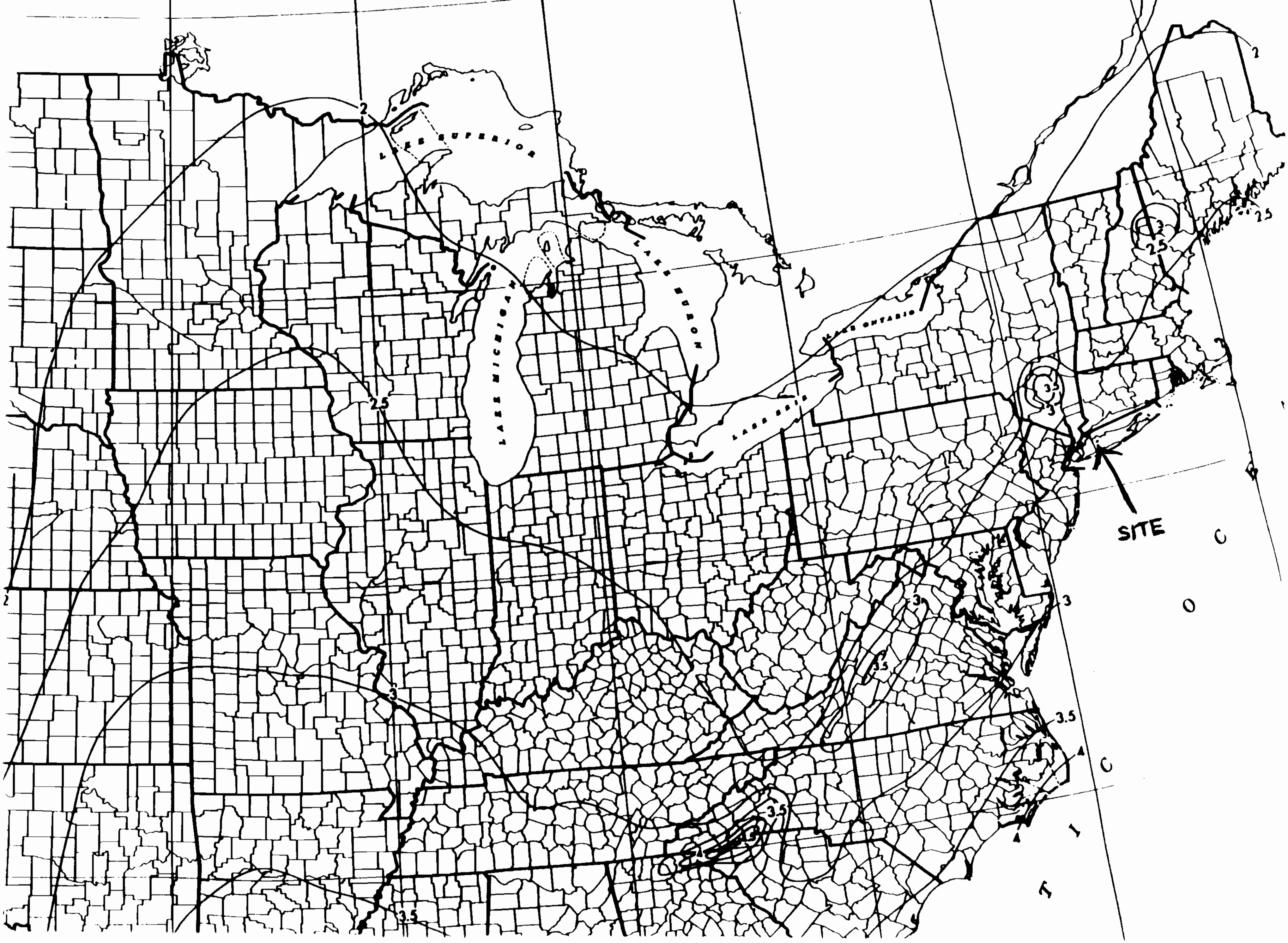



Based on period 1946-55

# NORMAL ANNUAL TOTAL PRECIPITATION (Inches)



# 1 YEAR 24-HOUR RAINFALL (inches)



REFERENCE NO. 37

02-8703-68

**NUS CORPORATION** TELECON NOTE

| CONTROL NO: | DATE: | TIME: |
|---|---|---|
| 02-8703-68 | 3/24/87 | 10:15 |

DISTRIBUTION: Photocircuits Division : File

| BETWEEN: | OF: | PHONE: |
|---|---|---|
| John Ozard | NYDEC, Delmar | (518) 439-7486 |

AND: David Grupp (NUS)

DISCUSSION:

– Called about Significant Habitat Areas indicated on Overlay.
Area - SW-30-009 - Hempstead Harbor - Designated Significant Coastal Fish & Waterfront area under NYS. Coastal Zone Management Program 13,000 acres - No Endangered or Threatened State or Federal species - Waterfowl wintering area, Significant finfish & Shellfish area.
Area - SW-30-005 - Wooded Area adjacent to Dosoris Pond Records of Ospreys, not a breeding area, summer users. Ospreys are NY State Threatened species.
Area SW-30-006 Dosoris Pond, No Endangered or Threatened Species, Tidal wetland - Brackish Pond Significant Habitat

– He said to send a topo indicating site and he will compile information from Significant Habitat & National Heritage Program.
– Updated L.I. revised overlay map available & he will also send. Also updating lower Hudson Region, Great Lakes, and St. Lawrence

ACTION ITEMS: Revisions will be available in 2-3 months.

D.J. Grupp 3/24/87

NUS 067 REVISED 0581

REFERENCE NO. 38

0 0 ~~~ ~
02-3723-62

**New York State Department of Environmental Conservation**
Wildlife Resources Center
Delmar, NY 12054



Henry G. Williams
Commissioner

April 10, 1987

Mr. David J. Grupp
NUS Corporation
Fieldcrest Avenue
Raritan Plaza III
Edison, NJ 08837

Dear Mr. Grupp:

We have reviewed the Significant Habitat Program and the Natural Heritage Program files with respect to the proposed project in the Town of Oyster Bay, Nassau County, NY.

We have identified the following potential concerns:

*<u>One Mile Radius</u>*

<u>Rare Plants</u>

<u>Aristolochia</u> <u>serpentaria</u> - Virginia snakeroot. This was last collected in 1879 in the vicinity of Glen Cove, NY. This is listed as "SH", State Historical, by the NY Natural Heritage Program. This means that no extant sites are known but that it may be rediscovered.

*<u>Two Mile Radius</u>*

<u>Rare Plants</u>

<u>Aristolochia</u> <u>serpentaria</u> - Virginia snakeroot. This was last collected in 1915 in the vicinity of Sea Cliff, NY.

<u>Asclepias</u> <u>variegata</u> - White milkweed. This was collected in the vicinity of Glen Cove, NY; however, no date was recorded. It is listed as "S1," critically imperiled in NYS because of extreme rarity, by the NY Natural Heritage Program.

<u>Significant Habitats</u>

SW 30-009 - Hempstead Harbor. This area has been designated as a "Significant Coastal Fish and Wildlife Habitat" by the NYS Department of

State under Policy 7 of the Waterfront Revitalization and Coastal Resources Act of 1981. It is considered one of the 10 most important waterfowl wintering areas on the north shore of Long Island, most noted for scaup, canvasback and black ducks. In addition, the bay provides nursery and feeding habitat for striped bass, scaup, bluefish, Atlantic silverside, menhaden, winter flounder and blackfish.

*Three Mile Radius*

Rare Plants

Corydalis flavula - Yellow harlequin. This plant was last collected in 1907 in the vicinity of Manhasset Neck on the west side of Hempstead Harbor. It si listed as "S1" by the NY Natural Heritage Program.

Silene caroliniana va. pensylvanica - Wild pink. This plant was confirmed in 1986 in Locust Valley near Forest Avenue and Bayville Road. It is listed as "S3," rare in NY State, by the NY Natural Heritage Program.

Significant Habitats

SW 30-009 - (see description above)

SW 30-005 - Dosoris Pond and SW 30-006 - adjacent woodlands. Dosoris Pond is a relatively large, protected brackish pond, rare in Nassau County. The woodlands and wetlands surrounding the pond support several heron spp. as feeding and occasionally breeding habitat.

SW 30-011 - Estate lands south and east of Glen Cove. This general area supports a variety of wildlife including several amphibians and wintering waterfowl concentrations. Spotted salamander, a State listed special concern species, has been reported from an area near Matinecock.

SW 30-013 - Glen Cove to Mill Neck Bay Waterfowl Area. This offshore area is most noted for wintering scaup, mallard, Canada geese and black ducks. More information concerning these sites may be available from the following sources:

Protected Significant Coastal Fish and Wildlife Habitats

| | |
|---|---|
| SW 30-009 - Hempstead Harbor | Mr. Thomas F. Hart<br>NYS DOS<br>162 Washington Avenue<br>Albany, NY 12231<br>(518) 474-3642 |

Rare Plants

Dr. Steven Clemants
NY Natural Heritage Program
Wildlife Resources Center
Delmar, NY 12054
(518) 439-7488

or

Mr. Robert Zaremba
The Nature Conservancy
P.O. Box 72
Cold Spring Harbor, NY 11724
(516) 367-3225

Significant Habitats

Regional Wildlife Manager
NYS DEC
SUNY @ Stony Brook - Bldg. 40
Stony Brook, NY 11790
(516) 751-7900

Our files are continually growing as new habitats and occurrences of rare species and communities are discovered. In most cases, site-specific or comprehensive surveys for plant and animal occurrences have not been conducted. For these reasons, we can only provide data which has been assembled from our files. We cannot provide a definitive statement on the presence or absence of species, habitats or natural communities. This information should not be substituted for on-site surveys that may be required for environmental assessment.

If this project is still active one year from now we recommend that you contact us again so that we may update this response.

Requests for data from the New York Natural Heritage Program and the Significant Habitat Program are now being consolidated. When requesting information from our files please include a brief description of the proposed project and a photocopy of the appropriate topographic quadrangle(s) with the site or sites identified. All requests should be addressed as follows:

ATTN: Information Services
Significant Habitat Unit
NYS Dept. of Environmental Conservation
Wildlife Resources Center
Delmar, NY 12054-9767

Our phone number is (518)439-7486. Please make a note of these changes.

If we can be of further assistance please do not hesitate to contact us.

Sincerely,

John W. Ozard
Senior Wildlife Biologist
Significant Habitat Unit

cc: H. Knoch
T. Hart
S. Clemants
R. Zaremba

JWO:sjs

REFERENCE NO. 39

C033-C
02-8709-11

# New York State Department of Environmental Conservation

Wildlife Resources Center
Delmar, NY 12054

March 10, 1988

**Thomas C. Jorling**
**Commissioner**

Ms. Susan Kennedy
NUS Corporation
1090 King Georges Post Road
Suite 1103
Edison, NJ 08837

Dear Ms. Kennedy:

We have reviewed the Significant Habitat Program and the Natural Heritage Program files with respect to your project in the Town of Oyster Bay, Nassau County, New York.

We have acquired no new information regarding Significant Habitat Areas 30-005, 30-006, or 30-009 since we sent the letter dated April 10, 1987 describing these areas. We do have two additional rare plant occurrences on the Hicksville quadrangle:

> Cyperus odoratus was collected in 1987; it is ranked G5 S2S3 by the New York Natural Heritage Program (see enclosed explanation of ranks).

> Magnolia virginiana was observed in 1985; it is ranked G5 S1, critically imperiled in New York State because of extreme rarity, by the New York Natural Heritage Program.

Our files are continually growing as new habitats and occurrences of rare species and communities are discovered. In most cases, site-specific or comprehensive surveys for plant and animal occurrences have not been conducted. For these reasons, we can only provide data which have been assembled from our files. We cannot provide a definitive statement on the presence or absence of species, habitats or natural communities. This information should not be substituted for on-site surveys that may be required for environmental assessment.

If this project is still active one year from now we recommend that you contact us again so that we may update this response.

New York Natural Heritage Program is supported in part
by The Nature Conservancy

If we can be of further assistance please do not hesitate to contact us.

Sincerely,

Carol Reschke

Carol Reschke
Community Ecologist

CR:jp
Encs.
cc: H. Knoch

## EXPLANATION OF RANKS AND CODES

### New York Natural Heritage Program (NYNHP) Ranks

Each element has a global and state rank. The global rank reflects the rarity of the element throughout the world and the state rank reflects the rarity within New York State. Infraspecific taxa are also assigned a taxon rank to reflect the infraspecific taxon's rank throughout the world.

GLOBAL RANK

G1 = Critically imperiled globally because of extreme rarity (5 or fewer occurrences, or very few remaining acres, or miles of stream) or especially vulnerable to extinction because of some factor of its biology.
G2 = Imperiled globally because of rarity (6 - 20 occurrences, or few remaining acres, or miles of stream) or very vulnerable to extinction throughout its range because of other factors.
G3 = Either very rare and local throughout its range (21 to 100 occurrences), or found locally (even abundantly at some of its locations) in a restricted range (e.g. a physiographic region), or vulnerable to extinction throughout its range because of other factors.
G4 = Apparently secure globally, though it may be quite rare in parts of its range, especially at the periphery.
G5 = Demonstrably secure globally, though it may be quite rare in parts of its range, especially at the periphery.
GH = Historically known, with the expectation that it might be rediscovered.
GX = Species believed extinct.
GU = Status unknown.

STATE RANK

S1 = Typically 5 or fewer occurrences, very few remaining individuals, acres, or miles of stream, or some factor of its biology making it especially vulnerable in New York State.
S2 = Typically 6 to 20 occurrences, few remaining individuals, acres, or miles of stream, or factors demonstrably making it very vulnerable in New York State.
S3 = Typically 21 to 100 occurrences, limited acreage, or miles of stream in New York State.
S4 = Apparently secure in New York State.
S5 = Demonstrably secure in New York State.
SH = Historically known from New York State, but not seen in the past 15 years.
SX = Apparently extirpated from New York State.
SE = Exotic, not native to New York State.
SR = State Report only, no verified specimens known from New York State.
SU = Status in New York State is unknown.

TAXON RANK

The T-ranks are defined the same way the Global ranks are but the T-rank only refers to the rarity of the subspecific taxon not the rarity of the species as a whole.

A "Q" indicates a question exists whether or not the taxon is a good taxonomic entity.
A "?" indicates a question exists about the rank.

## New York State Animal Protection Status

E = Endangered Species: any species which meet one of the following criteria:
1) Any native species in imminent danger of extirpation or extinction in New York.
2) Any species listed as endangered by the United States Department of the Interior, as enumerated in the Code of Federal Regulations 50 CFR 17.11.

T = Threatened Species: any species which meet one of the following criteria:
1) Any native species likely to become an endangered species within the foreseeable future in New York.
2) Any species listed as threatened by the United States Department of the Interior, as enumerated in the Code of Federal Regulations 50 CFR 17.11.

SC = Special Concern Species: those species which are not yet recognized as endangered or threatened, but for which documented concern exists for their continued welfare in New York. Unlike the first two categories, species of special concern receive no additional legal protection under Environmental Conservation Law Section 11-0535 (Endangered and Threatened Species).

P = Protected wildlife: wild game, protected wild birds, and endangered species of wildlife as defined in the Environmental Conservation Law.

U = Unprotected: the species may be taken at any time without limit; however a license to take may be required.

G = Game: any of a variety of big game or small game species as stated in the Environmental Conservation Law; many normally have an open season for at least part of the year, and are protected at other times.

REFERENCE NO. 40

REFERENCE NO. 41

#S942; #01226 • JOHN, MGR NATREG
#S942; #01226 • JOHN, MGR NATREG
#S942; #01226 • JOHN, MGR NAT[illegible]EG

NEW YORK
REGISTRY OF
NATIONAL HISTORIC
SITES + LANDMARKS
AS OF 2/4/87.
From the U.S. Dept. of
The INTERIOR

#S942; #01226 • JOHN, MGR NATREG; LOCPRNT • WED,
#S942; #01226 • JOHN, MGR NATREG; LOCPRNT • W[illegible],
#S942; #01226 • JOHN, MGR NATREG; LOCPRNT • WED,

#S942; #01226 • JOHN, MGR NATREG; LOCPRNT • WED, FEB 4, 1987, 1[illegible]
#S942; #01226 • JOHN, MGR NATREG; LOCPRNT • WED, FEB 4, 1987, 1[illegible]
#S942; #01226 • JOHN, MGR NATREG; LOCPRNT • WED, FEB 4, 1987, 1[illegible]

#S942; #01226 • JOHN, MGR NATREG; LOCPRNT • WED, FEB 4, 1987, 1:10 PM
#S942; #01226 • JOHN, MGR NATREG; LOCPRNT • WED, FEB 4, 1987, 1:10 PM
#S942; #01226 • JOHN, MGR NATREG; LOCPRNT • WED, FEB 4, 1987, 1:10 PM

U.S. Dept. of Interior

National Reg.

For National Natural Landmarks

For N.Y.

In correct order

#S942; #01224 * JOHN, MGR NAT
#S942; #01224 * JOHN, MGR NAT
#S942; #01224 * JOHN, MGR NAT

#S942; #01224 * JOHN, MGR.NATREG, LOCPRNT * W
#S942; #01224 * JOHN, MGR.NATREG; LOCPRNT * W
#S942; #01224 * JOHN, MGR NATREG; LOCPRNT * W

#S942; #01224 * JOHN, MGR NATREG; LOCPRNT * WED, FEB 4, 1987,
#S942; #01224 * JOHN, MGR NATREG, LOCPRNT * WED, FEB 4, 1987,
#S942; #01224 * JOHN, MGR.NATREG, LOCPRNT * WED, FEB 4, 1987,

NATIONAL REGISTER OF HISTORIC PLACES INDEX BY PROPERTY LOCATION
KEY: Property Name (Other Name) [Multiple Name], Address/Boundary

| STATE | CERTIFICATION/ DATE CERTIFIED |
|---|---|
| NEW YORK | |
| Albany County | |
| Albany | |
| Abrams Building | Listed |
| 55-57 S. Pearl St. | 02/14/80 |
| Reference No. 80002577 | |
| Albany Academy | Listed |
| (Joseph Henry House) | 02/18/71 |
| Academy Park | |
| Reference No 71000515 | |
| Albany City Hall | Listed |
| Eagle St. at Maiden Lane | 09/04/72 |
| Reference No. 72000812 | |
| Albany Institute of History and Art | Listed |
| 135 Washington Ave. | 07/12/76 |
| Reference No 76001202 | |
| Albany Union Station | Listed |
| E side of Broadway between Columbia and Steuben Sts. | 02/18/71 |
| Reference No. 71000516 | |
| Arbor Hill Historic District--Ten Broeck Triangle | Listed |
| (See Also:Arbor Hill Historic District--Ten Broeck Triangle (Boundary Increase);Ten Broeck Mansion) | 01/25/79 |
| Irregular pattern along Ten Broeck St. from Clinton Ave. to Livingston Ave. | |
| Reference No. 79001564 | |
| Arbor Hill Historic District--Ten Broeck Triangle (Boundary Increase) | Listed |
| (See Also:Arbor Hill Historic District--Ten Broeck Triangle) | 09/29/84 |
| Roughly Ten Broeck Pl., 1st, 2nd, and Swan Sts | |
| Reference No. 84003865 | |
| Arnold, Benjamin Walworth, House and Carriage House | Listed |
| (PH009211) | 07/26/82 |
| 465 State St. and 307 Washington Ave | |
| Reference No. 82003342 | |
| Cathedral of All Saints | Listed |
| S. Swan St. | 07/25/74 |
| Reference No 74001213 | |
| Cathedral of the Immaculate Conception | Listed |
| 125 Eagle St | 06/08/76 |
| Reference No 76001203 | |
| Center Square/Hudson-Park Historic District | Listed |
| Roughly bounded by Park Ave., State, Lark and S. Swan Sts. | 03/18/80 |
| Reference No. 80002578 | |
| Cherry Hill | Listed |
| S. Pearl St. between 1st and McCarthy Aves | 02/18/71 |

Palatine Bridge Freight House — Listed
E of Palatine Bridge on NY 5 — 03/07/73
Reference No 73001208

St. Johnsville

Fort Klock — Listed
2 mi. E of St. Johnsville on NY 5 — 11/28/72
Reference No 72000859

Nassau County

Cove Neck

Roosevelt, James Alfred, Estate — Listed
(Yellowbanks) — 05/17/79
360 Cove Neck Rd.
Reference No. 79001592

East Williston

East Williston Village Historic District — Listed
Roughly bounded by E. Williston Ave., Roslyn Rd., Atlanta Ave. and Village Green — 07/18/85
Reference No. 85001603

Flower Hill

Denton, George W., House — Listed
West Shore Rd. — 08/29/85
Reference No. 85001937

Garden City

Old Nassau County Courthouse — Listed
1550 Franklin Ave. — 02/17/78
Reference No. 78001863

Stewart, A. T., Era Buildings — Listed
4th, 5th, and 6th Sts., Cathedral and Cherry Valley Aves. — 11/14/78
Reference No. 78001864

Glen Cove

Woolworth Estate — Listed
77 Crescent Beach Rd. — 05/17/79
Reference No. 79001593

Great Neck Plaza

Grace and Thomaston Buildings — Listed
11 Middle Neck Rd. and 8 Bond St. — 12/14/78
Reference No. 78001865

Greenvale

Toll Gate House — Listed
Northern Blvd. — 08/16/77
Reference No. 77000952

Hempstead

St. George's Church — Listed
319 Front St. — 03/07/73
Reference No. 73001211

Hicksville

Heitz Place Courthouse — Listed
(Hicksville Village Hall) — 07/30/74
Heitz Pl.
Reference No. 74001263

Lattingtown

Aldred, John E., Estate — Listed
(Ormston;St. Josephat's Monastery) — 08/03/79
Lattingtown Rd
Reference No. 79001594

Lawrence

Rock Hall — Listed
199 Broadway — 11/21/76
Reference No 76001230

Locust Valley

Matinecock Friends Meetinghouse — Listed
Piping Rock and Duck Pond Rds — 07/19/76
Reference No 76001231

Long Beach

Granada Towers — Listed
310 Riverside Blvd — [illegible]

| | |
|---|---|
| 310 Riverside Blvd. | 05/31/84 |
| Reference No. 84002750 | |
| **Manhasset** | |
| Onderdonk, Horatio Gates, House | Listed |
| 1471 Northern Blvd | 04/16/80 |
| Reference No. 80002661 | |
| Valley Road Historic District | Listed |
| S of Manhasset on Community Dr. | 04/08/77 |
| Reference No. 77000953 | |
| **Massapequa** | |
| Grace Church Complex (old) | Listed |
| Merrick and Dover Rds. | 06/30/83 |
| Reference No. 83001713 | |
| **Millneck** | |
| Dodge, Lillian Sefton, Estate | Listed |
| (Sefton Manor;Mill Neck Manor Lutheran School for the Deaf) | 07/22/79 |
| Frost Mill Rd. | |
| Reference No. 79001595 | |
| **Muttontown Vicinity** | |
| Moore, Benjamin, Estate | Listed |
| (Chelsea) | 05/14/79 |
| N of Muttontown on NY 25A | |
| Reference No. 79001596 | |
| **North Hempstead** | |
| Saddle Rock Grist Mill | Listed |
| [Long Island Wind and Tide Mills TR] | 12/27/78 |
| Grist Mill Lane and Little Neck Bay | |
| Reference No. 78001866 | |
| **Oyster Bay** | |
| Adam-Derby House | Listed |
| 166 Lexington Ave. | 05/17/79 |
| Reference No. 79001597 | |
| Beekman, James William, House | Listed |
| ("The Cliffs") | 12/12/73 |
| West Shore Rd. | |
| Reference No. 73001212 | |
| Elmwood | Listed |
| (Young,Thomas F.,Estate) | 04/03/75 |
| E side of Cove Rd. | |
| Reference No. 75001200 | |
| First Presbyterian Church of Oyster Bay | Listed |
| E. Main St | 12/12/76 |
| Reference No 76001232 | |
| Raynham Hall | Listed |
| (Townsend Homestead) | 06/05/74 |
| 20 W. Main St. | |
| Reference No. 74001264 | |
| Seawanhaka Corinthian Yacht Club | Listed |
| Centre Island Rd. | 01/08/74 |
| Reference No. 74001265 | |
| Swan, Edward H., House | Listed |
| Cove Neck Rd. | 05/24/76 |
| Reference No. 76001233 | |
| Planting Fields Arboretum | Listed |
| W of Oyster Bay on Planting Fields Rd | 01/25/79 |
| Reference No 79001598 | |
| **Oyster Bay, Long Island** | |
| Sagamore Hill National Historic Site | Listed |
| (Sagamore Hill) | 10/15/66 |
| End of Cove Neck Rd | |
| Reference No. 66000096 | |
| **Port Washington** | |
| Main Street School | Listed |
| Main and S Washington St | 02/10/83 |
| Reference No 83001714 | |

Sands--Willets Homestead — Listed 09/19/85
336 Port Washington Blvd
Reference No. 85002425

Sousa, John Philip, House — Listed 10/15/66
14 Hicks Lane, Sands Point
Reference No. 66000532

Post Washington

Dodge, Thomas, Homestead — Listed 06/26/86
58 Harbor Rd.
Reference No. 86001387

Roslyn

Eastman Cottage — Listed 10/02/86
[Roslyn Village MRA]
130 Mott Ave.
Reference No. 86002635

Hicks Lumber Company Store — Listed 10/02/86
[Roslyn Village MRA]
1345 Old Northern Blvd.
Reference No. 86002636

Main Street Historic District — Listed 01/21/74
Main St. from N. Hempstead Tpke. to E. Broadway, includ ing Tower St. and portions of Glen Ave and Paper Mill Rd.
Reference No. 74001266

Roslyn Grist Mill — Listed 10/02/86
[Roslyn Village MRA]
1347 Old Northern Blvd.
Reference No. 86002638

Roslyn National Bank and Trust Company Building — Listed 10/02/86
[Roslyn Village MRA]
1432 Old Northern Blvd.
Reference No. 86002639

Roslyn Savings Bank Building — Listed 10/02/86
[Roslyn Village MRA]
1400 Old Northern Blvd
Reference No. 86002640

Roslyn Village Historic District — Determined Eligible 08/20/86
(See Also:Main Street Historic District)
[Roslyn Village Historic District]
Roughly bounded by Old Northern Blvd., Vernon and E. Br oadway Sts., Main, Glen Ave., and Tower St.
Reference No 86002650

Titus, Willet, House — Listed 10/02/86
[Roslyn Village MRA]
1441 Old Northern Blvd.
Reference No. 86002652

Trinity Church Complex — Listed 10/02/86
[Roslyn Village MRA]
Northern Blvd.
Reference No. 86002653

Warner, Samuel Adams, House — Listed 10/02/86
[Roslyn Village MRA]
1 Railroad Ave.
Reference No. 86002654

Roslyn Harbor

Cedarmere--Clayton Estates — Listed 09/29/86
Bryant Ave. and Northern Blvd
Reference No 86002634

Valley Stream

Pagan-Fletcher House — Listed 09/08/83
127 Hendrickson Ave.
Reference No. 83001715

Wantagh

Wantagh Railroad Complex — Listed 06/30/83
1700 Wantagh Ave.
Reference No 83001716

Westbury Vicinity

Westbury Vicinity

Old Westbury Gardens — Listed 11/08/76
(Phipps,John S.,Estate;Westbury House)
71 Old Westbury Rd.
Reference No. 76001234

New York County

Manhattan Bridge — Listed 08/30/83
Spans East River, between Front and Canal St.
Reference No. 83001694

Washington Bridge — Listed 09/22/83
Between Amsterdam and Undercliff Aves.
Reference No. 83001645

New York

75 Murray Street Building — Listed 04/03/73
75 Murray St.
Reference No. 73001213

AMBROSE (lightship) — Listed 09/07/84
(U.S. Lightship No. 87)
Pier 16, East River, Manhattan
Reference No. 84002758

Admiral's House — Listed 07/24/72
(Commanding General's Quarters)
Governors Island
Reference No. 72000860

Alwyn Court Apartments — Listed 12/26/79
180 W. 58th St.
Reference No. 79001599

American Fine Arts Society — Listed 05/06/80
(Art Students League)
215 W. 57th St.
Reference No. 80002662

American Museum Of Natural History — Listed 06/24/76
Central Park West and 77th St.
Reference No. 76001235

American Radiator Building — Listed 05/07/80
(American Standard Building)
40--52 W. 40th St.
Reference No. 80002663

American Stock Exchange — Listed 06/02/78
86 Trinity Pl.
Reference No. 78001867

Amsterdam Theater — Listed 01/10/80
(The New Amsterdam Theater, Rooftop Theater & Aerial Gardens;The New Amsterdam Bg:New Amsterdam Theater, Rooftop Theater )
214 W. 42nd St.
Reference No. 80002664

Ansonia Hotel — Listed 01/10/80
2101--2119 Broadway
Reference No. 80002665

Apartment at 1261 Madison Avenue — Listed 10/29/82
1261 Madison Ave.
Reference No. 82001185

Apollo Theater — Listed 11/17/83
253 W. 125th St.
Reference No. 83004059

Appellate Division Courthouse of New York State — Listed 07/26/82
(Appelate Division of the Supreme Court of the State of New York, First Department)
27 Madison Ave.
Reference No. 82003366

Apthorp Apartments — Listed 01/30/78
2201--2219 Broadway
Reference No. 78001868

Arthur, Chester A., House — Listed 10/15/66
123 Lexington Ave.
Reference No. 66000534

REFERENCE NO. 42

A | B | C

# Hagstrom map of Nassau County

Size: 33"x44"

2

Main Through Roads

Highways Under Construction

…d Highways

…ds and Streets

…s

…ghways

…ge Numbers

Railroad Lines and Stations

Parks

Golf Courses

Cemeteries

Hospitals

Airports

State and Federal Lands

School Districts and Schools

Public Bldgs.

County Boundaries

Township Boundaries

Village Boundaries

Zip Code Numbers and Boundaries

SCALES (approx.)

0 1 2 Miles

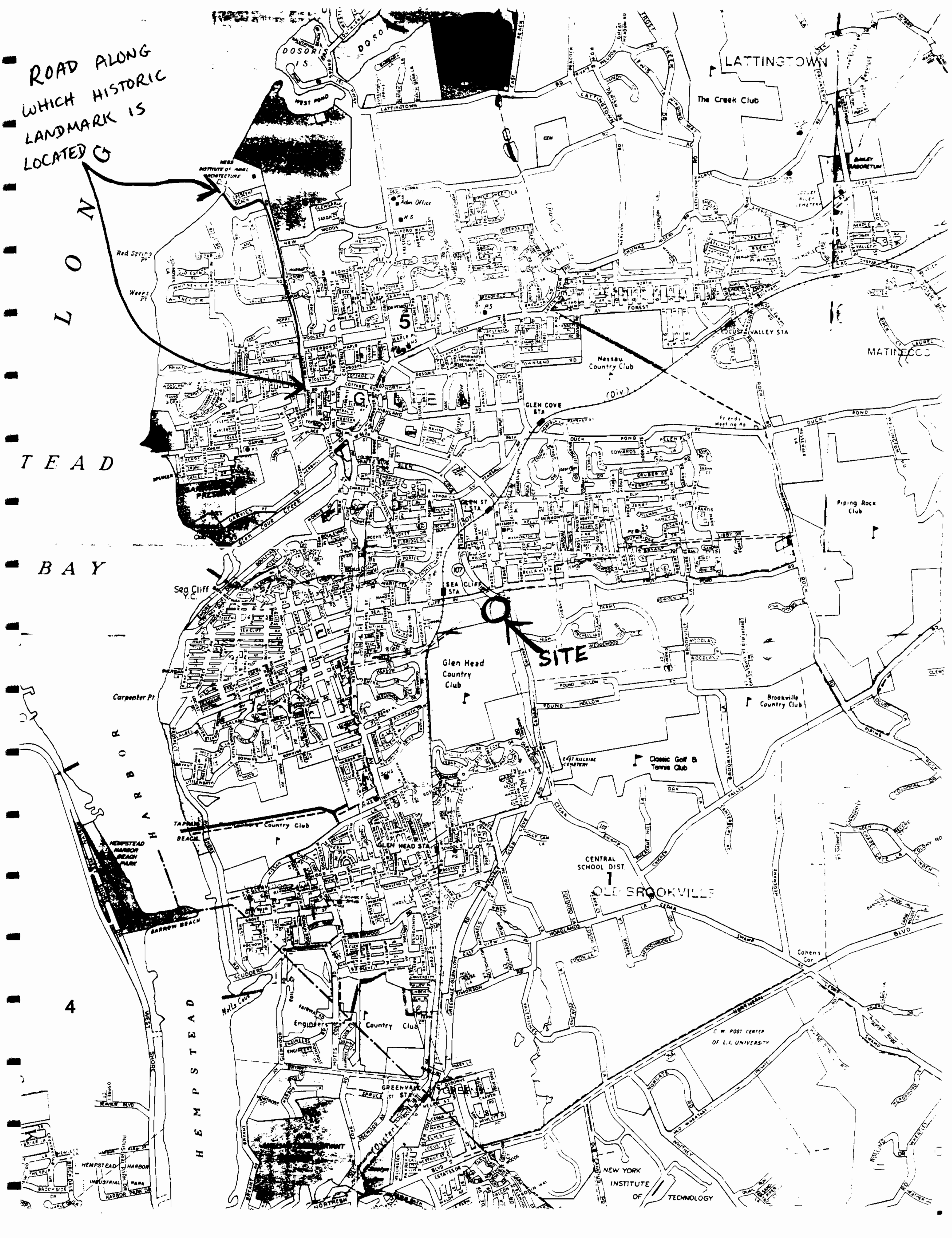
0 1 2 3 Kilometers



3


4

5


ROAD ALONG WHICH HISTORIC LANDMARK IS LOCATED
SITE
LONG
ISLAND
TEAD
BAY
HEMPSTEAD
HARBOR
HEMPSTEAD HARBOR BEACH PARK
BARROW BEACH
LATTINGTOWN
The Creek Club
BAILEY ARBORETUM
LOCUST VALLEY STA
MATINECOCK
Nassau Country Club
GLEN COVE STA
GLEN ST STA
SEA CLIFF STA
Sea Cliff Y.C.
Red Spring Pt
Weeks Pt
Carpenter Pt
Piping Rock Club
Glen Head Country Club
Brookville Country Club
Classic Golf & Tennis Club
EAST HILLSIDE CEMETERY
Country Club
GLEN HEAD STA
CENTRAL SCHOOL DIST. 1
OLD BROOKVILLE
Cohens Cor
C. W. POST CENTER OF L.I. UNIVERSITY
NEW YORK INSTITUTE OF TECHNOLOGY
Engineers Country Club
GREENVALE STA
HEMPSTEAD HARBOR INDUSTRIAL PARK
Friends Meeting Ho
Mott's Cove
WEST SHORE RD
NORTHERN
DUCK POND RD
POUND HOLLOW
CEDAR SWAMP
4
5
1

REFERENCE NO. 43

**NUS CORPORATION AND SUBSIDIARIES** | **TELECON NOTE**

| CONTROL NO: 02-8908-02 NYR5$I2 | DATE: September 12, 1989 | TIME: 1420 |
|---|---|---|

**DISTRIBUTION:**
Photocircuits

| BETWEEN: | OF: | PHONE: |
|---|---|---|
| Mr. Andy Yerman | Water Unit, NYSDEC, Region 1 | (516) 751-7725 |

**AND:**
Sue Lenczyk

**DISCUSSION:**

I asked about the classification of Glen Cove Creek. From its mouth to Pond 143, it is Class I. From Pond 143 upstream, it is Class D.

Class I refers to waters suitable for secondary contact recreation and any other usage except for primary contact recreation and shellfishing for market purposes.

Class D refers to waters suitable for fishing and for primary and secondary contact recreation.

Mr. Yerman said that these classifications were from the 1960s and may have been changed recently; ~~however,~~ also He tried to put me in contact with the marine habitat protection unit to confirm these classifications, but no one answered.

**ACTION ITEMS:**

Sue Lenczyk 9/12/89

NUS 087 REVISED 0685

**NUS CORPORATION AND SUBSIDIARIES** **TELECON NOTE**

| | | |
|---|---|---|
| CONTROL NO: 02-8908-02-SI NYRS$I2 | DATE: September 14, 1989 | TIME: 1040 |

DISTRIBUTION: Photocircuits

| | | |
|---|---|---|
| BETWEEN: Mr. John Lovejoy | OF: Water Division Nassau County Health Dept. | PHONE: (516) 535-2573 |

AND: Sue Lenczyk

DISCUSSION:

I inquired about the status of the Kelly Street well.

On January 9, 1989, when the new State standards went into effect, the Glen Cove Water District, which operates the well, voluntarily removed it from service. The Water District is currently installing an air stripping tower to remove the 1,1,1-~~d~~ trichloroethane that was in the well.

The well is still off line, but it should be going on line soon.

ACTION ITEMS:

Sue Lenczyk 9/14/89

**REFERENCE NO. 44**

REFERENCE NO. 40