02-9010-04-PA
REV. NO. 0

FINAL DRAFT
PRELIMINARY ASSESSMENT REPORT
NAVAL FACILITY N. DIVISION
CAMP HERO
MONTAUK, NEW YORK

PREPARED UNDER

TECHNICAL DIRECTIVE DOCUMENT NO. 02-9010-04
CONTRACT NO. 68-01-7346

FOR THE

ENVIRONMENTAL SERVICES DIVISION
U.S. ENVIRONMENTAL PROTECTION AGENCY

DECEMBER 31, 1990

NUS CORPORATION
SUPERFUND DIVISION

SUBMITTED BY:

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PROJECT MANAGER

Susan S. Hodgkiss
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SITE MANAGER

REVIEWED/APPROVED BY:

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RONALD M. NAMAN
FIT OFFICE MANAGER

SITE SUMMARY AND RECOMMENDATION

The Naval Facility N. Division (Camp Hero) Site is located on Montauk Point, Long Island, Suffolk County, New York. The site is approximately 500 acres and is surrounded by a residential area. The site is bounded to the south and east by the Atlantic Ocean and to the north and west by a New York State Park. A lighthouse is located on the eastern portion of the site.

The history of ownership for this site is extensive. Activities on site began in 1941 when the U.S. Army obtained the property on Montauk Point. Camp Hero was part of the Long Harbor Defense Program which stored guns and housed military personnel during wartime. From 1950 to 1982, the U.S. Air Force occupied approximately 308 acres of the property. The Montauk Air Force Base had several radar towers and housed official personnel. In 1974, approximately 119 acres were obtained from the Army by the State of New York with the restriction that the land be used as a park. In 1983 and 1984, the State of New York acquired another 296 acres under the same restriction. In 1971, approximately 17 acres were transferred from the Army to the Navy for use as a radar base station. This land was later purchased by the Navy in 1978. From 1982 to 1985, the Navy leased the lighthouse and garage on the eastern portion of the site to the U.S. Coast Guard. In 1985, the Navy sold its portion of the site to the Town of East Hampton for the purpose of constructing housing units. Nonetheless, the Navy currently operates a radar base station on the property under an easement and contracts workers who maintain the station as needed. The U.S. Coast Guard obtained approximately 6 acres at the lighthouse location. In 1984, the Town of East Hampton obtained an additional 30 acres, further subdivided a portion of its property, and sold it for individual home lots. Currently, the different portions of the site are owned by the State of New York, the Town of East Hampton, the U.S. Coast Guard, and approximately 28 homeowners.

Following Air Force occupancy of the site, the Suffolk County Health Department conducted an inspection on August 10, 1983 and reported that 10 oil-filled transformers were located on site as follows: six in the bunker power generating area, one by the radar building, and three by the power plant. The status of these transformers is unknown. It has also been reported that approximately 50 to 55 transformers were previously located on site. Three drums containing raw materials of unknown identity were also reportedly stored indoors. There is no documentation of hazardous waste activities here or elsewhere at the site and it is improbable that groundwater or surface water would be affected. Groundwater is used for potable water and irrigation purposes within 4 miles of the site. However, specific groundwater data are unavailable at this time. There are no surface water intakes within 4 miles of the site.

Despite extensive background investigation, the presence or indication of activities generating Comprehensive and Environmental Responsibility Cleanup Liability Act (CERCLA) hazardous waste has not been determined at the Naval Facility N. Division Site; therefore, **NO FURTHER REMEDIAL ACTION PLANNED** is recommended for this site

SITE ASSESSMENT REPORT: PRELIMINARY ASSESSMENT

PART I: SITE INFORMATION

1. **Site Name/Alias** Naval Facility N. Division (Camp Hero)

   Street Camp Hero Road

   City Montauk **State** New York **Zip** 11954

2. **County** Suffolk **County Code** 103 **Cong. Dist.** 01

3. **EPA ID No.** NY4210020414

4. **Block No.** Unknown **Lot No.** Unknown

5. **Latitude** 41° 04' 00" **Longitude** 71° 52' 10"

   USGS Quad. Montauk Point, New York

6. **Owner** State of New York
   Town of East Hampton
   U.S. Coast Guard
   Private Residences

   Tel. No.

   Street

   City **State** New York **Zip**

7. **Operator** New York State Parks and Recreation
   Town of East Hampton
   U. S. Coast Guard
   Private Residences

   Tel. No.

   Street

   City Montauk **State** New York **Zip** 11954

8. **Type of Ownership**

   ☒ Private ☒ Federal ☒ State
   ☐ County ☒ Municipal ☐ Unknown ☐ Other

9. **Owner/Operator Notification on File**

   ☐ RCRA 3001 Date ☐ CERCLA 103c Date
   ☒ None ☐ Unknown

10. **Permit Information**

Permit	Permit No.	Date Issued	Expiration Date	Comments
None				

11. Site Status

☐ **Active** ☐ **Inactive** ☒ **Unknown**

12. Years of Operation 1941 to Unknown

13. Identify the types of waste sources (e.g., landfill, surface impoundment, piles, stained soil, above- or below-ground tanks or containers, land treatment, etc.) on site. Initiate as many waste unit numbers as needed to identify all waste sources on site.

(a) Waste Sources

Waste Unit No.	Waste Source Type	Facility Name for Unit

There are no known CERCLA/SARA wastes on site.

(b) Other Areas of Concern

Identify any miscellaneous spills, dumping, etc. on site; describe the materials and identify their locations on site.

From 1950 to 1982, the U.S.Air Force occupied a portion of the site. It has been reported that nine aboveground and six underground tanks containing fuel oil were present on site. Although the aboveground tanks had no containment, there are no known spills associated with these tanks. Additionally, petroleum products are not CERCLA-eligible hazardous waste. A 1983 Suffolk County Health Department Inspection revealed that approximately 100 gallons of various paints were stored in a locker at one end of the bunker. It is unknown if these cans are still present on site . It has also been reported that a photography lab operated on site which may have produced hazardous wastes. It has also been reported that oil-filled transformers were located in the bunker power generating area, the radar building, and the power plant. The status of these transformers is unknown. There are no known spills associated with these transformers (Ref. No. 2).

14. Information available from

Contact Amy Brochu **Agency** U.S. EPA **Tel. No.** (201) 906-6802

Preparer Susan S. Hodgkiss **Agency** NUS Corp. Region 2 FIT **Date** December 31, 1990

PART II: WASTE SOURCE INFORMATION

The presence or indication of activities generating a CERCLA hazardous waste has not been determined at the Naval Facility N. Division Site.

For each of the waste units identified in Part I, complete the following items.

Waste Unit ________ - ______________________

Source Type

______	Landfill	______	Contaminated Soil
______	Surface Impoundment	______	Pile
______	Drums	______	Land Treatment
______	Tanks/Containers	______	Other

Description:

Hazardous Waste Quantity

Hazardous Substances/Physical State

Ref. Nos. 2-8

PART III: EXISTING ANALYTICAL DATA (If any)

No known existing analytical data are available.

PART IV: HAZARD ASSESSMENT

GROUNDWATER ROUTE

1. Describe the likelihood of a release of contaminant(s) to the groundwater as follows: observed release, suspected release, or none. Identify contaminants detected or suspected and provide a rationale for attributing them to the site. For observed release, define the supporting analytical evidence.

Activities generating a CERCLA hazardous waste have not been documented for the Naval Facility N. Division Site.

Ref. Nos. 2-8

2. Describe the aquifer of concern; include information such as depth, thickness, geologic composition, areas of karst terrain, permeability, overlying strata, confining layers, interconnections, discontinuities, depth to water table, groundwater flow direction.

The overlying strata in the Montauk Point area are glacial deposits divided into lower and upper units. The lower unit of stratified drift is composed of medium to coarse sand and gravel interspersed with some thin lenses of clay and silt with high permeability (10^{-3} to 10^{-5} cm/sec) and extensive distribution. Immediately above the lower unit is an undifferentiated unit of interbedded deposits of till and stratified drift approximately 30 to 100 feet thick and consisting of gravelly till, clay, silt, and some thin lenses of fine sand.

The glacial deposits are underlain by the Magothy Formation, which consists of beds of silt and sandy clay and has a permeability of 10^{-5} to 10^{-7} cm/sec. This formation is underlain by the Raritan Formation, which is approximately 300 to 400 feet thick. The Raritan Formation is divided into a lower unit called the Lloyd Sand Member and an upper unit called the Clay Member. The Lloyd Sand Member is an artesian aquifer that probably contains salt water in the Montauk Point area only. Underlying the Raritan Formation is bedrock which consists of gneiss and schist. Because the bedrock has a low permeability and contains only salt water, it is not considered an aquifer. Thus, the Magothy Formation is the aquifer of concern near the Naval Facility N. Division Site. Water in the principal aquifer, the Magothy Formation, is under artesian pressure due to the relatively low permeability of the overlying beds and is replenished by slow downward leakage from the overlying confining beds. In general, ground water moves from areas of recharge to areas of discharge. The water table in the area of the site is reported to be 5 to 25 feet below the land surface.

Ref. Nos. 17, 18, 25

3. What is the depth from the lowest point of waste disposal/storage to the highest seasonal level of the saturated zone of the aquifer of concern?

Activities generating a CERCLA hazardous waste have not been documented for the Naval Facility N. Division Site.

Ref. Nos. 2-8

4. What is the distance to and depth of the nearest well that is currently used for drinking purposes?

Specific groundwater use data are unavailable at this time. However, it is known that everyone within 4 miles of the site uses groundwater for potable purposes.

Ref. No. 15

5. **If a release to groundwater is observed or suspected, determine the number of people that obtain drinking water from wells that are documented or suspected to be located within the contamination boundary of the release.**

Activities generating a CERCLA hazadous waste have not been documented for the Naval Facility N. Division Site.

Ref. Nos. 2-8

6. **Identify the population served by wells located within 4 miles of the site that draw from the aquifer of concern.**

Distance	Population
0 - ¼ mi	106
>¼ - ½ mi	0
>½ - 1 mi	0
>1 - 2 mi	57
>2 - 3 mi	395
>3 - 4 mi	486

Groundwater data are unavailable at this time. However, it is known that everyone within 4 miles of the site uses groundwater for potable water purposes. Therefore due to a lack of data a population count was used to determine the population served by groundwater.

Ref. Nos. 15, 20, 21

7. **Identify uses of groundwater within 4 miles of the site (i.e. private drinking source, municipal source, commercial, irrigation, unuseable).**

Groundwater is used for potable water and irrigation purposes within 4 miles of the site.

Ref. Nos. 12, 15

SURFACE WATER ROUTE

8. **Describe the likelihood of a release of contaminant(s) to surface water as follows: observed release, suspected release, or none. Identify contaminants detected or suspected and provide a rationale for attributing them to the site. For observed release, define the supporting analytical evidence.**

Activities generating a CERCLA hazardous waste have not been documented for the Naval Facility N. Division Site.

Ref. Nos. 2-8

9. **Identify the nearest downslope surface water. If possible, include a description of possible surface drainage patterns from the site.**

The nearest downslope surface water is the Atlantic Ocean at the south and east boundaries of the site. In addition, an unnamed stream flows through the western portion of the site and ultimately leads into the Atlantic Ocean.

Ref. Nos. 1, 20

10. What is the distance to the nearest downslope surface water? Measure the distance along a course that runoff can be expected to follow.

The Atlantic Ocean is located on the southern and eastern border of the site. An unnamed stream is located on the western portion of the site and flows into the Atlantic Ocean. Thus, the distance to the nearest downslope surface water is zero.

Ref. Nos. 1, 20

11. Determine the floodplain that the site is located within.

The southern boundary of the site is located in an area of a 100-year coastal flood with velocity (wave action). The remainder of the site is located in area of minimal flooding, as defined by flood insurance rate maps.

Ref. No. 24

12. Identify drinking water intakes in surface waters within 15 miles downstream of the site. For each intake identify: the distance from the point of surface water entry, population served, and stream flow at the intake location.

There are no surface water intakes within 15 miles downstream of the site.

Ref. No. 15

13. Identify fisheries that exist within 15 miles downstream of the point of surface water entry. For each fishery specify the following information:

Fishery	Water Body Type	Flow (cfs)
Atlantic Ocean	Ocean	NA

Ref. Nos. 1, 11

14. Identify sensitive environments that exist within 15 miles of the point of surface water entry. For each sensitive environment specify the following:

Environment	Water Body Type	Flow (cfs)
Coastal Wetlands	Ocean	NA

Ref. Nos. 1, 11

15. If a release to surface water is observed or suspected, identify any intakes, fisheries, and sensitive environments from question Nos. 12-14 that are or may be located within the contamination boundary of the release.

Activities generating a CERCLA hazardous waste have not been documented for the Naval Facility N. Division Site.

Ref. Nos. 2-8

SOIL EXPOSURE PATHWAY

16. Determine the number of people that occupy residences or attend school or day care on or within 200 feet of the site property.

There are approximately 28 homes located on a portion of the site. Based on 3.8 persons per house, it is estimated that approximately 106 people occupy residences on the site.

Ref. Nos. 1, 19

17. Determine the number of people that work on or within 200 feet of the site property.

The U.S. Coast Guard operates a lighthouse and the State of New York owns and maintains a state park within 200 feet of the site. A park ranger lives and works on the site. The Navy operates a radar base station on site. However, Navy workers are not considered permanent because they are on site only as needed. Therefore, it is estimated that 1 to 100 people work on or within 200 feet of the site.

Ref. No. 1

18. Identify terrestrial sensitive environments on or within 200 feet of the site property.

There are no known terrestrial sensitive environments on or within 200 feet of the site property.

Ref. Nos. 1, 13

AIR ROUTE

19. Describe the likelihood of release of contaminants to air as follows: observed release, suspected release, or none. Identify contaminants detected or suspected and provide a rationale for attributing them to the site. For observed release define the supporting analytical evidence.

Activities generating a CERCLA hazardous waste have not been documented for the Naval Facility N. Division Site.

Ref. Nos. 2-8

20. Determine populations that reside within 4 miles of the site.

Distance	Population
0 - 1/4 mi	106
>1/4 - 1/2 mi	0
>1/2 - 1 mi	0
>1 - 2 mi	57
>2 - 3 mi	395
>3 - 4 mi	486

Ref. No. 21

21. Identify sensitive environments and wetlands acreage within $\frac{1}{2}$ mile of the site.

Sensitive Environment Type	Distance
Coastal Wetlands	0.8 mile Northeast

Ref. Nos. 1, 20

22. If a release to air is observed or suspected, determine the number of people that reside or are suspected to reside within the area of air contamination from the release.

Activities generating a CERCLA hazardous waste have not been documented for the Naval Facility N. Division Site.

Ref. Nos. 2-8

23. If a release to air is observed or suspected, identify any sensitive environments, listed in question No. 21, that are or may be located within the area of air contamination from the release.

Activities generating a CERCLA hazardous waste have not been documented for the Naval Facility N. Division Site.

Ref. Nos. 2-8

ATTACHMENTS

1. Maps and Photos

   - Site Location Map
   - Site Map
   - Photograph Log

2. References

   - All referenced documentation

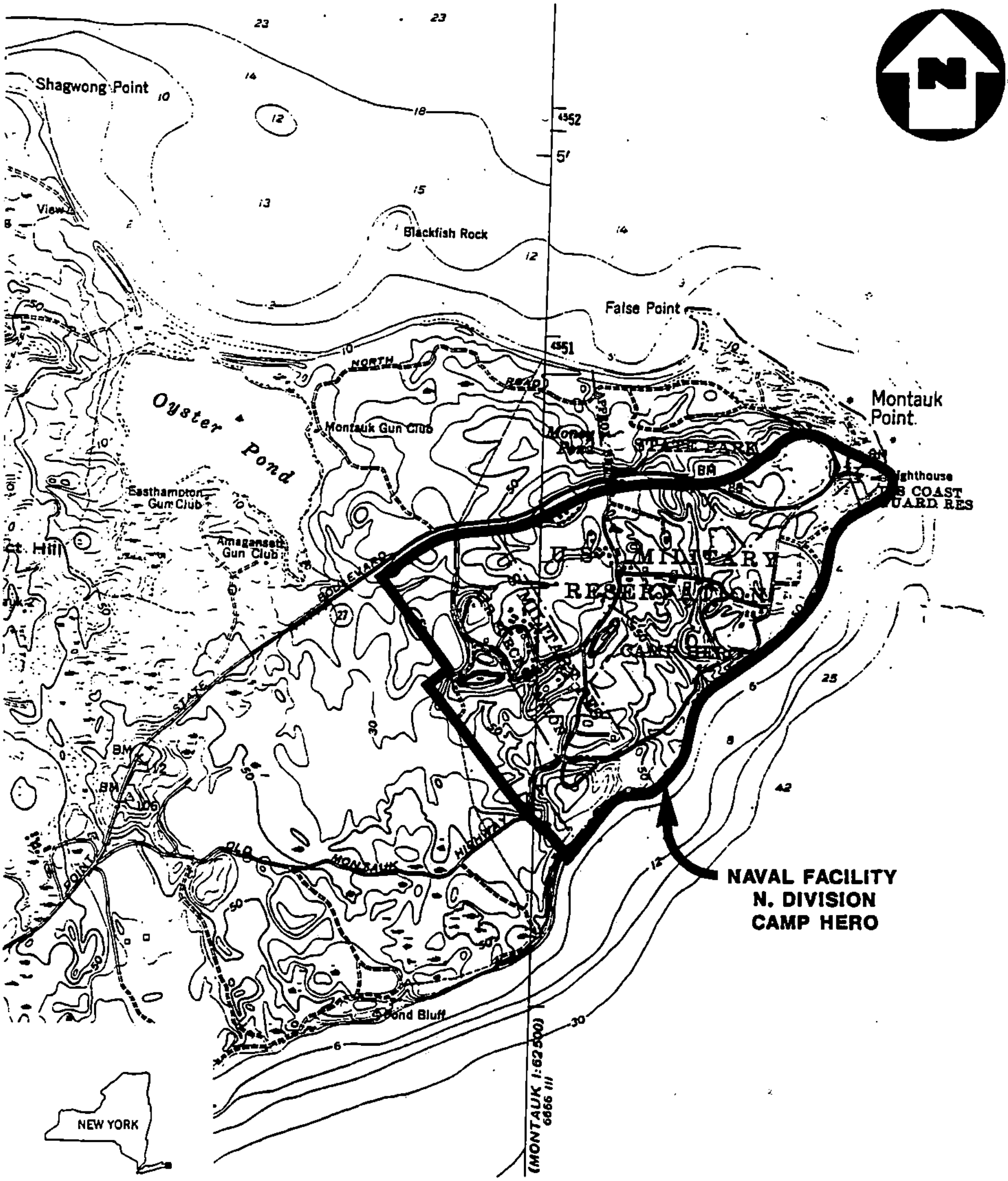
Sleeve containing PA Method score sheets.

ATTACHMENT 1

NAVAL FACILITY N. DIVISION

CAMP HERO

MONTAUK, NEW YORK



(QUAD) MONTAUK POINT, N.Y.

SITE LOCATION MAP

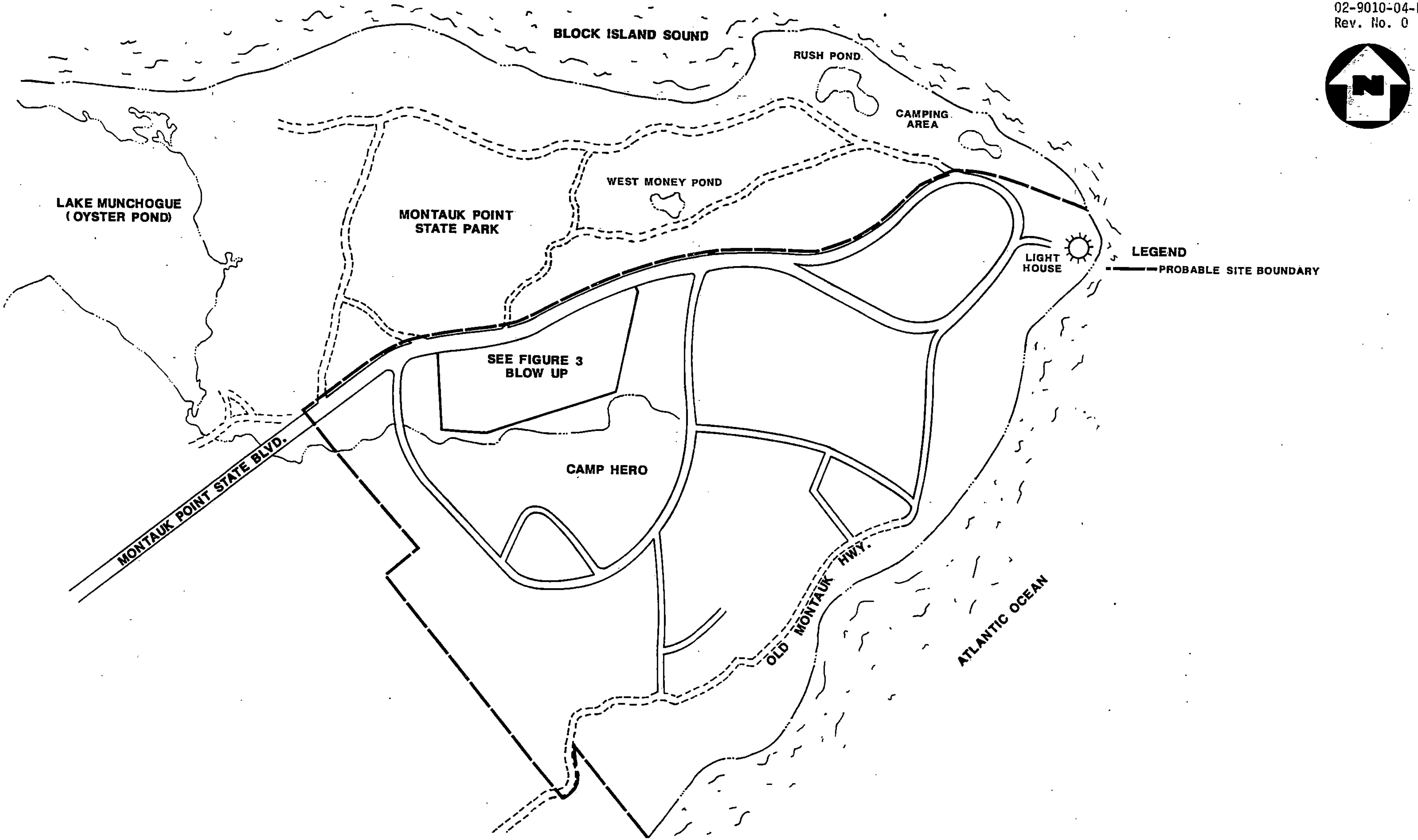
NAVAL FACILITY N. DIVISION CAMP HERO

MONTAUK, N.Y.

SCALE : 1" = 2000'

FIGURE 1

NUS CORPORATION



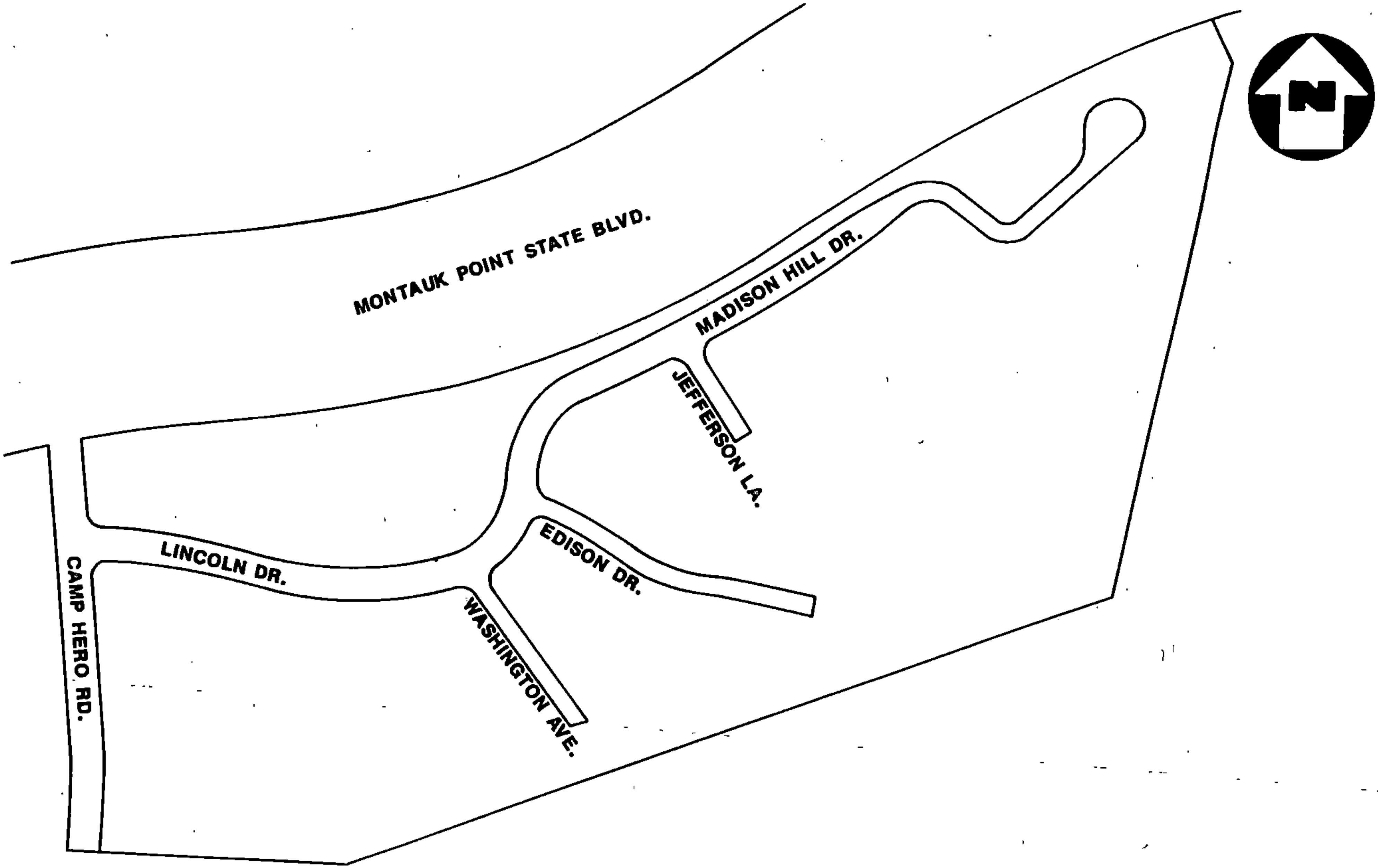
SITE MAP

NAVAL FACILITY N. DIVISION, CAMP HERO, MONTAUK, N.Y.

NOT TO SCALE

FIGURE 2

NUS CORPORATION



BLOW UP OF RESIDENTIAL AREA

NAVAL FACILITY N. DIVISION, CAMP HERO, MONTAUK, N.Y.

NOT TO SCALE

FIGURE 3

NUS CORPORATION

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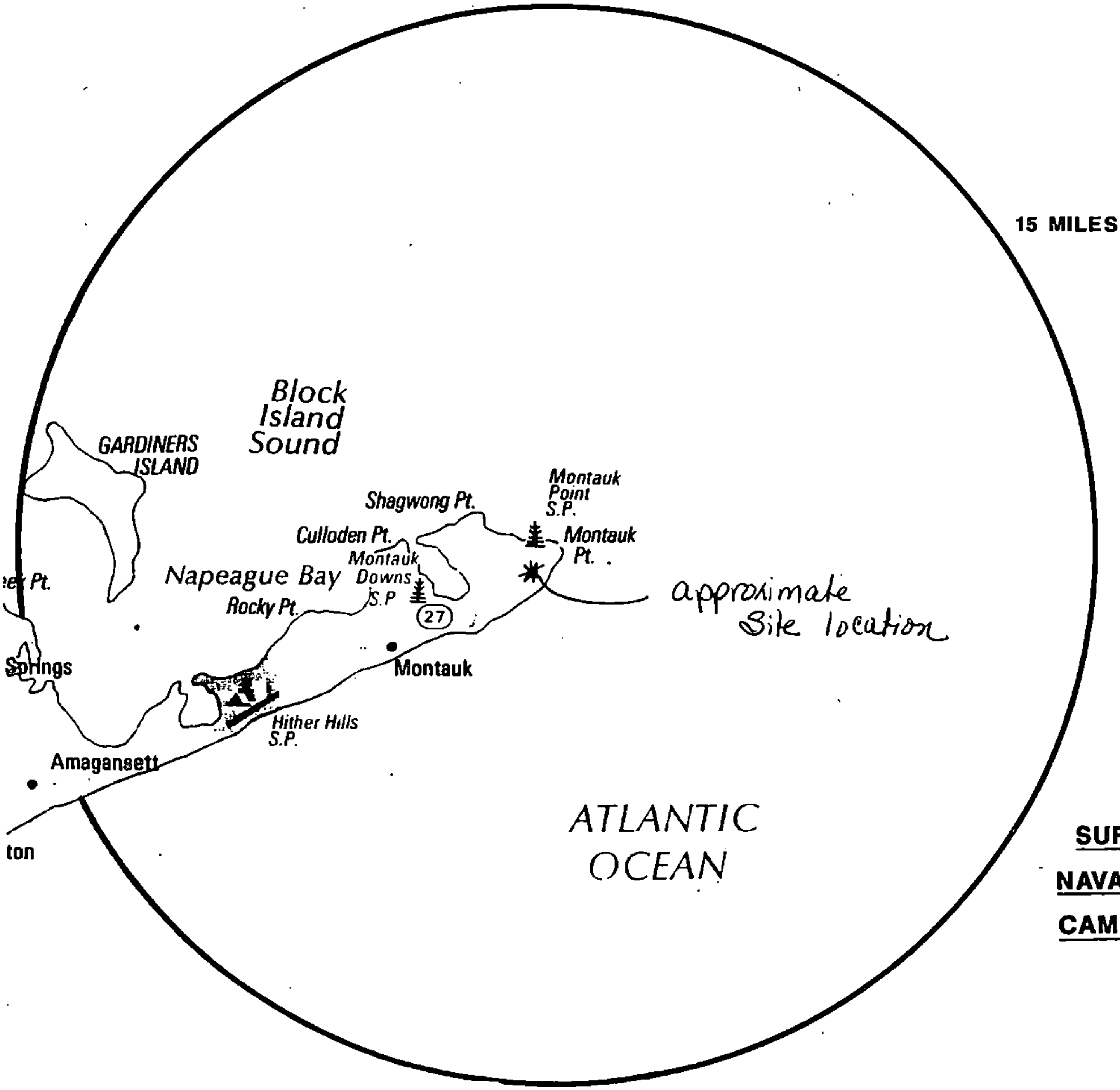

SURFACE WATER PATHWAY

NAVAL FACILITY N. DIVISION,

CAMP HERO, MONTAUK, N.Y.

FIGURE 4

NUS CORPORATION

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EXHIBIT A

NAVAL FACILITY N. DIVISION
CAMP HERO
MONTAUK, NEW YORK

PHOTOGRAPH LOG

OFF-SITE RECONNAISSANCE: NOVEMBER 18, 1986
OFF-SITE RECONNAISSANCE: NOVEMBER 2, 1990

NAVAL FACILITY N. DIVISION
CAMP HERO
MONTAUK, NEW YORK
NOVEMBER 2, 1990

OFF-SITE RECONNAISSANCE

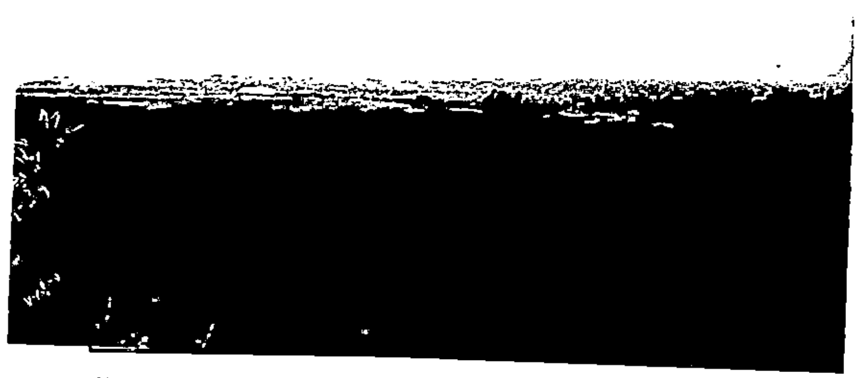
PHOTOGRAPH INDEX

ALL PHOTOGRAPHS TAKEN BY DOROTHY PONTE

Photo Number	Description	Time
1P-1	Photo of Montauk Point Lighthouse.	0817
1P-2	Photo facing west at mobile camping area near Point along Block Island Sound.	0821
1P-3	Photo facing west of wetlands taken from atop the bluff.	0825
1P-4	Photo facing northeast of a house belonging to State Park.	0829
1P-5	Photo looking southwest at ship positioning station. Note fenced entrance.	0833
1P-6	Photo looking south at abandoned guard station.	0845
1P-7	Photo looking southeast of Camp Hero Road. This is entrance to estates.	0848
1P-8	Photo looking southwest at residences along Madison Hill Drive.	0852
1P-9	Photo looking west at residences along Edison Drive.	0855
1P-10	Photo looking south along Camp Hero Road. Note: Do Not Enter Sign.	0857

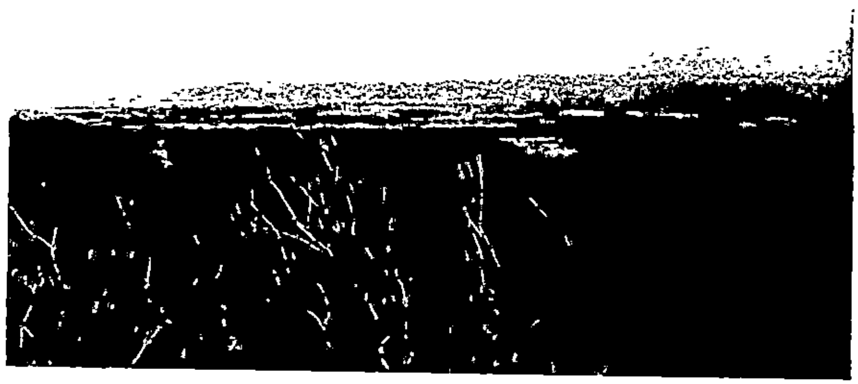
NAVAL FACILITY N. DIVISION CAMP HERO, MONTAUK, NEW YORK

1P-1 November 2, 1990 0817
Photo of Montauk Point Lighthouse.



1P-2 November 2, 1990 0821
Photo facing west at mobile camping area near Point along Block Island Sound.

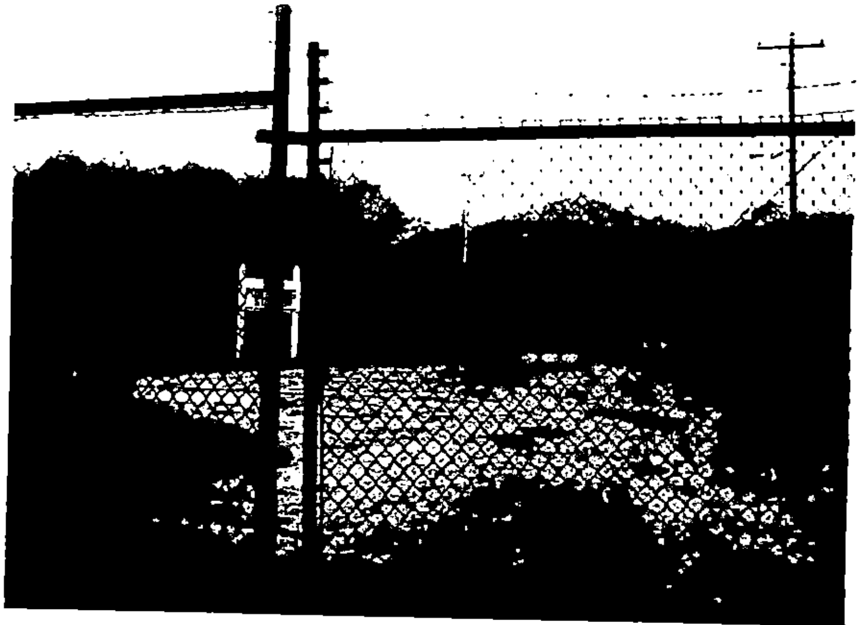
NAVAL FACILITY N. DIVISION CAMP HERO, MONTAUK, NEW YORK



1P-3 November 2, 1990 0825
Photo facing west of wetlands taken from atop the bluff.

1P-4 November 2, 1990 0829
Photo facing northeast of a house belonging to State Park.

NAVAL FACILITY N. DIVISION CAMP HERO, MONTAUK, NEW YORK



1P-5 November 2, 1990 0833
Photo looking southwest at ship positioning station. Note fenced entrance.

1P-6 November 2, 1990 0845
Photo looking south at abandoned guard station.

NAVAL FACILITY N. DIVISION CAMP HERO, MONTAUK, NEW YORK

1P-7 November 2, 1990 0848
Photo looking southeast of Camp Hero Road. This is entrance to estates.

1P-8 November 2, 1990 0852
Photo looking southwest at residences along Madison Hill Drive.

NAVAL FACILITY N. DIVISION CAMP HERO, MONTAUK, NEW YORK

1P-9 November 2, 1990 0855
Photo looking west at residences along Edison Drive.

1P-10 November 2, 1990 0857
Photo looking south along Camp Hero Road. Note: Do Not Enter Sign.

NAVAL FACILITY N. DIVISION
CAMP HERO
MONTAUK, NEW YORK
NOVEMBER 18, 1986

OFF-SITE RECONNAISSANCE

PHOTOGRAPH INDEX

ALL PHOTOGRAPHS TAKEN BY JANE BULLIS

Photo Number	Description	Time
1P-1	Looking south into Camp Hero.	1046
1P-2	Looking south down entrance road.	1047
1P-3	Looking east at gate house and tower.	1048
1P-4	Looking east at commissary.	1049
1P-5	Looking north at entrance road.	1050
1P-6	Looking west at storage building.	1102
1P-7	Looking south at abandoned building.	1103
1P-8	Looking east at house on Madison Hill Drive.	1104
1P-9	Looking east on corner of Madison Hill Drive and main access road.	1106

NAVAL FACILITY N. DIVISION CAMP HERO, MONTAUK, NEW YORK

1P-1 November 18, 1986
Looking south into Camp Hero. 1046

1P-2 November 18, 1986
Looking south down entrance road. 1047

NAVAL FACILITY N. DIVISION CAMP HERO, MONTAUK, NEW YORK

1P-3 November 18, 1986 1048
Looking east at gate house and tower.

1P-4 November 18, 1986 1049
Looking east at commissary.

NAVAL FACILITY N. DIVISION CAMP HERO, MONTAUK, NEW YORK

1P-5 November 18, 1986 1050
Looking north at entrance road.

1P-6 November 18, 1986 1102
Looking west at storage building.

NAVAL FACILITY N. DIVISION CAMP HERO, MONTAUK, NEW YORK

1P-7 November 18, 1986 1103
Looking south at abandoned building.

1P-8 November 18, 1986 1104
Looking east at house on Madison Hill Drive.

NAVAL FACILITY N. DIVISION CAMP HERO, MONTAUK, NEW YORK

1P-9 November 18, 1986 1106
Looking east on corner of Madison Hill Drive and main access road.

ATTACHMENT 2

REFERENCES

1. Preliminary Assessment Off Site Reconnaissance Information Reporting Form for Naval Facility N. Division, Camp Hero, TDD No. 02-9010-04, NUS Corporation Region 2 FIT, November 2, 1990.

2. Suffolk County Department of Health Services, Industrial Waste and Hazardous Materials Control Inspection Form, Montauk Air Force Station, August 10, 1983.

3. Telecon Note: Conversation between Robert Hass, U.S. Army Corps. of Engineers, and Susan S. Hodgkiss, NUS Corporation, November 5, 1990.

4. Telecon Note: Conversation between Joseph Simmons, U.S. Navy, and Susan S. Hodgkiss, NUS Corporation, November 1, 1990.

5. Telecon Note: Conversation between John McGrath, U.S. Navy, Real Estate Section, and Susan S. Hodgkiss, NUS Corporation, October 29, 1990.

6. Telecon Note: Conversation between Alex Moskie, New York State Department of Environmental Conservation, Region 1, and Susan S. Hodgkiss, NUS Corporation, October 26, 1990.

7. Telecon Note: Conversation between Joseph Simmons, U.S. Navy, Submarine Base Section, and Susan S. Hodgkiss, NUS Corporation, October 31, 1990.

8. Telecon Note: Conversation between Wayne Page, U.S. Navy, and Susan S. Hodgkiss, NUS Corporation, October 26, 1990.

9. Telecon Note: Conversation between Clerk, Real Estate Property Tax Service, and Susan S. Hodgkiss, NUS Corporation, October 29, 1990.

10. U.S. EPA Superfund Program, Comprehensive Environmental Response and Liability Information System (CERCLA), p. 330, December 12, 1990.

11. Telecon Note: Conversation between Mr. Usinger, National Marine Fisheries Service, Department of Commerce, and Dorothy Ponte, NUS Corporation, October 26, 1990.

12. Telecon Note: Conversation between Phil Sanok, Suffolk County Cooperative Extension Association, and Dorothy Ponte, NUS Corporation, October 26, 1990.

13. Letter from Michael S. Scheibel, Senior Wildlife Biologist, New York State Department of Environmental Conservation, to Diane Trube, NUS Corporation. December 20, 1988.

14. Telecon Note: Conversation between Seaman Vaillancourt, North Shore of Long Island, Montauk, U.S. Coast Guard, and Dorothy Ponte, NUS Corporation, October 26, 1990.

15. Telecon Note: Conversation between Ronald Blake, Suffolk County Water Authority, and Mike Schweitzer, NUS Corporation, October 24, 1990.

16. Project Note from Susan S. Hodgkiss, NUS Corporation to file, Subject: New York State Department of Conservation, Region 1, Spill Log Book, Spill No. 79-0651, July 31, 1990, December 1, 1990.

REFERENCES (CONT'D)

17. Perlmutter, Nathaniel M. and Frank A. DeLuca. Availability of Fresh Groundwater Montauk Point Area, Suffolk County Long Island, New York. Geological Survey Water Supply Paper 1613-B. Prepared in cooperation with the U. S. Air Force. 1963.

18. Haffman, J.F. and E.R. Lubke. Groundwater Levels and their Relationship to Groundwater Problems in Suffolk County, Long Island, New York. New York State Department of Conservation Water Resources Commission Bulletin-GW44. U. S. Geological Survey et. al, 1961.

19. Suffolk County, Town of East Hampton Tax Maps.

20. Four-Mile Vicinity Map based on U.S. Geological Service Topographic Maps, 7.5 minute series, Quadrangle for "Montauk Point, NY," 1956.

21. Project Note: From Susan S. Hodgkiss, NUS Corporation, to file. Subject: Population within 4 miles of the site, November 21, 1990.

22. Suffolk County Water Authority Annual Report, 1989.

23. Annual Water Supply Statement, Suffolk County Water Authority, Oakdale, New York, 1990.

24. FIRM Flood Insurance Rate Map, Town of East Hampton, Suffolk County Panel 1 of 33, Community Panel Number 360794 0001 B, National Flood Insurance Rate Program, map revised March 16, 1983.

25. Uncontrolled hazardous waste site ranking system, A users manual, 40 CFR, Part 300, Appendix A, 1984.

REFERENCE NO. 1

PRELIMINARY ASSESSMENT
OFF SITE RECONNAISSANCE
INFORMATION REPORTING FORM

Date: November 2, 1990

Site Name: ~~Camp Hero Military Reservation~~ Naval Facility N. Division Engineering Command TDD: 02-9010-04

Site Address: ______________
Street, Box, etc.

Montauk
Town

Suffolk
County

New York
State

NUS Personnel:

Name	Discipline
Dorothy Ponte	Environmental Sciences
Jennifer Leahy	Field Technician

Weather Conditions (clear, cloudy, rain, snow, etc.):

Sunny, clear

Estimated wind direction and wind speed: northwest 0-5 mph

Estimated temperature: 65°F

Signature: Dorothy Marian Ponte Date: November 2, 1990

Countersigned: Jennifer A. Leahy Date: November 2, 1990

PRELIMINARY ASSESSMENT

INFORMATION REPORTING FORM

Date: November 2, 1990

Site Name: Camp Hero Military Reservation TDD: 02-9010-04

Site Sketch:

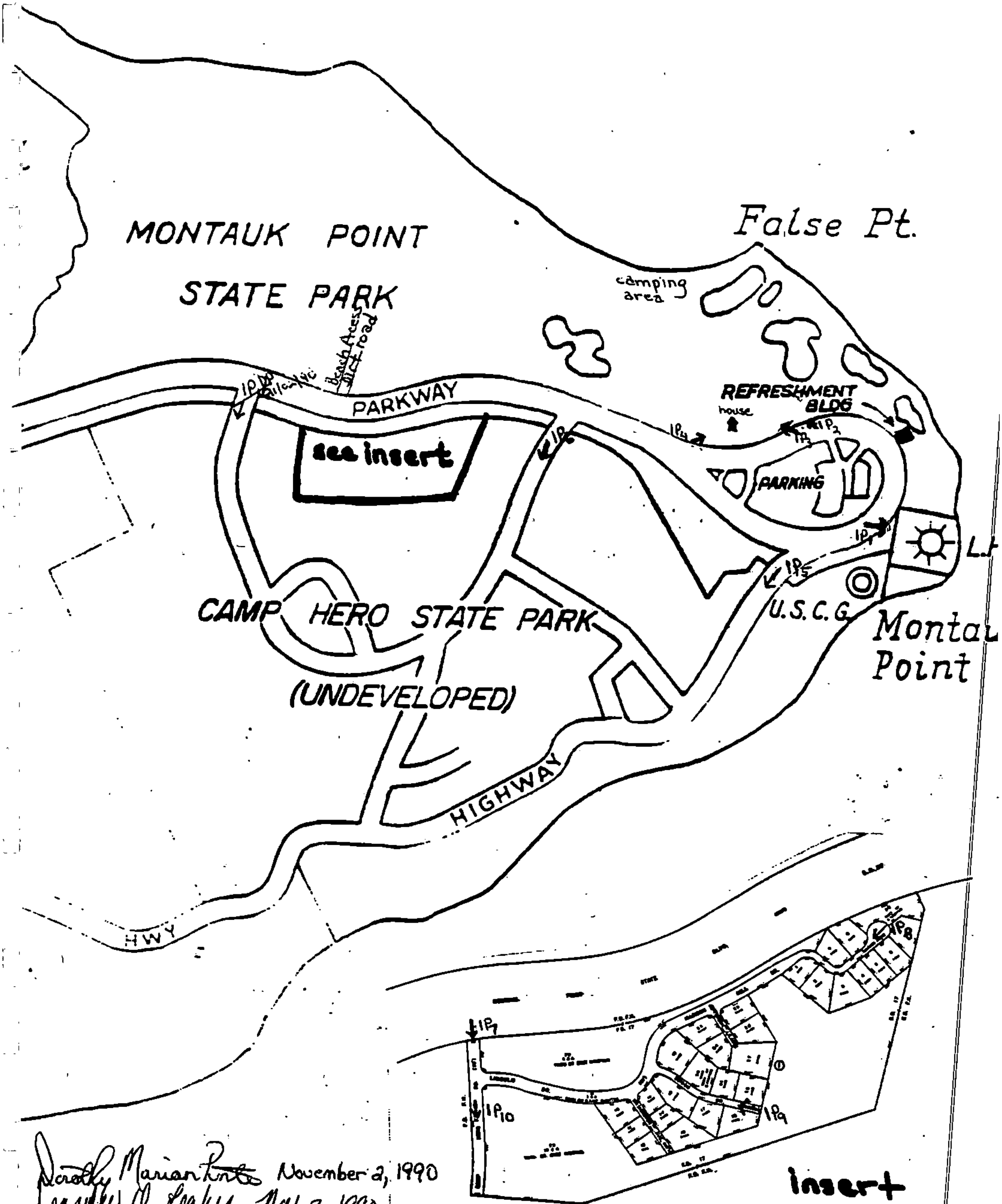
Indicate relative landmark locations (streets, buildings, streams, etc.).
Provide locations from which photos are taken.

see attatched page

Signature: Dorothy Marion Pinto Date: November 2, 1990

Countersigned: Jennifer A. Healy Date: Nov. 2, 1990

Camp Hero Military Reservation TDD: 02-9010-04



Dorothy Marian Pinto November 2, 1990
Jennifer A. Leahy Nov. 2, 1990

PRELIMINARY ASSESSMENT

INFORMATION REPORTING FORM

Date: November 2, 1990

Site Name: Camp Hero Military Reservation TDD: 02-9010-04

Notes (Periodically indicate time of entries in military time):

- 08:15 a.m. Arrived at lighthouse of Camp Hero site. The lighthouse facility was closed and entirely fenced. During the tourist season tours of the lighthouse are given on weekends.
- 08:20 Drive along Montauk Point State Parkway to new location near refreshment stand. Many recreational fishermen and other individuals are near the area, especially in the parking lot across from the refreshment building.
- 08:25 Continue driving along the parkway looking for transformers described by Alex Moskie of Region I DEC. Stopped to look at wetland area off northern bluff of Montauk Point.
- 08:27 Stopped to look at ditch near a storm sewer drain cover. Many beer cans and bottles are strewn in the ditch.
- 08:29 Continued along parkway to a home (park superintendant's home?) at edge of Montauk Point park entrance to the lighthouse.
- 08:30 Driving back around Montauk Point to the other side of the park. Traveling down a road to a ship positioning station. Entrance to area that follows road is fenced off.
- 8:42 Driving westward along Montauk State Parkway to entrance of a side road leading to an abandoned gaurd station.

Signature: Dorothy Marian Pinto Date: November 2, 1990

Countersignature: Jennifer O'Leary Date: Nov 2, 1990

PRELIMINARY ASSESSMENT

INFORMATION REPORTING FORM

Date: November 2, 1990

Site Name: Camp Hero Military Reservation TDD: 02-9010-04

Notes (Cont'd):

08:46 Continue to drive west along parkway and encounter entrance road to the Camp Hero Estates to our left. Entered estates along Camp Hero Road and encounter a residential area. Several dogs live in the area and follow our vehicle.

08:48 Decide to shoot a couple photographs of the residential area and the road off the estates which leads into Camp Hero State Park (marked DO NOT ENTER).

09:05 Drive back along road to search for another road which may lead to Old Montauk Highway. Are unable to acess this road and leave Camp Hero State Park at 09:16.

Notes:

- Were unable to see tranformers due to lush growth of bushes and wetland plants.
- Topography of site is relatively flat atop the park bluff.
- There is a substantial drop in height from the park buff to Long Island Sound.

Attach additional sheets if necessary. Provide site name, TDD number, signature, and countersignature on each.

Signature: Dorothy Marino Ponte Date: November 2, 1990

Countersignature: Jennifer A Healy Date: Nov. 2, 1990

PRELIMINARY ASSESSMENT

INFORMATION REPORTING FORM

Date: November 2, 1990

Site Name: Camp Hero Military Reservation TDD: 02-9010-04

Photolog:
All photographs taken by Dorothy Ponte.

Frame/Photo Number	Date	Time	Photographer	Description
1-P1	11/02/90	8:17	Dorothy Ponte	Photo of Montauk Point lighthouse (Facing east)
1-P2	↓	8:21	↓	Photo Facing west at mobil camping area near Fake Point along Block Island Sound
1-P3		8:25		Photo facing west of wetlands take from atop the bluff.
1-P4		8:29		Photo of a house pertaining to state park (Facing northeast).
1-P5		8:33		Photo looking south southwest at ship positioning station. Note fenced entrance.
1-P6		8:45		Photo looking south of abandoned gaurd station. Note road barrier.
1-P7		8:48		Photo looking south southeast of Camp Hero Road - entrance to estates.
1-P8		8:52		Photo looking southwest at residences along Madison Hill Drive.
1-P9		8:55		Photo looking west at residences along Edison Drive.
1-P10	11/02/09	8:57	Dorothy Ponte	Photo looking south along Camp Hero Road. Note do not enter sign.

Attach additional sheets if necessary. Provide site name, TDD number, signature, and countersignature on each.

Signature: Dorothy Marian Ponte Date: November 2, 1990

Countersignature: Jennifer Beaky Date: Nov. 2, 1990

REFERENCE NO. 2

SUFFOLK COUNTY DEPARTMENT OF HEALTH SERVICES
INDUSTRIAL WASTE AND HAZARDOUS MATERIALS CONTROL
15 HORSEBLOCK PLACE, FARMINGVILLE, N.Y. 11738
(516) 451-4633

NAME OF FACILITY: MONTAUK AIR FORCE STA.		OWNER (circled) / OFFICER: U.S. AIR FORCE / U.S. GOVERNMENT			PAGE 1 OF
COMPANY NAME:		CONTACT: JOE MOTT - MAINT. FOREMAN		TEL. 668-2321	
PLANT ADDRESS: MONTAUK HWY.	VILLAGE: MONTAUK	TOWN: E. HAMPTON		ZIP: 11954	
MAILING ADDRESS: P.O. BOX WW MONTAUK, N.Y. 11954					
DATE: 8/10/83	TIME: 10:10AM	ORIG. (circled) PERIODIC RE.	WASTE	NO WASTE (circled) H&H	SEWAGE SYSTEM: PUBLIC PRIVATE (circled)

INDUSTRY: ABANDONED GUN EMPLACEMENT + RADAR STATION

SPDES OR NPDES PERMIT? YES NO (circled) PERMIT NO. — 360 PERMIT? YES NO (circled) PERMIT NO.

SCAVENGER — TEL.

SCAVENGER APPROVED YES NO — PICK UP RECORDS AVAILABLE YES NO — RECORDS CONSISTENT WITH EXPECTED WASTE GENERATION YES NO

HEATING SYSTEM-MFG NAME	FUEL TYPE	FIRING RATE
CENTRAL HEATING PLANT W/ TWO BABCOCK WILLIAMS BOILERS (UNUSED)	#2	

INCIN. NAME	WASTE BURNED	RATE
NONE		

DRUM STORAGE: YES (circled) NO — NUMBER STORED (3) INDOORS 3 OUTDOORS — TYPE OF MATERIAL STORED: WASTE RAW (circled)

STORAGE TANKS: YES (circled) NO — NUMBER OF TANKS 15 ABOVEGROUND 9 UNDERGROUND 6 — TYPE OF MATERIAL STORED: WASTE RAW (circled)

OPEN PROCESS TANKS: YES NO (circled) — NUMBER OF OPEN PROCESS TANKS N/A — ANY ART. XII VIOLATIONS: YES ? NO

AIR FORCE STATION CONSISTS OF ABOUT 230 ACRES OF LAND — IT HAD STARTED OUT AS AN ARMY BASE WITH A COUPLE OF 16" GUNS MOUNTED AT EITHER END OF A 1,000 FT.-LONG (MOSTLY BURIED) BUNKER IN THE 1940'S. LATER, IN 1960'S TAKEN OVER AS A RADAR STATION BY THE AIR FORCE. IT WAS OFFICIALLY ABANDONED ON 3/31/81. IT IS MANNED BY A GROUP OF CIVIL SERVICE MAINTENANCE PEOPLE UNDER THE DIRECTION OF THE CIVIL ENGINEERING GROUP OPERATING OUT OF McGUIRE AIR FORCE BASE, NJ.
(SEE CONTINUATION SHEET)

PERMISSION IS GRANTED BY THIS FACILITY TO THE SUFFOLK COUNTY DEPARTMENT OF HEALTH SERVICES TO CONDUCT ROUTINE SAMPLING OF CESSPOOLS, STORMDRAINS, AND OTHER DISCHARGE POINTS AT THE FACILITY.

REINSPECTION SCHEDULED ON OR AFTER ________. FAILURE TO CORRECT UNSATISFACTORY CONDITIONS BY REINSPECTION DATE MAY RESULT IN A HEARING AND/OR FINE.

SIGN. OF PERSON REC. REPORT: Joseph B. Mott — JOE MOTT — TITLE: MAINTENANCE FOREMAN — INSPECTOR: JOHN MION

18-155: 9/82 — 5/81 — TJK

INDUSTRIAL WASTE PROCESS

NO.	PROCESS	CHEMICALS USED AND APPROXIMATE QUANTITY	DISCHARGE	DISCHARGE TO
	ESSENTIALLY NO INDUSTRIAL WASTE			

NOTE 1: THERE IS AN OLD PAINT STORAGE LOCKER (AT ONE END OF THE BUNKER) CONTAINING A TOTAL OF ABOUT 100 GALS OF VARIOUS PAINTS.

NOTE 2: THERE IS NO LANDFILL SITE ON BASE — ALL GARBAGE/DEBRIS ALWAYS WENT TO MONTAUK LANDFILL.

NOTE 3: THERE WERE SOME OIL-FILLED TRANSFORMERS AROUND.
6 — IN OLD BUNKER POWER GENERATING AREA
1 — BY 5-STORY RADAR BLDG.
3 — BY POWER PLANT

AIR POLLUTION SOURCES

18-155:

NO.	PROCESS	CONTROL TYPE	EP'S	CHEMICALS OR PRODUCTS USED	AMOUNT CONSUM.	HOURS OF OPERA.	TYPE OF EMISSION
	NO AIR POLLUTION SOURCES						

P 1 of 2

MONTAUK AF STATION, MONTAUK, NY.

8/10/83. MADE COMPLETE TOUR OF FACILITY WITH ED KENNEY, ED ANDREWS & GEORGE ANDERSON.

(1) TOURED FOLLOWING BUILDINGS. NO DRUM/TANK STORAGE EXCEPT THOSE LISTED SEPARATELY:

BLDG. #117 MAINTENANCE SHOP — OK
(HAS #2 OIL-FIRED HEAT — 2 1500 GAL BURIED TANKS).

BLDG #104 COMMISARY — OK
(HAS #2 OIL-FIRED HW — 1 1,000 GAL BURIED TANK)

BLDG # 9 BASE EXCHANGE — OK

BLDG # 109 — OK

BLDG # 6 DINING HALL — OK
(HAS #2 OIL-FIRED HW, TWO 275 GAL ABOVE GROUND STORAGE TANKS)

BLDG #206 BOWLING ALLEY — OK
(DIDN'T GET IN BUT I BELIEVE IT'S OK.)

BLDG # 1 BARRACKS — OK

BLDG # 3 GYM — OK

BLDG # 4 BARRACKS — OK

BLDG # 5 BARRACKS — OK

BLDG #6 REC. HALL — OK
(NOTE: HAD A PHOTO LAB)

BLDG #105 HEATING PLANT
(1) CONTAINED TWO UNUSED BOILERS
(2) ONE 1,000-GAL #2 OIL TANK — INSIDE, ON CONCRETE, NO BERM
(3) ONE 275-GAL OIL TANK — OUTSIDE, ON BARE GROUND, NO BERM.

BLDG 11 BARRACKS — OK

BLDG 13 HEADQUARTERS — OK

NOTE: AT THIS POINT WE HAD TO TERMINATE TOUR OF INDIVIDUAL BUILDINGS SINCE MEN WERE NEEDED ELSEWHERE — WE DID TOUR BUNKER (SEE NEXT PAGE) BEFORE WE STOPPED.

[signature]

CONTINUED: INSPECTORS OBSERVATIONS OR INTERVIEWS

P 2 of 2

MONTAUK AF STATION, MONTAUK, N.Y.

8/10/83

NOTE: THERE WERE A FEW BUILDINGS I DID NOT ACTUALLY TOUR — A FEW BARRACKS, A FEW STORAGE BUILDINGS, THE POWER HOUSE ITSELF (4-DIESEL DRIVEN GENERATORS) AND THE FIVE STORY RADAR BUILDING, THE STP, & THE WATER TREATMENT PLANT.

HI POINTS OF REST OF TOUR:

BUNKER — WALKED ENTIRE 1,000 FT. LENGTH OF BUNKER, EXCEPT FOR ONE ROOM (FOR WHICH WE DID NOT HAVE COMBINATION) IT WAS EMPTY. I WAS ASSURED THAT THIS ROOM WAS EMPTY.

TANK STORAGE SUMMATIONS

NOTE: ALL TANKS APPEAR IN GOOD SHAPE & ARE UP TO 30 YRS. OLD (AS OLD AS FACILITY, OR NEWER)

1 — 201,000 GAL DIESEL FUEL (1960)

2 — 25,000 GAL #2 FUEL (BURIED) (25 YRS)

1 — 1,000 GAL GASOLINE (BURIED)

2 — 1500 #2 FUEL (BURIED)

1 — 1,000 #2 FUEL (BURIED)

6 — 275 GAL #2 FUEL (ABOVE GROUND, UNCOVERED) NO BERM

1 — 1,000 GAL #2 FUEL (INSIDE ON CONC. NO BERM)

1 — 1,000 GAL #2 FUEL (OUTSIDE, UNCOVERED, BARE GROUND)

Joseph B. Mott

REFERENCE NO. 3

NUS CORPORATION AND SUBSIDIARIES — **TELECON NOTE**

CONTROL NO.:	DATE:	TIME:
02-9010-04	November 5, 1990	3:00 pm

DISTRIBUTION:

Naval Facility CAMP HERO

BETWEEN:	OF:	PHONE:
Robert Hass	U.S. Army Corp of Engineers	(212) 264-

AND:

Susan S. Hodgkiss (NUS)

DISCUSSION:

Mr. Hass called me regarding the history of Camp Hero. The information as of 1985 he provided is as follows.

1941 → The army obtained 468.69 acres on Montauk. Camp Hero was part of the Long Island defense during war time guns were stored on site. The camp also housed military personnel only.

1950 to 1982 → 307.65 acres were used by the airforce (Montauk Airforce Base) They had several radar towers and housed official personnel.

1974 → 119.26 acres were obtained by the state of N.Y under the restriction that the land be used as a Park

1983 → ~~Park~~ SSH NY They aquired 18.09 acres under a park lean

approx. 1984 → N.Y obtained 277.71 addition acres for the Park

approx 1984 → The Town of E. Hampton obtains 29.8 acres for low income housing.

ACTION ITEMS:

The U.S. Coast Guard obtain 6.25 acres at the lighthouse location

1983 → 17.44 was transfer to the Navy and used as a Radio base station. For 1983 this was sold to the Town of E. Hampton.

Mr. Hass informed me that at one time there were 50 to 55 transformers on site. They don't if they have been removed.

SSH

NUS 067 REVISED 0685

REFERENCE NO. 4

NUS CORPORATION AND SUBSIDIARIES **TELECON NOTE**

CONTROL NO.:	DATE:	TIME:
02-9010-04	November 1, 1990	4:00 pm

DISTRIBUTION:

Naval Facility Camp Hero

BETWEEN:	OF:	PHONE:
Joesph Simmons	Navy	(203) 449-4483

AND:

Susan S Hodgkiss (NUS)

DISCUSSION:

I spoke with Mr Simmons in regard to the Camp Hero. He had called me to inform me that he aquired some information from the Strategy Systems program office. a Contractor: Teledyne Hastings Raydist operators the facility they maintain + calabrate the navigational equipment. The point of contact is Dexter Phibbs (804) -723-6531 x 262. They only go out to the site when needed they do not have regular personnel on site each day. He informed me that they will only be using the equipment out there for 1 or 2 ~~or~~ ssH 3 more years. Then the equipment may change. In order to find out if Hazardous substance are present on site. I would need to contact ~~Mr.~~ Phibbs.

ACTION ITEMS:

Susan S Hodgkiss
11/8/90

NUS 067 REVISED 0685

REFERENCE NO. 5

NUS CORPORATION AND SUBSIDIARIES | **TELECON NOTE**

CONTROL NO.:	DATE:	TIME:
02-9010-04	October 29, 1990	11:00

DISTRIBUTION:

Naval Facility N. Division Camp Hero

BETWEEN:	OF:	PHONE:
John McGrath	Navy Realestate Section	(215) 897-6204

AND: Susan S. Hodgkiss (NUS)

DISCUSSION:

I spoke with Mr. McGrath concerning the camp Hero site. He informed me of the following:

1973 – 1978 Navy leased from the army
(he did not know if navy build on site or use in existing condition)

June 26, 1978 Navy purchased 17.4 acres from Army

1982 – 1985 Navy leased out garge near light house on Montauk point

1982 – 1984 Navy permitted N.Y.S. Parks and Recreation to use a portion of the site.

1985 Navy sold property (17.4 acres) via Quick Claim deed to the Town of E. Hampton.

The Navy used the site as a Radio ship position systems base station. Mr. McGrath did not know any specifics of the activities on site or if the property housed military personnel.

ACTION ITEMS:

SSH 10/29/90

NUS 067 REVISED 0685

REFERENCE NO. 6

NUS CORPORATION AND SUBSIDIARIES — **TELECON NOTE**

CONTROL NO.:	DATE:	TIME:
02-9010-04	10/26/90	10:00

DISTRIBUTION:

Naval Facility N. Division Camp Hero

BETWEEN:	OF:	PHONE:
Alex Moskie	NYSDEC Region 1	(516) 751-7900 x335

AND:

Susan S. Hodgkiss (NUS)

DISCUSSION:

I ask Mr. Moskie about Camp Hero. He informed me that he had been out there once several years ago. He said the DEC was not really involved with the site. He remembers Transformers on site and storage building. He said the site was extremely large with a number of building and that if we plan to go out to bring someone who knows the site. I informed him about the subdivision and the houses. He knew nothing about this.

ACTION ITEMS:

A file search will be conducted on Nov. 1 at the DEC to gather any inform. that they may have on this site.

Susan S. Hodgkiss
10/26/90

NUS 067 REVISED 0685

REFERENCE NO. 7

NUS CORPORATION AND SUBSIDIARIES **TELECON NOTE**

CONTROL NO.:	DATE:	TIME:
02-9010-04	October 31, 1990	2:30

DISTRIBUTION:

Naval Facility Camp Hero

BETWEEN:	OF:	PHONE:
Joesph Simmons	Navy - Submarine Base, Conn.	(203) 449-4423

AND: Susan S. Hodgkiss (NUS)

DISCUSSION:

I spoke with Mr. Simmons regarding Camp Hero He informed me that under an easement they still operate the Radio base station in Montauk. The occupy approximately 5.27 acres. They have a Contractor who serves the station on occasion. There are no regular personnel on site. There is no boat maintence done on site. I ask if any hazardous waste materials were ever stored or generated from naval activities on site, or if they had Equipment (such as transformer) that contain hazardous substances. He said he would check with the operations section and get back to me on this. Mr. Simmons also informed me that the navy only used a small portion of the site and never used the full 17.4 acres.

ACTION ITEMS:

Susan S. Hodgkiss
10/31/90

NUS 067 REVISED 0685

REFERENCE NO. 8

NUS CORPORATION AND SUBSIDIARIES **TELECON NOTE**

CONTROL NO.:	DATE:	TIME:
02-9010-04	October 26, 1990	9:30

DISTRIBUTION:

Naval Facility N. Division Camp Hero

BETWEEN:	OF:	PHONE:
Wayne Page	U.S. Navy	(215) 897-6282

AND:

Susan S. Hodgkiss (NUS)

DISCUSSION:

I spoke with Mr. Page of the Navy about Camp Hero. He could only tell me that the property was bought by the township of E. Hampton on June 13, 1986 by a quick Claim died. He believes that in 1978 the army bought the property from the ~~Army~~ Navy SSH 10/26 to use as a Radio ship systems base Station. Mr. Page had no knowledge of the history of the site. He told me the best thing to do was to call the Realestate Office Section of the Navy at 215-897-6204 they should be able to help me

ACTION ITEMS: Called Realestate section and spoke to Mr. John McGrath He asked me Fax him a map as to the area of the site. I Faxed him a copy of the Topo. Map.

215-897-6204 → office

215-897-5523 → Fax Number

Susan S. Hodgkiss
10/26/90

NUS 067 REVISED 0685

REFERENCE NO. 9

NUS CORPORATION AND SUBSIDIARIES **TELECON NOTE**

CONTROL NO.:	DATE:	TIME:
02-9010-04	October 29, 1990	10:45 AM

DISTRIBUTION:

Naval Facility N. Division Camp Hero

BETWEEN:	OF:	PHONE:
Clerk	Real estate Property tax Service	(516) 548-3150

AND:

Susan S. Hodgkiss (NUS)

DISCUSSION:

10:45 Called at 10:45 As to orginal Lot and block. Clerk told me computers were down please call back in the afternoon

Called back: I was informed that in order to get the Lot and Block number of Camp Hero which no longer exists we would have to have a title ~~title~~ search done.

ACTION ITEMS:

Susan S. Hodgkiss

NUS 067 REVISED 0685

REFERENCE NO. 10

EPA ID NO.	SITE NAME / STREET / CITY / COUNTY CODE AND NAME	STATE ZIP CONG DIST.	NFA. FLAG	OPRBLE UNIT	EVENT TYPE	ACTUAL START DATE	ACTUAL COMPL DATE	CURRENT EVENT LEAD
NYD086225596	NASSAU RECYCLE CORP			00	DS1		04/01/79	EPA (FUND)
	286 RICHMOND VALLEY RD				PA1		12/01/80	EPA (FUND)
	STATEN ISLAND	NY 10307						
	085 RICHMOND							
NYD080435159	NASSAU TANK CLEANING SERVICE INC			00	DS1		04/01/80	EPA (FUND)
	323 NASSAU ST				PA1		08/01/80	EPA (FUND)
	BROOKLYN	NY 11222			SI1	06/01/80	08/01/80	EPA (FUND)
	047 KINGS							
NYD981136500	NATIONAL FUEL GAS DISTRIBUTION			00	DS1		07/01/85	EPA (FUND)
	6250 PACKARD ROAD				PA1		08/01/85	EPA (FUND)
	NIAGARA FALLS	NY 14304			PA2		11/01/85	EPA (FUND)
	063 NIAGARA				PA3		03/15/86	EPA (FUND)
					SI1	08/15/85	09/15/85	EPA (FUND)
					SI2	11/01/85	12/01/85	EPA (FUND)
NYD980507131	NATIONAL GRINDING LF		NFA	00	DS1		04/01/80	EPA (FUND)
	WALCK RD				PA1		11/01/81	EPA (FUND)
	NORTH TONAWANDA	NY 14120						
	063 NIAGARA							
NYD002118149	NATIONAL GYPSUM - GOLD BOND		NFA	00	DS1		04/24/80	EPA (FUND)
	396 WRIGHT RD(AKRON)				PA1		09/02/87	EPA (FUND)
	ALABAMA	NY 14003						
	037 GENESEE							
NY4210020414	NAVAL FACIL N DIV /ENGINEERING COMMAND			00	DS1		06/01/81	EPA (FUND)
	CAMP HREO MILITARY RESERVATION							
	MONTAUK	NY 11954						
	103 SUFFOLK							
NY5170022250	NAVAL STATION NY		NFA	00	DS1		01/10/89	FED. FAC.
	207 FLUSHING AVE.				PA1		09/27/89	FED. FAC.
	BROOKLYN	NY 11251						
	047 KINGS							
NY8170024790	NAVAL UNDERWATER SYSTEMS CENTER			00	DS1		01/10/89	FED. FAC.
	FISHERS ISLAND				PA1		09/27/89	FED. FAC.
	FISHER ISLAND	NY 06390						
	103 SUFFOLK							

REFERENCE NO. 11

NUS CORPORATION AND SUBSIDIARIES TELECON NOTE

CONTROL NO.: 02-9010-08
DATE: 10/26/90
TIME: 11:30

DISTRIBUTION:

Cary Tank Farm

BETWEEN: Mr. Usinger
OF: National Marine Fisheries Service Department of Commerce
PHONE: (516) 727-0707

AND: Dorothy Ponte (NUS)

DISCUSSION:

I requested information concerning fishing off the coast of Long Island. Mr. Usinger stated that commercial and recreational fishing takes place off the coast of Long Island all year long. Most fishing off the coast of Long Island Sound takes place near the coast. Lobsters are caught near the shore, as well as mussels. Mussels are especially plentiful near Shinnecock. Oystering is also very popular in the region. When in season, Blue Crabs are also harvested off the coast of Long Island. Specific fish caught near Long Island are Blue Fish (summer near shore); Fluke (summer); Blackback Flounder (winter); Big Eyed, Blue Fin and Yellow Fin Tuna; shark, and Striped Bass. Striped Bass are caught off-shore especially near Orient Point.

Fishing off the coast of Long Island is restricted mostly due to high fecal coliform counts. The sewage treatment plants of Long Island and pollution derived from New York City industry are the only

ACTION ITEMS:

sources of ~~pollution~~ contaminants which Mr. Usinger could recall offhand that may occasionally impact on the quality of fishing in the region surrounding Long Island.

NUS 067 REVISED 0685

REFERENCE NO. 12

NUS CORPORATION AND SUBSIDIARIES — **TELECON NOTE**

CONTROL NO.:	DATE:	TIME:
02-9010-08	10/26/90	15:45

DISTRIBUTION:

Cary Tank Farm

BETWEEN:	OF:	PHONE:
Phil Sanok	Suffolk County Cooperative Extension Association 264 Griffing Avenue Riverhead, NY 11901	(516) 727-7850

AND: Dorothy Ponte (NUS)

DISCUSSION:

Conversation centered around use of groundwater and surface water for irrigation on Long Island. The situation on Long Island is similar to that of New Jersey's Pine Barrens region. The water table is generally shallow throughout Long Island, therefore the majority of water used for irrigation comes from groundwater. Some shallow ponds have been used to irrigate property, however as these tend to experience problems with algal growth and seasonal changes, few are used for this purpose on Long Island.

Gulf courses in Riverhead and Mattituck are irrigated using groundwater.

ACTION ITEMS:

REFERENCE NO. 13

New York State Department of Environmental Conservation
Building 40—SUNY, Stony Brook, New York 11794
(516) 751-7900

Thomas C. Jorling
Commissioner

December 20, 1988

Ms. Diane Trube
NUS Corp.
1090 King Georges Post Road
Suite 1103
Edison, New Jersey 08837

Re: Farmingdale - Lindenhurst Sites

Dear Ms. Trube:

I have reviewed your request of 11/22/88, and have the following responses to your questions:

1. No "critical habitats" for federally listed endangered species have been designated for Long Island as of this date.

2. Please contact Mr. Philip Barbato, of our Water Unit, at 516-751-7900, ext. 226.

3. Please contact Mr. Charles Guthrie of our Freshwater Fisheries Unit at 516-751-7900, ext 263.

If I can be of further assistance, please do not hesitate to contact me at 751-7900, ext. 248.

Sincerely,

Michael S. Scheibel
Senior Wildlife Biologist

MSS/sjmr

REFERENCE NO. 14

NUS CORPORATION AND SUBSIDIARIES **TELECON NOTE**

CONTROL NO.: 02-9010-08	DATE: 10/26/90	TIME: 13:30

DISTRIBUTION:

Cary Tank Farm

BETWEEN: Seaman Vaillancourt	OF: North shore of Long Island - montauk U.S. Coast Guard	PHONE: (516) 668-2773

AND: Dorothy Ponte (NUS)

DISCUSSION:

I requested information concerning the Mattituck Inlet and Camp Hero, both of Suffolk County, New York. The U.S. Coast Guard located at Montauk Point services the north shore of Long Island. Seaman Vaillancourt could not recollect any petroleum spills from the Cary Tank Farm which may have effected Mattituck Inlet off of Long Island Sound. He also was not aware of any past occurrances at Camp Hero which may have involved the U.S. Coast Guard. He reaffirmed that they haven't any files relating to either of these sites at their station.

ACTION ITEMS:

NUS 067 REVISED 0685

REFERENCE NO. 15

NUS CORPORATION AND SUBSIDIARIES

TELECON NOTE

CONTROL NO.:	DATE:	TIME:
02-9009-01	10/24/90	11:35 am

DISTRIBUTION:

East Hampton LF

BETWEEN:	OF:	PHONE:
Ronald Blake	Suffolk County Water Authority	(516) 324-0959

AND:

Mike Schweitzer (NUS)

DISCUSSION:

Mr Blake told me that there are 3 wells on Spring Close Hwy, 2 wells on Cross Hwy in Amagansett, 2 wells on Oakview Hwy, and 4 wells on Bridgehampton Rd. He said that Suffolk County Water Authority had no wells on Montauk Rd or Bull Path Rd as well as Fireplace Rd. He said the water from these wells is blended and redistributed to the people of East Hampton. He said the Suffolk County Water Authority serves approximately 3,000 people in East Hampton. He said that the Suffolk County Water Authority uses no surface water intakes from the Atlantic Ocean or any of the Harbors around Long Island.

Mike Schweitzer 10/24/90

ACTION ITEMS:

NUS 067 REVISED 0685

REFERENCE NO. 16

NUS CORPORATION
SUPERFUND DIVISION

PROJECT NOTES

TO: File

DATE: December 1, 1990

FROM: Susan S. Hodgkiss

COPIES:

SUBJECT: NYSDEC, Region 1 Spill Log Book, Spill No. 79-0651, July 31, 1979

REFERENCE:

NUS Corporation Region 2 FIT conducted a file search at Region 1 NYSDEC on November 1, 1990. Spill log sheets of the NYSDEC oil spill unit indicate that no spills have occurred on the Alsual Facility N. Division site. Attached is a copy of spill log sheets obtained from the log book.

Susan S. Hodgkiss

		source truck agent Rusco Fuel Selden Bottled Gas	quant —			11/7 3:50 PM		DR	4/27/86
r	4/21/83 late report	55 Ave D Farmingville source tank truck agent Farmingville Discount.	fuel oil ~100 gal	4 yds soil removed need to remove tree	ground basement		DOT invest	DR	Closed 3/23/87
,	9/21/83 late report	5 Brush Rd Mastic Beach (Hutton Well) source agent			well		DOT invest	DR	CLOSED 12/27/83
1	11/4/83	De Forest Rd & Montauk Hwy Montauk source: transformer agent: LILCO	mineral oil 10 gal	LILCO cleaning up	ground	from Tony Karwiel 11/9 9:45 AM		DR	CLOSED 11/25/83
	11/10/83	South Edgemere St Pole 11 Montauk source transformers agent LILCO	mineral oil 75 gal	LILCO cleaning up	ground			DR	4/27/86

83-70

OG#	SPILL DATE	SPILL LOCATION/SOURCE/AGENT	SPILL TYPE/AMT.	CLEAN UP REMARKS	ENVIRONMENTAL IMPACT	REPORT TO ALBANY	INVESTIGATION REMARKS	DATE CLOSED
83-988	1-5-84.	MONTAUK HWY & PECONIC RD. CENTER MORICHES. ~ TANK ~ ~~SUNOCO~~	KEROSENE ~ UNK. AMT.		GROUNDWATER AFFECTED.	BOB MILLER.	D.O.T. INVEST.	5/5/8[illegible]
83-1997	1-5-84	240 SMITHTOWN BLVD. NESCONSET. ~ STORAGE BLDG. (BASEMENT) ~ WILLIAM SIMON DIST.	ASSORTED INSECTICIDES & PESTICIDES ~ UNK. AMT.	M.P.C. ON SCENE. HIRED BY SPILLER	ON GROUND - IN CATCH BASIN AND RECHARGE BASIN ~ GROUNDWATER (?)	WALTER PARISH.	D.E.C. ON SCENE. SCHD ON SCENE.	
83-011	1-7-84	RIGHT-OF-WAY LANE. NOYACK (NOYACK RD) ~ TRANSFORMER. ~ LILCO	TRANSFORMER OIL ~ 10 GALLONS	LILCO CLEANING-UP	ON GROUND.	BERNIE PINKANS.		CLOSED 4/5/8
83-017	1-4-84	107 CARLTON AVE. EAST ISLIP ~ TANK ~ ~~PILOT PETROLEUM~~	DIESEL FUEL ~ UNK. AMT.		POSS. G.W.	BOB MILLER	D.O.T. INVEST.	CLOSED 11/7/84
83-020	1-6-84	BEACH ST & MONTAUK HWY @ MONTAUK (POLE #4) ~ TRANSFORMER ~ LILCO	TRANSFORMER OIL ~ 20 GAL.	LILCO CLEANING-UP	ON GROUND	BOB MILLER	D.O.T. INVEST	CLOSE 4/5/8

83-89

SPILL #	SPILL DATE	SPILL LOCATION/SOURCE/AGENT	SPILL TYPE/AMT.	CLEAN UP REMARKS	ENVIRONMENTAL IMPACT	REPORT TO ALBANY	INVESTIGATION REMARKS	DATE CLOSED
3-11	1-25-84	656 Bourbors Ave. Hagerman / Above Ground Tank / Unk. Agent	#2 Fuel Oil / 100 Gallons		Poss. G.W. Affected	Bernie Pinkans	F.D. On Scene D.O.T. Invest.	4/27/86
3-21	1-24-84	Old Montauk Hwy. Eastport. / Tank / ~~Mobil S/S~~	Gasoline / Unk. Amt.		Poss. G.W. Affected.	Bernie Pinkans.	D.O.T. Invest.	Closed 7/26/84
33-22	1-25-84	Harbor Road - Montauk / Tank / Viking Fleet	Diesel Fuel / Unk. Amt.		Surface Water / Montauk Hwy.	Bernie Pinkans.	D.O.T. Invest.	4/27/86
33-2132	1-26-84	1101 Walt Whitman Rd Melville / U.G. Tank / ~~Exxon~~	Unleaded Gasoline / Unk. Amt.		Poss - G.W. Affected	Bernie Pinkans.	D.O.T. Invest.	Closed 3/14/84
83-2143	1-26-84	Lawrence Ave. Upton (B.N.L.) / Transformer. Brookhaven Nat'l Lab	Transformer Oil / 55 Gallons	Speedi-Dry Applied By Spiller	Poss Ground-Water Affected	Don Darmer		Closed 4/5/84

83-92

								Albany	Date
S-329	6/29/79	Marina @ Montauk Harbor	Oil Minor Amount	No clean up possible per USCG	Slick dispersal no clean up possible per USCG.	Ray Gabriel called us 10 AM 7/6/79	USCG investigating source. G.S.	closed	6/2/87
S-330	6/30/79	Atlantic Ocean 5 miles South of Montauk Point?	Oil Unknown Amount		Unknown	Ray Gabriel called us 10 AM 7/6/79	USCG. investigating. G.S.	closed	6/2/87
S-331	7/10/79	Huntington Harbor	Diesel Fuel 5 gallons	No clean up necessary	None, slick dispersed, no clean up necessary	Ken Griggs called us 9:25 AM 7/11/79	NYSDOT investigated G.S.	Closed	2/1/80

A-0483

S-332 DOT# 790511	7/17/79	Port Jefferson Harbor ?	#6 Fuel Oil 50 gals.		Approx. 50 gals oil on water	Ray Gabriel called us 9:50 AM 7/17/79	USCG New Haven Group, Investigating. G.S.	closed	6/2/87
S-333	7/16/79	SUNY @ Stony Brook Health Science [illegible] Bldg. Loading Dock	Fungicide Pentachloronitro-Benzine (Powder)		N/K		SCDHS & NYSDEC investigating G.S.	Closed	

-924 -1849	3/9/82	Possible Town Hwy. Dept. Yards Mastic Beach	Gasoline	—	fumes in ground	Bob Miller 3/9	NYSDOT investigating. GS	Closed 3/23/87
-925 -1834	3/11/82	Slomin Oil Co. Spill at 3 Butler Place Northport	#2 Fuel Oil 15 gals	Slomins cleaning up	on ground	Bob Miller 3/11	NYSDOT investigating. GS	Closed 12/16/82
-926 -1875	3/17/82	Selden Bottled Gas & Fuel Spill at 22 Silver Street Selden	#2 Fuel Oil 50-60 gals.		on ground	Bob Miller 3/17	NYSDOT investigating. GS	10/7/86
-927 -1921	~~2/82~~ 3/1	17 Troy Court Northport Hufco Spill	#2 Fuel Oil 60 gals.		on ground	3/29	NYSDOT investigating. GS	10/7/86
-928 1882	3/19/82	USCG Station Lake Montauk	Diesel Fuel 20 gals.	USCG put out sorbent pads.	in water	Bob Miller 3/22	USCG investigated. GS	Closed 12/16/82

LOG#	SPILL DATE	SPILL LOCATION/SOURCE/AGEN[illegible]	SP[illegible] TYPE	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]
84-1020	7/12/84	MAIN ST. & LANIER BAYSHORE ↓ POLE MOUNTED TRANSFORMER ↓ LILCO	TRANSFORMER OIL ↓ UNK. AMT.		ROADWAY		[illegible] U.S.C.G. OTHER	[initials]	
84-1022	7/12/84	LONG ISLAND AVE & COMMACK RD COMMACK. ↓ U.G. TANK. ↓ PLENTA PETRO.	GASOLINE ↓ UNK. AMT.		G.W. POSS. AFFECTED.	BOB MILLER.	D.E.C. ☒ D.O.T. N.C.H.D. S.C.H.D. U.S.C.G. OTHER	[initials]	10/31
84-1025	7/12/84	WEST BROADWAY & BARNUM PORT JEFFERSON. ↓ UNK. ↓ UNK.	KEROSENE ↓ UNK. AMT.	VILLAGE F.D.-AND HIGHWAY DEPT. TO SAND.	ON GROUND-ROADWAY.	BOB MILLER.	☒ D.E.C. ☒ D.O.T. N.C.H.D. S.C.H.D. U.S.C.G. OTHER	[initials]	5/1
84-1026	7/12/84	MASTIC RD & RIVERSIDE MASTIC BEACH. ↓ UNK. ↓ SUSP. SUNOCO S/S	GASOLINE (ODOR) ↓ UNK. AMT.		G.W. POSS AFFECTED.	BOB MILLER	D.E.C. ☒ D.O.T. N.C.H.D. S.C.H.D. U.S.C.G. OTHER	[initials]	
84-1045	7/15/84	MONTAUK HARBOR, MONTAUK ↓ UNK. ↓ UNK.	UNK. TYPE ↓ UNK AMT.		SURFACE WATER OF MONTAUK HARBOR AFFECTED.	BOB MILLER	D.E.C. D.O.T. N.C.H.D. S.C.H.D. ☒ U.S.C.G. OTHER	[initials]	5/[illegible]

✓ = Notification Letter Sent

84-36

SPILL DATE	SPILL LOCATION	SPILL TYPE	CLEAN UP REMARKS	ENVIRONMENTAL IMPACT	REPORTED TO ALBANY	[illegible] REMARKS	CLOSED
2/10/83	Durkins Greenhouse Locust Ave, West Sayville	Pesticides		on ground	Hot line 2/11	NYSDEC & SCDHS investigating 6 S.	
2/14/83	Contaminated Well 22 South Ocean Ave Center Moriches	Unknown		ground water contaminated Well	Bob Miller 2/14	NYSDOT investigating 6 S.	3/23/87 closed
2/14/83	Arkay Packing 22 Arkay Drive Hauppauge	Isopropal Alchohol System Leak		Unknown	Bob Miller 2/14	SCDHS investigating. 6S	
1/16/83	Montauk Point State Park	K-33-C 50% wood Preservative 2 qts.	Cleaned up by spiller	on pavement		ECO's investigated. 6S,	C Closed 4/22/83
2/15/83	Mastic Fuel Oil 187 Van Buren St. Brookhaven FAMILY FUEL SERVICE	#2 Fuel Oil	Town of Brookhaven sanded road	on ground and road	Bob Miller 2/15	NYSDOT investigating. 6S	Closed 5/18/83

REFERENCE NO. 17

Appendix 1.3-1

1 of 7

Availability of Fresh Ground Water Montauk Point Area Suffolk County Long Island, New York

By NATHANIEL M. PERLMUTTER *and* FRANK A. DELUCA

RELATION OF SALT WATER TO FRESH GROUND WATER

GEOLOGICAL SURVEY WATER-SUPPLY PAPER 1613-B

Prepared in cooperation with the U.S. Air Force

UNITED STATES GOVERNMENT PRINTING OFFICE, WASHINGTON : 1963

Thirteen observation wells, 2 inches in diameter and ranging in
pth from about 70 to 150 feet, were installed at nine sites (test well
mbols, pl. 1). At four of these sites, pairs of shallow and deep
lls were installed to observe heads at different depths in fresh and
 water. The wells were developed and pumped by compressed
 with a gasoline-driven jet pump.

Vater from four of the observation wells was analyzed for chemical
tent. About 100 analyses were made of the chloride content of
er from the observation wells and pumping wells in the report
. A water-level measurement program, begun immediately after
construction of the observation wells, was continued through Sep-
ber 1961. Water-stage recorders were installed on several wells
periods ranging from a few days to several weeks. The altitude
neasuring points on observation wells were related to mean sea
l by spirit leveling, and a water-level contour map (pl. 1) was
ared.

hirty-four active and abandoned wells were inventoried (table 3),
 a brief examination was made of the surficial geology, particu-
y of the exposures in cliffs along the south shore.

PREVIOUS INVESTIGATIONS

he surficial geology of the Montauk Point area has been described
fly by Fuller (1914) in a report, which contains a geologic map
ong Island and a few sketches of outcrops at Montauk Point. As
t of another island-wide study of the ground-water resources,
er, deLaguna, and Perlmutter (1949) prepared contour maps
wing the depth to the Cretaceous deposits and bedrock beneath
g Island, including the Montauk area. A report by Perlmutter
 Crandell (1959, p. 1064) presents generalized sections of the
hshore beaches of Long Island, which suggest the presence of salt
er in the deep aquifers beneath Montauk Point. However, no de-
ed study of the water resources of the area had been made prior
he present investigation.

ACKNOWLEDGMENTS

he writers acknowledge the cooperation of the U.S. Army Corps
Engineers, who supplied large-scale maps and other engineering
a on former Camp Hero; the New York State Water Resources
nmission, which provided records of existing wells; land owners
o gave permission to enter their property to measure and install
ervation wells; and several well drilling firms which provided ad-
e in planning the construction of the observation wells. The close
peration of military and civilian personnel at both the Suffolk

County Air Force Base, Westhampton, N.Y., and the Montauk Air Force Station expedited the drilling of the test wells and the collection of hydrologic data.

GEOLOGY

The Montauk Point area is underlain by crystalline bedrock of Precambrian age upon which rest, in succession, unconsolidated deposits of Cretaceous, Pleistocene, and Recent age. As the bedrock and the Cretaceous formations are believed to contain salt water and are not penetrated by any wells in or near the project area, only a brief description of them, condensed from Suter, deLaguna, and Perlmutter (1949, p. 13-46 and pls. 10, 13), is given.

PRECAMBRIAN BEDROCK

The bedrock probably consists of gneiss and schist. Its surface is about 1,000 to 1,300 feet below sea level and slopes southeastward about 80 feet per mile. Very salty water is probably contained in openings along joints and other fractures in the rock. Because the bedrock has low permeability and contains only salty water, it is not considered an aquifer.

CRETACEOUS FORMATIONS

Immediately above the bedrock is the Raritan formation, which is about 300 to 400 feet thick. The Raritan is divided into a lower unit called the Lloyd Sand Member and an upper unit called the clay member. The Lloyd Sand Member is an artesian aquifer that contains fresh water in the western part of Long Island, but at Montauk Point it probably contains salty water only. The overlying clay member confines the water in the Lloyd.

The Raritan Formation is overlain by undifferentiated deposits of Cretaceous age that include the Magothy and probably several younger Cretaceous formations (Perlmutter and Crandall, 1959). These deposits contain permeable zones partly separated by lenticular beds of silt, sandy clay, and clay. The permeable zones probably could yield as much as 1,000 gpm to individual large wells, but the water is believed to be nearly as salty as the ocean. The Cretaceous surface in western Long Island is dissected by channels as deep as 300 to 500 feet below sea level. Similar deep channels probably exist beneath parts of the Montauk Point area, but the data are scanty as the deepest test well in the report area is terminated in glacial deposits at a depth of 130 feet below sea level.

PLEISTOCENE DEPOSITS

GENERAL CHARACTER AND STRATIGRAPHY

The Pleistocene deposits of Long Island are end products of the advance and melting of several ice sheets during the Pleistocene Epoch. Because of the complex geologic history of these deposits, which are important sources of ground water, a summary of the general character of glacial deposits and of the sequence of glacial units in Long Island is given below, followed by a description of the strata in the Montauk Point area.

Glacial deposits may be divided into two principal types: (1) till and (2) stratified drift. Till is predominantly composed of unsorted or poorly sorted deposits of boulders, gravel, sand, silt, and clay, dropped directly from melting ice. Till deposited as an irregular surficial mantle is called ground moraine. A ridge composed chiefly of till and marking the former front of an ice sheet is called an end moraine. Stratified drift is deposited by meltwater streams as outwash deposits, in lakes as glaciolacustrine deposits, and in the sea as glaciomarine deposits. Stratified drift is generally distinctly bedded and well graded, owing to the sorting action of the water from which it is deposited. The beds may range in texture from gravel to clay size, depending on the velocity of the water and the size of the source material. A detailed account of the origin and nature of glacial deposits is given in Flint (1957).

The lowermost formation of Pleistocene age on Long Island is the Jameco Gravel, a coarse-grained outwash deposit. Above the Jameco is the Gardiners Clay, a fossiliferous marine interglacial formation composed chiefly of beds of silt and clay. The beds above the Gardiners Clay consist of several sequences of outwash and till. Fuller (1914, p. 114–157) divided these units into the Jacob Sand and the Manhasset Formation. He subdivided the Manhasset Formation into two outwash members separated by a till member called the Montauk Till, after the type area at Montauk Point. According to Fuller, erosion of the Manhasset Formation was followed by deposition of more outwash and till during the last, or Wisconsin Stage of glaciation. The uppermost deposits of till were laid down as part of the Ronkonkoma end moraine, which forms the surface of most of the Montauk Point area.

Because of the difficulty in recognizing discrete units of till and outwash in many well logs and outcrops, the Geological Survey generally uses the informal name upper Pleistocene deposits for glacial deposits of post-Gardiners age. Although Fuller believed that the post-Gardiners deposits were partly Illinoian and partly Wisconsin in age, later workers, including Wells (1934, p. 121–122), and MacClintock and Richards (1936, p. 332), have suggested that they were laid down entirely during the Wisconsin Stage.

PLEISTOCENE STRATIGRAPHY OF THE MONTAUK POINT AREA

Because the evidence from generalized well logs and well samples was scanty and because not enough time was available to make a detailed examination of the lithology and structural features of the outcrops along the south shore, the glacial deposits in the report area were not correlated specifically with known Pleistocene formations but have been broadly divided into (1) a lower unit of stratified drift and (2) an upper unit consisting of undifferentiated deposits of till and stratified drift (pl. 2).

LOWER UNIT OF STRATIFIED DRIFT

The lower unit of stratified drift is composed chiefly of nonmarine grayish-brown medium to coarse sand and gravel and some thin lenses of clay and silt. It does not crop out, hence is known entirely from well logs and a few samples. A sample from a depth of 120–126 feet below land surface at well S17231 (pl. 1) consists chiefly of angular to subangular clear and iron-stained quartz (about 80 percent) and miscellaneous grains (about 20 percent), which include granite, gneiss, schist, and the minerals garnet, biotite, chlorite, and hornblende, and other dark minerals. Because of their high permeability, thickness, and extensive distribution, the beds of the lower unit comprise the principal aquifer in the report area (see "Ground Water").

UNDIFFERENTIATED DEPOSITS OF TILL AND STRATIFIED DRIFT

Immediately above the lower unit of stratified drift is an undifferentiated unit of varied lithology composed of interbedded deposits of till and stratified drift about 30 to 100 feet thick (see diagonally ruled area on pl. 2). Although not clearly discernible in plate 2, a study of the well logs and outcrops suggests that, in general, the lower 20 to 40 feet of the undifferentiated deposits consists of interbedded gray and brown clay, laminated green and gray silt and clay, and some thin lenses of fine brown sand (figs. 2, 3, pl. 2). Samples of micaceous silt from depths of 55–75 feet below land surface, near S19849, consisted chiefly of quartz, biotite, and muscovite. No forams or diatoms were found in the material. The middle part of the undifferentiated deposits is probably composed largely of gray and brown compact clayey and gravelly till, which grades laterally into fine-grained stratified drift in some places. Immediately above the compact till is generally stratified drift, which ranges in thickness from a featheredge to about 30 feet and is composed chiefly of beds and lenses of brown and gray silt, fine to medium sand, and clayey

RECENT DEPOSITS

Thin deposits of sand, gravel, and boulders deposited in Recent time are distributed along the narrow beaches of Montauk Point. Large boulders and cobbles are most common on the southern and eastern shores (figs. 2 and 3). Sand and swamp deposits are more common along the low-lying north shore. Reddish lenses of garnet and ilmenite-rich sand can be seen in many places in beach deposits bordering the bluffs. The Recent deposits are unimportant as aquifers because of their thinness, small intake area, and proximity to sea water.

GROUND WATER

SOURCE AND OCCURRENCE

The source of all fresh ground water in the report area is precipitation on the land surface, which averages about 48 inches annually. If all the precipitation were available for ground-water recharge, it would be equivalent to 2.3 million gallons per day per square mile. However, part is lost by direct evaporation from the soil and plants and from ponds and swamps that occupy numerous kettle holes; part is transpired by numerous trees and other forms of vegetation; part runs off to the sea in several small streams (pl. 1) whose discharge reaches a peak during and immediately after heavy precipitation; part is lost by seepage from cliffs along the south shore; and part percolates downward to replenish the ground-water reservoir.

Although no detailed studies have been made, general comparison of conditions at Montauk Point with those in western Long Island suggests that about 25 percent of the precipitation (12 inches, or about 570,000 gpd per sq mi) reaches the water table during a year of average precipitation. During years of above- or below-average precipitation, ground-water recharge is proportionately greater or lesser than average.

After seeping through the soil zone the water percolates downward through the pore spaces in the sand, gravel, silt, and clay to the main zone of saturation in the lower part of the undifferentiated deposits of till and stratified drift (pl. 2). The upper surface of the zone of saturation is called the water table. Scattered perched water bodies are found above the main water table, owing to lenses and beds of silt and clay, which retard downward movement of water. Some water in the upper part of the main zone of saturation moves to discharge areas at the shoreline, and some percolates slowly downward through confining beds of till, silt, and clay to the underlying principal aquifer. Water in the principal aquifer is under artesian pressure owing to the relatively low permeability of the overlying beds. The imaginary surface to which water in wells tapping the principal aquifier rises is

called the piezometric surface (pl. 1). Except for withdrawals through wells, most water in the principal aquifer discharges to the sea by upward seepage at and near the shoreline.

WATER IN THE UNDIFFERENTIATED DEPOSITS OF TILL AND STRATIFIED DRIFT

Undifferentiated deposits of till and stratified drift form the upper unit shown on plate 2. Owing to the poor sorting and clay content of the till and to the predominance of silt and sandy clay in the stratified part of the unit, the undifferentiated deposits probably cannot yield substantial amounts of water to individual wells in most parts of the area. Some water occurs in the undifferentiated deposits as perched water bodies above the main water table, and some is contained in minor permeable zones below the water table. The lower part of the undifferentiated unit consists chiefly of saturated deposits of till, silt, and clay, which serve mainly as confining beds for the underlying principal aquifer.

PERCHED WATER BODIES

Perched water bodies are generally small isolated bodies of water temporarily stored above the main water table in scattered lenses of permeable material underlain by clay and silt. During the drilling of most of the observation wells and during the foundation test borings for several structures at the Montauk Air Force Station, water was reported at depths ranging from about 5 to 25 feet below land surface, or about 35 to 100 feet above sea level. These altitudes, which are as much as 40 to 95 feet above the water level in the principal aquifer (pl. 1), are a strong indication of the existence of perched water bodies as they are too high to represent the main water table.

The fact that perched water is common was verified further by the history of test well S19486 in the northeast corner of the U.S. Military Reservation (pl. 1). Land surface at the well is about 70 feet above sea level. During the drilling of the auger hole for the well, the material from 0–8 feet was reported as dry; 8–16 feet as moist; and at 16 feet as a perched water zone of unknown thickness. A well driven in the auger hole to a depth of 65 feet below land surface remained dry for several months. To determine whether the well was plugged, it was filled with water, which seeped out through the screen in a few days. In March 1961 the well was driven about 12 feet deeper and penetrated the main zone of saturation between about 68 and 70 feet below land surface.

Perched water bodies may yield sufficient water for intermittent domestic use, but they generally are not dependable if large amounts are required for long periods. During months of low precipitation, wells tapping perched water-bearing zones may go dry, owing to the arge declines in water level in short periods of time, which are characteristic of these zones. An example of the large fluctuations which may be expected in perched water tables is given by the record of a test boring for a building near well S19195 in the center of the Montauk Air Force Station. When the boring was completed at a depth of 30 feet on November 22, 1955, the water level was 10 feet below land surface (about 50 feet above sea level). The water level declined during the next several days and by November 26 it was 23 feet below the land surface, a decline of 13 feet.

MINOR WATER-BEARING ZONES

Scattered minor water-bearing zones occur below the main water table in lenses of sand and gravel in the undifferentiated deposits of till and stratified drift. The location, thickness, extent, and continuity of these zones in most of the area is not apparent from present data. The upper limit of these zones is the main water table; the lower limit is unknown. As nearly all the wells terminate in the underlying principal aquifer, the altitude and configuration of the water table can only be estimated. Scanty data from test holes, drilled with a power auger, suggest that it may be as high as 10 to 17 feet above sea level in the central part of the area, about 16 feet above sea level in the southwestern part (S19500, table 3), and about at sea level at the shoreline. The water table is mainly in beds of silt, clay, and till, which are not suitable for development of large supplies.

In some shallow minor water-bearing zones, the water is under watertable, or unconfined, conditions; but at greater depths where these zones are overlain by thick beds of silt and clay, the water may be confined. Indirect evidence of the low yield of the minor water-bearing zones is the fact that all the active wells, including those constructed for domestic use, were drilled through these zones and completed in the principal aquifer. Two wells, S19500 and S1202, originally completed in the shallow beds were abandoned and replaced by wells screened in the principal aquifer. However, as the data are scanty and to make the maximum use of all available supplies, all future wells should be logged carefully and samples should be taken at 5-foot intervals to evaluate further the possible existence of productive zones at shallow depths.

CONFINING BEDS

The data shown on plate 2, and records of other wells not on the line of these sections, indicate that the lower part of the undifferentiated deposits consists chiefly of beds of silt, clay, sandy clay, and possibly some deposits of till. At several wells (for example, S17231, pl. 2) the confining beds are at least 20 to 30 feet thick, and at one place they are about 65 feet thick (S1245, pl. 2). The effectiveness of these confining beds is confirmed hydraulically by the differences in head between the water table and the piezometric surface of the principal aquifer, which are estimated to be as much as 8 to 12 feet in the central part of the area. At well S19500 (26 feet deep) in the southwestern part of the area, the water table is about 16 feet above sea level, or about 13 feet above the piezometric surface (pl. 1). The barometric effects and the distinct tidal effects shown by the hydrographs (figs. 5 and 6) of wells which are as much as 0.4 mile from the shore and screened in the principal aquifer, is additional evidence of the wide extent and low permeability of the confining beds.

WATER IN THE LOWER UNIT OF STRATIFIED DRIFT

PRINCIPAL AQUIFER

The principal aquifer is in the lower unit of stratified drift shown in plate 2. The upper limit of the aquifer, which is the bottom of the overlying confining beds, ranges in altitude from about sea level to 40 feet below sea level. The lower limit, for purposes of this report, is set at the top of the zone of diffusion between fresh and salty water, which ranges in altitude from about sea level to 130 feet below sea level. The principal aquifer consists chiefly of beds of medium to very coarse sand and gravel, about 10 to 80 feet thick. Scattered thin lenses of silt and silty clay are interbedded in some places with the more permeable beds.

Water in the principal aquifer is replenished by slow downward leakage from the overlying confining beds. The amount and rate of leakage per unit area of confining beds probably is small owing to their low permeability; however, the leakage over a large area may be substantial. Water in the principal aquifer is under artesian pressure, but the head is not sufficient to cause wells to flow. The depth to the static water level in existing wells ranges from about 13 to 70 feet below land surface (table 3). The depth to water is greatest in the center of the area where the altitude of the land surface is highest, and is least at the shoreline.

The principal aquifer is the only source of fresh water tapped by active wells. Wells 8 to 10 inches in diameter and finished with screens 10 to 20 feet long yield as much as 150 gpm. Reported specific capacities of wells range from 4 to 11 gpm per foot of drawdown. The history of pumping at Montauk Air Force Station suggests that sustained pumping at rates of 50 gpm or more will probably induce salt-water encroachment laterally or from below in most of the area.

PIEZOMETRIC SURFACE

The imaginary surface to which water in wells tapping the principal aquifer will rise is called the piezometric surface. The piezometric surface responds to changes in pressure in the aquifer caused by tidal and barometric fluctuations and by variations in natural recharge and discharge, and pumping. Plate 1 shows contours on the piezometric surface for April 12, 1961. The surface generally mirrors the shape and, in a very subdued manner, the topographic profile of the Montauk peninsula, except for the cone of depression formed around the pumping wells at the Montauk Air Force Station. The cone was roughly circular and had a diameter of about 0.5 mile in 1961. Its diameter and depth varies with the duration and rate of pumping, as well as with changes in natural recharge and discharge. The maximum depth of the cone is unknown as no readings were obtained in the main supply well S17231.

The contours shown on plate 1 are based on the measurements of water levels made chiefly on April 12, 1961. The measurements were adjusted to a common tidal stage. A few, made on April 7 and 8, were adjusted by comparison of regional water-level trends, to conform with the April 12 measurements. The highest known points on the piezometric surface of April 12 were about 3.5 feet above sea level at well S19484 at the north side of the Montauk Air Force Station and at well S2150 in the western part of the project area. The lowest measured altitude was about 1.3 feet above sea level in well S3599 near Montauk Lighthouse. The altitude in the center of the cone of depression was not determined but probably was as low as several feet below sea level.

MOVEMENT OF FRESH WATER

The following description of movement of water applies chiefly to water in the principal aquifer as few or no data were collected on flow in the shallow minor water-bearing zones in the upper part of the main zone of saturation.

In general, ground water moves from points of high head to points of low head (that is, from areas of recharge to areas of discharge). Before the start of pumping at the Montauk Air Force Station, ground water in the principal aquifer probably moved radially away from a mound on the piezometric surface near the center of the Montauk Air Force Station. The mound may have been as much as 7 feet above sea level, according to estimates from drillers' records. As a result of relatively heavy intermittent pumping, a cone of depression has formed around supply well S17231 (pl. 1) at the Air Force Station. The arrows oriented perpendicular to the piezometric contours show the horizontal component of movement of the water

and indicate that a part of the flow which formerly discharged to the sea now moves inland toward the center of the cone of depression.

Plate 2 illustrates the pattern of movement in the vertical section. The arrows show that during pumping some fresh water and salt water move radially toward the screen of supply well S17231. The remainder of the fresh water moves toward discharge areas at and near the shoreline. Some mixes with salt water to form the zone of diffusion and ultimately discharges to the sea. (See "Salt-water encroachment.") The hydraulic gradient under which the fresh water is moving probably ranges from about 2 to 10 feet per mile in most of the area, but near pumping wells it is higher.

Measurements in the observation wells and continuous records from waterstage recorders show that the artesian heads in the principal aquifer are constantly changing, owing to tidal, barometric, and pumping effects. Although the altitude of the piezometric surface fluctuated a foot or two during the period of record, the shape remained about the same, and consequently the general pattern of movement of fresh water was approximately as shown on plates 1 and 2.

FLUCTUATIONS OF WATER LEVELS

Fluctuations of water levels in wells are the result of changes in the balance between recharge and discharge in aquifers. Analysis of both short- and long-term fluctuations provides important data on the hydraulic characteristics of an aquifer. For example, the altitude and character of the fluctuations of water levels in wells screened at different depths give evidence of hydraulic interconnection or of separation between aquifers and indicate whether the water in the aquifer is confined or unconfined.

SHORT-TERM FLUCTUATIONS

Minor and recurring fluctuations of water levels in the principal aquifer in the report area, are caused by transient influences such as changes in barometric pressure and oceanic tides. A rise in barometric pressure causes water levels in wells to decline; a decline in pressure causes water levels to rise. Tidal effects produced by the pull of the moon and the sun on the oceans cause pressure changes in both the fresh and salty ground-water bodies as illustrated by the water-level fluctuations shown on the hydrographs in figures 5 and 6. The magnitude of the fluctuations is due partly to the tidal efficiency and partly to the barometric efficiency of the well, which are related to the degree of confinement of the aquifer. Tidal effects diminish with increased distance from the shoreline. The hydrographs show typical pairs of high and low water levels in fresh-water wells produced chiefly by daily tidal changes in the Atlantic Ocean and Block Island

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STATE OF NEW YORK
DEPARTMENT OF CONSERVATION
WATER RESOURCES COMMISSION

Ground-Water Levels and Their Relationship to Ground-Water Problems in Suffolk County, Long Island, New York

Prepared by the
U. S. GEOLOGICAL SURVEY
in cooperation with the
NEW YORK STATE WATER RESOURCES COMMISSION
SUFFOLK COUNTY BOARD OF SUPERVISORS
SUFFOLK COUNTY WATER AUTHORITY

ALBANY, N. [illegible]

STATE OF NEW YORK
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Ground-water levels and their relationship to ground-water problems in Suffolk County, Long Island, N. Y.

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ABSTRACT

Suffolk County occupies the eastern two-thirds of Long Island, N. Y. and its economic livelihood, derived essentially from industry and agriculture, is vitally dependent upon its vast natural reservoir of ground water of good quality.

Natural replenishment of ground water is provided by precipitation which averages about 43 inches per year. Under present conditions of infiltration, ground-water recharge is about 350 billion gallons during the average year. Natural discharge of ground water takes place through streamflow, underflow, transpiration and evaporation. Land development alters the natural recharge-discharge pattern in varying degrees by the installation of sewers and the establishment of extensive areas of paved and roofed surfaces. Increased water usage, which accompanies this development, also changes this pattern. The influence of these cultural changes on ground-water storage is evident through the continuing measurement of ground-water levels.

Presented herein (table 2), are more than 4,000 measurements for 65 water-table wells measured as part of this monitoring program. The location of all wells that were previously or are currently measured under the program are shown on plates 1 and 2 together with the associated aquifers and the availability of the measurements. Also tabulated, with report titles and report numbers for the years concerned (table 3), are the wells for which water levels have been published in the annual water-level reports that are issued periodically by the U. S. Geological Survey.

Water-level measurements are useful in other respects - especially in the construction field. Water-level data have been helpful in solving problems related to foundations, cesspools, well construction, and land drainage. In this report, a discussion is given of the relationship between water levels and these problems.

Filling in gaps in water-level data or estimating data for sites remote from observation wells is possible by interpolation of water-level measurements of wells in the vicinity. Correlation of the short-term water-level record of one well with the long-term water-level record of another constitutes a useful tool for extending water-level data. Projecting observed water-level information into the future, in order to estimate infrequent water-level extremes, is a useful application of water-level data and can be accomplished within broad limits by a logarithmic-probability plot of water levels for the well in question versus cumulative frequency of occurrence. This method, however, has certain limitations and must be used with caution.

INTRODUCTION

Suffolk County, one of the most rapidly growing counties in the United States, occupies the eastern two-thirds of Long Island (fig. 1). Here industry and agriculture exist side by side bringing prosperity to the entire population. One reason for the continued success of each activity is the abundant supply of water of good quality.

In 1956, nearly 20 billion gallons of ground water were withdrawn from Suffolk County's underground reservoir to supply the needs of industry, agriculture, public and private supply. As this reservoir is the principal source of water available at present, adequate protection of the subsurface reserves is vital to the economy and public welfare of Suffolk County.

The need for basic appraisal of the ground-water resources of Suffolk County as well as for determining any contamination or depletion of the reserves that might be taking place was recognized by State and County officials in the early thirties. As a result, since 1932, the New York State Water Resources Commission (formerly Water Power and Control Commission), the Suffolk County Board of Supervisors and, later, the Suffolk County Water Authority, have maintained agreements with the U. S. Geological Survey for a continuing countywide ground-water investigation.

A major threat to Suffolk County's water reserves is contamination from the salt-water bodies that bound the county on three sides; therefore, part of the continuing investigative program is periodic sampling of well water for evidence of such contamination. Recent evaluation of the results of this program (Hoffman and Spiegel, 1957) indicates that up through 1953 only localized sea-water contamination had taken place. The wells affected are near surface-water bodies containing salty water and contamination has resulted from pumping the individual well rather than from an extensive landward movement of salty water.

Periodic measurement of water levels at a number of observation wells throughout Suffolk County is another part of the continuing investigative program. Properly interpreted, these measurements help to determine basic water-level conditions and to delineate areas where overdevelopment of the ground-water reserves may lead to sea-water encroachment and other problems. Perhaps the chief advantage of this procedure is that impending contamination of the ground water can be detected without the landward movement of salt water.

The chief purpose of this report is to make available more than 4,000 previously unpublished water-level measurements for 65 selected Suffolk County shallow wells (tables 1 and 2) and to give the location of all wells measured for monitoring and other purposes (plates 1 and 2). Also tabulated are the Water-Supply Papers of the Geological Survey which contain water-level measurements for Suffolk County (table 3). In the past, these data were published annually by the Survey. Under the present schedule, the Survey will publish the levels for 1956 and 1957 in one volume and thereafter each volume will contain records covering a 5-year period. Additional uses for water-level data are described, and some

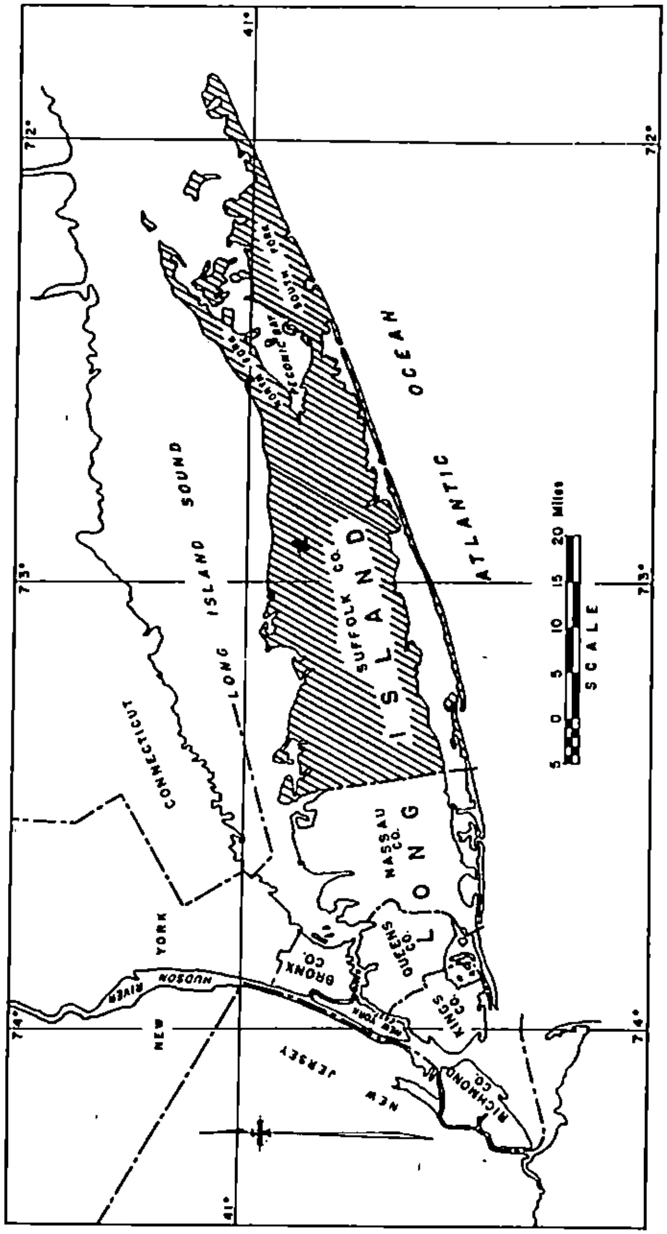


Figure 1.--Index map of Long Island, N.Y., showing location of Suffolk County.

methods are presented for estimating water levels in areas where there are no observation wells or where approximate long-term maximum and minimum values of water levels are desired.

Water-level measurements listed in table 2 were, for the most part, made by the U. S. Geological Survey. Measurements during the early 1900's and some during the early 1930's (table 3) were made by the New York City Department of Water Supply, Gas and Electricity when Long Island sources were being considered for extensive water-supply development.

GROUND-WATER OCCURRENCE AND MOVEMENT

Ground water fills the pore spaces of the unconsolidated clay, sand, and gravel that underlie Suffolk County. Three water-bearing formations (aquifers) have been recognized. Composed mainly of various types of sand and gravel, these formations in sequence upward from bedrock are: the Lloyd sand member of the Raritan formation of Late Cretaceous age, the Magothy(?) formation of Late Cretaceous age, and the upper Pleistocene or glacial deposits.

The water table of Suffolk County, the upper limit of the entire thickness of saturated material, ranges in altitude from about 70 feet above sea level in the inland, central portion of Suffolk County to sea level near the shores. Below this surface is stored many billions of gallons of ground water. Shown in figure 2 is a water-table map for a portion of south-central Suffolk County as of the end of December 1950 (after Lusczynski and Johnson, 1951).

In some parts of Suffolk County, locally continuous layers of low-permeability material lie above the water table. These areas are located mostly in the northern part of the County extending to Orient Point, and also in the South Fork. Percolation of recharge in these areas is temporarily retarded in its downward path and water, termed perched water, is stored above these layers. Storage in perched-water bodies appears to respond to short-term fluctuations in precipitation more markedly than storage in the main ground-water reservoir. During long periods of deficient precipitation the smaller and even some of the more extensive of these water bodies may be dissipated completely. As water levels in wells tapping these perched bodies do not necessarily reflect changes in storage in the recognized main ground-water reservoir, no attempt has been made to measure these levels in a continuing program.

Natural replenishment to Suffolk County's ground-water reservoir is derived solely from precipitation, which averages about 43 inches per year. Only part of the precipitation reaches the water-bearing formations, for sizeable amounts are lost through evaporation and transpiration before becoming ground water. Losses through overland runoff to streams in undeveloped areas are small, owing mainly to the excellent soil porosity. As a result of these factors and an estimated 50 percent recharge of precipitation, about 350 billion gallons of water replenish the ground-water reservoir during an average year.

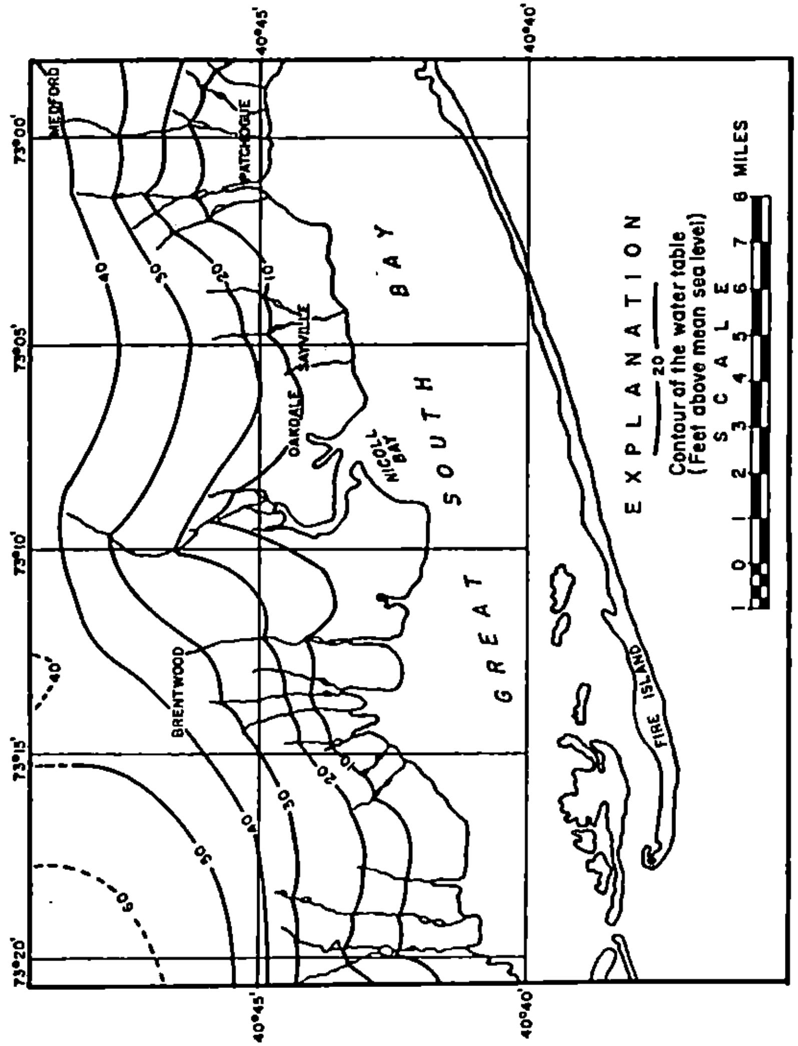


Figure 2.--Map of the water table in the south-central section of Suffolk County, Long Island, N.Y. at the end of December 1950.

Natural discharge from Suffolk County's ground-water reservoir takes place mainly through the seaward movement of streamflow and ground-water underflow. Streamflow is largely ground-water outflow through channels that intersect the water table. The annual volume of stream discharge averages about one-quarter of the average ground-water recharge (350 billion gallons) and amounts to more than 80 billion gallons. This quantity is about 4 times the ground water pumped for all purposes in 1956. An unknown, but probably greater, quantity of ground water moving through the subsurface sand, gravel, and clay, is discharged each year directly into the ocean or into streams below points of discharge measurement. A third water loss, also unknown in magnitude but possibly sizeable in amount, occurs through evaporation from surface-water bodies such as streams and ponds, and evaporation and transpiration from the marshy and low-lying areas that fringe the shoreline of Suffolk County.

Ground-water development can change the natural pattern of ground-water occurrence and movement. Pumping a well removes the ground water stored in the vicinity of the well and forms a local depression in the surrounding water table. This depression, because of its shape, is termed the cone of depression. Expansion of this cone takes place until ground-water recharge is increased or discharge is decreased an amount equal to that which is being pumped. Replenishing water can either improve or impair the quality of the stored ground water depending upon the quality of the source. Extreme quality impairment, such as that caused by serious sea-water encroachment, might require complete cessation of ground-water withdrawals.

Intensive land development also helps to unbalance the water budget. Interception and evaporation of precipitation from the increased roofed and paved areas and more efficient discharge of storm runoff to sewers dissipates water that otherwise would have seeped into the soil.

Variations in either recharge, discharge, or both results in changes in the amount of ground water in storage at any one time. These changes are reflected in changes in the position of the water table and are best determined by water-level measurements in representative observation wells.

GROUND-WATER LEVELS

Potential Ground-water Problems and Applications of the Water-level Data

At present, the chief ground-water problem in Suffolk County is localized sea-water contamination, but with increasing development of the ground-water reservoir, additional problems may become important. These are more fully described elsewhere (Hoffman, 1956). The following discussion considers: (1) more extensive sea-water contamination of the ground-water reservoir, (2) permanent depletion of ground-water storage, especially if Suffolk County should be extensively sewered, and (3) the application of water-level data to these potential problems.

Shown in figure 3 is a simplified version of how sea-water encroachment takes place. Here sustained pumping has depressed the ground-water levels below sea level. The cone of depression has expanded to the shoreline, and has caused salt water from the adjacent embayments and from the underlying sand and gravel to move toward the pumped well. First contaminated would be the water from the wells screened nearest the fresh water-salt water boundary. Continued pumping would cause a migration of this contamination further inland. In Suffolk County, stratification of the water-bearing beds, the presence of extensive layers of protective clays, and the pattern of ground-water movement modifies this theoretical picture.

Early detection of sea-water encroachment enables the application of measures to prevent further contamination. As previously indicated, one method of detection utilizes the large difference in the chloride content of sea water (high chloride) and fresh ground water (low chloride). The second method, previously mentioned, utilizes periodic measurement of water levels in observation wells. These measurements help to detect water-level trends that would favor ultimately the landward movement of sea water. For instance, measurements of the water levels in the observation wells shown in figure 3, when adjusted for precipitation, would show an overall downward trend from the start of pumping. Superimposed on this trend might be fluctuations owing to variations in artificial recharge and pumping, and in some cases, natural phenomena such as tides, barometric pressure, and evapotranspiration.

Permanent depletion of ground-water storage in Suffolk County may take place in future years owing to extensive sewering. The only sewers in Suffolk County at the present time are the small systems of the near-shore villages of Greenport, Huntington, Ocean Beach, Patchogue, Port Jefferson, and Riverhead; so, probably 80 percent of the water pumped from public, private and industrial wells is returned to the ground. If the area served by sewers expands, and if the storm water is discharged directly into the ocean, replenishment previously obtained from sanitary wastes and storm water will be reduced considerably.

On the other hand, withdrawals from the ground-water reservoir will probably increase in the future and the increased net draft will cause a decrease in ground-water storage and a decline of the water table. As in the case of sea-water contamination, water-level measurements will record the change in storage.

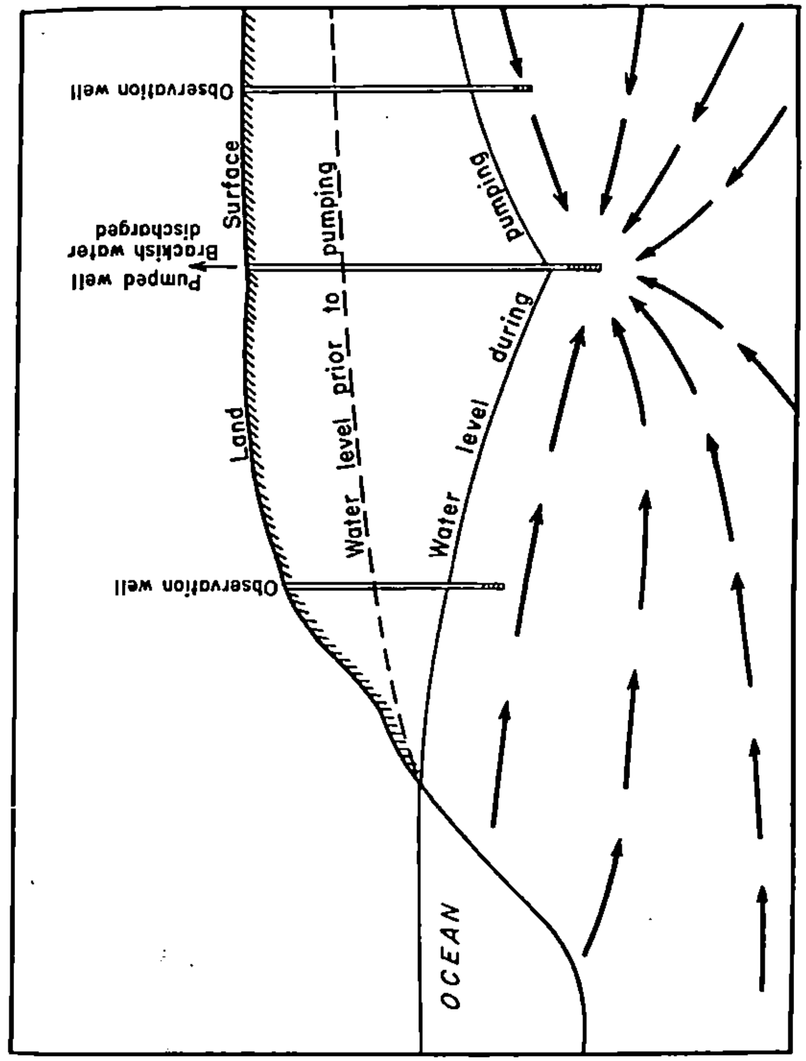


Figure 3.--Sea-water contamination of fresh water-bearing beds resulting from pumping a nearshore well.

Although the principal uses of water-level measurements in Suffolk County are for the evaluation of the basic ground-water situation and the detection of overdevelopment and sea-water contamination of the ground-water reservoir, water-level measurements are useful for a number of other purposes. Some of these uses are described in the following section of this report.

Additional Uses of Water-level Measurements

Besides the primary purpose of determining the status of ground-water storage and changes in this storage, water levels are useful in other respects - especially in the construction field. Some of these uses, as indicated by information requested from the U. S. Geological Survey, include the determination of depths of wells and cesspools, the diffusion of spent cooling water, and the design of foundations and land-drainage systems.

In some cases, satisfactory application of water-level data requires that the altitude of the land surface at the site be known. If exact altitudes are not available from the land survey, estimated altitudes are obtainable from U. S. Geological Survey topographic maps, available at nominal cost from the U. S. Geological Survey, Washington 25, D. C. Where greater accuracy is required, local surveyors, town engineers, state and county highway departments, or other agencies or individuals may have the desired information in their files. The depth to water beneath a site is the difference between the altitude of land surface and of the water table. Ideally, to determine the fluctuation of the water table beneath a site, the water level in a test hole or a well point at the site, should be measured periodically. Practically, it is assumed that the water table at the site undergoes a fluctuation pattern resembling that of the water level in a nearby observation well. When a test hole is not available or an observation well does not exist near the site, it may be possible to obtain a usable, but a less accurate, water-level altitude by interpolation of the water-level altitudes in two or more distant wells. This procedure is described more fully in the subsequent section entitled "Extending water-level data". Nearby pumping for water supply or dewatering purposes; ocean tides; tidal bores traveling up stream channels; changes in the flow of adjacent streams, especially if regulation is present; and the artificial recharge of cooling water and of storm or sanitary sewage are factors that influence such correlation.

Cost estimates and other needs often make it desirable to determine the minimum depth of a contemplated well. This very minimum depth possibly would be the depth to water beneath the site plus an allowance for the estimated drawdown due to pumping, recesssion of the water table due to diminished replenishment, and interference from nearby pumped wells. However, a number of other factors must be considered for the successful completion of a well, such as the rate at which the well is to be pumped, the hydraulic characteristics of the water-bearing material, the depth to a suitable water-yielding zone, and the proximity of sea water. Sometimes it is not possible to predetermine all of the factors and as a result,

conditions encountered during drilling may necessitate screening the well at a depth that is many feet below the previously estimated minimum depth.

Some sanitary and building codes, designated to minimize ground-water contamination, require that cesspool bottoms be located at least two feet above the highest recorded stage of the water table. The corresponding depth to water at site minus the prescribed distance of cesspool bottom above the water table gives the allowable cesspool depth under such requirements. Where only short-term records are available, the highest water level on record may be below the long-term maximum and at some future time a higher stage might result in cesspool problems.

Recommendations of the New York State Water Resources Commission, intended to minimize the effects of recirculation of warmed water, suggest that wells diffusing spent cooling water be placed at least 100 feet downgradient from the supply wells. In order to determine this direction, water levels in a number of local wells should be appraised. The most convenient method of appraisal is to construct a water-table contour map, such as that shown in figure 2, by plotting the well locations annotated with concurrent water-level altitudes. Lines, called contour lines, are then drawn through selected or interpolated points having the same water-level altitudes. Ground-water movement takes place in a direction at right angles to these contour lines.

Building foundations constructed during below-normal stages of the water table, in areas where the water table is relatively close to land surface, may be subject to seepage and stability problems when the water table rises. Cognizance of this possibility and examination of the long-term range in water-level fluctuations in nearby shallow wells at the time of foundation design can do much to avoid costly remedial measures. Foundation problems involving perched water may require a different solution. Consequently, it is important to distinguish between the two cases. Comparison of the altitude of the water level of the unidentified ground-water body with that of the water table underlying the site, estimated from a water-table contour map, or that of the water level in a nearby water-table observation well, may enable such identification. In some cases, it may be necessary to drive a well point, measuring the depth to water frequently as the well is driven, in order to determine whether or not an unsaturated condition exists beneath the unknown water body. If an unsaturated zone does exist at a greater depth, the water in the well will drain into the unsaturated zone and a water-level measurement will not be possible.

Land-drainage problems, similar to foundation problems, require determination of the source of the boggy condition prior to the use of remedial measures. Again, comparison of the water level at site with water levels in nearby water-table observation wells will assist in determining whether or not the water surface is related to the main ground-water body or to a perched water body. Problems arising from fluctuations of the main water table might necessitate, as one remedial measure, lowering the water table locally through the use of well points, trenching, stream dredging, etc.

Perched water problems, on the other hand, might be solved by draining the water, using sand drains 1/, to an underlying unsaturated zone, providing that such an outlet exists.

Extending Water-level Data

As any network of observation wells has limited coverage, it is sometimes necessary to extend existent water-level data to sites remote from observation wells. Even where an observation well is nearby, the length of water-level record may be inadequate for the problem in hand, especially when a more complete knowledge of the water-level extremes is required. Suggested below are some methods by which water-level data may be extended.

Shown in figure 4 is a profile of the water table across Suffolk County from Sayville to Setauket (Lusczynski and Johnson, 1951, pl. 4, line H-H'). As the water table of Suffolk County slopes very gently, the gradient being, in general, less than 15 feet per mile, the altitude of the water table at an intermediate point can be obtained by straight-line interpolation between two known points, within certain limits of distance. For example, three wells S3496 (pl. 1, rect. D-13), S3736 (pl. 1, D-12), and S3545 (pl. 1, D-13), north of Sayville (fig. 1) lie approximately in a straight line. The altitudes of the water levels in these wells at the end of December 1950 were 46.3, 42.3, and 33.6 feet above mean sea level, respectively (Lusczynski and Johnson, 1951). The distance between wells S3496 and S3736 is about 2,120 feet; between S3736 and S3545 about 3,720 feet, and between wells S3496 and S3545 measured along a connecting line through well S3736 about 5,840 feet. Proportioned according to these distances, the estimated altitude of the water level in well S3736 is 41.7 feet or 0.6 foot below that actually measured.

Important to the use of such a procedure is the assumption that the slope of the water table is constant. Near large streams, pumping wells, recharge wells and basins, and waste-disposal beds, the water table is a markedly curved surface and the results obtained by this procedure should be qualified accordingly.

When it is not possible to obtain 3 wells lying even approximately in a straight line, a local water-table contour map may be used in the solution of this type of problem. Distance measurements on such a map should be made perpendicular to the contour lines.

1/. Sand drains are vertical columns of sand penetrating soil of low permeability and of high compressibility. They are constructed by boring holes into the soil to a predetermined depth and backfilling with coarse sand.

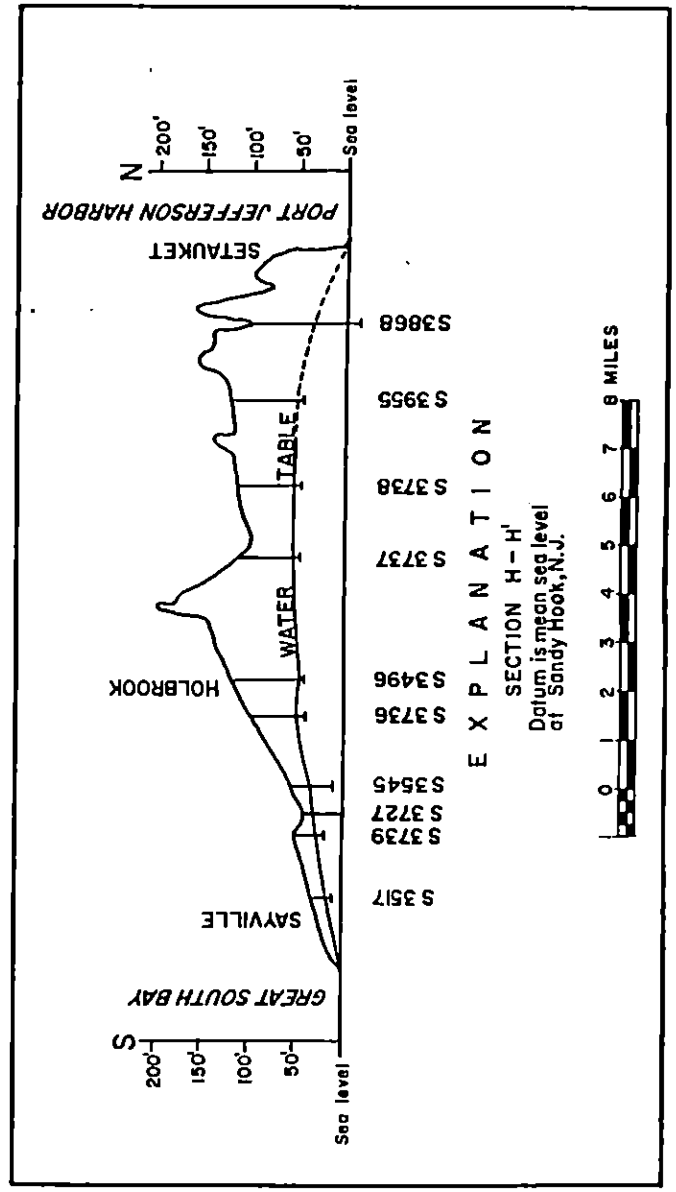


Figure 4.--Profile of the water table in Suffolk County from Sayville to Setauket, Long Island, N.Y., at the end of December 1950.

Extension of the short-term water-level record for a well can be made by correlating, for the same period, the short-term record with the long-term record of a nearby well. In figure 5, the end of the month water-level measurements for 1945 and 1946 in well S3496 (see table 3 for the source of basic data) have been plotted against the corresponding measurements for well S3736. A straight line, termed a regression line, has been drawn through the greatest concentration of points. Although this has been done by eye for simplicity, a more accurate plotting would be obtained by the use of the method of least squares. The month-end water levels for 1950 for well S3736 were estimated, using the observations in well S3496 for 1950 and the regression line of figure 5. These estimates compare with the actual field measurements as shown below:

Altitude of water level in well S3736 a/

Date 1950	Regression line	Field measurement	Difference
Jan.	44.0	44.2	-0.2
Feb.	43.5	43.4	+ .1
Mar.	43.1	43.1	0
Apr.	42.9	43.0	- .1
May	42.6	42.9	- .3
June	42.6	42.5	+ .1
July	42.6	43.0	- .4
Aug.	42.9	42.8	+ .1
Sept.	42.9	43.0	- .1
Oct.	42.6	42.6	0
Nov.	42.4	42.2	+ .2
Dec.	42.1	42.3	- .2

a/ Feet above mean sea level.

Based on a correlation of 2 years of water-level record, the error incurred in estimating water levels for the well concerned 5 years later, was 0.4 foot or less.

Besides supplying intermediate record, it is often necessary to estimate maximum and minimum water levels. The highest water level measured at well S3496, during the period 1942 to 1956, is 52.7 feet above mean sea level (June 22, 1956). Using this value in conjunction with the regression line in figure 5, the maximum water level for well S3736 is estimated as 48.1 feet above mean sea level. Based on monthly measurements since 1943, the highest water level observed for well S3736 was 48.7 feet above mean sea level (Sept. 28, 1956). The estimate was thus 0.6 foot too low. A similar comparison for the lowest water level on record, using an observed low of 45.7 for well S3496, shows the estimated lowest water level for well S3736 to be 41.6 feet above mean sea level, which is the same as that

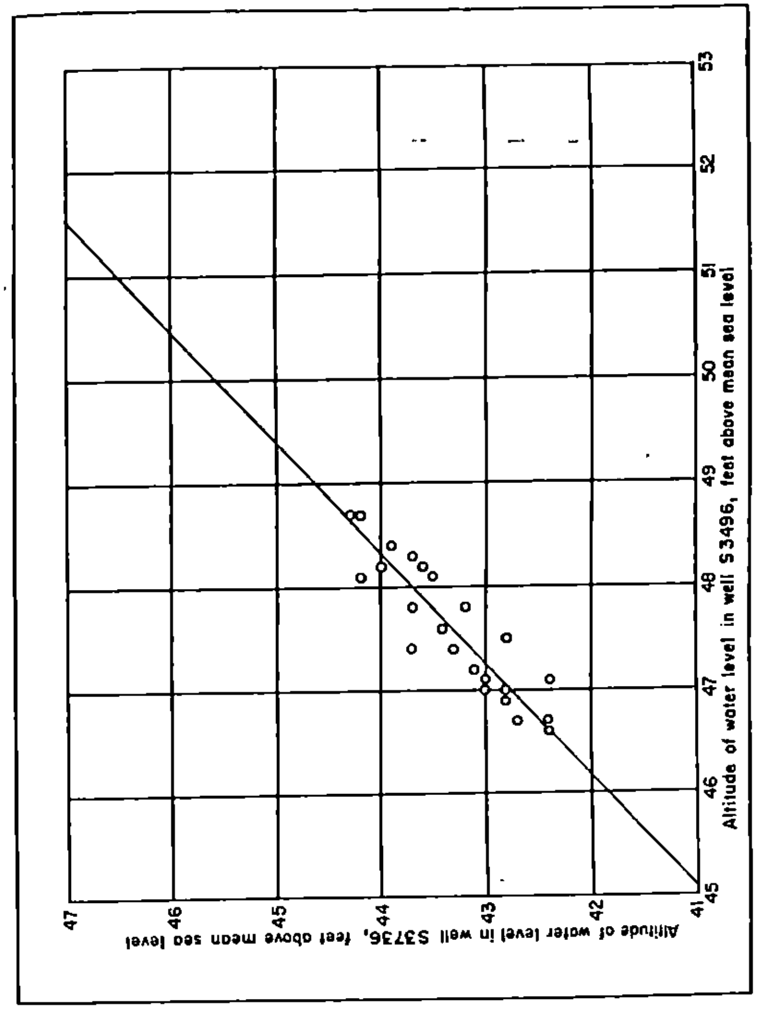


Figure 5.--Correlation of the month-end water-level measurements in wells S3496 and S3736 for 1945-46.

based on actual measurement. Predictions outside the range of observed data are probably less reliable than estimates made within the range of observation.

Correlation of water-level data for two wells requires that hydrologic conditions affecting the water level in each well be essentially the same. Similarly, the surrounding topographic and geologic conditions governing ground-water recharge and discharge must remain relatively unchanged if any previously determined correlation is to remain valid.

Projection of water-level data, for a single well, into the future to obtain infrequent high or low water levels is perhaps the least reliable procedure of all the methods herein described. Even so, problems such as those involving foundations and cesspools make it desirable to obtain some estimate of the extreme water-level stages, and of course such an estimate should be used with caution. The following method has been adapted from the statistical procedures found useful in estimating peak flood flows (Wisler and Brater, 1949, p. 336-41).

Tabulated below arethe highest water-level altitudes occurring annually for well S1806, at Pinelawn (pl. 1, C-9), from 1933 to 1956 (see table 3 for reference sources of these data).

Year	Annual maximum altitude of water level (feet above msl)
1933	54.0
1934	55.5
1935	55.9
1936	55.3
1937	57.3
1938	59.1
1939	61.7
1940	58.4
1941	56.8
1942	56.5
1943	56.4
1944	58.4

Year	Annual maximum altitude of water level (feet above msl)
1945	57.1
1946	57.4
1947	55.7
1948	58.4
1949	59.1
1950	55.2
1951	55.7
1952	58.1
1953	59.6
1954	56.7
1955	58.5
1956	59.1

These can be arranged in the following manner:

Range of annual water-level maxima	Midpoint	Cumulative number of occurrences	Cumulative percentage of total occurrences
54.0 to 55.99	55.0	24	100
56.0 to 57.99	57.0	17	71
58.0 to 59.99	59.0	10	42
60.0 to 61.99	61.0	1	4.2

Shown in figure 6 is a logarithmic-probability plot of the cumulative percentage of total occurrences versus the corresponding midpoint water level. This type of plot has been used in preference to an arithmetic-probability plot or an arithmetic plot, because a straight line or a flat curve, obtained from the logarithmic-probability plot, can be extended with less error than the one of sharper curvature obtained from the other types of plot. Prediction of the occurrence of water-level extremes is as follows: assume that it is desired to determine the maximum water level that would occur at well S1806 once in every 100 years (a one percent occurrence). From the curve, the midpoint water-level altitude corresponding to a one percent occurrence is about 63.5 feet. As the interval used is 2 feet, the upper limit and maximum water-level altitude would be 64.5 feet, or rounded off 65 feet above mean sea level. Extending water-level data by this method required that hydrologic conditions influencing future water-levels follow a pattern similar to that in the past. The longer the previous water-level record, the firmer will be the future prediction.

Land use and ground-water development can markedly change this hydrologic pattern. For instance, extensive sewering or pumping in the vicinity of well S1806 would change conditions of ground-water recharge and would probably produce a permanent lowering of the water table. Thus estimates of future maximum stages of the water table, based on data now available would be too high. Similarly, in the same situation, if the same procedure is applied to predict infrequent minimum water-level stages, the predicted minimum water-level may be considerably above the actual minimum water level.

Water-level Data in this Report

Presented in table 1 is a summary of well data and water levels for Suffolk County, Long Island, N. Y. for wells listed in this report. Included are the highest and lowest readings with corresponding dates of measurement, the number of years for which measurements are available, the range of water-level fluctuation and the approximate altitude of land surface at each observation well.

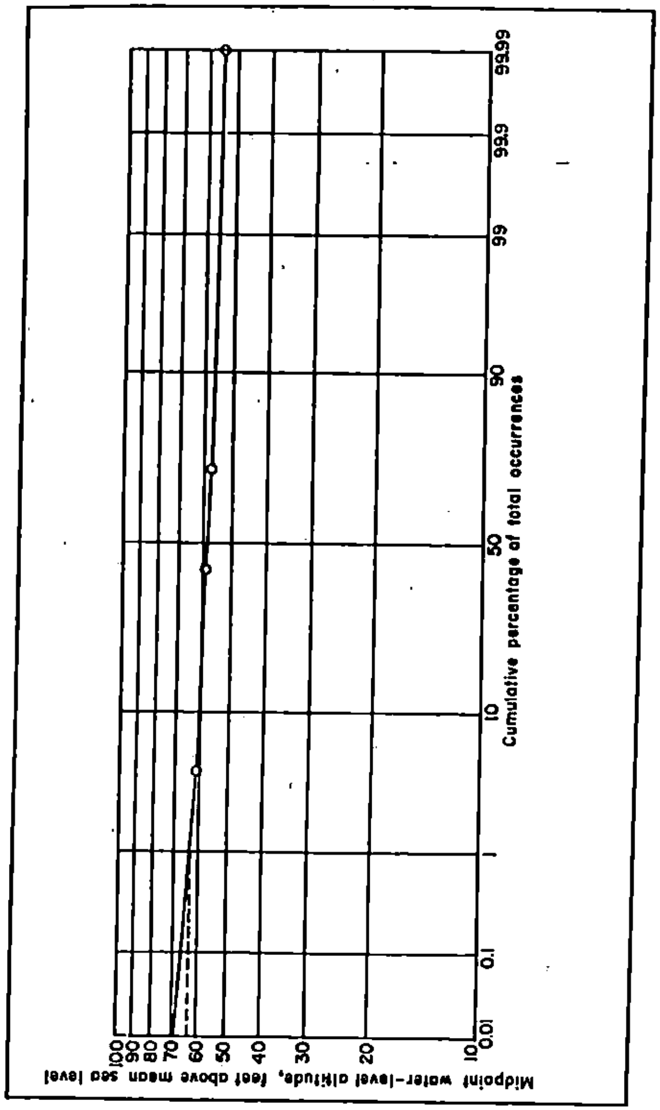


Figure 6.--Extension of the water-level record of well S1806 by means of a logarithmic-probability plot.

More than 4,000 water-level measurements made in 65 water-table wells in Suffolk County are presented in table 2. Present release of the measurements for many of these wells completes, to date (1956), the published record that was discontinued in 1950. Water-level measurements for observation wells screened in the deeper formations -- the Lloyd sand member of the Raritan formation and the Magothy(?) formation, are published in the annual water-level reports (table 3) or are otherwise available at the offices of the U. S. Geological Survey, 1505 Kellum Place, Mineola, N. Y.

Determination of the altitudes of the water levels listed in table 2 were made in two steps. First, the depth to water was measured from a selected point on or near the top edge of the well that is designated the measuring point of the well and then second, for purposes of comparison with the water levels in other wells, the depth-to-water measurement was converted to an altitude above mean sea level. This is accomplished by simple subtraction of the depth-to-water measurement from the altitude of the measuring point.

Measurements of depth to water in each observation well were made by trained personnel using a steel tape or were obtained from the charts of water-stage recorders. The error in measurement is considered to be generally less than 0.03 foot.

The altitude of the measuring point at each observation well was determined by spirit leveling from established bench marks. Those based on first-order leveling by the U. S. Coast and Geodetic Survey were used in most cases as the initial basic control, but in some instances bench marks based on third-order leveling by the U. S. Corps of Engineers had to be used. Both agencies have used mean sea-level datum. For uniformity the Geological Survey, where possible, has used the sea-level datum and bench marks established by the Coast and Geodetic Survey. In this report water-level measurements in wells whose measuring-point altitudes are based on the Corps of Engineers bench marks have been corrected by the addition of 0.31 foot to the tabulated measurements. (See wells S1813, S1815, S1816, and S3112 in table 2).

A current general review of field notes has also indicated that minor inaccuracies in the altitude of the measuring point of some observation wells have resulted from errors made in running levels from bench marks to the measuring points. Water-level measurements made at these wells and appearing in table 2 have also been converted. However, as some uncorrected measurements have been previously published, in both instances the correction factor appears in a footnote to the tabulated measurements. (See wells S3515, S3536, S4367, S5615, and S8853).

Annual water-level reports of the U. S. Geological Survey containing published water-level record for Suffolk County are appropriately listed in table 3 for all wells that have had any record published. Table 3 also shows the present (1956) measurement status of each well, and identifies those wells whose record is contained in this report.

Table 1.--Summary of well data and ground-water levels in Suffolk County, Long Island, N. Y. included in this report

[Wells appearing in the table below are currently (Jan. 1, 1957) scheduled for periodic measurement unless otherwise footnoted. Water levels in feet with reference to mean sea level datum at Sandy Hook, N. J.]

Well number	Map coordinates	Latitude	Longitude	Location	Owner	Well data: Diameter (inches)	Well data: Depth (feet)	Well data: Altitude of land surface at well (feet)	Date of first measurement	Number of record years through 1956	Lowest water level: Altitude (feet)	Lowest water level: Date	Highest water level: Altitude (feet)	Highest water level: Date	Range of water level fluctuation (feet)
S370	F-19	40°59'10"	72°32'06"	Route 25 and Pacific Ave., Mattituck	Mattituck Fire Dept.	6	40.6	13	July 14, 1949	8	1.06	Oct. 4, 1950	3.07	Apr. 4, 1953	2.01
S397	G-20	41°02'13"	72°26'16"	S. Harbor La., Southold	Southold Fire Dept.	6	49.9	11	July 13, 1949	8	.16	Dec. 29, 1949	1.89	Apr. 8, 1951	1.73
S399	G-20	41°02'32"	72°26'16"	do.	do.	6	44.7	10	July 13, 1949	8	.07	Dec. 29, 1949	3.45	Apr. 2, 1953 May 4, 1953	3.38
S1812	E-12	40°50'00"	73°05'40"	Smithtown Blvd. and Nichols Rd., Nesconset	U.S.G.S.*	14	37.0	69	Apr. 17, 1937	20	44.10	Jan. 25, 1951	51.09	May 27, 1939	6.99
S1813	D-12	40°48'13"	73°00'40"	Johnson Ave., near Terry Rd., Ronkonkoma	do.	16	39.3	39	Nov. 4, 1939	18	36.77a	Jan. 25, 1951	40.46a	May 25, 1953	3.69
S1815	D-11	40°47'00"	73°14'17"	Suffolk and Eastern Aves., Brentwood	do.	14	39.8	79	Dec. 2, 1939	18	42.74a	Jan. 25, 1951	50.02a	Oct. 27, 1953	7.28
S1816	D-10	40°45'58"	73°18'41"	Brentwood and Commack Rds., Deer Park	do.	14	36.9	85	Dec. 2, 1939	18	53.95	Jan. 22, 1951	61.73	Nov. 26, 1953	7.78
S3434	C-10	40°43'03"	73°19'20"	Near Deer Park Ave. at L.I.R.R. Station, Babylon	L.I.R.R.**	14	44.8	15	Sept. 21, 1940	17	6.70	Oct. 4, 1941	9.37	Feb. 21, 1949	2.60
S4485	E-15	40°51'11"	72°51'20"	Brookhaven National Laboratory, Upton	do.	8	73.0	60	July 28, 1948	9	32.05	Jan. 30, 1951	38.92	June 25, 1956	6.07
S4676	F-19	40°59'42"	72°31'30"	Bergen Ave. and Cox Neck Rd., Mattituck	William Lindsay	6	61.8	15	Sept. 7, 1949	8	3.30	Oct. 5, 1950 Nov. 9, 1950	6.36	May 27, 1953	3.06
S3112	C-9	40°44'57"	73°22'53"	Long Island Ave. and Little East Neck Rd., Wyandanch	N.Y.C.B.W.S.**	2	39.5	78	Aug. 30, 1941	16	51.47a	Oct. 30, 1951	58.84a	Apr. 28, 1953	7.37
S3497	D-13	40°48'53"	73°02'42"	Long Island Ave. and Beverly Ave., Holtsville	U.S.G.S.	14	64.9	104	Nov. 6, 1942	15	45.33	Feb. 26, 1951	51.85	June 29, 1956	6.52
S3515	C-10	40°44'30"	73°13'37"	E. 3d Ave. near Brook St., Bayshore	N.Y.C.B.W.S.	2	35.0	44	Mar. 5, 1937	19a	35.53b	Dec. 21, 1950	39.78a	Mar. 31, 1953	4.25
S3518	D-11	40°45'47"	73°12'30"	Islip Ave. near Locust St., Central Islip	do.	2	39.7	50	Mar. 20, 1937	18	49.72	Nov. 27, 1950	54.67	Apr. 30, 1953	4.95
S3519	D-11	40°45'56"	73°11'44"	Carleton Ave. near Manhattan Blvd., Central Islip	do.	2	33.8	37	Mar. 29, 1937	18	25.69	Dec. 5, 1939	27.49	Apr. 30, 1953	1.80
S3524	D-15	40°49'30"	72°54'51"	Park Rd. near Yaphank Ave., Yaphank	do.	2	35.8	46	Mar. 6, 1937	18	21.47	Dec. 30, 1943	23.86	Apr. 6, 1945	2.39
S3527	D-16	40°48'54"	72°56'41"	Horseblock Rd., Plainfield	do.	2	88.2	85	Mar. 7, 1937	18	30.81	Feb. 26, 1951	35.89	June 28, 1956	5.08
S3529	D-16	40°48'06"	72°55'57"	Horseblock Rd., Brookhaven	do.	2	34.1	38	Mar. 8, 1937	18	24.07	Nov. 29, 1944	28.48	May 25, 1953	4.41
S3530	D-16	40°49'10"	72°56'10"	Near L.I.R.R., west of Yaphank Ave., Yaphank	do.	2	65.5	66	Mar. 8, 1937	18	31.40	Jan. 25, 1951	35.66[1]	June 28, 1956	4.26
S3531 (S9130)	D-15	40°48'32"	72°53'08"	River Rd., north of Montauk Highway, South Haven	do.	2	33.5	25	Aug. 9, 1937	18	9.16	Dec. 11, 1939	10.82	May 28, 1953	1.66
S3533	E-16	40°52'24"	72°55'03"	South of Middle Country Rd., Middle Island	do.	2	31.7	60	Apr. 6, 1937	19a	44.87	Jan. 26, 1951	50.02a	June 8, 1938	5.15

See footnotes at end of table.

Table 1. (Continued)

(Water levels in feet with reference to mean sea level datum at Sandy Hook, N. J.)

Well number	Map coordinates	Latitude	Longitude	Location	Owner	Well data: Diameter (inches)	Well data: Depth (feet)	Well data: Altitude of land surface at well (feet)	Date of first measurement	Number of record years through 1956	Lowest water level: Altitude (feet)	Lowest water level: Date	Highest water level: Altitude (feet)	Highest water level: Date	Range of water level fluctuation (feet)
S1586	D-18	40°48'13"	72°48'30"	Moriches Blvd., Center Moriches	N.Y.C.B.W.S.	8	68.1	74	Apr. 20, 1937	19	22.78a	Mar. 8, 1951	26.68a	June 5, 1938	3.80
S1618	E-18	40°51'14"	72°37'18"	Route 113 near intersection with Route 51, Flanders	do.	8	30.4	34	Jan. 11, 1939	17	14.18	Jan. 23, 1951	18.18	June 24, 1953	4.00
S1540	E-17	40°50'18"	72°42'03"	Riverhead Rd., Speonk	do.	8	53.8	38	Mar. 8, 1937	18	18.80	Mar. 2, 1951	23.87	June 24, 1953	5.23
S1541	D-17	40°49'43"	72°40'08"	Old Country Rd., Speonk	do.	8	36.5	36	Mar. 9, 1937	14b	20.79	Jan. 28, 1951	11.49	May 24, 1953	4.71
S1548	E-17	40°50'46"	72°40'48"	North of Old Country Rd., near L.I.R.R. crossing, Speonk	do.	2	34.3	72	Apr. 13, 1937	18	17.38	Dec. 21, 1951	13.97	June 26, 1953	6.43
S1544	D-18	40°48'08"	72°38'10"	Near L.I.R.R., Westhampton	do.	8	30.4	25	Nov. 18, 1937	18b	10.15	Jan. 23, 1951	14.87	Apr. 20, 1953	4.82
S3727	D-13	40°48'12"	73°04'13"	Church St., East Sayville	do.	8	88.7	40	July 18, 1945	14b	29.21	Jan. 25, 1951	34.42	May 23, 1953	5.21
S3733	D-14	40°48'48"	72°57'32"	Sehoaker Ave., Bayport	do.	8	44.8	68	May 18, 1948	13b	48.18	Jan. 23, 1951	24.87	May 14, 1948	4.74
S3738	E-14	40°54'08"	72°58'19"	Mt. Sinai Rd., Miller Place	do.	8	78.4	110	Oct. 8, 1948	14	41.81	Jan. 8, 1948	41.84	Oct. 4, 1953	6.79
S4730	E-11	40°47'08"	73°08'18"	Rabbath St., Holbrook	U.S.G.S.	1½	30.1	38	July 19, 1945	14	41.60	Feb. 21, 1951	48.87	Sept. 28, 1954	7.07
S3946	F-13	40°58'08"	72°32'48"	South of Route 25, Mattituck	C. Kaleski	8	48.4	18	Sept. 8, 1948	8	2.47	Oct. 4, 1950	4.00	May 27, 1953	1.53
S4210	F-17	40°57'08"	72°42'08"	Roanoke Ave., Riverhead	U.S.G.S.	4	48.1	80	Aug. 8, 1948	11	18.48	Oct. 21, 1950	24.88	June 23, 1953	4.29
S4207	D-12	40°48'08"	73°16'18"	Florida Ave., Commack	E. Coutsinger	10	123.0	176	Aug. 8, 1948	9b	61.88a	Sept. 20, 1950	60.81a	Aug. 27, 1954	7.97
S4277	E-12	40°52'18"	73°08'18"	Moriches Rd., St. James	J. Zimmerman	10	47.8	105	Aug. 1, 1948	12	30.46	Jan. 22, 1951	41.85	June 20, 1954	6.86
S4215	F-18	40°56'07"	72°38'30"	Route 25 and Northville Turnpike, Riverhead	U.S.G.S.	1½	13.1	18	Aug. 8, 1948	11	8.09	Oct. 1, 1951	18.88	May 1, 1954	8.80
S4229	F-18	40°57'19"	72°45'00"	Sound and Tuthill Aves., Riverhead	J. Grossman	4	107.4	115	Oct. 4, 1945	11	10.88	Feb. 20, 1951	12.79	Apr. 1, 1954	2.31
S4478	F-18	40°58'40"	72°37'54"	Near Church La., Laurel	T. T. Lowe	8	97.1	81	June 23, 1949	8	7.37	Jan. 20, 1951	11.80	May 27, 1953	4.43
S5618	F-21	40°57'21"	72°20'12"	Bridgehampton	A. Tyska	12	180.0	117	Aug. 6, 1949	7	15.74a	Jan. 22, 1951	20.77a	Jan. 25, 1954	5.03
S4622	G-20	41°04'22"	72°24'20"	Horton's La., Southold	J. McCabe	24	48.4	48	Aug. 9, 1949	8	1.78	Apr. 24, 1950	3.89	May 29, 1954	4.11
S4628	H-20	41°05'04"	72°23'00"	Delaware Ave., Southold	Southold Fire Dept.	6	61.1	14	July 13, 1949	8	-.82	Dec. 29, 1949	2.04	Feb. 28, 1951	2.96
S4329	G-20	41°03'40"	72°25'05"	Route 25, Southold	E. Reilly	1½	58.4	36	Aug. 8, 1949	8	1.88	Feb. 1, 1950	4.80	May 27, 1953	2.92
S4637	G-20	41°01'18"	72°29'38"	Cox La. and Route 25, Cutchogue	Cutchogue Fire Dept.	6	44.4	11	July 14, 1949	8	1.78	Oct. 4, 1950	4.04	May 1, 1954	2.26
S4640	G-20	41°00'28"	72°29'43"	Alvah's La., Cutchogue	do.	6	48.4	21	July 14, 1949	8	3.21	Nov. 20, 1950	7.45	May 27, 1954	4.24
S4645	G-20	41°00'19"	72°28'52"	New Suffolk La., Cutchogue	do.	8	41.8	15	July 14, 1949	8	1.08	Nov. 4, 1950	2.81	May 1, 1954	1.73
S4644	F-20	40°59'12"	72°28'36"	do.	do.	6	41.0	10	July 14, 1949	8	.38	Aug. 23, 1950	2.13	Apr. 1, 1954	1.75
S4638	G-18	41°01'40"	72°30'18"	Oregon Rd. and Depot La., Cutchogue	A. Krupski	36	48.0	58	Sept. 7, 1949	8	8.18	Mar. 20, 1950	8.88	Dec. 26, 1954	5.81
S4680	F-19	40°58'10"	72°31'17"	Cox Neck Rd., Mattituck	Mattituck Fire Dept.	6	30.4	24	July 14, 1949	8	4.27	Nov. 2, 1950	6.23	May 27, 1953	2.03
S4686	F-19	40°57'18"	72°32'00"	Peconic Bay Blvd., Mattituck	do.	6	32.0	10	July 14, 1949	8	1.20	Dec. 20, 1949	2.84	Apr. 1, 1952	1.64
S7721	H-23	41°08'17"	72°14'44"	Route 25 near Orient Pt., Orient	E. King	30	28.5	18	Sept. 20, 1949	8	.19	June 28, 1952	2.82	Apr. 8, 1954	2.73

See footnotes at end of table.

Table 1. (Continued)

[illegible]

Table 2.-- Water-level records for selected water-table wells in Suffolk County, Long Island, N. Y.

5370. Mattituck Fire Dept. Route 25 and Pacific Ave., Mattituck. Lat. [illegible], long. [illegible]. Drilled fire well in deposits of late Pleistocene age, diameter 6 inches, depth [illegible] feet. Highest water level [illegible] feet above msl, Apr. [illegible]; lowest [illegible] feet above msl, Oct. [illegible]. Records published, including this report: 1949-56.

Water level above msl, Sandy Hook, N. J. datum

[illegible]

5387. Southold Fire Dept. [illegible] Lat. [illegible], long. [illegible]. Drilled fire well in deposits of late Pleistocene age, diameter 6 inches, depth [illegible] feet. Highest water level [illegible] feet above msl, Apr. [illegible]; lowest [illegible] feet above msl, Dec. [illegible], 1949. Records published, including this report: 1949-56.

Water level above msl, Sandy Hook, N. J. datum

[illegible]

5389. Southold Fire Dept. [illegible], Southold. Lat. [illegible], long. [illegible]. Drilled fire well in deposits of late Pleistocene age, diameter 6 inches, depth [illegible] feet. Highest water level [illegible] feet above msl, Apr. [illegible]; lowest [illegible] feet above msl, Dec. [illegible], 1949. Records published, including this report: 1949-56.

Water level above msl, Sandy Hook, N. J. datum

[illegible]

15016. [illegible] Lat. [illegible], long. [illegible]. Driven observation well in deposits of late Pleistocene age, diameter [illegible] inches, depth [illegible] feet. Highest water level [illegible] feet above msl, [illegible]; lowest [illegible] feet above msl, [illegible]. Records published, including this report: 1951-56.

Water level above msl, Sandy Hook, N. J. datum

[illegible]

Table 8. (Continued)

[illegible]

Table 8. (Continued)

[illegible]

Table 2. (Continued)

[illegible]

Table 2. (Continued)

[illegible]

[illegible] City of New York, Board of Water Supply. [illegible] Driven observation well in deposits of late Pleistocene age, diameter [illegible] inches, depth [illegible] feet. Highest water level [illegible] feet above msl, [illegible]; lowest [illegible] feet above msl, [illegible]. Records published, including this report [illegible].

Water level above msl, Sandy Hook, N. J. datum

Date	Water level	Date	Water level	Date	Water level
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible] City of New York, Board of Water Supply. [illegible] Driven observation well in deposits of late Pleistocene age, diameter [illegible] inches, depth [illegible] feet. Highest water level [illegible] feet above msl, [illegible]; lowest [illegible] feet above msl, [illegible]. Records published, including this report [illegible].

Water level above msl, Sandy Hook, N. J. datum

Date	Water level	Date	Water level	Date	Water level
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible] U.S. Geol. Survey. [illegible] Driven observation well in deposits of late Pleistocene age, diameter [illegible] inches, depth [illegible] feet. Highest water level [illegible] feet above msl, [illegible]; lowest [illegible] feet above msl, [illegible]. Records published, including this report [illegible].

Water level above msl, Sandy Hook, N.J. datum

Date	Water level	Date	Water level	Date	Water level
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible] C. [illegible] Drilled irrigation well in deposits of late Pleistocene age, diameter [illegible] inches, depth [illegible] feet. Highest water level [illegible] feet above msl, [illegible]; lowest [illegible] feet above msl, [illegible]. Records published, including this report [illegible].

Water level above msl, Sandy Hook, N.J. datum

Date	Water level	Date	Water level	Date	Water level
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible] U. S. Geol. Survey. [illegible] Drilled observation well in deposits of late Pleistocene age, diameter [illegible] inches, depth [illegible] feet. Highest water level [illegible] feet above msl, [illegible]; lowest [illegible] feet above msl, [illegible]. Records published, including this report [illegible].

Water level above msl, Sandy Hook, N. J. datum

Date	Water level	Date	Water level	Date	Water level
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible] Dug cased well in deposits of late Pleistocene age, diameter [illegible] inches, depth [illegible] feet. Highest water level [illegible] feet above msl, [illegible]; lowest [illegible] feet above msl, [illegible]. Records published, including this report: [illegible].

Water level above msl, Sandy Hook, N. J. datum

Date	Water level	Date	Water level	Date	Water level
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

a. Records previously published are in error. [illegible] to convert previously published measurements to msl, Sandy Hook, N. J. datum.

[illegible] Dug cased well in deposits of late Pleistocene age, diameter [illegible] inches, depth [illegible] feet. Highest water level [illegible] feet above msl, [illegible]; lowest [illegible] feet above msl, [illegible]. Records published, including this report: [illegible].

Water level above msl, Sandy Hook, N.J. datum

Date	Water level	Date	Water level	Date	Water level
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible] U. S. Geol. Survey. [illegible] Driven observation well in deposits of late Pleistocene age, diameter [illegible] inches, depth [illegible] feet. Highest water level [illegible] feet above msl, [illegible]; lowest [illegible] feet above msl, [illegible]. Records published, including this report [illegible].

Water level above msl, Sandy Hook, N. J. datum

Date	Water level	Date	Water level	Date	Water level
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible] Drilled cased well in deposits of late Pleistocene age, diameter [illegible] inches, depth [illegible] feet. Highest water level [illegible] feet above msl, [illegible]; lowest [illegible] feet above msl, [illegible]. Records published, including this report [illegible].

Water level above msl, Sandy Hook, N. J. datum

Date	Water level	Date	Water level	Date	Water level
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible] Drilled cased well in deposits of late Pleistocene age, diameter [illegible] inches, depth [illegible] feet. Highest water level [illegible] feet above msl, [illegible]; lowest [illegible] feet above msl, [illegible]. Records published, including this report [illegible].

Water level above msl, Sandy Hook, N.J. datum

Date	Water level	Date	Water level	Date	Water level
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible] Drilled irrigation well in deposits of late Pleistocene age, diameter [illegible] inches, depth [illegible] feet. Highest water level [illegible] feet above msl, [illegible]; lowest [illegible] feet above msl, [illegible]. Records published, including this report: [illegible].

Water level above msl, Sandy Hook, N.J. datum

Date	Water level	Date	Water level	Date	Water level
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

a. Records previously published are in error. [illegible] to convert previously published measurements to msl, Sandy Hook, N.J. datum.

S6[illegible]. J. [illegible], [illegible] La., Southold. Lat. 41°[illegible], long. 72°[illegible]. Dug cased well in deposits of late Pleistocene age, diameter [illegible] inches, depth [illegible] feet. Highest water level [illegible] feet above msl, [illegible]; lowest [illegible] feet above msl, [illegible]. Records published, including this report: [illegible].

Water level above msl, Sandy Hook, N.J. datum

Date	Water level	Date	Water level	Date	Water level
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

S6[illegible]. Southold Fire Dept. [illegible] Ave., Southold. Lat. 41°[illegible], long. 72°[illegible]. Drilled fire well in deposits of late Pleistocene age, diameter [illegible] inches, depth [illegible] feet. Highest water level [illegible] feet above msl, [illegible]; lowest [illegible] feet above msl, [illegible]. Records published, including this report [illegible].

Water level above msl, Sandy Hook, N.J. datum

Date	Water level	Date	Water level	Date	Water level
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

S6[illegible]. [illegible]. Route 27, Southold. Lat. 41°[illegible], long. 72°[illegible]. Driven cased well in deposits of late Pleistocene age, diameter [illegible] inches, depth [illegible] feet. Highest water level [illegible] feet above msl, [illegible]; lowest [illegible] feet above msl, [illegible]. Records published, including this report [illegible].

Water level above msl, Sandy Hook, N. J. datum

Date	Water level	Date	Water level	Date	Water level
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

S6[illegible]. Cutchogue Fire Dept. [illegible] La. and Route 25, Cutchogue. Lat. 41°[illegible], long. 72°[illegible]. Drilled fire well in deposits of late Pleistocene age, diameter [illegible] inches, depth [illegible] feet. Highest water level [illegible] feet above msl, [illegible]; lowest [illegible] feet above msl, [illegible]. Records published, including this report [illegible].

Water level above msl, Sandy Hook, N. J. datum

Date	Water level	Date	Water level	Date	Water level
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

S6[illegible]. Cutchogue Fire Dept. [illegible] La., Cutchogue. Lat. 41°[illegible], long. 72°[illegible]. Drilled fire well in deposits of late Pleistocene age, diameter [illegible] inches, depth [illegible] feet. Highest water level [illegible] feet above msl, [illegible]; lowest [illegible] feet above msl, [illegible]. Records published, including this report [illegible].

Water level above msl, Sandy Hook, N. J. datum

Date	Water level	Date	Water level	Date	Water level
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

S6[illegible]. Cutchogue Fire Dept. New Suffolk La., Cutchogue. Lat. 41°[illegible], long. 72°[illegible]. Driven fire well in deposits of late Pleistocene age, diameter [illegible] inches, depth [illegible] feet. Highest water level [illegible] feet above msl, [illegible]; lowest [illegible] feet above msl, [illegible]. Records published, including this report [illegible].

Water level above msl, Sandy Hook, N. J. datum

Date	Water level	Date	Water level	Date	Water level
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

S6[illegible]. Cutchogue Fire Dept. New Suffolk La., Cutchogue. Lat. 41°[illegible], long. 72°[illegible]. Drilled fire well in deposits of late Pleistocene age, diameter [illegible] inches, depth [illegible] feet. Highest water level [illegible] feet above msl, [illegible]; lowest [illegible] feet above msl, [illegible]. Records published, including this report [illegible].

Water level above msl, Sandy Hook, N. J. datum

Date	Water level	Date	Water level	Date	Water level
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

S6[illegible]. [illegible]. [illegible] Rd. and [illegible] La., Cutchogue. Lat. 41°[illegible], long. 72°[illegible]. Dug cased well in deposits of late Pleistocene age, diameter [illegible] inches, depth [illegible] feet. Highest water level [illegible] feet above msl, [illegible]; lowest [illegible] feet above msl, [illegible]. Records published, including this report [illegible].

Water level above msl, Sandy Hook, N. J. datum

Date	Water level	Date	Water level	Date	Water level
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Table 8. (Continued)

Table 8. (Continued)

[illegible] Bay Harbor Rd., Bridgehampton. Lat. [illegible], long. [illegible]. Dug cased well in deposits of late Pleistocene age. [illegible] Highest water level [illegible] feet above msl, [illegible]; lowest [illegible] feet above msl, [illegible]. Records published, including this report 1950–1956.

Water level above msl, Sandy Hook, N.J. datum

Date	Water level	Date	Water level	Date	Water level
1950		1952			
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1951		1953		1954	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
				1955	
				1956	

[illegible] Three Mile Harbor, Easthampton. Lat. [illegible], long. [illegible]. Dug cased well in deposits of late Pleistocene age. [illegible] Highest water level [illegible] feet above msl, [illegible]; lowest [illegible] feet above msl, [illegible]. Records published, including this report 1950–1956.

Water level above msl, Sandy Hook, N.J. datum

Date	Water level	Date	Water level	Date	Water level
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible] Sag Harbor Fire Dept. [illegible] Drilled fire well in deposits of late Pleistocene age. [illegible] Records published, including this report 1950–1956.

Water level above msl, Sandy Hook, N.J. datum

Date	Water level	Date	Water level	Date	Water level
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible] Bridgehampton. [illegible] Dug cased well in deposits of late Pleistocene age. [illegible] Records published, including this report 1950–1956.

Water level above msl, Sandy Hook, N.J. datum

Date	Water level	Date	Water level	Date	Water level
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible] U. S. Geol. Survey. [illegible] Driven observation well in deposits of late Pleistocene age. [illegible] Records published, including this report 1950–1956.

Water level above msl, Sandy Hook, N.J. datum

Date	Water level	Date	Water level	Date	Water level
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible] U. S. Geol. Survey. [illegible] Driven observation well in deposits of late Pleistocene age. [illegible] Records published, including this report 1950–1956.

Water level above msl, Sandy Hook, N.J. datum

Date	Water level	Date	Water level	Date	Water level
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible] Driven cased well in deposits of late Pleistocene age. [illegible] Records published, including this report 1950–1956.

Water level above msl, Sandy Hook, N.J. datum

Date	Water level	Date	Water level	Date	Water level
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

* [illegible]

[illegible] Sag Harbor Tpke., [illegible] Bridgehampton. [illegible] Driven observation well in deposits of late Pleistocene age. [illegible] Records published, including this report 1950–1956.

Water level above msl, Sandy Hook, N.J. datum

Date	Water level	Date	Water level	Date	Water level
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Table 3.--Geological Survey annual water-supply papers containing tabulated water-level record for Suffolk County, Long Island, N. Y.

Title of publications containing water-level record for Suffolk County, L. I., N. Y.:

1. Publications numbered 777, 817, 840, 845, and 886 are entitled "Water levels and artesian pressures in observation wells in the United States, in 19--" -- U. S. Geol. Survey Water-Supply Paper No. ____ (insert number from table). Published yearly.

2. Publications numbered 906, 936, 944, 986, 1016, 1023, 1071, 1096, 1126, 1156, 1165, 1191, 1221, 1265, 1321, and 1404 are entitled "Water levels and artesian pressures in observation wells in the United States in 19--, part 1, Northeastern States" -- U. S. Geol. Survey Water-Supply Paper No. ____ (insert number from table). Published yearly.

3. One publication will present data for 1956 and 1957 and will be entitled "Ground-water levels in the United States, Northeastern States, 1956 to 1957" -- U. S. Geol. Survey Water-Supply Paper No. ____ (number is not yet available). Subsequent publications will carry similar titles and will be published only at 5-year intervals.

4. Where no footnote symbol or serial number appears in the table below, no water-level record is currently (1956) on file at the U. S. Geol. Survey office in Mineola, N. Y.

5. Publications listed in the table below are for sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.

Aquifer in which observation well is screened: L, Lloyd sand member of the Raritan formation; R, Magothy(?) formation; where no designation is made aquifer is understood to be of late Pleistocene or of Recent age.

Well number State	Well number Other[a]	Map coordinates	Location	Aquifer	1907	1908	1909	1910	1911	1912	1913	1914	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956
S18		E-9	South Huntington		...	...	...	...	...	...	...	...	...	...	...	...	840	840	845	886	906	936	944	...	...	...	...	...	...	...	...	...	...	...	...	...	...
S19		C-10	Bayshore	R	...	...	...	...	...	...	...	...	...	777	777	777	777	840	845	886	906	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
S36		C-11	Islip	R	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1016	1023	1071	1096	1126	1156	1165	1191	1221	1265	1321	1404	b
S801		E-11	Smithtown		...	...	...	...	...	...	...	...	...	...	...	...	...	840	845	886	906	936	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
S802		E-8	Huntington	L	...	...	...	...	...	...	...	...	...	...	...	...	840	840	845	886	906	936	944	986	1016	1023	1071	1096	1126	1156	1165	1191	1221	1265	1321	1404	b
S803		D-9	Dix Hills	R	...	...	...	...	...	...	...	...	...	...	...	...	...	840	845	886	906	936	944	986	1016	1023	1071	1096	1126	1156	1165	1191	1221	1265	...	...	...
S909		N-21	East Marion		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1191	1191	1191	1221	1265	1321	1404	b
S1803	SU-12	C-9	Babylon		...	...	...	...	...	840	840	840	840	...	...	...	840	840	845	886	906	936	944	986	1016	1023	1071	1096	1126	1156	1165	1191	1221	1265	1321	1404	b
S1804	SU-30	C-9	Amityville		...	...	...	...	...	840	840	840	840	840	840	840	840	840	845	886	906	936	944	...	...	...	...	...	...	...	...	...	...	...	...	...	...
S1805	SU-37	C-9	do.		...	...	...	...	...	840	840	840	840	840	...	840	840	840	845	886	906	936	944	986	1016	1023	1071	1096	1126	1156	1165	1191	1221	1265	1321	1404	b
S1806	SU-47	C-9	Pinelawn		...	...	...	...	...	840	840	840	840	840	840	840	840	840	845	886	906	936	944	986	1016	1023	1071	1096	1126	1156	1165	1191	1221	1265	1321	1404	b
S1807	SU-66	C-10	Babylon		...	...	...	...	...	840	840	840	840	840	...	...	840	840	845	886	906	936	944	986	1016	1023	1071	1096	1126	1156	1165	1191	1221	1265	1321	1404	b
S1808	SU-75	C-10	Brightwaters		...	...	...	...	...	777	777	777	777	777	...	777	817	840	845	886	906	936	944	986	1016	1023	1071	1096	1126	1156	1165	1191	1221	1265	1321	1404	b
S1809	SU-81	C-10	do.		...	...	...	...	...	777	777	777	777	777	777	777	817	840	845	886	906	936	944	986	1016	1023	1071	1096	1126	1156	1165	1191	1221	1265	1321	1404	b
S1810	SU-86	D-10	Pineaire		...	...	...	...	...	777	777	777	777	777	777	777	817	840	845	886	906	936	944	986	1016	1023	1071	1096	1126	1156	1165	1191	1221	1265	1321	1404	b,c
S1811	SU-101	D-12	Ronkonkoma		...	...	...	...	...	...	...	...	...	...	...	...	...	840	845	886	906	936	944	986	1016	1023	1071	1096	1126	1156	1165	1191	1221	1265	1321	1404	b
S1812	SU-108	E-12	Nesconset		...	...	...	...	...	...	...	...	...	...	...	...	...	840	845	886	906	936	944	986	1016	1023	1071	1096	1126	1156	1165	d	d	d	d	d	b,c
S1813		D-12	Ronkonkoma		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	906	906	936	944	986	1016	1023	1071	1096	1126	1156	1165	d	d	d	d	d	b,c
S1814		D-11	Central Islip		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	906	906	936	944	986	1016	1023	1071	1096	1126	1156	1165	1191	1221	1265	1321	1404	b
S1815		D-11	Brentwood		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	906	906	936	944	986	1016	1023	1071	1096	1126	1156	1165	d	d	d	d	d	b,c
S1816		D-10	Deer Park		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	906	906	936	944	986	1016	1023	1071	1096	1126	1156	1165	d	d	d	d	d	b,c
S1817		D-9	Wyandanch		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	906	906	936	944	986	1016	1023	1071	1096	1126	1156	1165	1191	1221	1265	1321	1404	b
S2030		F-9	Eatons Neck	L	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	906	936	...	...	...	...	...	...	...	...	...	...	...	...	...	...
S3146		C-46	Montauk		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1191	1221	1265	1321	1404	...

See footnotes at end of table.

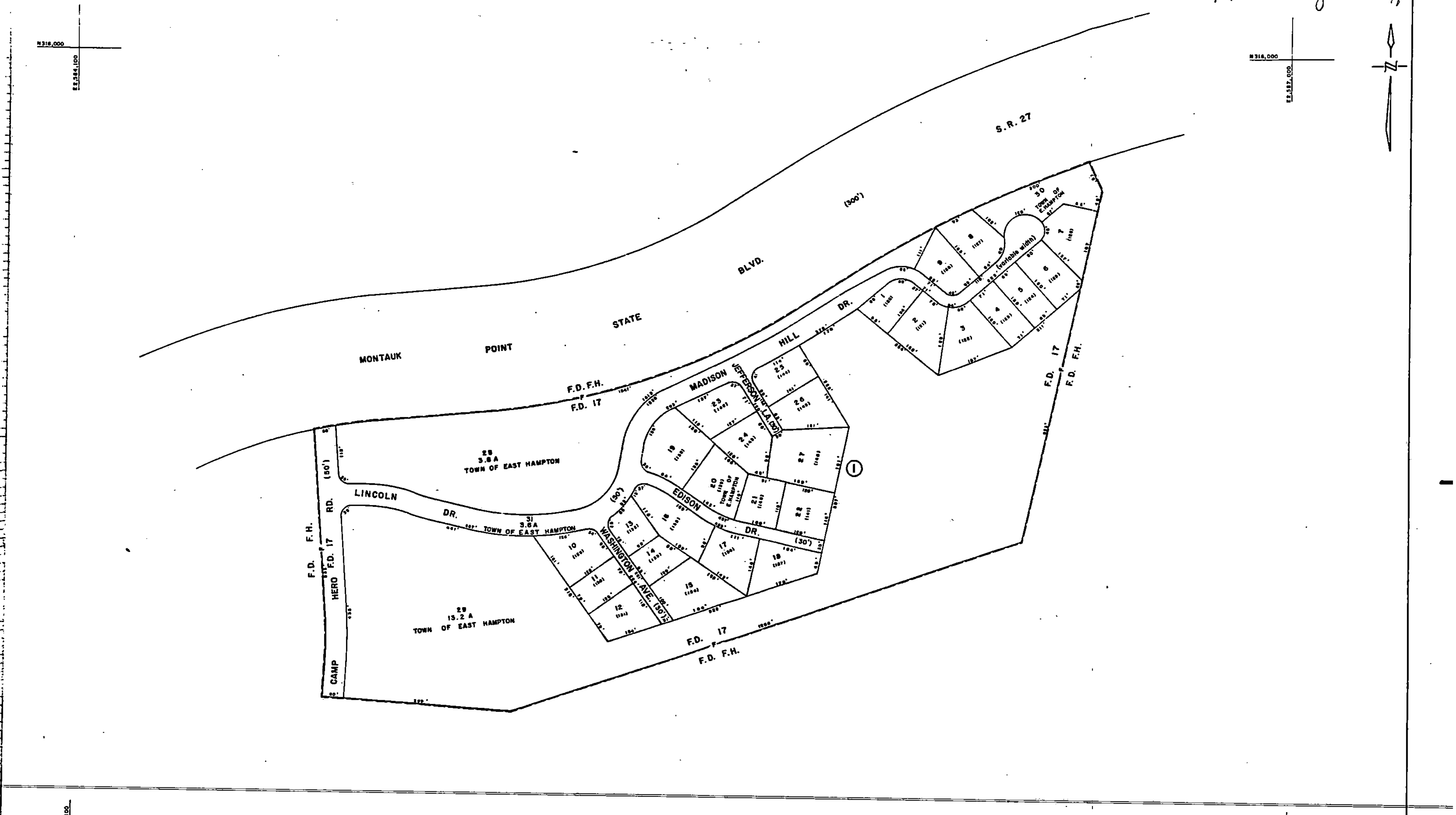
Table 3.-- (Continued)

Well number State	Well number Other[a]	Map coordinates	Location	Aquifer	1907	1908	1909	1910	1911	1912	1913	1914	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956
S3316		D-9	Wyandanch	R	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	986	1016	1023	1071	1096	1126	1156	1165	1191	1221	1265	1321	1404	b
S1434		C-10	Babylon		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	906	936	944	986	1016	1023	1071	1096	1126	1156	1165	d	d	d	d	d	b,d
S1435		C-10	Bayshore		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	906	936	944	986	1016	1023	1071	1096	1126	1156	1165	1191	1221	1265	1321	1404	b
S1848		D-11	Central Islip		906	906	906	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	936	944	986	...	...	...	...	...	...	...	...	...	...	...	...	...
S3113		C-9	Wyandanch		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	936	944	986	1016	1023	1071	1096	1126	1156	1165	d	d	d	d	d	b,d
S3496		E-13	Holbrook		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	944	986	1016	1023	1071	1096	1126	1156	1165	1191	1221	1265	1321	1404	b
S3497		E-13	Holtsville		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	944	986	1016	1023	1071	1096	1126	1156	1165	d	d	d	d	d	b,d
S3498		D-13	Medford		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	944	986	1016	1023	1071	1096	1126	1156	1165	b	b	b	b	b	b
S3511		E-12	Lake Grove		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	944	986	1016	1023	1071	1096	1126	1156	1165	b	b	b	b	b	b
S3513		E-12	Selden		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	944	986	1016	1023	1071	1096	1126	1156	1165	1191	1221	1265	1321	1404	b,c
S3514		E-10	Commack		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	944	986	1016	1023	1071	1096	1126	1156	1165	1191	1221	1265	1321	1404	b,c
S3515		C-10	Bayshore		944	944	944	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	944	986	1016	1023	1071	1096	1126	1156	1165	d	d	d	...	...	...
S3516		D-10	do.		944	944	944	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	944	986	1016	1023	1071	1096	1126	1156	1165	1191	1221	1265	1321	1404	b
S3517		C-11	Sayville		944	944	944	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	944	986	1016	1023	1071	1096	1126	1156	1165	1191	1221	1265	1321	1404	b
S3518		D-11	Central Islip		944	944	944	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	944	986	1016	1023	1071	1096	1126	1156	1165	d	d	d	d	d	b,d
S3519		D-11	do.		944	944	944	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	944	986	1016	1023	1071	1096	1126	1156	1165	d	d	d	d	d	b,d
S3520		D-14	Blue Point		944	944	944	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	944	986	...	...	...	...	...	...	...	...	...	...	...	...	...
S3521		D-13	Medford		944	944	944	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	944	986	1016	1023	1071	1096	1126	1156	1165	b	b	b	b	b	b
S3522		D-13	Patchogue		944	944	944	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	944	986	1016	1023	1071	1096	1126	1156	1165	b	b	b	b	b	b
S3523		E-14	do.		944	944	944	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	944	986	1016	1023	...	...	...	...	...	...	...	...	...	...	...
S3524		D-15	Yaphank		944	944	944	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	944	986	1016	1023	1071	1096	1126	1156	1165	d	d	d	d	d	b,d
S3525		E-15	do.		944	944	944	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	944	986	1016	1023	...	...	...	...	...	...	...	...	...	...	...
S3526		E-15	do.		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1016	1023	1071	1096	1126	1156	1165	1191	1221	1265	1321	1404	b
S3527		D-16	Plainfield		944	944	944	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	944	986	1016	1023	1071	1096	1126	1156	1165	d	d	d	d	d	b,d
S3528		E-14	Patchogue		944	944	944	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	944	986	...	...	...	...	...	...	...	...	...	...	...	...	...
S3529		D-14	Brookhaven		944	944	944	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	944	986	1016	1023	1071	1096	1126	1156	1165	d	d	d	d	d	b,d
S3530		D-16	Yaphank		944	944	944	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	944	986	1016	1023	1071	1096	1126	1156	1165	d	d	d	d	d	b,d
S3531 (See S6130)		E-15	South Haven		944	944	944	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	944	986	1016	1023	1071	1096	1126	1156	1165	d	d	d	d	d	b,d
S3532		E-15	Ridge		944	944	944	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	944	986	1016	1023	1071	1096	1126	1156	1165	1191	1221	1265	1321	1404	b

See footnotes at end of table.

REFERENCE NO. 19

Tax Maps - County of Suffolk



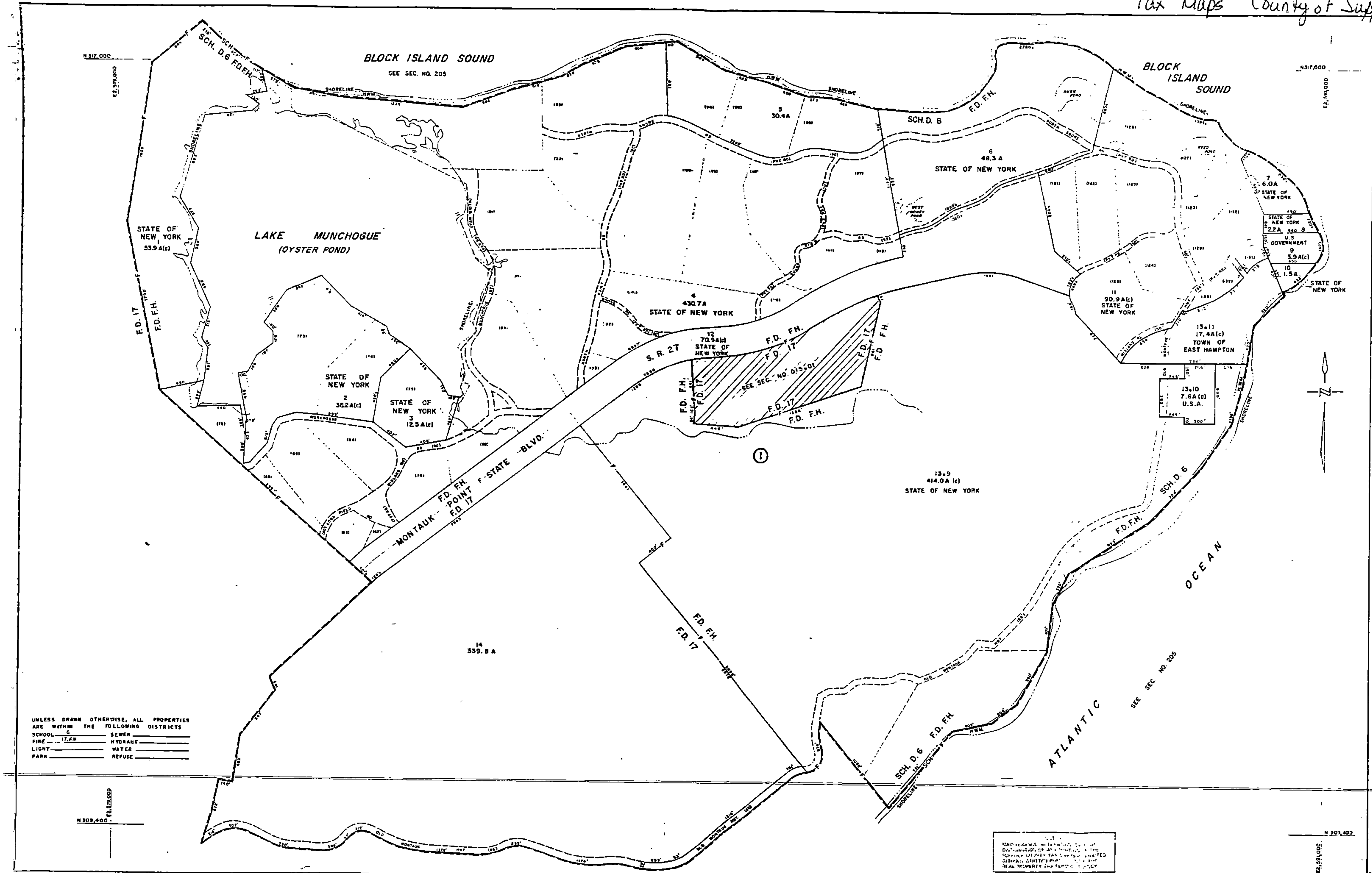
UNLESS DRAWN OTHERWISE, ALL PROPERTIES ARE WITHIN THE FOLLOWING DISTRICTS

SCHOOL 6	SEWER
FIRE 17	HYDRANT
LIGHT	WATER
PARK	REFUSE

NOTICE

MAINTENANCE, ALTERATION, SALE OR DISTRIBUTION OF ANY PORTION OF THE SUFFOLK COUNTY TAX MAP IS PROHIBITED WITHOUT WRITTEN PERMISSION OF THE REAL PROPERTY TAX SERVICE AGENCY.

Tax Maps - County of Suffolk



REFERENCE NO. 20

REFERENCE NO. 21

NUS CORPORATION
SUPERFUND DIVISION

PROJECT NOTES

TO: Naval facility N. Division File
DATE: November 21, 1990
FROM: Susan S. Hodgkiss
COPIES:
SUBJECT: Population within 4 miles of site.
REFERENCE:

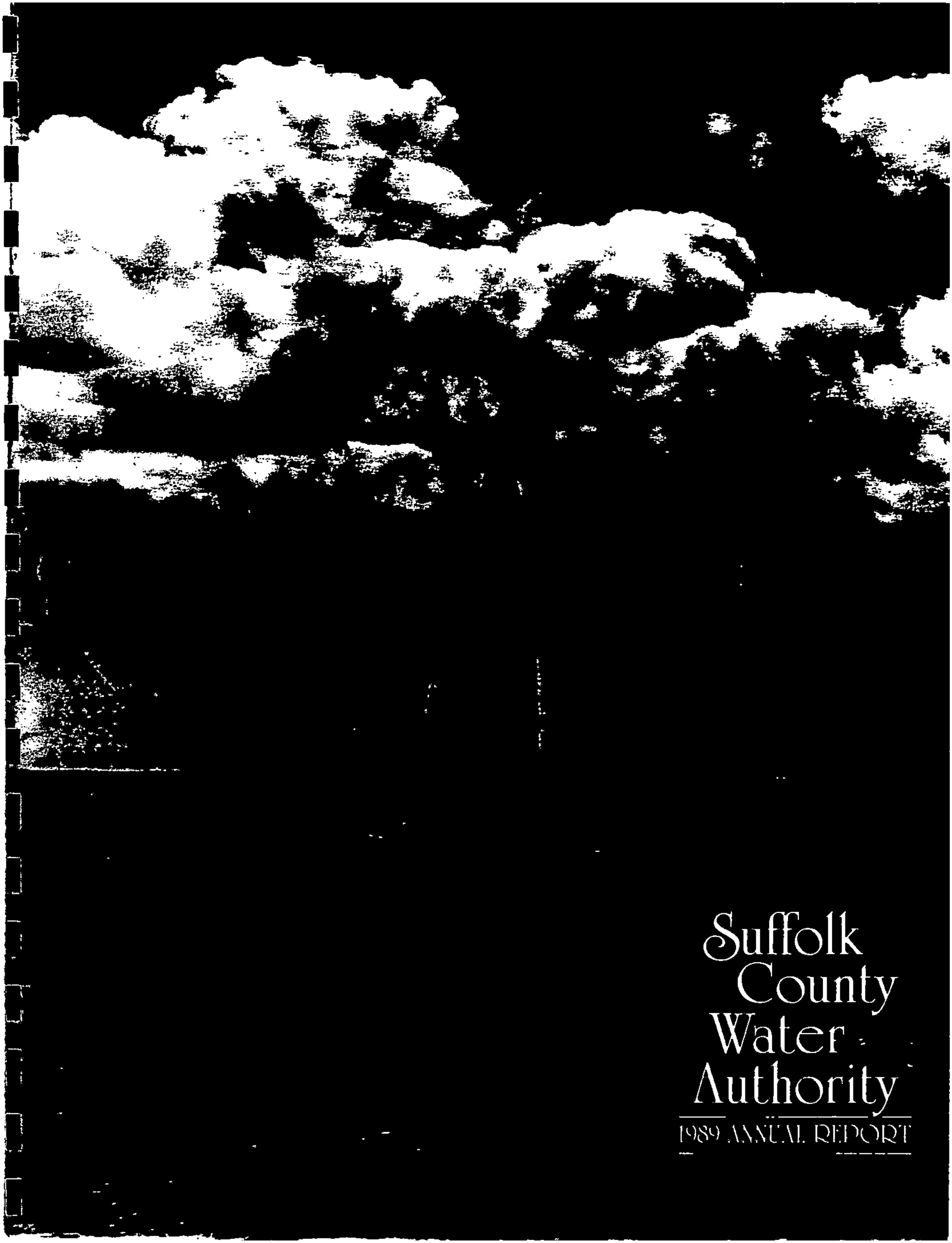
Due to the inaccurace of the GEMS Data a house count was done for this site. Population is based on 3.8 persons per house. The following information was obtained from the U.S. Geological Topographic Map Quadrangle for "Montauk Point, NY"

Distance	Population	Houses
0 - 1/4	106	28
1/4 - 1/2	0	0
1/2 - 1	0	0
1 - 2	57	15
2 - 3	395	104
3 - 4	486	128
total	1044	275

Note: House count was based on a 1956 Topographic Map. therefore the estimated population is most likely lower than ~~actt~~ SSH 11/21/90 actual current population.

SSH 11/21/90

REFERENCE NO. 22



Suffolk County Water Authority

1989 ANNUAL REPORT

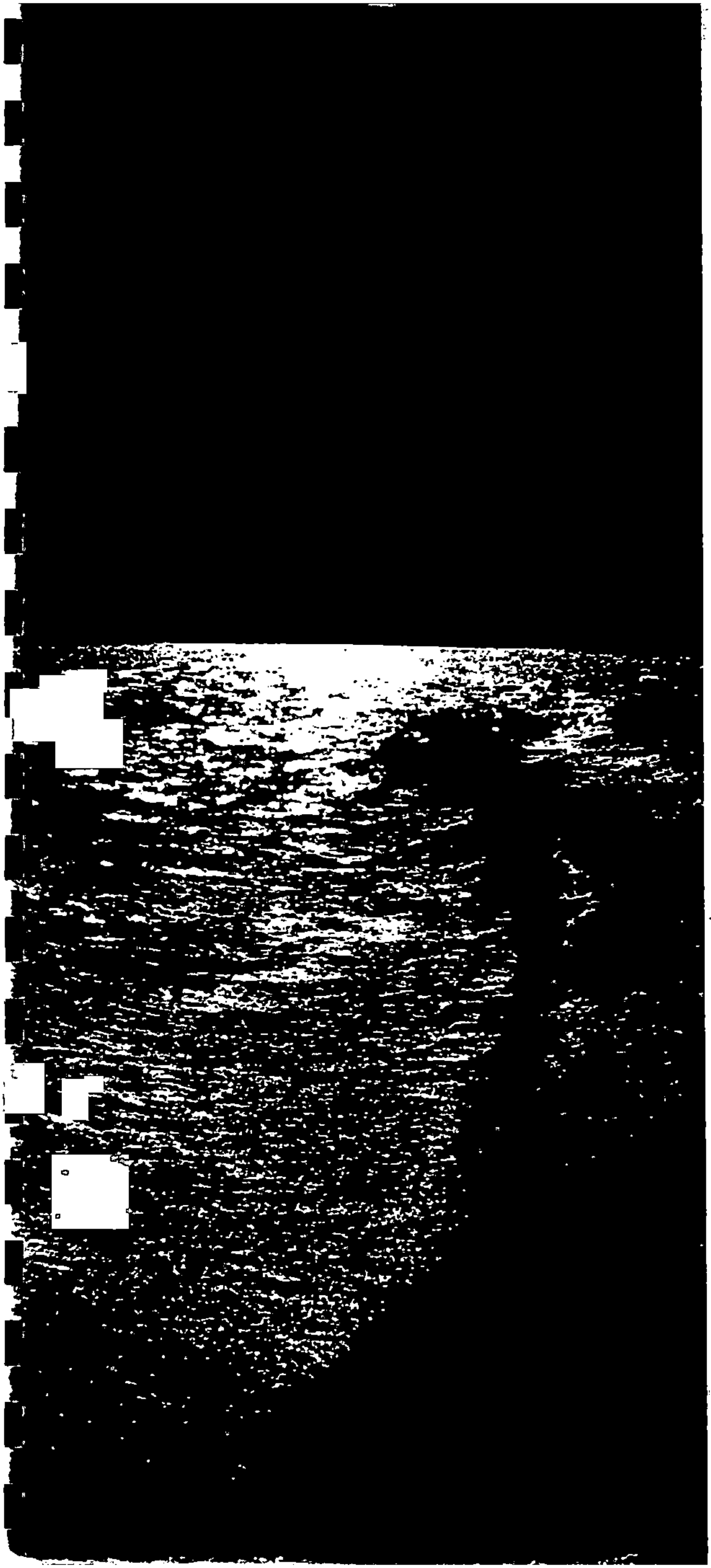
Keeping Pace With Suffolk County 1979-1989

STATISTICS	For Fiscal Year Ended May 31 1989	1979	10-Year Growth	Percent Increase
Customers	282,585	231,735	50,850	22%
Population Served	963,000	841,000	122,000	15%
Miles of Main	4,123	3,399	724	21%
Fire Hydrants	26,048	21,895	4,153	19%
Water Pumped (million gals.)	49,300	34,759	14,541	42%
Employees	575	420	155	37%
FINANCIAL				
Gross Revenues	$ 62,503,000	$ 27,236,000	$ 35,267,000	129%
Water Plant at Cost	429,841,000	226,137,000	203,704,000	90%
Bonded Indebtedness	139,235,000	119,033,000	20,202,000	17%
Total Earnings in the Business at the Close of Period	$ 128,804,000	$ 55,953,000	$ 72,851,000	130%

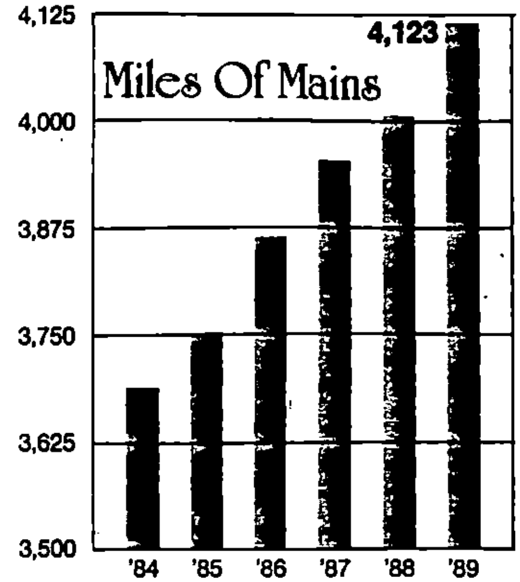
About the Authority

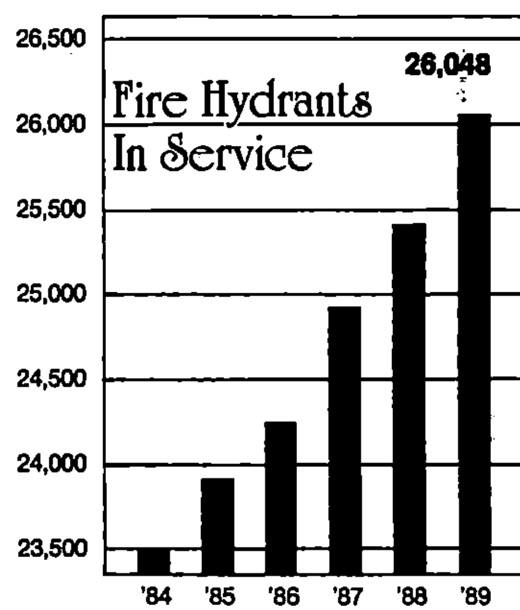
The Suffolk County Water Authority is a self-supporting, public-benefit corporation operating by virtue of the Public Authorities Law of the State of New York. It is without taxing power and operates as a business enterprise. The only revenue the Authority receives is that obtained from the sale of water to its customers. The Authority is non-profit; all revenue received must be used for operating expenses and for paying outstanding debts. Any excess revenue is used for construction purposes. The Authority is operated solely for the benefit of the customers it serves.

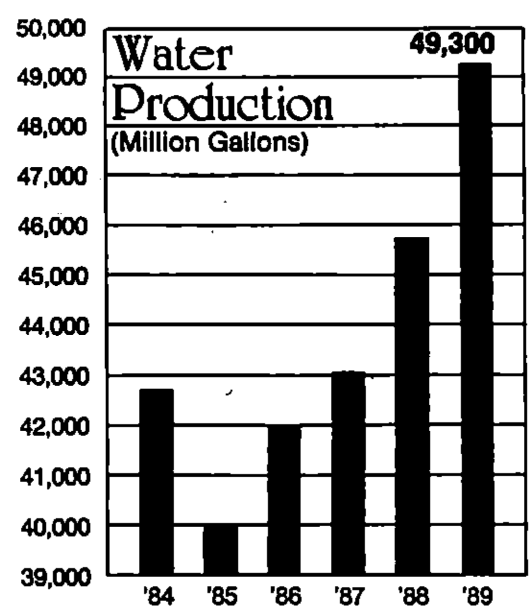
This report printed on recycled paper.



Data Collection







Highlights

	May 31	
	1989	1988
Total Revenues	$ 62,503,000	$ 58,345,000
Operating and Maintenance Expense except depreciation	37,737,000	32,995,000
Interest on Bonds and Notes; including amortization of debt discount and expense	9,205,000	9,516,000
Depreciation	7,658,000	6,929,000
Revenues Invested in Facilities for the year	7,903,000	8,905,000
Revenues Invested in Facilities (since June 1, 1951)	128,804,000	101,467,000
Total Water Plant at Cost	429,841,000	386,625,000
Net Additions to Water Plant	43,216,000	31,512,000
Customers (Active Services)	282,585	275,944
Miles of Main in Service	4,123	4,012
Fire Hydrants in Service	26,048	25,462
Water Production (Million Gallons)	49,300	45,513

Plant Facilities

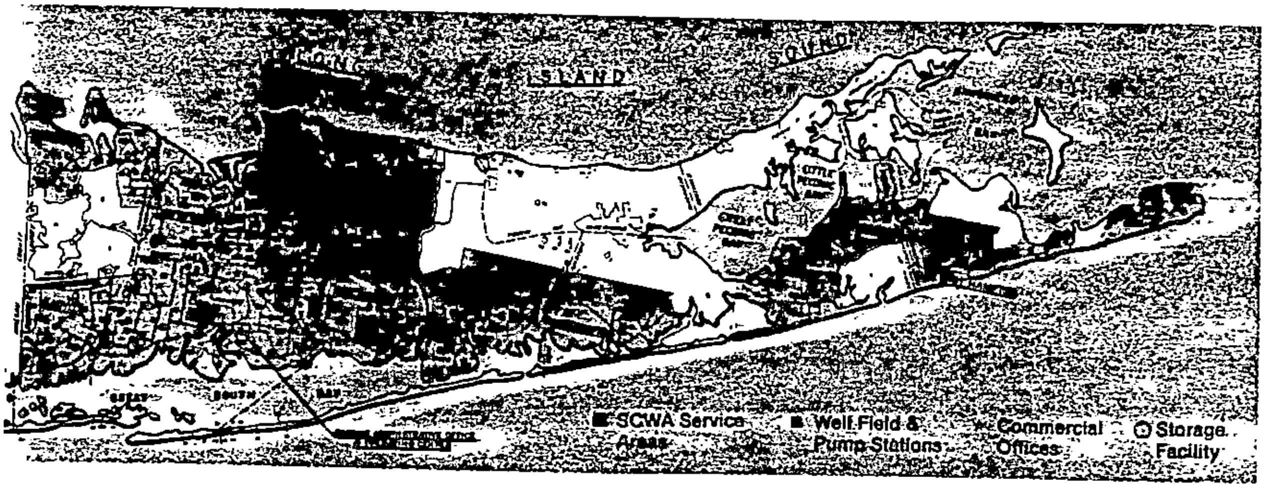
Service Areas of Plants	WELLS				Pumping Plants				Storage Facilities				Active Services	
	Active		Inactive		No.		Capacity - 1,000 Gallons Daily*		No.		1,000 Gallons			
BABYLON	45	48	5	4	19	19	80,780	81,848	8	7	7,515	7,220	58,342	56,792
BAY SHORE	52	49	9	14	20	20	89,395	82,224	7	7	6,012	6,012	49,093	49,498
PATCHOGUE	72	67	1	7	27	27	117,000	108,864	11	11	11,465	11,465	55,022	56,296
HUNTINGTON	54	53	2	4	21	21	66,528	63,072	11	11	11,842	11,842	29,424	29,677
PT. JEFFERSON	70	68	0	4	28	29	113,112	107,496	7	7	7,404	7,404	38,842	38,199
SMITHTOWN	47	45	1	4	21	20	84,096	82,224	6	6	6,100	6,100	24,615	24,795
**WESTHAMPTON	31	30	0	1	11	11	24,624	24,336	4	4	3,350	3,350	13,461	15,849
EAST HAMPTON	35	35	0	1	18	19	24,336	24,408	5	5	5,720	5,720	11,145	11,479
TOTALS	406	395	18	39	165	166	599,871	574,272	59	58	59,408	59,113	275,944	282,585

**Includes satellite plant located in Center Moriches

*Based on 24 hour operation and on actual capacity of pumping equipment for active wells.

AS OF MAY 31, 1988 □ AS OF MAY 31, 1989 □

Communities Served



BABYLON DISTRICT
Amity Harbor
Amityville
Babylon
Copiague
Deer Park
Dix Hills**
Lindenhurst
North Amityville
North Babylon
North Lindenhurst
Pinelawn
West Babylon
Wheatley Heights
Wyandanch

BAY SHORE DISTRICT
Bay Shore
Brentwood
Brightwaters
Central Islip
Edgewood
East Islip
Great River
Islandia
Islip
Islip Manor
Islip Terrace
North Bay Shore
North Great River
Oakdale
West Bay Shore
West Islip

CENTER MORICHES DISTRICT
Center Moriches
East Moriches
Eastport
East Yaphank
Manorville
Mastic
Mastic Beach
Middle Island**
Moriches
North Shirley
Shirley
South Ridge

EAST HAMPTON DISTRICT
Amagansett
East Hampton
Freetown
Montauk
North Haven
North Sea
Sag Harbor
Southampton
Watermill

HUNTINGTON DISTRICT
Asharoken
Centerport
Cold Spring Harbor
Commack
Crab Meadow
East Huntington
East Neck
East Northport
Eatons Neck
Fort Salonga
Halesite
Huntington
Huntington Bay
Huntington Station
Lloyd Harbor
Northport

PATCHOGUE DISTRICT
Bayport
Bellport
Blue Point
Bohemia
Brookhaven
Coram
East Holbrook
East Patchogue
Farmingville
Gordon Heights
Hagerman
Holbrook
Holtsville
Lakeland
Lake Ronkonkoma
Medford
North Bellport
North Patchogue
Patchogue
Ronkonkoma
Sayville
Selden
South Centereach
South Holbrook
South Medford
South Yaphank
Village of Islandia
Village of Lake Grove
Village of Patchogue
West Bellport
West Ronkonkoma
West Sayville
West Yaphank
Yaphank

PORT JEFFERSON DISTRICT
Belle Terre
Centereach
Coram
East Setauket
Lake Grove
Middle Island
Miller Place
Mount Sinai
North Centereach
North Selden
Poquott
Port Jefferson
Port Jefferson Station
Ridge
Rocky Point
Setauket
South Setauket
Sound Beach
South Stony Brook
Stony Brook
Terryville

SMITHTOWN DISTRICT
East Commack
Flowerfield*
Fort Salonga
Hauppauge
Head of the Harbor
Kings Park
Nesconset
Nissequogue**
St. James*
San Remo*
Smithtown
South Hauppauge
Village of the Branch
West St. James
West Smithtown*

WESTHAMPTON DISTRICT
East Quogue
Mattituck
Oakville
Quiogue
Quogue
Remsenburg
Speonk
Westhampton
Westhampton Beach

* - Included in Wholesale Water District
** Serves portion of area

Suffolk County Water Authority
OAKDALE, LONG ISLAND, N.Y. 11769

REFERENCE NO. 23

BULK RATE
U.S. POSTAGE PAID
SUFFOLK COUNTY WATER AUTHORITY

SUFFOLK COUNTY WATER AUTHORITY
SUNRISE HIGHWAY CORNER POND ROAD
P.O. BOX 38
OAKDALE, L.I., NEW YORK 11769-0901

1990 ANNUAL WATER SUPPLY STATEMENT

- [illegible] quality and quantity [illegible] water supply [illegible]
- [illegible]
- [illegible]

SUFFOLK COUNTY WATER AUTHORITY

CHAIRMAN'S MESSAGE

Dear

Since 1987, all New York State water suppliers have been required by law to provide certain information and data to their customers concerning the water supply. The Water Authority appreciates that opportunity because we know that an informed public can make the difference in protecting that very supply with respect to both quality and quantity.

This year, in response to inquiries from our customers, we have explained how the water system works and expanded our coverage on the subjects of water conservation and protection.

Throughout the year, we will continue to communicate with you through our billing insert "Behind the Faucet" and through public-service messages aired on your local radio stations. Please take a few minutes to read the inserts found in your bills. In addition to information concerning current Water Authority activities and on-going improvements, we provide you with facts and suggestions on how you can help to protect and conserve Long Island's fragile and precious water resources.

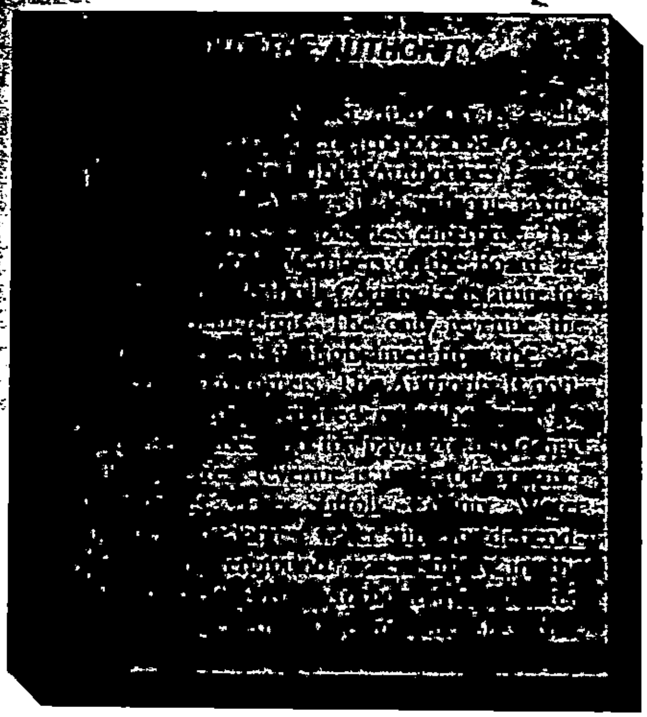
It cannot be stressed too often or too strongly just how important it is for everyone to do their share to protect our precious water resources. Our mission at the Authority is to ensure a safe and dependable supply of water for this and future generations. However, we fully recognize that it is going to take the cooperation of *all* sectors of our Long Island community to achieve this goal.

Please join us in this effort.

Sincerely,

Leon J. Campo
Chairman

SCWA - 1990 ANNUAL WATER SUPPLY STATEMENT



For Calendar Year
Ended December 31, 1989

STATISTICS	1989
Customers	290,909
Population Served	989,090
Miles of Main	4,188
Fire Hydrants	26,328
Water Pumped (gals.)	43,715,883,000
Active Wells	399
Wells Removed From Service (Due to new water standards of 5 parts per billion for all volatile organic chemicals)	37
Wells Restored Through Treatment (Utilizing granular activated carbon filtration systems)	31
Pumping Plants	168
Storage Facilities and	60
Water Capacity (gals.)	60,563,000
Service Area District Offices	9
Average Annual Water Rates per (120,000 gallons)	$157.45

WHERE DOES YOUR WATER COME FROM?

All of the water Nassau and Suffolk County residents are supplied with is groundwater. Your water is stored beneath the ground in sandy, geological formations known as the Aquifer System. Water in the Aquifer System originates as precipitation which slowly percolates down through the soil. That is why activities on the surface of the land can significantly effect the quality of the water beneath. Where contamination occurs on the land, it may be picked up by rain water and carried into the aquifer. Land preservation, sound land planning practices, careful use and disposal of all hazardous materials, and water conservation are essential if we are to protect our water resources for future use.

LONG ISLAND AQUIFER SYSTEM

There are three primary formations which lie, one on the other, and make up the Long Island Aquifer System. From the shallowest to the deepest, these formations are:

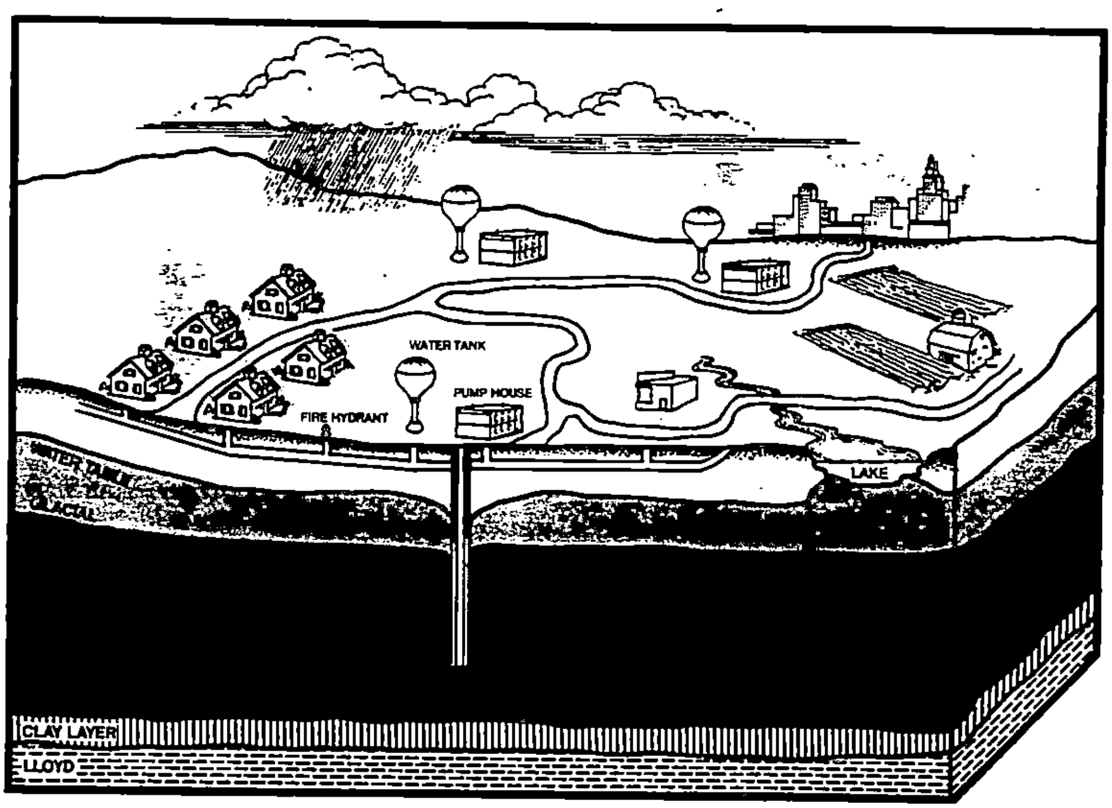
Glacial - contains the youngest or newest water to the groundwater system. The Water Authority has 151 wells drawing from this portion of the aquifer. Virtually all private wells draw from the Glacial Aquifer.

Magothy - is the largest of the three formations and holds the most water, much of which is hundreds of years old. There are 252 Water Authority wells drawing from this portion of the aquifer.

Lloyd - a largely untapped layer which contains the oldest water, some of which has been held in the aquifer system for more than 5,000 years.

The total depth of the Aquifer is smallest along the North Shore of the island (approx. 600 ft.), and deepest along the South Shore (approx. 2,000 ft.).

HOW DOES THE WATER GET FROM THE AQUIFER SYSTEM TO YOUR TAP?



HOW DOES A WATER SYSTEM WORK?

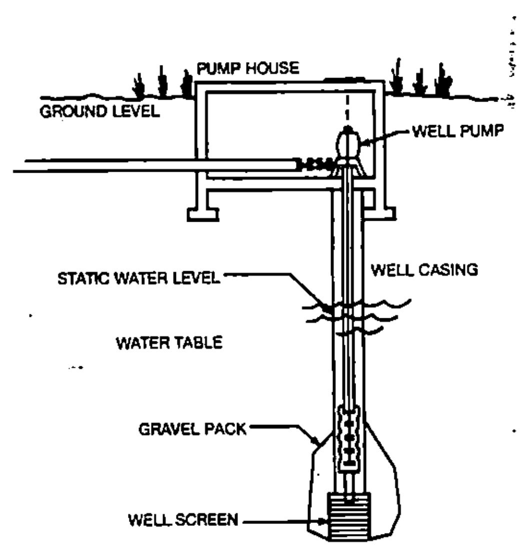
SCWA has 399 active wells pumping water to our customers. The water is treated and then released into the 4,188 miles of water main. Some water is temporarily stored in water tanks before release into the water main system. This water held in storage helps to maintain the proper amount of water pressure in the water mains (usually 40 to 60 lbs. per sq. inch). It also serves as a back-up supply during periods of heavy water demand and for fire fighting. The SCWA System is served by 59 such storage facilities, which store over 59 million gallons of water.

Although the water system is interconnected all across the county, water tends to be pumped and used within the same general area. Thus, customers do not receive water from just a single well but rather a "blended" water supply from several well fields in the same localized zone.

Usually, only a portion of our wells are in operation at any one time. Wells are turned on and off as the water demand fluctuates. During the winter months, only about 50% of our wells are needed. The rest of our well capacity is needed during the summer months when water demand soars.

Major water transmission mains are usually 12 to 18 inches in diameter. These large mains are the backbone of the system. As water is brought into a residential community, the main size gradually decreases so that most individual homes tap into mains only about 6 inches in size.

WATER SUPPLY WELL



HOW MUCH WATER DID WE SUPPLY IN 1989?

To meet the water demand for our customers, we pumped more than 43.9 billion gallons of water. Of that total, we billed our customers for 41.9 billion gallons. The difference of 1.9 billion gallons is "unaccounted for" and represents water lost from the system as well as water used for fire fighting and other purposes. This lost water represents 4% of the total water pumped in 1989.

Maximum pumpage for the water system on a single day was 333.5 million gallons. This occurred on June 15, 1988 and was the highest single day water production ever reached at SCWA.

HOW GOOD IS THE WATER AND HOW IS IT MONITORED?

The water we deliver to our customers is of excellent quality, meeting all local, state, and federal standards or guidelines.

It is important for our consumers to be aware of the extensive monitoring required of all public water suppliers. The Suffolk County Water Authority, as the largest public water supplier on Long Island, must comply with strictly enforced standards established by the United States Environmental Protection Agency, the New York State Health Department, and the Suffolk County Department of Health Services.

The Suffolk County Water Authority is required to routinely monitor its system by testing the water both at the wellhead and within the distribution system for a wide range of parameters, including bacteria, inorganic chemicals such as nitrate, chloride and lead, and volatile organic compounds, including benzene and trichlorethlyene.

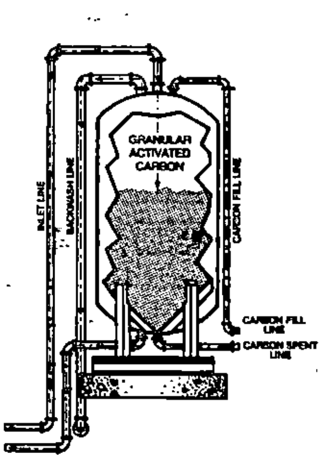
The Water Authority has its own New York State Certified Laboratory that in 1989 alone analyzed over 25,000 water samples. Our laboratory contains apparatus (from the simple to the sophisticated) capable of testing for over 100 compounds. The laboratory is in use 7 days a week, 24 hours a day.

In addition to the monitoring SCWA does on a regular basis, the Suffolk County Department of Health Services routinely performs tests of the public water supply at the wellhead and at various parts in the distribution system. **The purpose of all this monitoring is to ensure that the highest quality water is served to consumers.**

As of January 9, 1989, new and more stringent water standards promulgated by the New York State Department of Health for virtually all organic chemicals went into effect. The new standard is now 5 parts per billion as compared to the old standard of 50 parts per billion. **These are extremely stringent regulations that surpass the drinking water standards for any other state in the U.S.A.**

Suffolk County Water Authority wells have been largely free of most contaminants or fall well below maximum permissible standards. However, there are four organic chemicals that are appearing at some of our wellheads and causing concern and the need for treatment. They are: 1,1,1 trichloroethane; 1,1,2 trichloroethylene; 1,2 dichloropropane; and tetrachloroethylene. In addition to organics, the other chemical of concern is nitrate.

The Authority has implemented a program utilizing Granular Activated Carbon Systems (GAC's) for those wells in need of remediation. In 1989, we restored 32 wells which had been removed from service due to volatile or organic chemicals and/or pesticides by using GAC's. We are proud of that accomplishment! However, remediation is extremely costly. Each carbon filtration unit costs approximately $500,000. That is why at the Authority we believe "prevention" of contamination of the water supply is paramount.



GRANULAR ACTIVATED CARBON SYSTEM

The Granular Activated Carbon System (GAC) is used for the efficient removal of dissolved organic compounds from water intended for potable use. A unit consists of two process vessels. Each vessel contains 20,000 lbs. of Granulated Activated Carbon. When the carbon in the vessels becomes saturated with contaminants from the water, the unit is shut down and the spent carbon is replaced. All our GAC systems will be enclosed in attractive buildings to prevent freezing, reduce maintenance, and blend in with the neighborhood.

HOW GOOD IS THE WATER AND HOW IS IT MONITORED?

Due to the high quality of water which is tapped for public water supplies, our groundwater fortunately does not generally receive extensive treatment prior to distribution through the water main system. All waters of the Suffolk County Water Authority are routinely chlorinated to assure that the water remains bacteria free. This is required by the New York State Department of Health. The natural waters of the aquifer are normally slightly acidic (pH can range from 4.5 to 6.8) making the water slightly corrosive. To prevent damage to customers' plumbing, the water is chemically "buffered" using hydrated lime to increase the pH level.

Where iron levels are high, mostly due to a naturally higher iron content in some areas of Suffolk County, sequestering agents such as polyphosphates are added to control the iron and keep it in solution. Other causes of high iron levels are: use of fire hydrants in the system causing turbulence and mixing of any sediments in the water mains; water mains flushing to remove sediment build-up; and water main repairs or new service hook-ups.

HOW CAN WE PROTECT THE GROUNDWATER?

It is estimated that the typical household contains between 3 and 10 gallons of materials that are hazardous to human health and to the natural environment. We mentioned earlier that there are a few specific chemicals which are causing a number of our wells to require expensive remediation. Over the next few years, it will cost about $40 million to clean up wells not meeting the new 5 parts per billion water standard. It does not take much contamination to result in water quality problems. A one gallon container of volatile organic can pollute approximately 200 million gallons of water.

We can all help in protecting our water supply by each doing our part. As a homeowner, there are basic guidelines to follow in order to prevent chemicals used in and around the house from reaching our underground water supply.

- **Minimize the use of chemical products (fertilizers and pesticides) to the greatest extent possible. Landscaping with plants that do not require chemicals to thrive is preferable.**
- **Never pour chemical products down the drain or on the ground** such as: degreasers; paint thinners; pesticides; photographic products; toilet, drain, oven, and septic system cleaners; oil-based paint; gasoline; or motor oil.
- **Read Labels Carefully** — certain key words can help you determine if a product is hazardous. **DANGER, WARNING,** and **CAUTION.** Other words to look for are: **POISON, CORROSIVE, CAUSTIC, VOLATILE,** and **FLAMMABLE.**
- **Use Safe Alternatives Whenever Possible** — For further information on household chemicals and safer alternatives contact: Cornell Cooperative Extension of Suffolk County, 246 Griffing Avenue, Riverhead, NY 11901 (727-7850).
- **Buy Small Quantities and Use It Up** — Buy only as much as you need. If a hazardous product must be used, choose the least toxic substance on the market and purchase only enough material to accomplish the job.
- **Prevent Spills and Leaks and Clean Up Immediately If They Occur.**
- **Share Any Leftovers With a Friend or Neighbor.**
- **Store Carefully — Seal Tightly With Labels Intact.**

- **Save For Proper Disposal Through Your Town's "STOP" — Stop Throwing Out Pollutants Program**

  Almost all ten towns in Suffolk sponsor a STOP Program. Carefully store any of your leftover hazardous household chemicals until your Town notifies you of the times and sites that have been set aside for collection of these materials. The Town will see to it that these chemicals are disposed of properly. If your Town does not have a STOP Program, contact your local public officials and encourage them to put this program in place.

- **Report Suspicious Dumping Activities Immediately To The Police**

  An alert citizen can avert an environmental disaster.

- **You Can Bring Up To 5 Gallons of Waste Oil To Your Local Automobile Service Station** (one who provides maintenance and repair service) **For Safe Disposal**

  This is a state law and there is no charge for this service.

WHAT IS THE SCWA DOING TO PROTECT THE WATER SOURCE?

/ater quality protection efforts can take many forms. /A is developing new approaches to advance water uality protection goals. These include Wellhead Protec-on, Chemical Source Reduction and Watershed Rules and ılations.

vELLHEAD PROTECTION

sing computer-aided analysis, SCWA is better defining area that is directly affected by a pumping well. The is to ensure a high level of environmental protection or this land, since it is directly linked to the water we ıp.

EMICAL SOURCE REDUCTION

ssisting the individuals and businesses which use and dle bulk chemicals and providing technical assistance to understand and comply with environmental regulations are the goals of SCWA's Source Reduction Program. Proper storage, use, disposal, compliance activities, education, and environmentally preferred substitutes of chemical products are all aspects of the Program.

WATERSHED MANAGEMENT

Preparing rules that provide a proper level of protection to SCWA wells and future wells allows the SCWA to prudently protect its investment in water production facilities. The public health benefits of a pollution-free water supply are also assured. Watershed Rules and Regulations gives SCWA the appropriate legal authority to require certain minimum standards for activities that may reasonably affect SCWA facilities. Such a program is consistent with wise management, as well as reflective of state policy.

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Saving Water r
pump water and
pumping stations,

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our needs now
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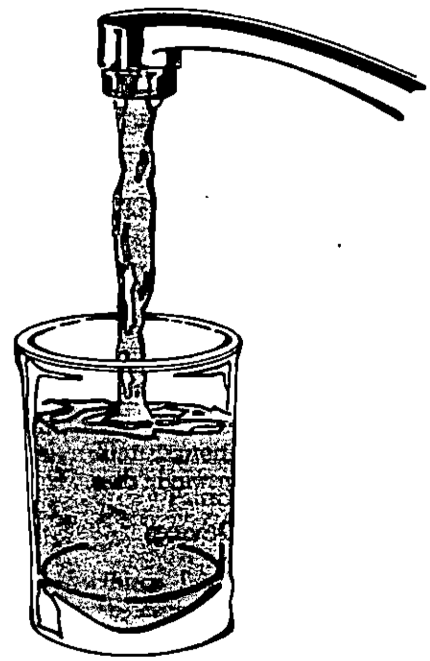
Repair All Lea
Outside Your

Leaks waste wat
all faucets inside a
repaired with an
and toilets. You ca
an invisible toile
gallons a year! R
hoses. Check pool
your pool, or exp
an indication of a

WHY SAVE WATER AND HOW DO WE AVOID WASTING IT?

Although the County, as a whole, has an adequate amount of water to meet present and future demands, there are a number of critical reasons why it is important to conserve water now:



Saving Water saves energy and some of the costs associated with both of these necessities of life.

Saving Water makes life easier on cesspools and septic systems reducing the need to use caustic and costly chemicals.

Saving Water reduces the cost of energy required to pump water and the need to construct costly new wells, pumping stations, and water towers.

Saving Water lessens the strain on the water pumping system during a dry spell or drought helping to avoid severe water use restrictions so that essential fire-fighting needs are met.

Saving Water ensures a plentiful supply of water for all our needs now and for future generations of Long Islanders.

WATER CONSERVATION GUIDELINES

Repair All Leaks Inside and Outside Your Home Promptly

Leaks waste water 24 hours a day, 7 days a week! Check all faucets inside and outside for leaks. Often they can be repaired with an inexpensive washer. Check showerheads and toilets. You can lose more than 100 gallons a day from an invisible toilet leak, and that is more than 30,000 gallons a year! Repair or replace leaky garden and pool hoses. Check pool liners. If you are adding water daily to your pool, or experience a sudden loss of water, it may be an indication of a leak.

Use Water Saving Fixtures and Appliances

Replacing old fixtures and appliances with water conserving models can produce substantial water use reduction without reducing effectiveness and comfort.

Avoid Running the Water Needlessly

Use your automatic dishwasher and washing machine for full loads. Don't use water to clean driveways and sidewalks. Use a broom or blower instead.

WATER CONSERVATION GUIDELINES

Use Automatic Timers

For above-ground sprinklers, install an inexpensive timing device that automatically shuts off at a pre-set time. This timer attaches to your hose and outdoor faucet. It is common for many of us to turn on the sprinkler and forget for hours that it is running. This is a great example of water waste.

Restrict Lawn Watering — Set Timers for Early AM or Late PM

Water less frequently, but thoroughly on cool days or othe cooler parts of the day (set timing devices on sprinkler systems accordingly). If the ground is dry, the water used will be absorbed and will not accumulate in the street or sidewalks. Do not water on windy days.

Install Water Sensor Devices

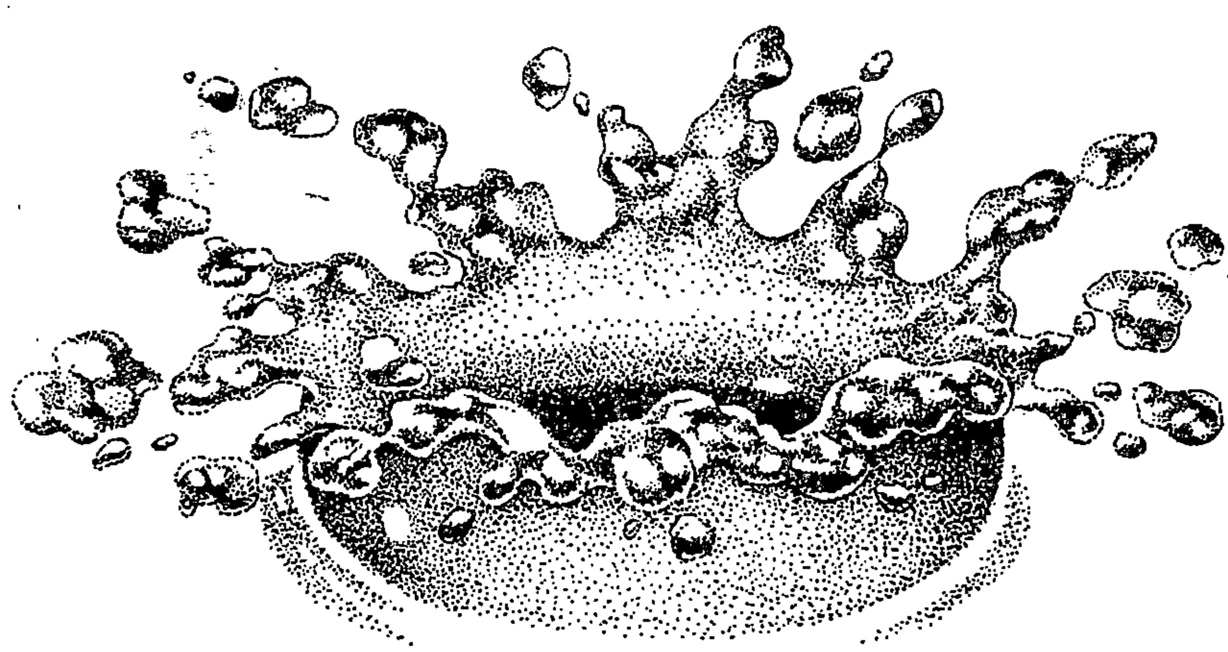
If purchasing an inground sprinkler system, make certain that a weather/water sensor device that measures moisture content or soil density is part of the system. This will conserve water as it prevents unnecessary watering in rainy weather. If you already have an inground sprinkler system, check with a plumber or plumbing supply store to modify your system for a weather/water sensor device.

Use Triggered Water Nozzle
(For washing the car, etc.)

A triggered water nozzle that automatically cuts off water flow when hand pressure is released helps avoid wasting water.

Commercial, Industrial, and Institutional Water Users

Some of our customers use great quantities of water because of the nature of their business or by virtue of their size. We urge all of our commercial, industrial, and institutional customers to develop water conservation plans. The Water Authority will be available to conduct water audits and to give guidance and assistance to these large users in devising workable conservation strategies.



AUTHORITY MEMBERS

Seated: Leon J. Campo, Chairman; left to right: James T.B. Tripp, Esq.; Melvin M. Fritz, D.O.M.D.; Michael E. White, Esq.; and Matthew B. Kondenar, Secretary

ADMINISTRATIVE STAFF

Walter C. Hazlitt
Executive Director

David T. Ross
Deputy Executive Director

Herbert C. Koehler
Director of Distribution

Edward J. Rosavitch
Chief Engineer

Charles K. Stein
Director of Finance

Michael Stevenson
Director of Human Resources

Laura J. Mansi
Director of Public Information

Bernard T. Hanrahan
Director of District Office Operations

Sarah J. Meyland
Director of Watershed Oversight and Protection

Patrick J. Dugan, Jr.
Chief Chemist

Herman J. Miller
Superintendent of Production

SERVICE AREA DISTRICT OFFICES

If you have any questions or concerns related to the Suffolk County Water Authority service or billing, contact your district office.

Babylon	179 Little East Neck Road Babylon, NY 11702	669-1545 669-1669
Bay Shore	40 Nassau Street Islip, NY 11751	581-2129 581-2193
Center Moriches	774 Montauk Highway Center Moriches, NY 11934	874-3504 874-3748
East Hampton	32 Montauk Highway East Hampton, NY 11937	324-0959
Huntington	131 Spring Road Huntington, NY 11743	427-0305 427-0123
Patchogue	336 West Main Street Patchogue, NY 11772	475-1919 475-1973
Port Jefferson	120 West Broadway Port Jefferson, NY 11777	473-0176 473-0183
Smithtown	401 E. Jericho Turnpike Smithtown, NY 11787	979-8460 979-8461
Westhampton	148 West Main Street Westhampton Beach, NY 11978	288-1034

CUSTOMER RELATIONS

To resolve difficult service problems or to report any threat to our water supply, Authority customers should call our office of Customer Relations at:

589-5215

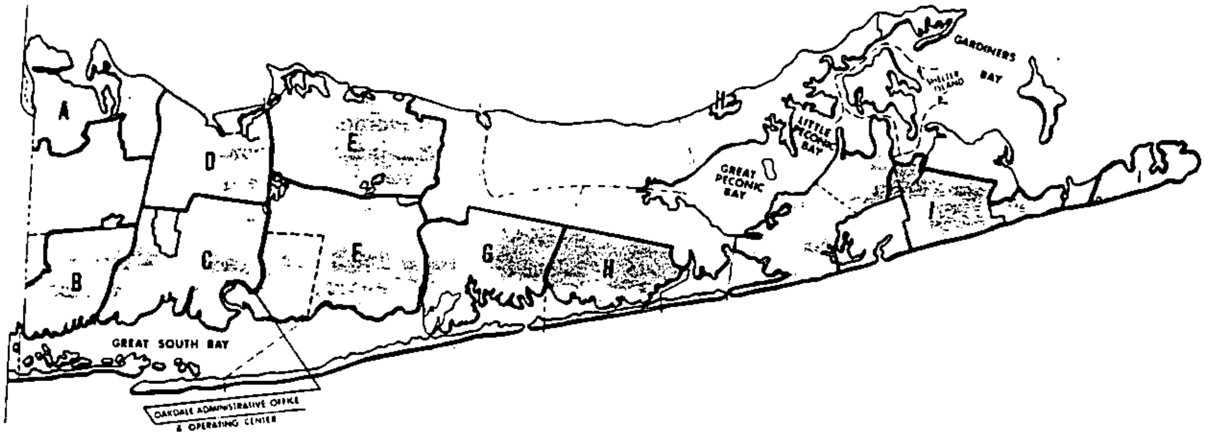
In case of **EMERGENCY** after office hours or on weekends, call:

665-0663

For additional copies of this booklet, call:

563-0267

COMMUNITIES SERVED



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Pinelawn
West Babylon
Wheatley Heights
Wyandanch

(C)
BAY SHORE
DISTRICT
Bay Shore
Brentwood
Brightwaters
Central Islip
Edgewood
East Islip
Great River
Islandia
Islip
Islip Manor
Islip Terrace
North Bay Shore
North Great River
Oakdale
West Bay Shore
West Islip

(D)
SMITHTOWN
DISTRICT
East Commack
Flowerfield*
Fort Salonga
Hauppauge
Head of the Harbor
Kings Park
Nesconset
Nissequogue**
St. James*
San Remo*
Smithtown
South Hauppauge
Village of the Branch
West St. James
West Smithtown*

(E)
PORT
JEFFERSON
DISTRICT
Belle Terre
Centereach
Coram
East Setauket
Lake Grove
Middle Island
Miller Place
Mount Sinai
North Centereach
North Selden
Poquott
Port Jefferson
Port Jefferson
Station Ridge
Rocky Point
Setauket
South Setauket
Sound Beach
South Stony Brook
Stony Brook
Terryville

(F)
PATCHOGUE
DISTRICT
Bayport
Bellport
Blue Point
Bohemia
Brookhaven
Coram
East Holbrook
East Patchogue
Farmingville
Gordon Heights
Hagerman
Holbrook
Holtsville
Lakeland
Lake Ronkonkoma
Medford
North Bellport
North Patchogue
Patchogue
Ronkonkoma
Sayville
Selden
South Centereach
South Holbrook
South Medford
South Yaphank
Village of Islandia
Village of Lake Grove
Village of Patchogue
West Bellport
West Ronkonkoma
West Sayville
West Yaphank
Yaphank

(G)
CENTER
MORICHES
DISTRICT
Center Moriches
East Moriches
Eastport
East Yaphank
Manorville
Mastic
Mastic Beach
Middle Island**
Moriches
North Shirley
Shirley
South Ridge

(H)
WESTHAMPTON
DISTRICT
East Quogue
Mattituck
Oakville
Quiogue
Quogue
Remsenburg Speonk
Westhampton
Westhampton Beach

(I)
EAST HAMPTON
DISTRICT
Amagansett
East Hampton
Freetown
Montauk
North Haven
North Sea
Sag Harbor
Southampton
Watermill

ncluded in Wholesale Water District
ervices Portion of Area

[illegible]es [illegible]ain in Service	4,[illegible]	4,[illegible]
Fire Hydrants in Service	26,468	26,048
Water Production (Million Gallons)	43,361	49,300

PLANT FACILITIES

Service Areas of Plants	WELLS Active		Inactive		Pumping Plants No.		Capacity - 1,000 Gallons Daily*		Storage Facilities No.		1,000 Gallons		Active Services	
BABYLON	48	48	4	6	19	19	81,648	81,288	7	7	7,220	7,220	56,792	55,968
BAY SHORE	49	45	14	19	20	21	82,224	80,568	7	7	6,012	6,012	49,498	50,040
PATCHOGUE	67	70	7	5	27	28	108,864	117,504	11	12	11,465	12,465	56,296	60,532
HUNTINGTON	53	51	4	6	21	22	63,072	63,648	11	11	11,842	11,842	29,677	30,589
PT. JEFFERSON	68	65	4	7	29	30	107,496	105,912	7	8	7,404	7,854	38,199	40,201
SMITHTOWN	45	47	4	2	20	20	82,224	83,520	6	6	6,100	6,100	24,795	25,361
**WESTHAMPTON	30	32	1	0	11	12	24,336	24,912	4	4	3,350	3,350	15,849	16,859
EAST HAMPTON	35	35	1	1	19	19	24,408	24,732	5	5	5,720	5,720	11,479	12,000
TOTALS	395	393	39	46	166	171	574,272	582,084	58	60	59,113	60,563	282,585	291,550

** Includes satellite plant located in Center Moriches

* Based on 24-hour operation and on actual capacity of pumping equipment for active wells.

AS OF MAY 31, 1989 ☐ AS OF MAY 31, 1990 ☑

REFERENCE NO. 24

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

TOWN OF
EAST HAMPTON, NEW YORK
SUFFOLK COUNTY

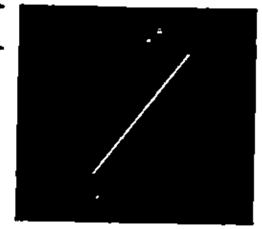
PANEL 1 OF 33
(SEE MAP INDEX FOR PANELS NOT PRINTED)

COMMUNITY-PANEL NUMBER
360794 0001 B

MAP REVISED:
MARCH 16, 1983

KEY TO MAP

500-Year Flood Boundary
100-Year Flood Boundary
Zone Designations* With Date of Identification e.g., 12/2/74
100-Year Flood Boundary
500-Year Flood Boundary



Base Flood Elevation Line With Elevation In Feet**	~~~513~~~
Base Flood Elevation In Feet Where Uniform Within Zone**	(EL 987)
Elevation Reference Mark	RM7×
Zone D Boundary	— — —
River Mile	•M1.5

**Referenced to the National Geodetic Vertical Datum of 1929

*EXPLANATION OF ZONE DESIGNATIONS

ZONE	EXPLANATION
A	Areas of 100-year flood; base flood elevations and flood hazard factors not determined.
A0	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; average depths of inundation are shown, but no flood hazard factors are determined.
AH	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; base flood elevations are shown, but no flood hazard factors are determined.
A1-A30	Areas of 100-year flood; base flood elevations and flood hazard factors determined.
A99	Areas of 100-year flood to be protected by flood protection system under construction; base flood elevations and flood hazard factors not determined.
B	Areas between limits of the 100-year flood and 500-year flood; or certain areas subject to 100-year flooding with average depths less than one (1) foot or where the contributing drainage area is less than one square mile; or areas protected by levees from the base flood. (Medium shading)
C	Areas of minimal flooding. (No shading)
D	Areas of undetermined, but possible, flood hazards.
V	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors not determined.
V1-V30	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors determined.

NOTES TO USER

Certain areas not in the special flood hazard areas (zones A and V) may be protected by flood control structures.

This map is for flood insurance purposes only; it does not necessarily show all areas subject to flooding in the community or all planimetric features outside special flood hazard areas.

For adjoining map panels, see separately printed Index To Map Panels.

Coastal base flood elevations shown on this map include the effects of wave action.

Coastal base flood elevations apply only landward of the shoreline shown on this map.

INITIAL IDENTIFICATION:
AUGUST 29, 1975

FLOOD HAZARD BOUNDARY MAP REVISIONS:
NONE

FLOOD INSURANCE RATE MAP EFFECTIVE:
SEPTEMBER 30, 1976

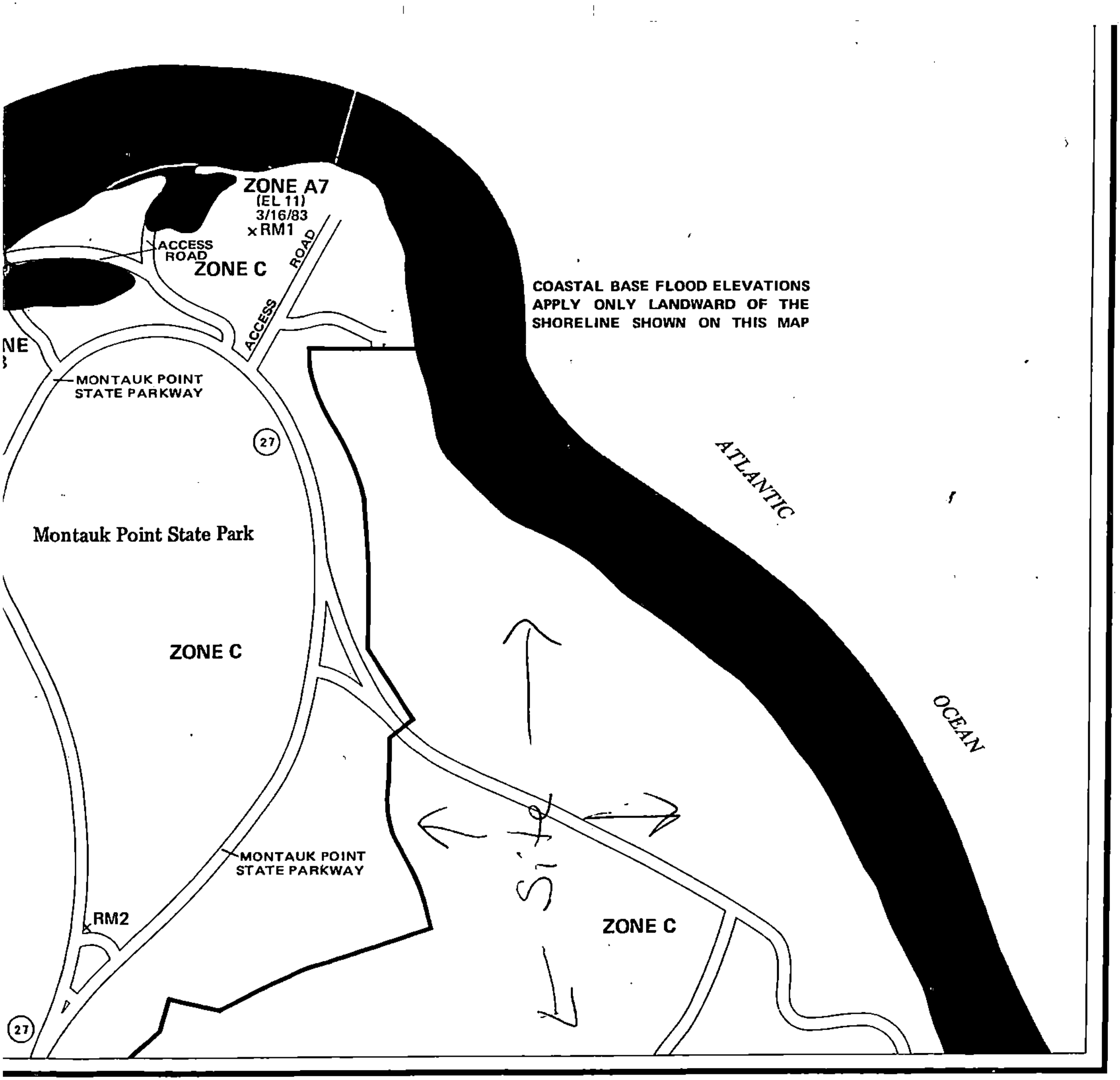
FLOOD INSURANCE RATE MAP REVISIONS:

March 16, 1983 -to include the effects of wave action.

To determine if flood insurance is available in this community, contact your insurance agent, or call the National Flood Insurance Program, at (800) 638-6620.

APPROXIMATE SCALE

400


ZONE A7
(EL 11)
3/16/83
×RM1
ACCESS ROAD
ZONE C
ACCESS ROAD
MONTAUK POINT STATE PARKWAY
27
Montauk Point State Park
ZONE C
COASTAL BASE FLOOD ELEVATIONS APPLY ONLY LANDWARD OF THE SHORELINE SHOWN ON THIS MAP
ATLANTIC
OCEAN
Site
MONTAUK POINT STATE PARKWAY
RM2
ZONE C
27

REFERENCE NO. 25

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

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PA Scoresheets

PRELIMINARY ASSESSMENT

DRAFT NOV 06 1990

CERCLIS IDENTIFICATION NUMBER	
STATE: New York	SITE NUMBER: NY4210020044

SITE LOCATION

SITE NAME: Legal, common or descriptive name of site
Naval Facility N. Division / Camp Hero

STREET ADDRESS, ROUTE or SPECIFIC LOCATION IDENTIFIER

CITY	STATE	ZIP CODE	TELEPHONE
Montauk	NY	11954	( )

COORDINATES: LATITUDE and LONGITUDE	TOWNSHIP, RANGE, and SECTION
41° 04' 00" 71° 52' 10"	Suffolk County

OWNER/OPERATOR IDENTIFICATION

OWNERS: New York state, U.S. Coast Guard, Town of East Hampton, and private residence	OPERATOR: SAME AS OWNER
OWNER ADDRESS	OPERATOR ADDRESS
CITY: Montauk	CITY
STATE: NY / ZIP CODE: 11954 / TELEPHONE: ( )	STATE / ZIP CODE / TELEPHONE: ( )

TYPE OF OWNERSHIP

- [x] PRIVATE – homes
- [x] FEDERAL: Agency name U.S. Coast Guard – lighthouse
- [x] STATE – New York state Parks
- [ ] COUNTY
- [ ] MUNICIPAL
- [x] OTHER: Town of East Hampton
- [ ] NOT SPECIFIED

OWNER/OPERATOR NOTIFICATION ON FILE

- [x] NONE
- [ ] CERCLA 103 C. UNCONTROLLED WASTE SITE DATE: ______
- [ ] RCRA 3001 DATE: ______

SITE STATUS	YEARS OF OPERATION	APPROXIMATE SIZE OF SITE
[x] ACTIVE U.S. Coast Guard portion [x] INACTIVE ← airforce army Navy [ ] UNKNOWN	BEGINNING YEAR: 1941 ENDING YEAR: unknown [ ] UNKNOWN	The site is approximately 500 acres in size. The actual location of storage/disposal of hazardous waste is unknown

SITE EVALUATION

AGENCY / ORGANIZATION: NUS Corporation Region 2 FIT

INVESTIGATOR: Susan S. Hodgkiss

CONTACT: Amy Brochu

ADDRESS: U.S. EPA Region 2, Edison, New Jersey

TELEPHONE: (201) 906-6802

DATE: December 31, 1990

DRAFT

NOV 06 1990

Site Name: Naval Facility N. Division 2
Date: 12/31/90

GENERAL INFORMATION

Site Description and Operational History:

The Naval Facility N. Division, (Camp Hero) is located on Montauk Point, Long Island, Suffolk County, New York. The site is approximately 500 acres and the surronding area is residential. The site is bounded to the south and east by the Atlantic Ocean and to the north and west by a New York State Park. Located on the eastern portion of the site is a lighthouse currently operated and owned by the U.S. Coast Guard. The history of ownership for this site is extensive. Activities on site began in 1941 when the army obtained the property on Montauk Point. Camp Hero was Part of the Long Island Defense Program during war time and stored guns as well as house military personnel. From 1950 to 1982 the U.S. Air Force occupied approximately 308 acres of the property and had several radar towers, and personnel housing. In 1974, approximately 119 acres was obtained from the Army by the State of New York with the restriction that the land be used as a park. In 1983 and 1984, the state of New York acquired another 296 acres under the same restriction. In 1971, approximately 17 acres was transferred from the army to the Navy for use as a radar base station. This land was later purchased by the Navy in 1978. During 1982 to 1985, the Navy leased the lighthouse and garage on the eastern portion of the site to the U.S. Coast Guard. In 1985, the Navy sold their portion of the Site to the town of East Hampton for the purpose of constructing housing units. None the less, the Navy currently operates a radar base station on the property under an easement contracts workers who maitain the station as needed. The U.S. Coast Guard. obtained approx. 6 acres at the lighthouse location. In 1984, the Town of East Hampton obtained an additional 30 acres. The Town of East Hampton further subdivided a portion of their site property and sold it for individual home lots. Currently, the different portions of are owned by the state of N.Y, Town of E. Hampton, U.S. Coast Guard, and approx. 28 homeowners. During the Air force occupancy the Suffolk County Health Department conducted an inspection on Aug. 10, 1983 and reported 10 oil filled Transformers. The status of these transformers is unknown. Despite extensive background investigation, the presence or indication of activities generating CERCLA hazardous waste has not been determined at the site.

Probable Contaminants of Concern:
(Previous investigations; analytical data)

- The presence or indication of activities generating a CERCLA hazardous waste has not been determined at the Naval Facility N. Division Site.

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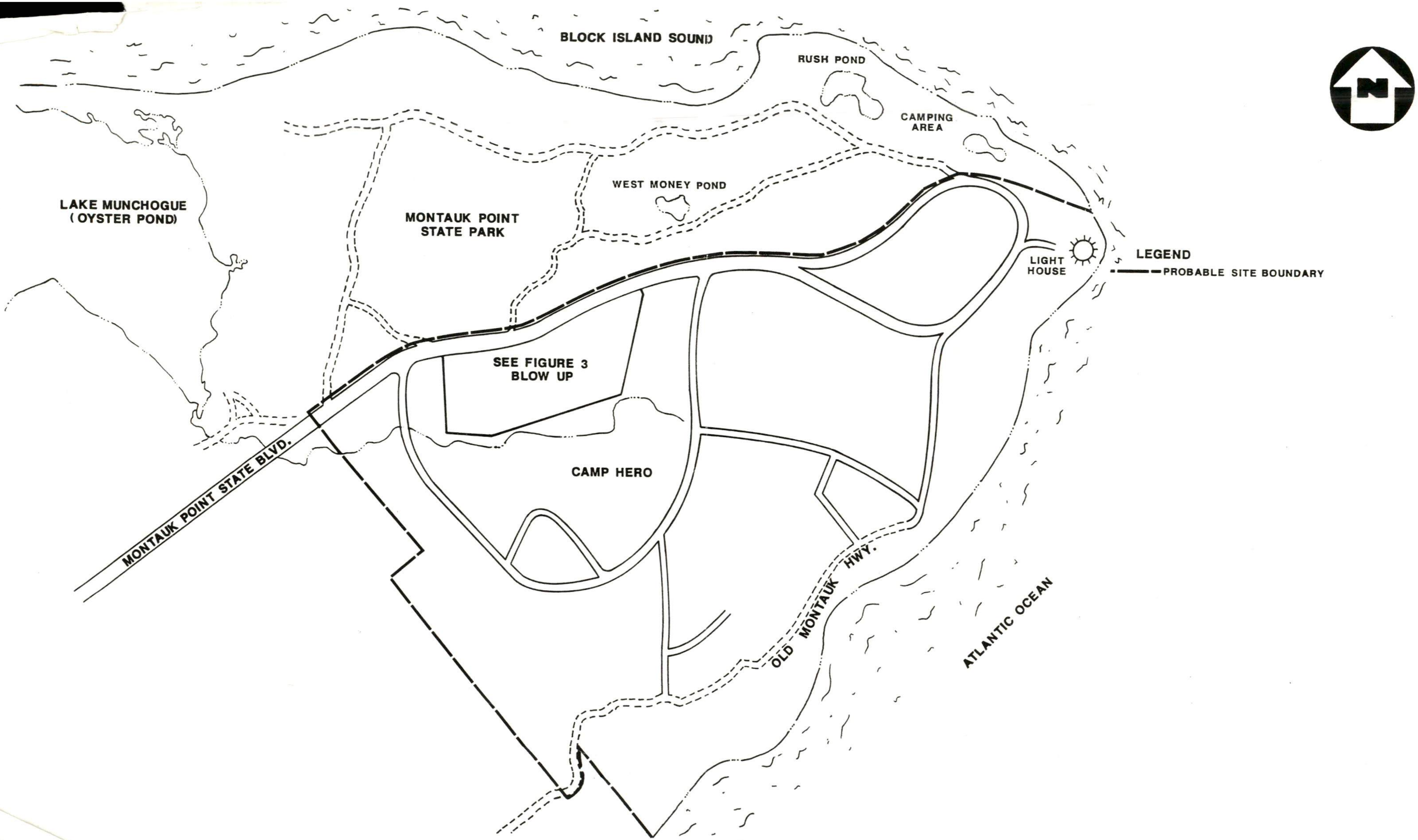
NOV 06 1990

Site Name: Naval Facility N. Division 3
Date: 12/31/90

GENERAL INFORMATION (continued)

Site Sketch:
(Show all pertinent features; indicate sources and closest targets)

See attached Maps.



SITE MAP

NAVAL FACILITY N. DIVISION, CAMP HERO, MONTAUK, N.Y.

NOT TO SCALE

FIGURE 2

NUS CORPORATION

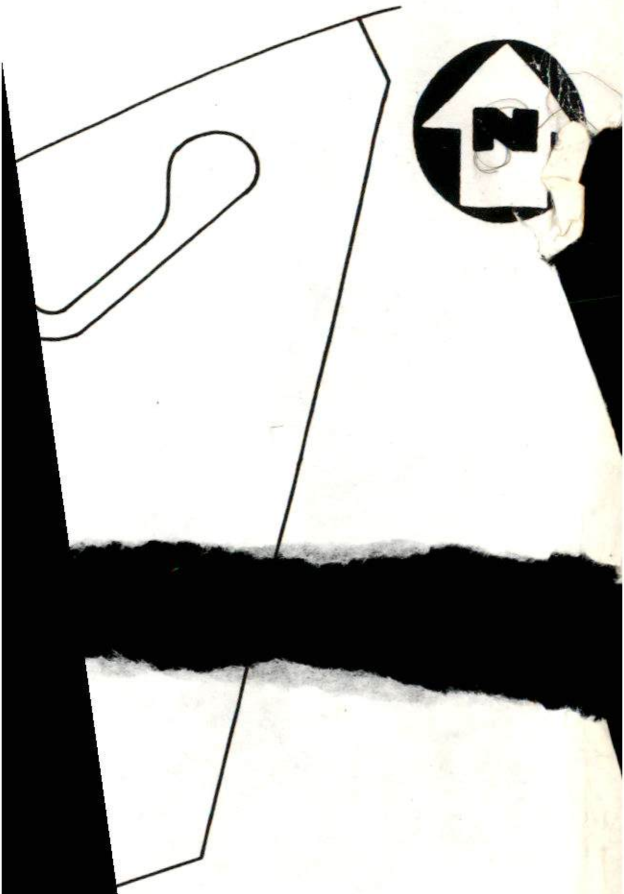


FIGURE 3

NUS CORPORATION

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NOV 08 1990

Site Name: Naval Facility N Division
Date: 12/31/90

GENERAL INFORMATION (continued)

Source Descriptions:

Due to the lack of data and information the Presence or indication of activities generating a CERCLA hazardous waste has not been determined at the Naval Facility N. Division Site.

Waste Characteristics (WC) Calculations:
(See PA Table 1, page 5)

There are no known sources of hazardous waste on site at the Naval Facility N. Division. Therefore, the waste characteristic value is zero.

WC = 0

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NOV 06 1990

Site Name: Naval Facility N. Division 5
Date: 12/31/90

PA TABLE 1: WASTE CHARACTERISTICS (WC) SCORES

PA Table 1a: WC Scores for Single Source Sites and Formulas for Multiple Source Sites

TIER	SOURCE TYPE	SINGLE SOURCE SITES (assigned WC scores) WC = 18	WC = 32	WC = 100	MULTIPLE SOURCE SITES Formula for Assigning Source WQ Values
CONSTITUENT	N/A	≤100 lbs	>100 to 10,000 lbs	>10,000 lbs	*lbs ÷ 1*
WASTESTREAM	N/A	≤500,000 lbs	>500,000 to 50 million lbs	>50 million lbs	*lbs ÷ 5,000*
VOLUME	Landfill	≤6.75 million ft^3 ≤250,000 yd^3	>6.75 million ft^3 to 675 million ft^3 >250,000 to 25 million yd^3	>675 million ft^3 >25 million yd^3	*ft^3 ÷ 67,500* *yd^3 ÷ 2,500*
	Surface impoundment	≤6,750 ft^3 ≤250 yd^3	>6,750 ft^3 to 675,000 ft^3 >250 to 25,000 yd^3	>675,000 ft^3 >25,000 yd^3	*ft^3 ÷ 67.5* *yd^3 ÷ 2.5*
	Drums	≤1,000 drums	>1,000 to 100,000 drums	>100,000 drums	*drums ÷ 10*
	Tanks and non-drum containers	≤50,000 gallons	>50,000 to 5 million gallons	>5 million gallons	*gallons ÷ 500*
	Contaminated soil	≤6.75 million ft^3 ≤250,000 yd^3	>6.75 million ft^3 to 675 million ft^3 >250,000 to 25 million yd^3	>675 million ft^3 >25 million yd^3	*ft^3 ÷ 67,500* *yd^3 ÷ 2,500*
	Pile	≤6,750 ft^3 ≤250 yd^3	>6,750 ft^3 to 675,000 ft^3 >250 to 25,000 yd^3	>675,000 ft^3 >25,000 yd^3	*ft^3 ÷ 67.5* *yd^3 ÷ 2.5*
AREA	Landfill	≤340,000 ft^2 ≤7.8 acres	>340,000 to 34 million ft^2 >7.8 to 780 acres	>34 million ft^2 >780 acres	*ft^2 ÷ 3,400* *acres ÷ 0.078*
	Surface impoundment	≤1,300 ft^2 ≤0.029 acres	>1,300 to 130,000 ft^2 >0.029 to 2.9 acres	>130,000 ft^2 >2.9 acres	*ft^2 ÷ 13* *acres ÷ 0.00029*
	Contaminated soil	≤3.4 million ft^2 ≤78 acres	>3.4 million to 340 million ft^2 >78 to 7,800 acres	>340 million ft^2 >7,800 acres	*ft^2 ÷ 34,000* *acres ÷ 0.78*
	Pile*	≤1,300 ft^2 ≤0.029 acres	>1,300 to 130,000 ft^2 >0.029 to 2.9 acres	>130,000 ft^2 >2.9 acres	*ft^2 ÷ 13* *acres ÷ 0.00029*
	Land treatment	≤27,000 ft^2 ≤0.62 acres	>27,000 to 2.7 million ft^2 >0.62 to 62 acres	>2.7 million ft^2 >62 acres	*ft^2 ÷ 270* *acres ÷ 0.0062*

1 ton = 2,000 lbs = 1 yd^3 = 4 drums = 200 gallons

* Use area of land surface under pile, not surface area of pile.

PA Table 1b: WC Scores for Multiple Source Sites

WQ Total	*WC Score*
>0 to 100	18
>100 to 10,000	32
>10,000	100

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NOV 06 1990

Site Name: Naval Facility N. Division

Date: 12/31/90

GROUND WATER PATHWAY
GROUND WATER USE DESCRIPTION

Describe Ground Water Use Within 4-miles of the Site:

(Provide generalized stratigraphy; information on aquifers, municipal, and or private wells)

The overlying strata in the Montauk Point area are glacial deposits consisting of till and stratified drift. These glacial deposits are divided into lower and upper units of stratified drift consisting of undifferentiated deposits of till and stratified drift. The lower unit of stratified drift is composed of medium to coarse sand and gravel interspered with some thin lenses of clay and silt. Because of the high permeability (10^{3} to 10^{5} cm/sec) and extensive distribution, the beds of the lower unit comprise the principal aquifer in the area. Immediately above the lower unit is an undifferentiated unit of interbedded deposits of till and stratified drift approx. 30 to 100 feet thick and consisting of gravelly till, clay, silt, and some thin lenses of fine sand. The glacial deposits are underlain by the Magothy Formation which consists of beds of silt and sandy clay and has a permeability of 10^{5} to 10^{7} cm/sec. This formation is underlain by the Raritan Formation, which is approx. 300 to 400 feet thick. The Raritan Formation is divided into a lower unit called the Lloyd Sand Member and an upper unit called the Clay Member. The Lloyd Sand Member is an artesian aquifer that probably contains salt water only in the Montauk Point area. Underlying the Raritan Formation is bedrock which consists of gneiss and schist. Because the bedrock has a low permeability and contains only salt water, it is not considered an aquifer. Water in the principal aquifer, the Magothy Formation, is under artesian pressure due to the relatively low permeability of the overlying beds and is replenished by slow downward leakage from the overlying confining beds. The Magothy Formation is the aquifer of concern near the site. In general, groundwater moves from areas of recharge to areas of discharge. The water table in the area of the site is reported to be 5 to 25 feet below the land surface.

Show calculations of ground water drinking water populations:

Groundwater data is unavailable at this time. However, everyone with 4 miles of the site uses groundwater for potable purposes. Therefore, due to the lack of data a house count was used to determine the population served by groundwater.

Distance	Population
0 - 1/4	106
1/2 - 1/2	0
1/2 - 1	0
1 - 2	57
2 - 3	395
3 - 4	486

DRAFT NOV 06 1990

GROUND WATER PATHWAY CRITERIA LIST

Site Name: Naval Facility N. Division
Date: 12/31/90

This chart provides guidelines to assist you in hypothesizing the presence of a suspected release and identifying primary targets. It is expected that not all of this information will be available during the PA. Also, these criteria are not all-inclusive; list any other criteria you use to hypothesize a suspected release or to identify primary targets. This chart will record your professional judgment in evaluating these factors.

The "Suspected Release" section of the chart guides you through evaluation of some site, source, and pathway conditions to help hypothesize whether a release from the site is likely. If a release is suspected, use the "Primary Targets" section to guide you through evaluation of some conditions that will help identify targets likely to be exposed to hazardous substances. You may use this section of the chart more than once, depending on the number of targets you feel may be considered "primary." In the "Primary Targets" section on this sheet, record the responses for the well that you feel has the highest probability of being exposed to hazardous substances.

Check the boxes to indicate a "yes", "no", or "unknown" answer to each question. If you check the "Suspected Release" box as "yes", make sure that you assign a Likelihood of Release value of 550 for the pathway.

GROUND WATER PATHWAY

SUSPECTED RELEASE

Yes	No	Unknown	
☐	☐	☒	Are sources poorly contained?
☐	☐	☒	Is the source a type likely to contribute to ground water contamination (e.g., wet lagoon)?
☐	☐	☒	Is waste quantity particularly large?
☒	☐	☐	Is precipitation heavy and infiltration rate high?
☐	☒	☐	Is the site located in an area of karst terrain?
☐	☒	☐	Is the subsurface highly permeable or conductive?
☒	☐	☐	Is drinking water drawn from a shallow aquifer?
☐	☐	☒	Are suspected contaminants highly mobile in ground water?
☐	☐	☒	Does any circumstantial evidence of ground water or drinking water contamination exist?
☒	☐		Other criteria? no waste source
☐	☒		**SUSPECTED RELEASE?**

PRIMARY TARGETS

Yes	No	Unknown	
☐	☐	☒	Is any drinking-water well nearby?
☐	☐	☒	Is any nearby drinking-water well closed?
☐	☐	☒	Has foul-tasting or foul-smelling water been reported by any nearby drinking-water users?
☐	☒	☐	Do any nearby wells have a large drawdown or high production rate?
☐	☒	☐	Are drinking-water wells located between the site and other wells that are suspected to be exposed to hazardous substances?
☐	☒	☐	Does any circumstantial evidence of ground water or drinking water contamination exist?
☐	☒	☐	Does any drinking-water well warrant sampling?
☒	☐		Other criteria? no waste source
☐	☒		**PRIMARY TARGET(S) IDENTIFIED?**

Summarize the rationale for suspected release (attach an additional page if necessary):

the presence or indication of activities generating a CERCLA hazardous waste has not been determined at the Naval Facility N. Division Site.

Summarize the rationale for Primary Targets (attach an additional page if necessary):

there are no primary targets as there is no suspected release of contaminates to the groundwater from the Naval Facility N. Division site.

DRAFT
NOV 06 1990

Site Name: Naval Facility N. Division
Date: 12/31/90

GROUND WATER PATHWAY SCORESHEET

Pathway Characteristics	
Do you suspect a release (see Ground Water Pathway Criteria List, page 7)?	Yes ___ No ✓
Is the site located in karst terrain?	Yes ___ No ✓
Depth to aquifer:	5 to 25 ft
Distance to the nearest drinking-water well:	Unknown ft

LIKELIHOOD OF RELEASE

	A: Suspected Release	B: No Suspected Release	References
1. SUSPECTED RELEASE: If you suspect a release to ground water (see page 7), assign a score of 550, and use only column A for this pathway.	(550)		
2. NO SUSPECTED RELEASE: If you do not suspect a release to ground water, and the site is in karst terrain or the depth to aquifer is 70 feet or less, assign a score of 500; otherwise, assign a score of 340. Use only column B for this pathway.		(500 or 340) 500	2-8
LR =		500	

TARGETS

	A	B	References
3. PRIMARY TARGET POPULATION: Determine the number of people served by drinking water from wells that you suspect have been exposed to hazardous substances from the site (see Ground Water Pathway Criteria List, page 7). ______ people x 10 =			
4. SECONDARY TARGET POPULATION: Determine the number of people served by drinking water from wells that you do NOT suspect have been exposed to hazardous substances from the site, and assign the total population score from PA Table 2. Are any wells part of a blended system? Yes ___ No ___ Unknown. If yes, attach a page to show apportionment calculations.		28	21
5. NEAREST WELL: If you have identified any Primary Targets for ground water, assign a score of 50; otherwise, assign the highest Nearest Well score from PA Table 2. If no drinking-water wells exist within 4 miles, assign a score of zero.	(50,20,18,8,6,3,2, or 0)	(20,18,8,6,3,2, or 0) 0	15
6. WELLHEAD PROTECTION AREA (WHPA): Assign a score of 20 if any portion of a designated WHPA is within ¼ mile of the site; assign 5 if from ¼ to 4 miles.	(20, 5, or 0)	(20, 5, or 0) 0	
7. RESOURCES: A score of 5 is assigned.	(5) 5	(5) 5	
T =		33	

WASTE CHARACTERISTICS

	A	B
8. A. If you have identified any Primary Targets for ground water, assign the waste characteristics score calculated on page 4, or a score of 32, whichever is GREATER; do not evaluate part B of this factor.	(100 or 32)	
B. If you have NOT identified any Primary Targets for ground water, assign the waste characteristics score calculated on page 4.	(100,32, or 18)	(100,32, or 18) 0
WC =		0

GROUND WATER PATHWAY SCORE:

$$\frac{LR \times T \times WC}{82{,}500}$$

(subject to a maximum of 100)

0

Site Name:
Date:

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PA TABLE 2: VALUES FOR SECONDARY GROUND WATER TARGET POPULATIONS

PA Table 2a: Non-Karst Aquifers

Distance from Site	*Population*	*Nearest Well (choose highest)*	*Population Served by Wells Within Distance Category* 1 to 10	11 to 30	31 to 100	101 to 300	301 to 1,000	1,001 to 3,000	3,001 to 10,000	10,001 to 30,000	30,001 to 100,000	100,001 to 300,000	*Population Value*
0 to ¼ mile	106	20	1	2	5	(16)	52	163	521	1,633	5,214	16,325	16
> ¼ to ½ mile	0	18	1	1	3	10	32	101	323	1,012	3,233	10,121	—
> ½ to 1 mile	0	9	1	1	2	5	17	52	167	522	1,668	5,224	—
> 1 to 2 miles	57	5	1	1	(1)	3	9	29	94	294	939	2,938	1
> 2 to 3 miles	395	3	1	1	1	2	(7)	21	68	212	678	2,122	7
> 3 to 4 miles	486	2	1	1	1	1	(4)	13	42	131	417	1,306	4

Nearest Well = 20 **Score =** 28

PA Table 2b: Karst Aquifers

Distance from Site	*Population*	*Nearest Well (use 20 for karst)*	*Population Served by Wells Within Distance Category* 1 to 10	11 to 30	31 to 100	101 to 300	301 to 1,000	1,001 to 3,000	3,001 to 10,000	10,001 to 30,000	30,001 to 100,000	100,001 to 300,000	*Population Value*
0 to ¼ mile	____	20	1	2	5	16	52	163	521	1,633	5,214	16,325	____
> ¼ to ½ mile	____	20	1	1	3	10	32	101	323	1,012	3,233	10,121	____
> ½ to 1 mile	____	20	1	1	3	8	26	82	261	816	2,607	8,162	____
> 1 to 2 miles	____	20	1	1	3	8	26	82	261	816	2,607	8,162	____
> 2 to 3 miles	____	20	1	1	3	8	26	82	261	816	2,607	8,162	____
> 3 to 4 miles	____	20	1	1	3	8	26	82	261	816	2,607	8,162	____

Nearest Well = ____ **Score =** ____

Naval Facility N. Division
12/31/90

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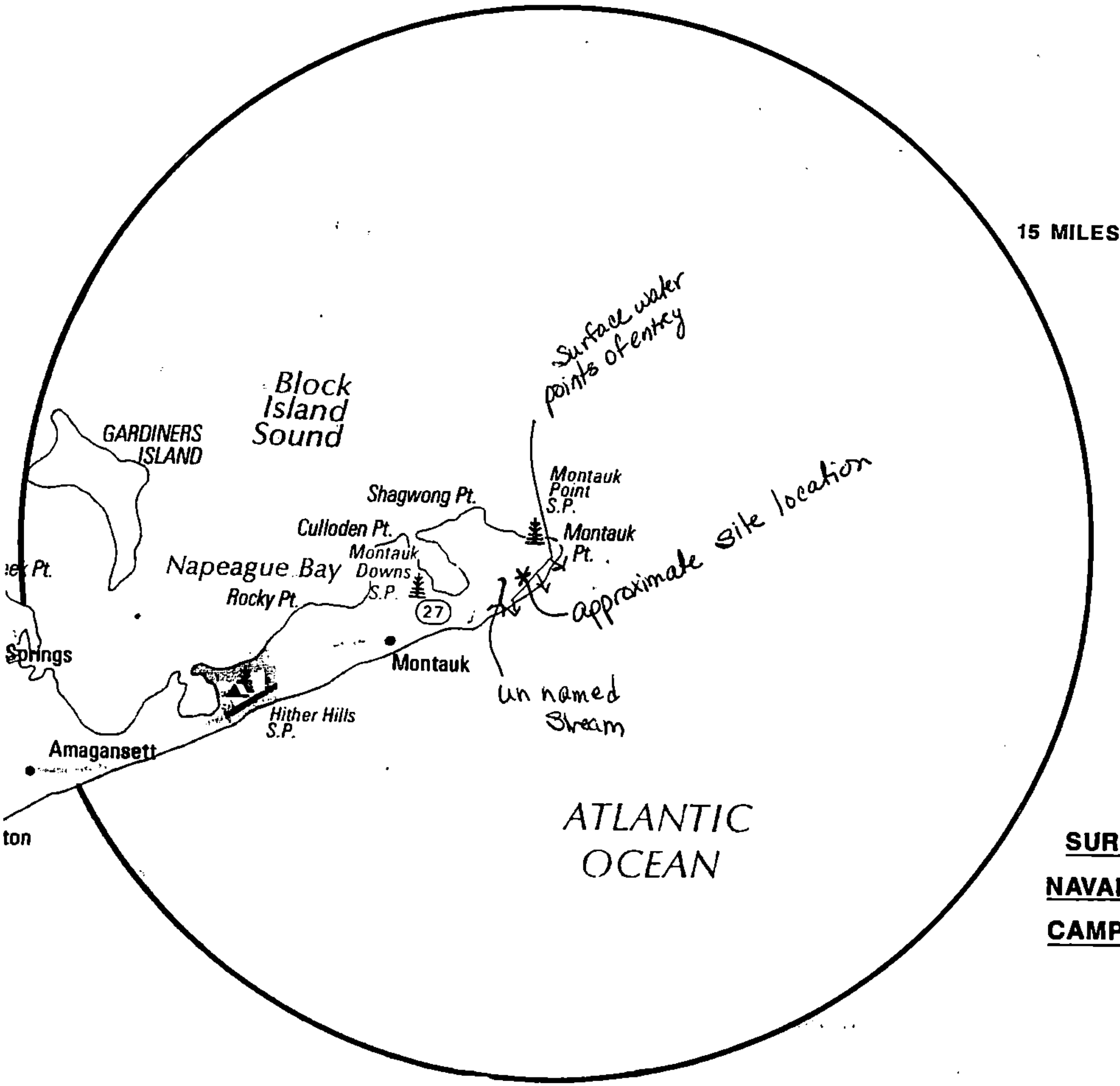
Site Name: Naval Facility N. Division 10
Date: 12/31/90

SURFACE WATER PATHWAY MIGRATION ROUTE SKETCH

Provide a Sketch of the Surface Water Migration Route:
(include runoff route, probable point of entry, 15-mile target distance limit, intakes, fisheries, and sensitive environments)

See attached Map



SURFACE WATER PATHWAY

NAVAL FACILITY N. DIVISION,

CAMP HERO, MONTAUK, N.Y.

FIGURE 4

NUS CORPORATION

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SURFACE WATER PATHWAY CRITERIA LIST

Site Name: Naval Facility N. Division
Date: 12/31/90

This chart provides guidelines to assist you in hypothesizing the presence of a suspected release and identifying primary targets. It is expected that not all of this information will be available during the PA. Also, these criteria are not all-inclusive; list any other criteria you use to hypothesize a suspected release or to identify primary targets. This chart will record your professional judgment in evaluating these factors.

The "Suspected Release" section of the chart guides you through evaluation of some site, source, and pathway conditions to help hypothesize whether a release from the site is likely. If a release is suspected, use the "Primary Targets" section to guide you through evaluation of some conditions that will help identify targets likely to be exposed to hazardous substances. You may use this section of the chart more than once, depending on the number of targets you feel may be considered "primary." In the "Primary Targets" section on this sheet, record the responses for the target that you feel has the highest probability of being exposed to hazardous substances.

Check the boxes to indicate a "yes", "no", or "unknown" answer to each question. If you check the "Suspected Release" box as "yes", make sure that you assign a Likelihood of Release value of 550 for the pathway.

SURFACE WATER PATHWAY

SUSPECTED RELEASE

Yes	No	Unknown	
☑	☐	☐	Is surface water nearby?
☐	☐	☑	Is waste quantity particularly large?
☑	☐	☐	Is the drainage area large?
☐	☑	☐	Is precipitation heavy or infiltration rate low?
☐	☐	☑	Are sources poorly contained or prone to runoff or flooding?
☐	☐	☑	Is a runoff route well defined (e.g., ditch or channel leading to surface water)?
☐	☐	☑	Is vegetation stressed along the probable runoff path?
☐	☐	☑	Are suspected contaminants highly persistent in surface water?
☐	☐	☑	Are sediments/water unnaturally discolored?
☐	☐	☑	Is wildlife unnaturally absent?
☐	☑	☐	Has deposition of waste into surface water been observed?
☑	☐	☐	Is ground water discharge to surface water likely?
☐	☑	☐	Is there any circumstantial evidence of surface water contamination?
☑	☐		Other criteria? no wastesource
☐	☑		**SUSPECTED RELEASE?**

PRIMARY TARGETS

Yes	No	Unknown	
☑	☐	☐	Is any target nearby? If yes: ☐ Drinking-water intake ☑ Fishery ☑ Sensitive environment
☐	☑	☐	Has an intake, fishery, or recreational area been closed?
☐	☑	☐	Is there any circumstantial evidence of surface water contamination at or downstream of a target?
☐	☑	☐	Does any target warrant sampling? If yes: ☐ Drinking-water intake ☐ Fishery ☐ Sensitive environment
☑	☐		Other criteria? No waste source
☐	☑		**PRIMARY INTAKE(S) IDENTIFIED?**
☐	☑		**PRIMARY FISHERY IDENTIFIED?**
☐	☑		**PRIMARY SENSITIVE ENVIRONMENT(S) IDENTIFIED?**

Summarize the rationale for suspected release (attach an additional page if necessary):

activities generating a CERCLA hazardous the presence or indication of waste has not been determined at the Naval Facility N. Division site.

Summarize the rationale for Primary Targets (attach an additional page if necessary):

there are no primary targets as there is no suspected release of contaminants to the surfacewater from the Naval Facility N. Division site.

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Site Name: Naval Facility N. Division 12
Date: 12/31/90

SURFACE WATER PATHWAY
LIKELIHOOD OF RELEASE AND DRINKING WATER THREAT SCORESHEET

Pathway Characteristics	
Do you suspect a release (see Surface Water Pathway Criteria List, page 11)?	Yes ___ No ✓
Distance to surface water:	NA ft
Flood Frequency:	100 yrs
What is the downstream distance to the nearest drinking-water intake? NA miles	
nearest fishery? 0 miles nearest sensitive environment? 0.8 miles	

LIKELIHOOD OF RELEASE

	A *Suspected Release*	B *No Suspected Release*	*References*
1. SUSPECTED RELEASE: If you suspect a release to surface water (see page 11), assign a score of 550, and use only column A for this pathway.	(550)		
2. NO SUSPECTED RELEASE: If you do not suspect a release to surface water, and the distance to surface water is 2,500 feet or less, assign a score of 500; otherwise, assign a score from the table below. Use only column B for this pathway.		(500,400,300 or 100) 500	1, 11
LR =	(550)	(500,400,300 or 100) 500	

Floodplain	*Score*
Site in annual or 10-yr floodplain	500
Site in 100-yr floodplain	400
Site in 500-yr floodplain	300
Site outside 500-yr floodplain	100

DRINKING WATER THREAT TARGETS

3. Determine the water body types, flows (if applicable), and number of people served by all drinking-water intakes within the 15-mile target distance limit. If there are no drinking-water intakes within the target distance limit, assign a total Targets score of 5 at the bottom of this page (Resources only) and proceed to page 14.

Intake Name	*Water Body Type*	*Flow*	*People Served*
______	______	______ cfs	______
______	______	______ cfs	______
______	______	______ cfs	______

4. PRIMARY TARGET POPULATION: If you suspect any drinking-water intake listed above has been exposed to hazardous substances from the site (see Surface Water Pathway Criteria List, page 11), list the intake name(s) and calculate the factor score based on the number of people served.

______, ______,

______ people x 10 =

5. SECONDARY TARGET POPULATION: Determine the Secondary Target Population score from PA Table 3 based on the populations using drinking-water from intakes that you do NOT suspect have been exposed to hazardous substances from the site.

Are any intakes part of a blended system? Yes ___ No ___
If yes, attach a page to show apportionment calculations.

	A	B	References
6. NEAREST INTAKE: If you have identified any Primary Targets for the drinking water threat (Factor 4), assign a score of 50; otherwise, assign the Nearest Intake score from PA Table 3. If no drinking-water intake exists within the 15-mile target distance limit, assign a score of zero.	(50,20,10,2,1, or 0)	(20,10,2,1, or 0) 0	15
7. RESOURCES: A score of 5 is assigned.	(5) 5	(5) 5	
T =		5	

Site Name:
Date:

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PA TABLE 3: VALUES FOR SECONDARY SURFACE WATER TARGET POPULATIONS

Surface Water Body Flow Characteristics (see PA Table 4)	*Population*	*Nearest Intake (choose highest)*	*Population Served by Intakes Within Flow Category* 1 to 30	31 to 100	101 to 300	301 to 1,000	1,001 to 3,000	3,001 to 10,000	10,001 to 30,000	30,001 to 100,000	100,001 to 300,000	300,001 to 1,000,000	1,000,001 to 3,000,000	*Population Value*
<10 cfs	____	20	2	5	16	52	163	521	1,633	5,214	16,325	52,136	163,246	____
10 to 100 cfs	____	2	1	1	2	5	16	52	163	521	1,633	5,214	16,325	____
>100 to 1,000 cfs	____	1	0	0	1	1	2	5	16	52	163	521	1,633	____
>1,000 to 10,000 cfs	____	0	0	0	0	0	1	1	2	5	16	52	163	____
>10,000 cfs or Great Lakes	____	0	0	0	0	0	0	0	1	1	2	5	16	____
3-mile Mixing Zone	____	10	1	3	8	26	82	261	816	2,607	8,162	26,068	81,663	____

Nearest Intake = ____

Score = ____

PA TABLE 4: SURFACE WATER TYPE / FLOW CHARACTERISTICS WITH DILUTION WEIGHTS FOR SECONDARY SURFACE WATER SENSITIVE ENVIRONMENTS

Type of Surface Water Body Water Body Type	OR	Flow Characteristics	*Dilution Weight*
minimal stream		flow less than 10 cfs	*1*
small to moderate stream		flow 10 to 100 cfs	*0.1*
moderate to large stream		flow greater than 100 to 1,000 cfs	*N/A*
large stream to river		flow greater than 1,000 to 10,000 cfs	*N/A*
large river		flow greater than 10,000 cfs	*N/A*
3-mile mixing zone of quiet flowing streams or rivers		flow 10 cfs or greater	*N/A*
coastal tidal water (harbors, sounds, bays, etc.), ocean, or Great Lakes		N/A	*N/A*

Naval Facility ND Division
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Site Name: Naval Facility N. Division
Date: 12/31/90

SURFACE WATER PATHWAY (continued)
HUMAN FOOD CHAIN THREAT SCORESHEET

LIKELIHOOD OF RELEASE		A Suspected Release	B No Suspected Release	References
Enter the Surface Water Likelihood of Release score from page 12.	LR =	(550)	(500,400,300 or 100) 500	

HUMAN FOOD CHAIN THREAT TARGETS	A Suspected Release	B No Suspected Release	References
8. Determine the water body types and flows (if applicable) for all fisheries within the 15-mile target distance limit. If there are no fisheries within the target distance limit, assign a Targets score of 0 at the bottom of this page and proceed to page 15.			1, 11
9. PRIMARY FISHERIES: If you suspect any fishery listed above has been exposed to hazardous substances from the site (see Surface Water Criteria List, page 11), assign a score of 300 and do not evaluate Factor 10. List the Primary Fisheries: ____, ____, ____, ____.	(300 or 0)		
10. SECONDARY FISHERIES: If you have not identified any Primary Fisheries, assign a Secondary Fisheries score from the table below using the LOWEST flow at any fishery within the 15-mile target distance limit.	(210,30,12 or 0)	(210,30,12 or 0) 12	1, 11
T =	(300,210,30,12 or 0)	(210,30,12 or 0) 12	

Fishery Name	Water Body Type	Flow
Atlantic Ocean	Ocean	NA cfs
		cfs
		cfs
		cfs
		cfs

Lowest Flow	Secondary Fisheries Score
< 10 cfs	210
10 to 100 cfs	30
>100 cfs, coastal tidal waters, oceans, or Great Lakes	12

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Site Name: Naval Facility N. Division
Date: 12/31/90

SURFACE WATER PATHWAY (continued)
ENVIRONMENTAL THREAT SCORESHEET

LIKELIHOOD OF RELEASE

	A Suspected Release	B No Suspected Release	References
Enter the Surface Water Likelihood of Release score from page 12. LR =	(550)	(500, 400, 300 or 100) 500	

ENVIRONMENTAL THREAT TARGETS

11. Determine the water body types and flows (if applicable) for all surface water sensitive environments within the 15-mile target distance limit (see PA Tables 4 and 5). If there are no sensitive environments within the 15-mile target distance limit, assign a Targets score of 0 at the bottom of this page, and proceed to page 17.

Environment Name	Water Body Type	Flow
Coastal Wetlands	Ocean	NA cfs
		cfs
		cfs
		cfs
		cfs

References: 1, 11

12. PRIMARY SENSITIVE ENVIRONMENTS: If you suspect any sensitive environment listed above has been exposed to hazardous substances from the site (see Surface Water Criteria List, page 11), assign a score of 300 and do not evaluate Factor 13. List the Primary Sensitive Environments:

(A: 300 or 0)

_______________, _______________,
_______________, _______________.

13. SECONDARY SENSITIVE ENVIRONMENTS:

A. For Secondary Sensitive Environments on surface water bodies with flows of 100 cfs or less, assign scores as follows, and do not evaluate part B of this factor:

Flow	Dilution Weight (PA Table 4)	Environment Type and Value (PA Tables 5 and 6)	Total
cfs	x	=	
cfs	x	=	
cfs	x	=	
cfs	x	=	
cfs	x	=	

Sum =

B. If NO Secondary Sensitive Environments are located on surface water bodies with flows of 100 cfs or less, assign a score of 10.

(A: 10 or 0) (B: 10 or 0)

	A	B
T =		0

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Site Name: Naval Facility N. Div.
Date: 12/31/90

PA TABLE 5: SURFACE WATER AND AIR SENSITIVE ENVIRONMENTS VALUES

Sensitive Environment	Assigned Value
Critical habitat for Federally designated endangered or threatened species Marine Sanctuary National Park Designated Federal Wilderness Area Ecologically important areas identified under the Coastal Zone Wilderness Act Sensitive Areas identified under the National Estuary Program or Near Coastal Water Program of the Clean Water Act Critical Areas identified under the Clean Lakes Program of the Clean Water Act (subareas in lakes or entire small lakes) National Monument National Seashore Recreation Area National Lakeshore Recreation Area	100
Habitat known to be used by Federally designated or proposed endangered or threatened species National Preserve National or State Wildlife Refuge Unit of Coastal Barrier Resources System Federal land designated for the protection of natural ecosystems Administratively Proposed Federal Wilderness Area Spawning areas critical for the maintenance of fish/shellfish species within a river system, bay or estuary Migratory pathways and feeding areas critical for the maintenance of anadromous fish species in a river system Terrestrial areas utilized by large or dense aggregations of vertebrate animals (semi-aquatic foragers) for breeding National river reach designated as recreational	75
Habitat known to be used by State designated endangered or threatened species Habitat known to be used by a species under review as to its Federal endangered or threatened status Coastal Barrier (partially developed) Federally designated Scenic or Wild River	50
State land designated for wildlife or game management State designated Scenic or Wild River State designated Natural Area Particular areas, relatively small in size, important to maintenance of unique biotic communities	25
State designated areas for the protection/maintenance of aquatic life under the Clean Water Act	5
Wetlands	See PA Table 6 (Surface Water Pathway) or PA Table 9 (Air Pathway)

PA TABLE 6: SURFACE WATER WETLANDS FRONTAGE VALUES

Total Length of Wetlands	Assigned Value
Less than 0.1 mile	0
0.1 to 1 mile	25
Greater than 1 to 2 miles	50
Greater than 2 to 3 miles	75
Greater than 3 to 4 miles	100
Greater than 4 to 8 miles	150
Greater than 8 to 12 miles	250
Greater than 12 to 16 miles	350
Greater than 16 to 20 miles	450
Greater than 20 miles	500

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Site Name: Naval Facility N. Division 17
Date: 12/31/90

SURFACE WATER PATHWAY (concluded)
WASTE CHARACTERISTICS, THREAT, AND PATHWAY SCORE SUMMARY

WASTE CHARACTERISTICS

	A Suspected Release	B No Suspected Release
14. A. If you have identified ANY Primary Targets for surface water (pages 12, 14, or 15), assign the waste characteristics score calculated on page 4, or a score of 32, whichever is GREATER; do not evaluate part B of this factor.	(100 or 32)	
B. If you have NOT identified any Primary Targets for surface water, assign the waste characteristics score calculated on page 4.	(100, 32, or 18)	(100, 32, or 18)
WC =		0

SURFACE WATER PATHWAY THREAT SCORES

Threat	*Likelihood of Release (LR) Score (from page 12)*	*Targets (T) Score*	*Pathway Waste Characteristics (WC) Score (determined above)*	*Threat Score LR x T x WC / 82,500*
Drinking Water	500	5	0	(subject to a maximum of 100) 0
Human Food Chain	500	12	0	(subject to a maximum of 100) 0
Environmental	500	0	0	(subject to a maximum of 60) 0

SURFACE WATER PATHWAY SCORE (Drinking Water Threat + Human Food Chain Threat + Environmental Threat)	(subject to a maximum of 100) 0

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SOIL EXPOSURE PATHWAY CRITERIA LIST

Site Name: Naval Facility N. Divisio
Date: 12/31/90

This chart provides guidelines to assist you in hypothesizing the presence of a resident population. It is expected that not all of this information will be available during the PA. Also, these criteria are not all-inclusive; list any other criteria you use to hypothesize resident populations. This chart will record your professional judgment in evaluating this factor.

Use the resident population section to guide you through evaluation of some site and source conditions that will help identify targets likely to be exposed to hazardous substances. You may use this section of the chart more than once, depending on the number of nearby people you feel may be considered part of a resident population. Record the responses for the resident population target that you feel has the highest probability of being exposed to hazardous substances.

Check the boxes to indicate a "yes", "no", or "unknown" answer to each question.

SOIL EXPOSURE PATHWAY

SUSPECTED CONTAMINATION	*RESIDENT POPULATION*			
	Yes	No	Unknown	
Surficial contamination is assumed.	☑	☐	☐	Are there residences, schools, or day care facilities on or within 200 feet of areas of suspected contamination?
	☐	☐	☑	Are residences, schools, or day care facilities located on adjacent land previously owned or leased by the site owner/operator?
	☑	☐	☐	Is there an overland migration route that might spread hazardous substances near residences, schools, or day care facilities?
	☐	☑	☐	Are there any reports of adverse health effects from onsite or adjacent residents or students, exclusive of apparent drinking water or air contamination problems?
	☐	☑	☐	Does any offsite property warrant sampling?
	☑	☐		Other criteria? No Waste Source
	☐	☑		**RESIDENT POPULATION IDENTIFIED?**

Summarize the rationale for resident population (attach an additional page if necessary):

The presence of indication of activities generating a CERCLA hazardous waste has not been determined at the Naval Facility N. Division Site.

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Site Name: Naval Facility N. Division 19
Date: 12/31/90

SOIL EXPOSURE PATHWAY SCORESHEET

Pathway Characteristics	
Do any people live on or within 200 ft of areas of suspected contamination?	Yes ✓ No ___
Do any people attend school or day care on or within 200 ft of areas of suspected contamination?	Yes ___ No ✓
Is the facility active? Yes ✓ No ___ If yes, estimate the number of workers: 1	

LIKELIHOOD OF EXPOSURE

	A *Suspected Contamination*	B *No Suspected Contamination*	*References*
1. SUSPECTED CONTAMINATION: Surficial contamination is assumed. A score of 550 is assigned. **LE =**	(550) 550		

RESIDENT POPULATION THREAT TARGETS

	A	B	*References*
2. RESIDENT POPULATION: Determine the number of people occupying residences or attending school or day care on or within 200 feet of areas of suspected contamination (see Soil Exposure Pathway Criteria List, page 18). 106 people x 10 =	1060		19
3. RESIDENT INDIVIDUAL: If you have identified any Resident Population (Factor 2), assign a score of 50; otherwise, assign a score of 0.	(50 or 0) 50		19
4. WORKERS: Assign a score from the following table based on the total number of workers at the facility and nearby facilities with suspected contamination:	(15, 10, 5, or 0) 5		1
5. TERRESTRIAL SENSITIVE ENVIRONMENTS: Assign a value from PA Table 7 for each terrestrial sensitive environment that is located on an area of suspected contamination: **Sum =**			
6. RESOURCES: A score of 5 is assigned.	(5) 5		
T =	1120		

Number of Workers	Score
0	0
1 to 100	5
101 to 1,000	10
>1,000	15

Terrestrial Sensitive Environment Type	*Value*
___	___
___	___

WASTE CHARACTERISTICS

	A	B
7. Assign the waste characteristics score calculated on page 4. **WC =**	(100, 32, or 18) 0	

RESIDENT POPULATION THREAT SCORE: $\frac{LE \times T \times WC}{82,500}$ (subject to a maximum of 100) 0

NEARBY POPULATION THREAT SCORE:
Assign a score of 2 — 2

SOIL EXPOSURE PATHWAY SCORE: (subject to a maximum of 100) 2
Resident Population Threat + Nearby Population ...

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Site Name: Naval Facility N.?

Date: 12/31/90

PA TABLE 7: SOIL EXPOSURE PATHWAY
TERRESTRIAL SENSITIVE ENVIRONMENT VALUES

Terrestrial Sensitive Environment	*Assigned Value*
Terrestrial critical habitat for Federally designated endangered or threatened species National Park Designated Federal Wilderness Area National Monument	100
Terrestrial habitat known to be used by Federally designated or proposed threatened or endangered species National Preserve (terrestrial) National or State terrestrial Wildlife Refuge Federal land designated for protection of natural ecosystems Administratively proposed Federal Wilderness Area Terrestrial areas utilized by large or dense aggregations of animals (vertebrate species) for breeding	75
Terrestrial habitat used by State designated endangered or threatened species Terrestrial habitat used by species under review for Federally designated endangered or threatened status	50
State lands designated for wildlife or game management State designated Natural Areas Particular areas, relatively small in size, important to maintenance of unique biotic communities	25

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AIR PATHWAY CRITERIA LIST

Site Name: Naval Facility N. Div.
Date: 12/31/90

This chart provides guidelines to assist you in hypothesizing the presence of a suspected release. It is expected that not all of this information will be available during the PA. Also, these criteria are not all-inclusive; list any other criteria you use to hypothesize a suspected release. This chart will record your professional judgment in evaluating this factor.

The "Suspected Release" section of the chart guides you through evaluation of some conditions to help hypothesize whether a release from the site is likely. For the Air Pathway, if a release is suspected, "Primary Targets" are any residents, workers, students, or sensitive environments within ¼ mile of the site.

Check the boxes to indicate a "yes", "no", or "unknown" answer to each question. If you check the "Suspected Release" box as "yes", make sure that you assign a Likelihood of Release value of 550 for the pathway.

AIR PATHWAY

Yes	No	Unknown	*SUSPECTED RELEASE*	*PRIMARY TARGETS*
☐	☑	☐	Have odors been reported?	*If you suspect a release to air, evaluate all populations and sensitive environments within ¼ mile (including those onsite) as Primary Targets.*
☐	☑	☐	Has a release of hazardous substances to the air been directly observed?	
☐	☑	☐	Are there any reports of adverse health effects (e.g., headaches, nausea, dizziness) potentially resulting from migration of hazardous substances through the air?	
☐	☑	☐	Is there any circumstantial evidence of an air release?	
☑	☐		Other criteria? no waste source	
☐	☑		**SUSPECTED RELEASE?**	

Summarize the rationale for suspected release (attach an additional page if necessary):

..the presence of indication of activities generating a CERCLA hazardous waste has not been determined at the Naval Facility N. Division Six.

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Site Name: Naval Facility N. Division
Date: 12/31/90

AIR PATHWAY SCORESHEET

Pathway Characteristics	
Do you suspect a release (see Air Pathway Criteria List, page 21)?	Yes ___ No ✓
Distance to the nearest individual:	0 ft

	A Suspected Release	B No Suspected Release	References
LIKELIHOOD OF RELEASE			
1. SUSPECTED RELEASE: If you suspect a release to air (see page 21), assign a score of 550, and use only column A for this pathway.	(550)		
2. NO SUSPECTED RELEASE: If you do not suspect a release to air, assign a score of 500, and use only column B for this pathway.		(500) 500	2-8
LR =		500	
TARGETS			
3. PRIMARY TARGET POPULATION: Determine the number of people subject to exposure from a release of hazardous substances through the air (see Air Pathway Criteria List, page 21). ____ people x 10 =			
4. SECONDARY TARGET POPULATION: Determine the number of people within the 4-mile target distance limit, and assign the total population score from PA Table 8.		17	21
5. NEAREST INDIVIDUAL: If you have identified any Primary Targets for the air pathway, assign a score of 50; otherwise, assign the highest Nearest Individual score from PA Table 8.	(50,20,7,2,1, or 0)	(20,7,2,1, or 0) 20	21
6. PRIMARY SENSITIVE ENVIRONMENTS: Sum the sensitive environment values (PA Table 5) and wetland acreage values (PA Table 9) for environments subject to exposure from air hazardous substances (see Air Pathway Criteria List, page 21). Sum =			
7. SECONDARY SENSITIVE ENVIRONMENTS: Use PA Table 10 to determine the score for secondary sensitive environments.		1	1,11
8. RESOURCES: A score of 5 is assigned.	(5) 5	(5) 5	
T =		38	
WASTE CHARACTERISTICS			
9. A. If you have identified any Primary Targets for the air pathway, assign the waste characteristics score calculated on page 4, or a score of 32, whichever is GREATER; do not evaluate part B of this factor.	(100 or 32)		
B. If you have NOT identified any Primary Targets for the air pathway, assign the waste characteristics score calculated on page 4.	(100,32, or 18)	(100,32, or 18) 0	
WC =		0	

Sensitive Environment Type	Value

AIR PATHWAY SCORE: $\frac{LR \times T \times WC}{82{,}500}$ (subject to a maximum of 100) **0**

Site Name:
Date:

PA TABLE 8: VALUES FOR SECONDARY AIR TARGET POPULATIONS

Distance from Site	Population	Nearest Individual (choose highest)	Population Within Distance Category: 1 to 10	11 to 30	31 to 100	101 to 300	301 to 1,000	1,001 to 3,000	3,001 to 10,000	10,001 to 30,000	30,001 to 100,000	100,001 to 300,000	300,001 to 1,000,000	1,000,001 to 3,000,000	Population Value
Onsite	106	20	1	2	5	(16)	52	163	521	1,633	5,214	16,325	52,136	163,246	16
>0 to ¼ mile	0	20	1	1	1	4	13	41	130	408	1,303	4,081	13,034	40,811	
>¼ to ½ mile	0	2	0	0	1	1	3	9	28	88	282	882	2,815	8,815	
>½ to 1 mile	0	1	0	0	0	1	1	3	8	26	83	261	834	2,612	
>1 to 2 miles	57	0	0	0	(0)	0	1	1	3	8	27	83	266	833	0
>2 to 3 miles	395	0	0	0	0	0	(1)	1	1	4	12	38	120	376	1
>3 to 4 miles	486	0	0	0	0	0	(0)	1	1	2	7	23	73	229	0

Nearest Individual = 20

Score = 17

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PA TABLE 9: AIR PATHWAY VALUES FOR WETLAND AREA

Wetland Area	Assigned Value
Less than 1 acre	0
1 to 50 acres	25
Greater than 50 to 100 acres	75
Greater than 100 to 150 acres	125
Greater than 150 to 200 acres	175
Greater than 200 to 300 acres	250
Greater than 300 to 400 acres	350
Greater than 400 to 500 acres	450
Greater than 500 acres	500

PA TABLE 10: DISTANCE WEIGHTS AND CALCULATIONS FOR AIR PATHWAY SECONDARY SENSITIVE ENVIRONMENTS

Distance	Distance Weight	Sensitive Environment Type and Value (from PA Table 5 or 9)	Product
Onsite	0.10	x	
		x	
0-1/4 mi	0.025	x Wetlands 25	.63
		x	
		x	
1/4-1/2mi	0.0054	x	
		x	
		x	
		x	

Total Environments Score = 1

Naval Facility North Division 12/7/90

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Site Name: Naval Facility 24 Div
Date: 12/31/90

SITE SCORE CALCULATION

	S	S^2
GROUND WATER PATHWAY SCORE (S_{gw}):	0	0
SURFACE WATER PATHWAY SCORE (S_{sw}):	0	0
SOIL EXPOSURE PATHWAY SCORE (S_{se}):	2	4
AIR PATHWAY SCORE (S_a):	0	0

SITE SCORE: $\sqrt{\frac{S_{gw}^2+S_{sw}^2+S_{se}^2+S_a^2}{4}}$ = $\sqrt{\frac{4}{4}}$ = 1

RECOMMENDATION

Despite extensive background investigation, the presence or indication of activities generating CERCLA hazardous waste has not been determined at the Naval Facility 24 Division therefore a No Further Remedial Action Planned is recommended for this Site.

SUMMARY

	YES	NO
1. Is there a high possibility of a threat to nearby drinking water wells by migration of hazardous substances in ground water?	☐	☑
A. If yes, identify the wells recommended for sampling during the SI. ______		
B. If yes, how many people are served by these threatened wells? ______		
2. Are any of the following suspected to have been exposed to hazardous substances through surface water migration from the site?		
A. Drinking water intake	☐	☑
B. Fishery	☐	☑
C. Sensitive environment: wetland, critical habitat, others	☐	☑
D. If yes, identify the targets recommended for sampling during the SI. ______		
3. Do people reside or attend school or day care on or within 200 ft of any area of suspected contamination?	☐	☐
4. Are there public health concerns at this site that are not addressed by PA scoring considerations? If yes, explain: ______	☐	☑


ATLANTIC OCEAN
BUNKER NO. 2
GUARD HOUSE
ACCESS ROAD
SEWAGE TREATMENT FACILITY
STATE PARK SERVICE MOTOR POOL
BUNKER NO. 1
BUNKER NO. 5
FAMILY CAMP AREA
(EAST) ACCESS ROAD
RADAR TOWER
EMPTY STRUCT.
COMMAND CENTER
MATS. CONT. BLDG.
209
107
205
RADAR TOWER
203 (POWER PLANT)
AIR FORCE RADAR STATION AREA
PPS-6
BCE
WATER TANK
LOCATION OF UTILITY BUNKER
STORAGE TANK
WATER PUMP HOUSE (2010)
21
20
19
18
14
P-16 (NCO)
(POLICE HDQTR.) P-12
13
P-17 (DISPENSARY)
BARRACKS AREA
10
(DORM.) P-8
11
SEWAGE EJECTOR STATION
105 (HEATING PLANT)
(DORM.) P-7
BUNKER NO. 3
9
5
109
4
LILCO BLDG.
RECREATION BLDG.
22
204
COMMISSARY AREA
BUNKER NO. 4
ACCESS ROAD
CAMP ENTRANCE
N
SITE PLAN
LEGEND:
EXISTING STRUCTURES TO BE DEMOLISHED
EXISTING STRUCTURES
EXISTING STRUCTURE UNDER FORTIFIED EARTHWORK (BUNKER)
PROPERTY LINE
CHAIN LINK FENCE
SCALE: 1" = 200'
200' 100' 0 200' 400'
Revision
Description
Date
Approved
U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
NEW YORK, NEW YORK
Designed by:
CAMP HERO
MONTAUK POINT
LONG ISLAND, NEW YORK
Drawn by:
I.H.
SITE PLAN
BUILDING DEMOLITION / DEBRIS REMOVAL (BD/DR) AND SEALING OF EXTERIOR BUNKER OPENINGS
Checked by:
Reviewed by:
SECTION CHIEF
Approval Recommended:
CHIEF, ENGINEERING DIVISION
Sheet reference number:
DERP-3
Date:
Scale:
Concurred:
CHIEF, DESIGN BRANCH
Approved by:
COLONEL, C. E. DISTRICT ENGINEER
Sheet __ __ of __
FILE NO.
5
4
3
2
1
D
C
B
A
CLOSER CORPORATION