TB 3/11/96

EPA WORK ASSIGNMENT NO: 076-2JZZ
EPA CONTRACT NO: 68-W8-0110
EBASCO SERVICES INCORPORATED
ARCS II PROGRAM

DRAFT
SCREENING SITE INSPECTION (SSI)
CENTRAL SUFFOLK PAVING SITE
WESTHAMPTON BEACH, SUFFOLK COUNTY, NEW YORK
CERCLIS NO. NYD986881324
FEBRUARY 1996

VOLUME I OF II

NOTICE

THE INFORMATION PROVIDED IN THIS DOCUMENT HAS BEEN FUNDED BY THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY (USEPA) UNDER ARCS II CONTRACT NO. 68-W8-0110 TO EBASCO SERVICES INCORPORATED (EBASCO). THIS DOCUMENT IS A DRAFT AND HAS NOT BEEN FORMALLY RELEASED BY EITHER EBASCO OR USEPA. AS A DRAFT, THIS DOCUMENT SHOULD NOT BE CITED OR QUOTED, AND IS BEING CIRCULATED FOR COMMENT ONLY.

EBASCO

February 15, 1996
ARCS II-96-76-0027

Ms. Catherine Moyik
Work Assignment Manager
U.S. Environmental Protection Agency
18th Floor, 290 Broadway
New York, NY 10007

SUBJECT: ARCS II PROGRAM - EPA CONTRACT 68-W8-0110
WORK ASSIGNMENT NO. 076-2JZZ
PRELIMINARY SCREENING SITE INSPECTION
CENTRAL SUFFOLK PAVING SITE

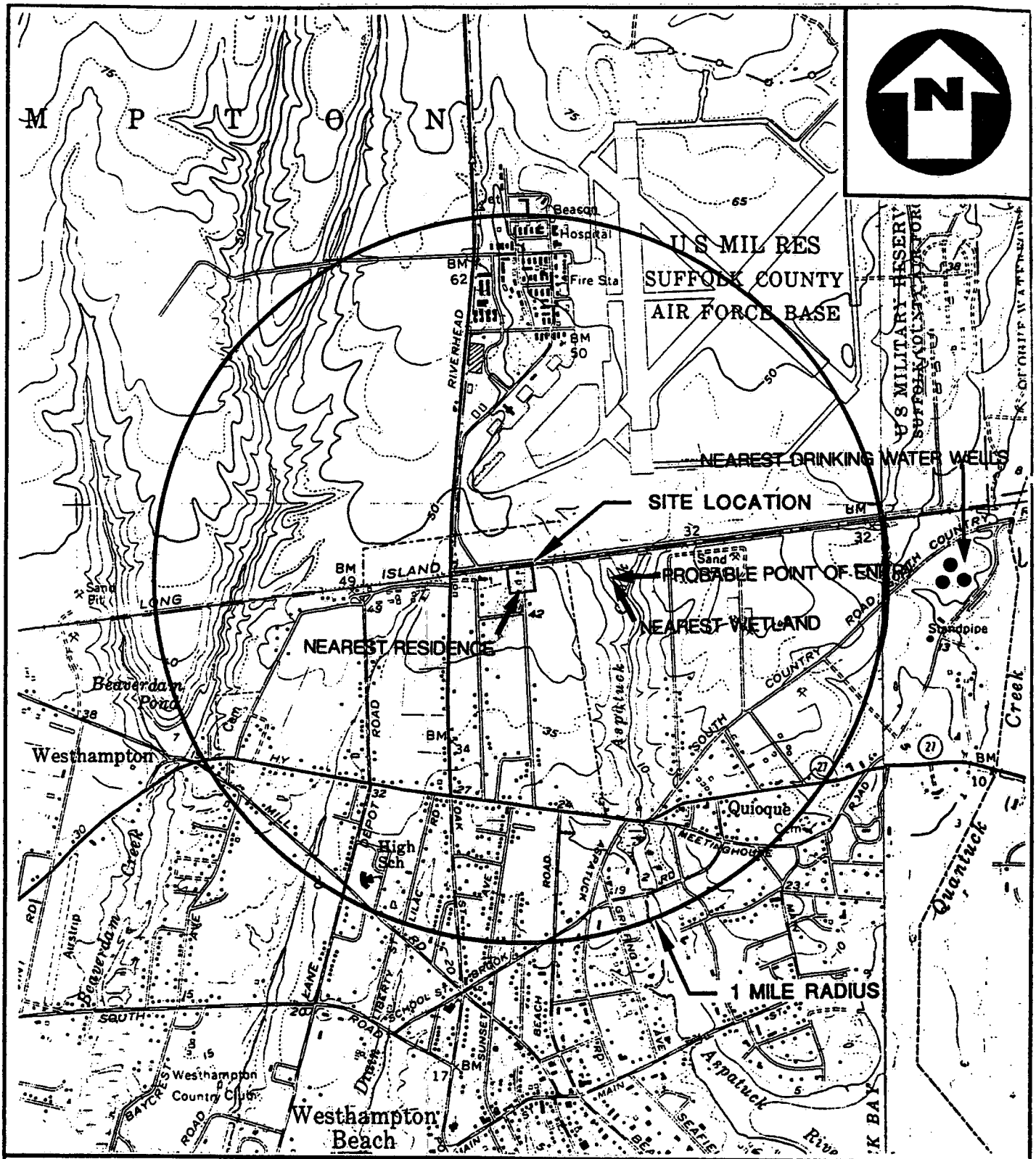
Dear Ms. Moyik:

The following is a draft summary of the Screening Site Inspection evaluation of the Central Suffolk Paving site, CERCLIS ID No. NYD986881324, located in Westhampton Beach, Suffolk County, New York.

Site Description and History

The Central Suffolk Paving (CSP) site is an approximately 9.4-acre parcel located in the Village of Westhampton Beach, in Suffolk County, New York (Ref. 3, pp. 6 and 12 of 122). Figure 1 is the site location map; Figure 2 is the site layout map. The site is bordered to the north by a commuter railroad easement (owned by Long Island Railroad) and the Suffolk County Air Force Base to the east by property containing Long Island Lighting Company (LILCO) utility towers; to the south by vacant land and local roadways; and a wooded rural area to the west, with a low density of residences (Ref. 3, pp. 42, 49, and 60 of 122; Ref. 4, p. 1 of 1). The site is currently being used for asphalt production (Ref. 3, p. 13 of 122). On-site structures include the operations buildings (office and garage) and asphalt-making machinery (towers, conveyors, hoppers, etc.) (Ref. 3, p. 42 of 122).

Property ownership can be traced retroactively for approximately 47 years, when the property was privately-owned, with no record of on-site commercial activity prior to 1962 (Ref. 3, p.12 of 122). The first commercial activity conducted was by an asphalt paving company (Ref. 3, p. 12 of 122). The property has changed ownership eight times since 1948 (Ref. 3, p. 12 of 122). In 1983 the property owner submitted a Mined Land Reclamation & Part 360 Permit Application to the New York State Department of Environmental Conservation (NYSDEC) and received a permit for the purpose of mining sand and gravel from a 40 foot wide by 100 foot long by 20 foot deep area located in the eastern portion of the property (Ref. 5, p. 1 of 1; Ref. 6, p. 1 of 1).



BASE MAP ADAPTED FROM U.S.G.S. EASTPORT QUADRANGLE (1956), NEW YORK–SUFFOLK CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)

1 1/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

NEW YORK

QUADRANGLE LOCATION

SITE LOCATION MAP

CENTRAL SUFFOLK PAVING
100 ROGERS AVENUE
WESTHAMPTON BEACH, N.Y.

EBASCO ENVIRONMENTAL

FIGURE 1

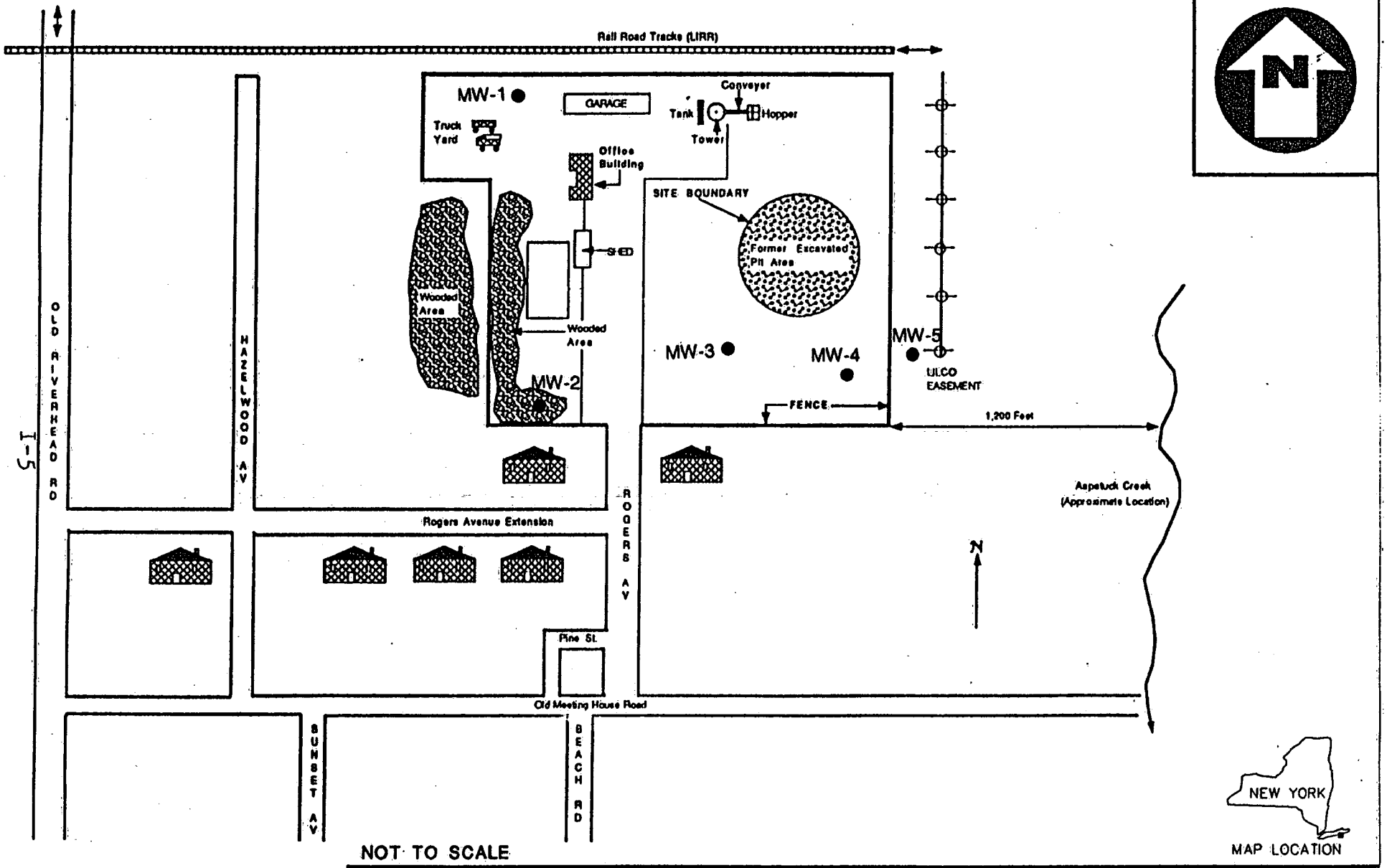


FIGURE 2

SITE AREA MAP

CENTRAL SUFFOLK PAVING
100 ROGERS AVENUE
WESTHAMPTON BEACH, N.Y.

EBASCO ENVIRONMENTAL

FIGURE 2

The stated intent for further use of this area was to dispose of construction and demolition (C&D) debris in the mine pit before backfilling with sand and gravel to the original grade (Ref. 5, p. 1 of 1; Ref. 6, p. 1 of 1). There is no documentation available that indicates hazardous materials were disposed of at the site.

In 1983, the Suffolk County Department of Health Services inspected the site and found large spills of waste oil and waste diesel on the ground (Ref. 3, pp. 121 and 122 of 122). The spills resulted from the storage of open containers of waste oil and waste diesel on the outside northwest wall of the maintenance building (Ref. 3, pp. 121 and 122 of 122).

Also in 1983, the property owner at that time submitted an Industrial Waste and Hazardous Materials Control form to the Suffolk County Department of Health, which listed all of the on-site aboveground and underground storage tanks (Ref. 3, pp. 121 and 122 of 122). One 275-gallon tank contained solvent lubricant for trucks; therefore, it is possible that VOCs detected in on-site soils may be attributable to machinery or truck cleaning and degreasing solvents and asphalt tank cleaning solvents that were potentially spilled or dumped onto the ground. (Ref. 3 pp. 13, 121, and 122 of 122).

When the property changed ownership in 1987, the current owner, an asphalt production company, unearthed, transported, and disposed of all C&D material from the disposal pit off-site, then backfilled the excavation with clean fill (Ref. 3, pp. 6, 47, 54, and 55 of 122).

A local citizen filed a complaint with the NYSDEC, stating that illegal activities, including sandmining and construction debris disposal, had occurred on the CSP property (Ref. 3, pp. 6, 13, and 57 of 122). During an August 1988 interview, the local citizen could not recall the dates that the alleged illegal activities took place, and no mention of hazardous waste deposition at the mine pit was made by the citizen (Ref. 3, p. 57 of 122). The complaint led to a 1988 Phase II investigation and a 1989 site inspection report (Ref. 3, p. 6 of 122). A Phase I investigation was never conducted at the site (Ref. 3, p. 6 of 122).

Various underground and aboveground tanks, registered with the county, store the raw materials used for asphalt production (i.e.; #2 fuel oil, hydraulic oil, motor oil, asphaltic cement, solvent detergent, and waste oil) (Ref. 3, p. 13 of 122). Raw materials are mixed with pre-dried sand and gravel; no residue is produced for disposal (Ref. 3 p. 13 of 122). Although asphalt is not classified as a hazardous waste, it is possible that asphalt tank cleaning product residuals may be produced occasionally (Ref. 3, pp. 8 and 13 of 122). The current owner filed an air permit, (date not documented) along with stack test data, with the NYSDEC, Air Resources Department (Ref. 3, p. 13 of 122).

A Phase II investigation was conducted by NYSDEC in 1988 (Ref. 3, p. 6 of 122). Five monitoring wells (MW-1 through MW-5) were installed between October 6 and 12, 1988, and the first round of groundwater samples were collected on October 17, 1988 (Ref. 3, p. 10 of 122). Five surface and one subsurface soil samples were collected on November 14, 1988 (Ref. 3, pp. 11 and 60 of 122).

The soil sample analytical data revealed the following concentrations of volatile organic compounds (VOCs) in on-site soils: 1,1-dichloroethene at 5 ug/kg; 1,1,1-trichloroethane (TCE),

ranging from 6 to 17 ug/kg, tetrachloroethene (PCE) at 4 ug/kg, and chloroform at 12 ug/kg (Ref. 3, p. 33 of 122). The following semi-volatile organic compounds (SVOCs) were detected: phenol at 180 ug/kg; and butylbenylphthalate at 1,600 ug/kg (Ref. 3, p. 33 of 122). The following pesticides were detected: dieldrin at 22 ug/kg; 4,4'-DDT at 78 ug/kg; and heptachlor epoxide at 12 ug/kg (Ref. 3, p. 33 of 122). Antimony, at 17.7 ug/kg, was the only inorganic analyte detected outside the common range found in soil for the sampling event (2-10 mg/kg) (Ref. 3, pp. 34 and 35 of 122). No background soil samples were obtained during the investigation.

Evaluation of Existing Data

Existing information and analytical data with supporting documentation from a 1988 Phase II investigation were used to evaluate the CSP site. VOCs, SVOCs, metals, and pesticides were detected in on-site soils. Toluene, a constituent of gasoline, was detected in on-site soils; however, this compound was not used to evaluate the site because oil tanks are located on-site and the compound is excluded under the Petroleum Exclusion Policy. No documentation has been found in available file information to indicate that hazardous wastes were ever disposed of at the site. Soil contamination at the site may be attributable to poor housekeeping practices during truck and machinery cleaning and asphalt tank cleaning using a solvent lubricant or wash. The distribution of contamination extends throughout the site and is not isolated to a particular area. VOC and SVOC contamination was found in surface soils on-site and soils located between the eastern property fence and the LILCO easement. Pesticides were detected in on-site soils, but their presence on-site cannot be attributed to site activities. Only TCE was detected in the subsurface soil sample collected from the former sand mine/landfill on-site. Because a background soil sample was not obtained, the data will be used for screening purposes only.

The groundwater sample analysis contained the proper Quality Assurance/Quality Control documentation; however, an observed release to groundwater was not documented.

Hazard Assessment

Updated and additional information and data collected to further evaluate the site to determine the need for further CERCLA remedial action included historical site information, groundwater population data, public water supply information, surface water information, floodplain information, and sensitive environment information.

Source Description

Based upon available information, the only source identified at the site was contaminated soil (Ref. 3, pp. 33, 34, and 35 of 122). Samples obtained from the site during the Phase II investigation revealed the presence of VOCs, SVOCs, and pesticides in on-site soils (Ref. 3, pp. 33, 34, and 35 of 122).

An area of approximately 9.4 acres, or 409,464 square feet, is being used to evaluate the site (Ref. 3, p. 12 of 122).

Groundwater Pathway

The groundwater pathway is evaluated on a potential-to-release basis. The existing analytical data did not document an observed release to groundwater.

The site is underlain by Upper Cretaceous to Pleistocene aged unconsolidated deposits that overlie southward sloping consolidated bedrock (Ref. 7, pp. 2 through 7 of 7). The site is underlain by the Upper Glacial aquifer, which occurs from the ground surface, approximately 75 feet above sea level, to 150 feet below sea level, making the formation of the Upper Glacial aquifer 225 feet thick (Ref. 7, pp. 3 through 5 of 7). The Upper Glacial aquifer is generally comprised of glacial till, outwash deposits, lacustrine, marine and reworked deposits (Ref. 7, p. 7 of 7). According to well logs of the monitoring wells installed on site, the Upper Glacial aquifer underlying the site is composed of fine, medium and coarse grained sands with some gravel and silts (Ref. 8, pp. 1 through 23 of 23). The depth to groundwater at the site is 33.46 feet below grade, and the groundwater flow is in a south-southwest direction (Ref. 3, p. 20 of 122). The Magothy aquifer, which underlies and is hydraulically interconnected with the Upper Glacial aquifer, is approximately 750 feet thick, extending from 150 to 900 feet below sea level, or 225 to 975 feet below grade in the vicinity of the site (Ref. 7, pp. 3 through 5 of 7). The Magothy aquifer is typically composed of fine to medium grained sand, interbedded with lenses of clay and layers of coarse sand (Ref. 7, p. 6 of 7). The Upper Glacial aquifer and the hydraulically interconnected Magothy aquifer are considered to be one hydraulic unit, and the aquifer of concern (Ref. 3, pp. 18 and 19 of 122). The Raritan confining unit, which forms a confining layer between the Magothy and the underlying Lloyd aquifer, is approximately 250 feet thick, extending from 900 to 1,150 feet below sea level (Ref. 7, pp. 4 and 5 of 7). The Raritan confining unit is composed of clay and silty clay, with a few lenses of sand (Ref. 7, p. 7 of 7). The Lloyd aquifer, which is considered a confined aquifer, is located below the Raritan confining unit and rests atop the bedrock formation (Ref. 7, pp. 4 and 5 of 7). The Lloyd aquifer, which is approximately 350 feet thick, extending from 1,150 to 1,500 feet below sea level, is comprised of fine to coarse grained sand and gravel, with lenses and layers of clay (Ref. 7, p. 7 of 7). The Lloyd aquifer is not used as a water supply source within the study area (Ref. 3, p. 18 of 122). The bedrock formation, which is not used as an aquifer, is located below the Lloyd aquifer and consists of crystalline metamorphic and igneous rock (Ref. 7, p. 7 of 7).

Within the TDL, potable water for public and private consumption is obtained through groundwater supply wells (Ref. 9, p. 2 of 9; Ref. 10, p. 1 of 1). A total population of approximately 3,709 utilized private domestic wells for their potable supply within a 4-mile radius of the site (Ref. 11, pp. 8 and 9 of 9). A population of 11 is served within 0 and 0.25 miles; 27 within 0.25 and 0.5 miles; 213 within 0.5 and 1 mile; 701 within 1 to 2 miles; 747 within 2 to 3 miles; and 2,010 within a 3 and 4 mile radius of the site are served by private wells (Ref. 11, pp. 8 and 9 of 9). The nearest potable private wells that serve a residential population are located within 0 to 0.25 miles of the site (Ref. 4, p. 1 of 1; Ref. 11, pp. 8 and 9 of 9). Based on the thickness of the Upper Glacial aquifer (i.e.: 225 feet), residential wells are assigned to this aquifer (Ref. 7, pp. 3 through 7 of 7).

The Suffolk County Water Authority uses ten municipal supply wells, located within a four-mile radius of the site, to supply potable water to its customers (Ref. 10, p. 1 of 1). There are no municipal water supply wells located between a 0 and 1 mile radius of the site (Ref. 4, p. 1 of

1). Between a 1 and 2 mile radius of the site, the Suffolk County Water Authority (SCWA) utilizes 1 groundwater well located approximately 1.5 miles south of the site (screened in the Magothy aquifer) to supply drinking water to a population of 2,348, and three wells located approximately 1.25 miles east of the site (screened in the Upper Glacial aquifer) to supply drinking water to a population of approximately 7,044 people (Ref. 4, p. 1 of 1; Ref. 9, pp. 4, 7, 8, and 9 of 9). Between a 2 and 3 mile radius of the site, the SCWA utilizes three wells located approximately 2.4 miles west of the site (screened in the Upper Glacial aquifer) to supply drinking water to a population of 7,044, and one well located approximately 2.6 miles northeast of the site (screened in the Magothy aquifer) to supply drinking water to a population of approximately 2,348 people (Ref. 4, p. 1 of 1; Ref. 9, pp. 4, 7, 8, and 9 of 9). Between a 3 and 4 mile radius of the site, the SCWA utilizes two wells located approximately 3.2 miles northeast of the site (screened in the Upper Glacial aquifer) to supply drinking water to a population of approximately 4,696 people (Ref. 4, p. 1 of 1; Ref. 9, pp. 4, 7, 8, and 9 of 9). The total population served by both municipal and private wells, screened in the Upper Glacial and Magothy aquifers, and located within four miles of the site is 27,189 (Ref. 9, p. 9 of 9). A total population of 18,784 is supplied water from wells in the Upper Glacial aquifer, and a total population of 4,696 is supplied water from wells in the Magothy aquifer (Ref. 9, p. 9 of 9).

The state of New York has a wellhead protection program in place for the Upper Glacial, Magothy, and Lloyd aquifers (Ref. 12, p. 5 of 5).

Within the target distance limit (TDL) groundwater is a sole source for drinking water; therefore, it is used as a potable water source, for food crop irrigation, and in commercial food preparation (Ref. 10, p. 1 of 1).

Surface Water Pathway

There are no representative surface water analytical data for this site; therefore, the pathway is evaluated on a potential-to-release basis.

Site topography has a slope of less than 3 percent, and most of the property has been cleared for operating conditions (Ref. 3, p. 7 of 122). Surface water run-off from the site would flow east across an open area towards Aspatuck Creek (Ref. 13, p. 1 of 3). The probable point of entry to surface water is approximately 1,320 feet east of the site in the Aspatuck Creek (Ref. 13, p. 1 of 3). The Aspatuck Creek, which has a streamflow of approximately 1.2 cubic feet per second, originates near the Suffolk County Air Force Base Property (Ref. 13, p. 1 of 3; Ref. 14, p. 2 of 2). The 15-stream-mile in-water segment of the TDL begins on the Aspatuck Creek, which flows south for approximately 1.57 stream miles before emptying into the Quantuck Bay (Ref. 13, pp. 1 and 3 of 3). The Quantuck Bay flows east, through the Quogue Canal, for approximately 3.23 stream miles before emptying into the Shinnecock Bay (Ref. 13, pp. 1 and 3 of 3). The Shinnecock Bay flows east through the Shinnecock Inlet for approximately 5.88 stream miles before emptying into the Atlantic Ocean (Ref. 13, pp. 1 and 3 of 3). The remainder of the 15-stream mile TDL, approximately 4.31 stream miles, extends into the Atlantic Ocean (Ref. 13, pp. 1 and 3 of 3). Because Quantuck Bay is tidally influenced, Quantuck Creek, which flows approximately 1.86 stream miles south into the bay, has been included in the TDL (Ref. 13, pp. 1 and 3 of 3; Ref. 17, p. 8 of 13). At a gauging station located 0.58 stream miles downstream from its point of origin, Quantuck Creek has a stream flow rate of approximately

2.1 cubic feet per second (Ref. 13, pp. 1 and 3 of 3; Ref. 14, p. 2 of 2). As it flows into Quantuck Bay, the creek increases in size to a small to moderate stream with a flow rate between 10 and 100 cubic feet per second (Ref. 1, p. 1 of 1; Ref. 13, pp. 1 and 3 of 3).

Aspatuck Creek is used for fishing and is suitable for fish propagation; Quantuck Creek is used for fishing and recreational activities, and is suitable for fish propagation; Quantuck Bay and Shinnecock Bay are used for shellfishing, fishing, and recreational activities, and are suitable for fish propagation (Ref. 13, pp. 1 and 3 of 3; Ref. 15, pp. 5, 6, 7, 9, and 10 of 11).

The nearest regulated wetland to the site is located 0.25 miles east of the site, along Aspatuck Creek (Ref. 13, p. 1 of 3). The Quogue Waterfowl Refuge is located 1.65 miles northeast of the site, along Quantuck Creek (Ref. 13, p. 1 of 3). The Least Tern and the Piping Plover, both federally endangered birds, are located approximately 2.4 and 2.9 miles southeast of the site, respectively (Ref. 16, pp. 6 and 8 of 12). Aspatuck Creek has approximately 1.37 stream miles of wetlands along its shores; Quantuck Creek has approximately 0.78 stream miles; Quantuck Bay has approximately 1.57 stream miles; the Quogue Canal has approximately 3.33 stream miles; and Shinnecock Bay has approximately 17.65 stream miles (Ref. 13, pp. 1 and 3 of 3). There are no wetlands along the portion of the Atlantic Ocean coast that lies within the TDL (Ref. 13, pp. 1 and 3 of 3). The SLF is not located within a floodplain (Ref. 3, p. 49 of 122).

Soil Exposure Pathway

This pathway is evaluated based on an area of known contamination.

The site is located within the corporate limits of Westhampton Beach, in Suffolk County, Long Island, New York (Ref. 4, p. 1 of 1). Site access is restricted by a fence that surrounds the entire property (Ref. 3, p. 39 of 122).

The nearest residential homes are located within 0.125 miles south of the site (Ref. 4, p. 1 of 1). There are no day-care centers, residences, or schools located within 200 feet of any documented contamination at the site (Ref. 3, pp. 40 and 42 of 122; Ref. 4, p. 1 of 1; Ref. 17, p. 11 of 13). There are four workers on-site (Ref. 20, p. 1 of 1). There are no terrestrial sensitive environments located on the areas of observed contamination (Ref. 13, p. 1 of 3; Ref. 16, pp. 4 through 12 of 12).

The population for 0 to 0.25 miles is 80, from 0.25 to 0.5 miles is 204, and 844 from 0.5 to 1 mile from the site (Ref. 11, pp. 8 and 9 of 9).

Air Pathway

There are no representative air sampling data available for the site; therefore, this pathway is evaluated on a potential-to-release basis only.

The nearest residences are located within 0.125 miles south of the site (Ref. 4, p. 1 of 1). There are approximately 10,469 people living within a 4-mile radius of the site as follows: 0-0.25 miles, 80; 0.25-0.5 miles, 204; 0.5-1 mile, 844; 1-2 miles, 2,511; 2-3 miles, 2,435; 3-4 miles, 4,395 people (Ref. 11, pp. 8 and 9 of 9). The approximate wetlands acreage from 0 to 0.25 miles is

0 acres; from 0.25 to 0.5 miles is 10 acres; from 0.5 to 1 mile is 18 acres; from 1 to 2 miles is 260 acres; from 2 to 3 miles is 215 acres; and from 3 to 4 miles is 540 acres of wetlands (Ref. 13, pp. 1 and 2 of 3).

There are no state game lands located within a 4-mile radius of the site; however, the Quogue Waterfowl Refuge is located 1.65 miles northeast of the site (Ref. 13, p. 1 of 3). Within a 0 to 1 mile radius of the site, there are no state or federally-listed threatened or endangered species (Ref. 16, pp. 4 through 12 of 12). The Little-Leaf Tick-Trefoil, the Swamp Sunflower, and the Button Sedge, are federally threatened plants located within a 1 and 2 mile radius of the site (Ref. 16, pp. 4 through 12 of 12). The Least Tern and the Piping Plover are federally endangered birds located within a 2 and 3 mile radius of the site (Ref. 16, pp. 4 through 12 of 12). The White Milkweed, the Sandplain Wild Flax, and the Few Flower Nutrush, are federally threatened plants located within a 2 and 3 mile radius of the site (Ref. 16, pp. 4 through 12 of 12).

Summary

The existing data are sufficient to evaluate the site. Volatile organic contamination has been documented in surface and subsurface soils on-site and may be attributable to poor housekeeping during machinery, truck, and asphalt tank cleaning practices using a solvent-based cleaner.

Groundwater is a sole source for public and private potable water supplies within a 4-mile radius of the site. Municipal supply wells and private wells are screened in the Upper Glacial and interconnected Magothy aquifers. A total population of 3,709 people utilized private domestic wells for their potable supply within a 4-mile radius of the site. The nearest public water supply wells are owned by the SCWA and located approximately 1.25 miles east of the site. The SCWA utilizes 10 groundwater wells to supply drinking water to a total population of approximately 23,480 within the site study area. The total population relying on groundwater as a potable source within the TDL is approximately 27,189.

The site drains into Aspatuck Creek, into Quantuck Bay, and eventually the Atlantic Ocean.

The nearest regulated wetland is located approximately 0.25 miles east of the site. There are no areas of observed contamination located within 200 feet of any residence, day-care center, or school.

No documented releases to air have occurred. Approximately 10,469 people live within a 4-mile radius of the site.

Prepared by:

Janis Hottinger/EPA

Janis Hottinger
Task Leader
Ebasco Services Incorporated

Approved by:

Dev R. Sachdev

Dev Sachdev, Ph.D., P.E.
ARCS II Program Manager
Ebasco Services Incorporated

Reviewed by:

Edgar J. Aguado
Site Manager
Ebasco Services Incorporated

REFERENCE 1

John D. Reichhoff
Peak File Copy

12-14-90
Vol. 55 No. 241

federal register

Friday
December 14, 1990

Ref 1
p 1 of 1

Book 2

United States
Government
Printing Office
SUPERINTENDENT
OF DOCUMENTS
Washington, DC 20402

OFFICIAL BUSINESS
Penalty for private use, $300

SECOND CLASS NEWSPAPER
Postage and Fees Paid
U.S. Government Printing Office
(ISSN 0097-6326)

REFERENCE 2

Reference 2
p. 1 of 1

United States
Environmental Protection
Agency

Solid Waste And
Emergency Response
(OS-240)

9360.4-18
EPA ~~9345.1-13~~
~~November 1991~~
July 1994

EPA

Superfund Chemical Data Matrix

Printed on Recycled Paper

REFERENCE 3

Ref 3
1 of 120

ENGINEERING INVESTIGATIONS AT INACTIVE HAZARDOUS WASTE SITES

PHASE II INVESTIGATION

CENTRAL SUFFOLK PAVING SITE

NYSDEC SITE NO. 152092

VILLAGE OF WESTHAMPTON BEACH, SUFFOLK COUNTY

FINAL - MARCH 1990

PREPARED FOR:

New York State
Department of
Environmental Conservation

50 Wolf Road, Albany, New York 12233-7010
Thomas C. Jorling, Commissioner

Division of Hazardous Waste Remediation
Michael J. O'Toole Jr, P.E., Director

PREPARED BY:
GRB ENVIRONMENTAL SERVICES, INC.
East Northport, New York 11731
SUBCONTRACTOR TO:
GIBBS & HILL, INC.

TABLE OF CONTENTS

		Page
I	Executive Summary	
	1.1 Site Description	I-1
	1.2 Phase II Investigation	I-2
	1.3 Site Assessment	I-2
	1.4 Hazard Ranking System Score	I-3
II	Purpose	II-1
III	Scope of Work	III-1
	3.1 Collection and Review of Background Information	III-1
	3.2 Geophysical Survey	III-3
	3.3 Geotechnical Field Investigation	III-4
	3.4 Air Quality Monitoring	III-4
	3.5 Groundwater and Soil Sampling	III-4
	3.6 Well Survey	III-5
	3.7 Laboratory Analysis	III-5
	3.8 Groundwater Elevation Measurements	III-6
	3.9 Surface Water and Sediment Sample Collection	III-6
	3.10 Leachate Samples	III-6
	3.11 Waste Samples	III-6
IV	Site Assessment	
	4.1 Site History	IV-1
	4.2 Topography/Historical Geology	IV-2
	4.3 Hydrology	IV-7
	4.4 Site Contamination	IV-10
	4.5 Conclusion	IV-15

Ref 3
3 of
122

Table of Contents (cont')

		Page
V	**Hazard Ranking System**	
	5.1 Work Sheets	V-1
	5.2 Documentation Records	V-8
	5.3 EPA Site Inspection Form	V-25

Rf3
4of
122

TABLES

TABLE NO.	TITLE	PAGE
4-1	Geologic Events	IV-16a
4-2	Horizontal Movement of Groundwater	IV-17
4-3	Climate Data	IV-18
4-4	Groundwater Quality Data-VOC/BNA/PEST./PCB's	IV-19
4-5	Groundwater Quality Data-METALS/INORGANICS	IV-20
4-6	Soil Quality Data-VOC/BNA/PEST./PCB's	IV-21
4-7	Soil Quality Data-METALS/INORGANICS	IV-22
4-8	Maximum Concentration of Metals and Inorganics in Site Soils and Common Range Found in Soils	IV-23
4-9	Air Quality Data-HNU	IV-24

FIGURE NO.	TITLE	
1-1	Site Location Map	I-4
1-2	Site Area Map	I-5
4-1	West-East Geologic Cross-Section	IV-25
4-2	North-South Geologic Cross-Section	IV-26
4-3	Site Groundwater Contour Map-February 9, 1989	IV-27
4-4	Site Groundwater Contour Map-November 14, 1988	IV-28
4-5	Regional Groundwater Contours	IV-29
4-6	Air Monitoring Station Location Map	IV-30

Pg 3 of 122

APPENDIX A

	Page
A-1 OWNER (MR. PENNINO) INTERVIEW	A-1-1
A-2 COMPLETION REPORTS-L.I. WELLS	A-2-1
A-3 1986 POPULATION CENSUS	A-3-1
A-4 HYDROGEOLOGIC ATLAS OF SUFFOLK COUNTY	A-4-1
A-5 CLIMATE / SOIL SURVEY DATA	A-5-1
A-6 EVAPORATION MAPS OF U.S.A.	A-6-1
A-7 APPLIED HYDROLOGY,pg.75	A-7-1
A-8 SUFFOLK COUNTY HAGSTROM MAP	A-8-1
A-9 LOCATION OF COMMUNITY WATER SYSTEMS	A-9-1
A-10 USGS TOPOGRAPHIC MAP	A-10-1
A-11 RAINFALL FREQUENCY ATLAS OF U.S.	A-11-1
A-12 MINING PERMIT APPLICATION	A-12-1
A-13 TELEPHONE CONVERSATION RECORDS	A-13-1
A-14 LETTER FROM SUFFOLK COUNTY WATER AUTHORITY	A-14-1
A-15 ORGANIC CHEMICAL BACKGROUND INFORMATION	A-15-1
A-16 POPULATION CALCULATION WITHIN ONE MILE RADIUS	A-16-1

APPENDIX B

B-1 GEOPHYSICAL SURVEY	B-1-1
B-2 BORING LOGS	B-2-1
B-3 AIR QUALITY MONITORING DATA	B-3-1
B-4 LABORATORY RESULTS	B-4-1
B-5 WELL SURVEY REPORT	B-5-1
B-6 SIGNIFICANT HABITATS	B-6-1

APPENDIX C

UPDATED WORK PLAN

UPDATED REGISTRY

Ref 3 of 12

1.0 Executive Summary

GRB Environmental Services, Inc. is a subcontractor to Gibbs & Hill, Inc who entered into a consulting services agreement on October 16, 1986 with the New York State Department of Environmental Conservation (NYSDEC) Division of Solid and Hazardous Waste to conduct preliminary investigations (Phase I) and field investigations (Phase II) at inactive hazardous waste disposal sites in New York State.

Gibbs & Hill's original agreement was amended January 21, 1988 (Amendment 1) to include an additional 25 sites to receive Phase II investigations. This report presents the results of the Phase II investigation of the Former Central Suffolk Paving Site (NYSDEC site ID # 152092) performed by GRB Environmental Services, Inc. There is no Phase I report for this site.

1.1 Site Description

The Former Central Suffolk Paving site is located in Westhampton Beach, Suffolk County, New York; NYSDEC Region 1 (see Figure 1-1). The site consists of a 40' x 100' x 20' deep pit into which construction and demolition debris was deposited. Currently, an asphalt manufacturing plant is in operation at the site. The name of the corporation is Twin Fork Asphalt, Inc. which is operated under the direction of Mr. Gabriel Pennino, President. Upon purchase of the facility from Central Suffolk Paving Corporation, Twin Fork Asphalt, Inc. had the construction and demolition debris unearthed, transported off site, and backfilled with clean engineer fill. Chemical test data of soils taken from the former pit supports the latter statement. Historically, the site is known to have operated as an asphalt manufacturing facility from 1962 to 1967, under the name of Sicilian Asphalt Paving, and from 1980 to 1987 as Central Suffolk Paving. Town records do not indicate that asphalt manufacturing occured from 1967 to 1980, only that various real estate companies owned the site. The current operations has filed for an Air Quality permit. There are no known records to demonstrate that hazardous waste was produced or disposed of on site. The site came to the attention of the NYSDEC from a complaint by a concerned citizen. The resident stated that illegal dumping activities were going on (sandmining and disposal of construction debris within the sand pit). GRB interviewed the resident regarding his claim that illegal activities occured at the site. Although the concerned citizen seemed to have a good memory as to what he reported to have seen, he could not give a date when such activity occured or even the year the "dumping" occured. Central Suffolk Paving was issued a permit by the NYSDEC on December 21, 1983 to mine sand and gravel from a 40' x100' x 20' deep pit (App. A-12).

The site has a topographic slope of less than 3 percent and has been cleared for operational purposes. Raw asphalt cement material is stored in a tank within the property of the facility and sand and gravel are also stored. A small house, which is rented to a tenant, exists at the entrance. Additionally, a small parcel of land has been rented to a landscaper along the west side of the entrance, some 200 feet from the entrance gate.

No natural surface water bodies are within the site. The nearest surface water body, Aspatuck Creek, is 1,200 feet east of the site. The nearest sensitive ecological area is a salt water wetland located approximately 1.5 miles southeast, along the shore of the Aspatuck Creek. The closest rare plant communities reported to the site are Lespedeza (Lespedeza stuevi) and Pitchpine located some 1.5 miles from the site (A-6). There are no historical landmarks visible from the site.

1.2 Phase II Investigation

A Phase II inactive hazardous waste site investigation was performed per NYSDEC standards and protocols. The investigation included the following field and laboratory activities:

- Site Reconnaissance
- Geophysical Survey
- Drilling, well installation and development
- Groundwater and Soil Sampling
- Chemical analysis on groundwater and selected soil samples
- Geotechnical analysis on selected soil samples.
- Groundwater level measurements
- Hydrogeological testing (slug tests)

Demographic and historical data were collected in order to describe the site history and to ascertain the target populations for the HRS score.

1.3 Site Assessment

There are no records of hazardous waste being disposed at the site. This is substantiated by laboratory analysis of site groundwater and soils. Chemical compounds found at the site are low in concentration and

are likely a result of storage of asphalt material after on-site production. Asphalt is not classified as a hazardous waste. For the most part, chemical compounds identified and associated with the asphalt, were found in groundwater in concentrations below detection limits ("J" values). Pesticides were identified at the site. Since the site area has been farmed over the years, the likely source of any pesticides found on site is believed to be wind borne. Another potential source of the pesticides could be application for weed control by the Long Island Rail Road along the tracks which abut the northern property line.

The only chemical compounds found on site to be above drinking water standards were iron (80,900 to 49,200 ppb) and manganese (2,220 to 1,120 ppb). The source of these metals is not known.

Based on the results of laboratory analysis and site assessment, it is recommended that no further investigatory action is required.

1.4 Hazard Ranking System Score

The HRS scores for this site were S_M=0 (S_{gw} = 0, S_{sw} = 0 and S_a = 0), S_{FE}=0 and S_{DC}=0. The S_M score reflects the potential for harm due to migration of hazardous substances away from the facility. This score is the composite of scores for groundwater (S_{gw}), surface water (S_{sw}), and air (S_a) transport routes. The S_{FE} score reflects the potential harm from substances which explode or cause fires, and the S_{DC} score reflects the potential harm from direct contact with hazardous substances.

The following Agencies were contacted in an effort to obtain information:

1. Suffolk County Department of Health Services
   -Main Office in Happaugue
   -Farmingville Office

2. NYSDEC Region 1 Office
   - Division of Hazardous Waste
   - Division of Solid Waste
   - Water Division
   - Marine Regulatory Office
   - Regulatory Affairs Office
   - Natural Resources Office

3. United States Geological Survey (USGS)- Syosset Office

4. Suffolk County Water Authority

5. Southampton Town Hall
   - Planning Board Office
   - Tax Assessors Office
   - Building and Zoning Office
   - Conservation Department

6. Westhampton Beach Village Hall
   - Clerks Office
   - Police Department
7. NYSDEC Albany Office

8. Long Island Lighting Company

3.2 Geophysical Survey

On July 26, 1988 a magnetometer survey was performed in those areas where the proposed monitoring wells were to be drilled to identify any buried utilities. (See Appendix B-1 for report).

The Schonstedt Model GA-52B flux-gate magnetometer was used. This instrument provides a continuous audio signal which increases from the idling frequency of 40 Hz as surface or subsurface ferromagnetic material is approached. As a result of the survey, the original location of GW-5 was relocated. All other locations were essentially unchanged.

3.3 Geotechnical Field Investigation

From October 6 to October 12, 1988 five monitoring wells (GW-1 through GW-5) were installed and developed by Marine Pollution Control under the supervision of a qualified geologist and in the presence of NYSDEC personnel. All wells were drilled utilizing a 6 1/4 inch hollow stem auger. At the completion of each five foot advancement, a 24 inch split spoon sample was taken. The spoon was driven with an automatic 140 pound hammer having a free fall of 30 inches. Upon opening the split spoon, HNu readings were taken, sample recovery measured, and the sample classified utilizing the Unified Soil Classification System. After classification, the sample was placed in a glass jar, labeled and sealed. All downhole equipment was steam cleaned prior to introduction into each borehole. At the completion of drilling, each well was developed. (See appendix B-2 for Boring Logs). During the field program, NYSDEC personnel performed down-hole geophysics utlilizing an EM-39 geophysical instrument in order to identify any groundwater pollution plumes. None were found. A discussion of site stratigraphy is presented in section 4.3.3.

3.4 Air Quality Monitoring

At the beginning of each day during well drilling, air quality measurements were obtained utilizing a portable photoionizing detector, HNu Model 101 at 8 stations (see Figure 3-1). The HNu meter was calibrated each day prior to use. The selection of the air monitoring stations was pre-approved by onsight NYSDEC personnel. The raw data can be found in Appendix B-3.

3.5 Groundwater and Soil Sampling

3.5.1 Groundwater

On October 17, 1988 groundwater samples were collected from each monitoring well utilizing a Geo-Guard Gas-Driven Pump. Prior to sampling, 3 volumes or more of water were evacuated until the discharge water obtained a NTU (turbidity) value of less than 50. At the completion of well development, the wells were sampled. Dedicated bailers and rope were utilized for each well. Each bailer was decontaminated per NYSDEC protocols prior to use. Each bailer was then placed in plastic bag and sealed. The seal was not

opened until just before sampling. Chain of custody sheets were filled out for each sample collected. All samples were stored in glass jars with screw caps, with appropriate preservatives, and placed in ice-filled chests. All samples were delivered to H2M Laboratories, located in Melville, N.Y., the same day (See Appendix B-4 results).

3.5.2 Soil

On October 14, 1988, 6 soil samples were collected for laboratory analysis. Five of the soil samples were surface samples. However soil sample SS-3 was to be collected from within the old pit area. Therefore, in an effort to obtain a representative sample, a boring was made. As per work plan requirements, continuous sampling was performed in order to ascertain the interface between native soils and off-site soils (brought in to fill the pit where the reported construction material was excavated and removed from the site). The depth of the interface was judged to be at 8 feet. Consequently, the soil from 8 to 10 feet was picked for analysis. All soil samples were cooled to 4 degrees C and delivered to the laboratory the same day of collection.

GRB was notified in the first week of November 1988 by the laboratory that the jars utilized for sample transport were contaminated by the supplier and therefore, resampling was required. Therefore, on November 14, 1988 the soil samples were resampled and delivered to the laboratory for analysis. Soil sample SS-3 was redrilled and sampled from 8 to 10 feet.

3.6 Well Survey

On November 4, 1988 the wells were surveyed by Storch Engineers, a New York State Licensed Surveyor, to the nearest 0.01 foot (See Appendix B-5 for results).

3.7 Laboratory Analysis

H2M Laboratories analyzed the 5 groundwater and 6 soil samples utilizing NYSDEC contract laboratory protocols and deliverables. All laboratory holding times were met. The results are presented in B-4 and summary tables are found in Section 4.0. A discussion of the results is given in Sections 4.4.2 (soil) and 4.4.1 (water).

4.0 SITE ASSESSMENT

4.1 Site History

4.1.1 Ownership

The site has changed ownership 8 times since 1948. A summary of previous owners is as follows:

Owner	Date	Sold to
E.W. Rogers	1948-1950	Haggartey 4/62
Haggartey	4/62-6/67	H.S. Roberts 6/67
H.S. Roberts	6/67-12/73	Jim Cap Realty 12/73
Jim Cap Realty	12/73-1976	Barbay Realty Corp 1976
Barbay Realty	1976-1976	Frank Cinfetelli 1976
F. Cinfetelli	1976-1977	T.L.C. Realty Corp 1977
TLC Realty	1977-1980	Central Suffolk Paving 1980
Central Suffolk	1980-1987	Twin Forks Asphalting 1987

Town records show a gap in ownership from 1950 to 1962. Asphalt manufacturing has occured on the site from 1962 when Haggartey either operated or leased the land to Sicilian Asphalt Paving Company, according to Town records. The records do not mention an asphalt operation from 1967 to 1980 when Central Suffolk Paving acquired the site.

4.1.2 Permits

In 1983 Central Suffolk Paving submitted a Mined Land Reclamation and Part 360 Permit for use of a Construction and Demolition Debris Disposal Site to the NYSDEC. The project description on the Notice of Complete Application form is as follows: "Mining permit (1 year) to mine sand and gravel from a 40' x 100' x 20' deep area (site) of a 9.4 acre parcel and place construction and demolition debris in resultant pit to raise grade to within 2' of original grade. Place and grade sand and gravel to a 2' elevation above existing surrounding grade. Project site is 1,200 l.f. east of Old Riverhead Road, north of Rogers Avenue Extention, Village of Westhampton Beach, New York." The Suffolk County Department of Health Services responded to the Notice of Complete Application with a letter dated January 27, 1984 stating their concern on potential impacts on groundwater and requested that the landfill operations be closely monitored. The letter recommended that steps be taken to eliminate the potential effects on nearby private wells by extending public water prior to approval of any landfilling operations. It is not known if the public water line was extended into immediate vicinity of the site.

4.1.3 Dumping

On August 25, 1988, GRB interviewed Mr. Charles Barnett by phone. Mr. Barnett stated that he lived near the site and recalled "illegal activities, sandmining and construction debris disposal", occuring at the site. Mr. Barnett recalled the open pit and that construction debris (concrete, asphalt, wood, etc.) was being disposed in the pit. Mr. Barnett stated that he brought the matter to the attention of the NYSDEC. However, Mr. Barnett could not remember any dates or the year which the illegal activities occured. Mr. Barnett stated that there is a file on the site in Westhampton Beach Village Hall. GRB went to the Village Hall and no records could be found.

4.1.4 Site Operations

GRB interviewed Mr. Gabriel Pennino on September 8, 1988 regarding current site operations. Mr. Pennino provided the following:

"Process: Sand and gravel is heated in a large tumbler by fire to remove water. The sand and gravel is then mixed with C.A.-20, Asphalt Cement. The Asphalt Cement is held in a large tank next to the Asphalt Plant. There is no residue produced or anything to disposed of. There are no chemicals other than the asphalt cement used in the process of producing the asphalt." (A-1). Although not reported, it is possible that cleaning wastes from flushing the asphalt tank may occur occasionally.

Mr. Pennino continued stating that there are three underground storage tanks on the property that hold No. 2 fuel oil (capacity: two 7,500-gallon and one 2,500-gallon). Above-ground tanks include one 20,000 gallon tank containing asphaltic cement, one 275-gallon tank containing liquid soap detergent and one 2,000-gallon tank containing No. 2 fuel oil. Within the building are two above-ground 200-gallon waste oil tanks. The underground tanks have been reported to the Suffolk County Department of Health Services and the required "Toxic Liquid Registration Forms" filled out for each tank. The only permit needed for his operation, according to Mr. Pennino, is an Air Permit which has been filed with the NYSDEC Air Resources Department. Stack test data was obtained and submitted with the permit. The only previous owner known to Mr. Pennino was Central Suffolk Paving. Mr. Pennino stated that a small portion of the site is rented to a landscaper who installs underground sprinklers.

4.2 Topography / Historical Geology

4.2.1 Topography

The site is flat having a slope of less than 3 percent (GRB site visit, October 1988). There are no

naturally occuring surface water bodies within or adjacent to the site. The nearest surface water body is the Aspatuck Creek located 1,200 feet east. The nearest public water supply is located 1.5 miles east on Meeting House Road, Well No. S-64716, owned by Suffolk County Water Authority (Source: Completion Reports-Long Island Wells-A-2 and App. A-14). A second well field (Old County Road Well) is located 1,631 feet north of Old Country Road and 3,324 feet east of Evergreen Avenue in Westhampton, Town of Southampton. The population served by these two wells is reported to be approximately 12,000 by the Suffolk County Water Authority (App. A-14).

The site is located in Suffolk County ,which is included in the Atlantic Coastal Plain Physiographic province. This province consists of Pre-Cambrian age crystalline bedrock buried under several thousand feet of late Cretaceous and Pleistocene sediments. Suffolk County may be subdivided into a small northern region of irregular hills and a large southern region of a broad gently sloping outwash plain. The outwash plain is characterized by a gently rolling land surface, which slopes southward at about 20 feet per mile. The site is located in the outwash plains.

4.2.2 Historical Geology

Long Island and surrounding areas were affected by several geologic events (see Table 4-1), which began during the Ordovician Period (500 million years ago (mya)) and climaxed during the Permian Period (280 mya). By Cretaceous time (65 to 135 mya), the entire area had been reduced to a peneplain (a flat to gently undulating land surface), over which sediments from the eroding Appalachians to the west were being deposited. Some of these deposits eventually formed the Raritan and Magothy formations which underlie Long Island. The Pleistocene Epoch is characterized by four major glacial advances, two of which are evidenced on Long Island. The present day landscape of Long Island has been shaped by the latter glacial advance, the Wisconsin advance. The glaciers melted away from the Long Island area approximately 12,000 to 15,000 years ago.

4.2.3 Bedrock

The Precambrian bedrock consists chiefly of complex folded and faulted gneisses and schists that were eroded to a peneplain prior to Cretaceous deposition. Depth to bedrock beneath the site is approximately 1,600 feet below sea level.

The bedrock has a low hydraulic conductivity and does not yield more than a few gallons per minute to wells. The quantity of water that can flow through the bedrock is insignificant compared with the quantities that flow in the overlying unconsolidated units. Therefore, the bedrock surface is considered to be the bottom hydrologic boundary of the ground water flow system.

4.2.4 Site Stratigraphy

Resting beneath the site are Cretaceous and Pleistocene deposits. The Cretaceous deposits make up the Raritan and Magothy Formations and the Monmouth greensand. The Pleistocene deposits consist of the Gardiners Clay and the Upper Glacial deposits. The following paragraphs discuss each of the above geologic units.

Cretaceous Deposits

The Upper Cretaceous sediments include mostly continental material deposited, unconformably over bedrock, in thickening wedges towards the southeast.

These deposits include the Raritan Formation and the undifferentiated Magothy Formation. The Cretaceous deposits were covered by continental and marine sediments during the Pleistocene. The Pleistocene deposits, including the Gardiners Clay and Upper Glacial Deposits, consist of both deltaic and lagoonal marine sediments of interbedded sand, silt, and clay. These deposits were derived predominantly from the meltwaters of large continental glaciers which eroded bedrock surfaces from the Hudson Bay in Canada to northern New Jersey and New York City. The following paragraphs address site specific stratigraphic formations in more detail.

Raritan Formation

The Lloyd sand member, the earliest Cretaceous deposit beneath the site, lies unconformably on bedrock and consists mainly of deltaic deposits of fine to coarse sand interbedded with small to large gravel. Interbeds of silt and clay and silty and clayey sand are common throughout the unit. The Lloyd aquifer is overlain and generally overlapped by the clay member of the Raritan Formation. The Lloyd aquifer member of the Raritan Formation is approximately 400 feet thick beneath the site.

The Raritan Clay unit consists mainly of deltaic clay and silty clay beds and some interbedded sand. The clay member increases in thickness from a knife edge at its northern limit to nearly 250 feet at its southern limit. The unit is characterized as having a low vertical hydraulic conductivity, (approximately 10^{-3} ft/day or 3 x 10^{-6} cm/sec), thereby acting as a confining layer between the Lloyd sand member and the overlying Magothy Aquifer. The Raritan Clay unit beneath the site is approximately 225 feet thick.

Magothy Formation

The Magothy Formation comprises the uppermost remaining deposits of the Cretaceous Period beneath the site. This unit was severly eroded from Late Cretaceous to the time of deposition of the Monmouth greensand.

The deposits of the Magothy Formation, like the earlier Cretaceous deposits, are of continental origin and are mostly deltaic sand and silty sand with lesser amounts of interbedded clay and silt. The unit commonly has a coarse sand and in many places a gravel basal zone 25 to 50 feet thick. The Magothy Formation beneath the site is approximately 850 feet thick.

The Magothy aquifer has been estimated to have an average horizontal hydraulic conductivity of 50 ft/d (1.7×10^{-2} cm/sec), but as in the Lloyd aquifer, individual sandy and gravelly beds may have values four to five times higher.

Monmouth greensand

The Monmouth greensand consists of interbedded marine deposits of clay, silt, and sand, dark greenish gray in color. The unit has a low hydraulic conductivity and confines water in the underlying Magothy aquifer. The Monmouth greensand unit is approximately 75 feet thick beneath the site.

Pleistocene Deposits

The Cretaceous deposits, including the deep valley channels, were covered by continental and marine sediments during the Pleistocene. The Pleistocene deposits beneath the site include the Gardiners Clay and Upper Glacial Deposits, consisting of both deltaic and lagoonal marine sediments of interbedded sand, silt and clay. These deposits were derived predominantly from the meltwaters of large continental glaciers which eroded bedrock surfaces from the Hudson Bay in Canada to northern New Jersey and New York City. Th following paragraphs discuss each of the above units.

Gardiners Clay

The Gardiners Clay is a marine deposit along the south shore of Long Island. In southern Nassau county and southwestern Suffolk County, its upper surface elevation ranges from -40 to -120 ft below sea level. Its thickness ranges from 0 ft at its northern limit to 90 ft at the barrier islands. Beneath the site the Gardiners Clay is approximately 50 feet thick. The deposit unconformably overlies the Monmouth greensand and is unconformably overlain by Upper Glacial deposits of Pleistocene age.

The age of the Gardiners Clay exceeds 38,000 years. Because of its age and stratigraphic position, the unit is considered to be of Sangaman age. Similar to the Raritan Clay member, the Gardiners Clay is characterized by a low vertical hydraulic conductivity, on the order of 10^{-3} ft/d (3.5×10^{-7} cm/sec). Therefore, where it is present, it restricts vertical flow between the upper glacial aquifer and the deeper aquifers. Where the confining unit is absent, groundwater flow between aquifers is unimpeded.

Upper Glacial Deposits

The Upper Glacial deposits are Wisconsin in age and of glacial origin. The deposits unconformably overlie all underlying units and are found throughout the site and Long Island's surface. The glacial deposits include: 1) terminal-moraine deposits, emplaced by an ice front; 2) ground moraine deposits, north of the terminal moraine; and 3) glacial outwash, south of the terminal moraine. The site lies within the outwash deposits. Meltwater from the ice front flowed southward and carried sand and gravel in broad coalescing sheets to form the outwash plain that extends from the terminal moraine south to the coast forming the south shore of Long Island. Thickness of the Upper Glacial deposits beneath the site is approximately 150 feet.

Site Stratigraphy

The following information is based on boring log data. The upper seven feet consist of sandy loam (mixtures of fine to coarse sand and various amounts of silt) and slopes towards the south. This layer is continuous throughout the site except in those areas where excavations greater than seven feet have occured. Resting beneath this layer is a layer of fine to coarse sand with various amounts of gravel (38 to < 1%) and silt (1 to 21%). Found within this layer are various amounts silt mixed in with the sand, producing lenses of sandy loam (see Figures 4-1 and 4-2).

A representative soil sample from the sandy loam sediments and four from the poorly graded sandy sediments were forwarded to Geotech Associates for grain size distribution and/or hydrometer analysis, as required.

The sandy loam sediments had upwards to 21 percent silt, 77 percent fine to coarse sand, and only 2 percent fine gravel. The sandy material had from 1 to 2 percent silt, 61 to 98 percent fine to coarse sand, and from 2 to 38 percent fine to coarse gravel (See B-6 - Geotechnical Analysis).

4.3 Hydrology

Resting beneath the site are the Lloyd, Magothy and Upper Glacial aquifers. The depth to the Lloyd Aquifer is approximately 1,300 feet, the Magothy Aquifer is approximately 200 feet and the Upper Glacial Aquifer is approximately 35 feet. The following paragraphs discuss the hydrology of these aquifers.

4.3.1 Regional Hydrology-Hydraulic Interconnection of Aquifers

The aquifers of Long Island are hydraulically interconnected. Layers of clay and silt within an aquifer, or clayey and silty units between aquifers, confine the ground water; but these units do not completely prevent the vertical movement of water through them.

The Lloyd aquifer has moderate horizontal hydraulic conductivity, estimated to be 40 ft/day (1.4×10^{-2} cm/sec). However, individual sandy and gravelly beds within the aquifer may have much higher values. High capacity wells tapping the Lloyd aquifer have generally been pumped at rates less than 1,000 gal/min, but pumpage rates as high as 1,600 gal/min from a single well have been reported. Specific capacities (gal/min pumped per foot of drawdown in the well) of wells in the Lloyd aquifer have ranged from 4 to about 40 gal/min/ft. Water in the Lloyd aquifer is highly confined between the bedrock and the Raritan clay unit.

The Upper Glacial aquifer includes all of the saturated glacial drift. Sand beds and sand-and-gravel beds in the outwash south of the terminal moraine are highly permeable and are capable of yielding large quantities of water to wells. Horizontal hydraulic conductivity of glacial outwash has been estimated to be 270 ft/d (9.5 x10-2 cm/sec). Public-water supply and other high capacity wells tapping outwash deposits have commonly yielded as much as 1,500 gal/min, with specific capacities ranging from 50 to 60 gal/min/ft. Terminal and ground-moraine deposits generally have much lower conductivity than outwash deposits because they include clay and silt and are not well sorted. Coarse sand and gravel lenses within the moraine deposits may yield significant amounts of water, but locations of such lenses are scattered and unpredictable.

On the average, the vertical hydraulic conductivity and rates of vertical flow through the upper glacial aquifer are greater that those of all other hydrogeologic units in Suffolk County. The vertical movement of

Ref 3
19 of 122

water through the Magothy aquifer is impeded by intercalated lenses and beds of clay and silt; but, locally, vertical movement through the aquifer is facilitated by the lateral discontinuity of clay and silt beds. Vertical movements of water through clay and silt beds of the Magothy aquifer is very slow. The Raritan clay effectively confines water in the underlying Lloyd aquifer because the Raritan clay is thick and is of very low hydraulic conductivity. Movement through the bedrock is negligible (Jensen and Soren, 1974, A-4).

The contact between the upper glacial and the Magothy aquifers is not a smooth plane. Glacial deposits filled buried valleys that were cut in the Magothy aquifer, and these deposits are in lateral contact with truncated beds in the Magothy aquifer. In the buried valleys, water enters the Magothy aquifer at depths of hundreds of feet directly from the upper glacial aquifer. Near Huntington, a buried valley cuts completely through the Magothy aquifer and extends into the Raritan clay; in the Ronkonkoma basin, the Magothy aquifer seems to be nearly completely cut through; and along the north shore, where locally all the pre-Pleistocene deposits were completely eroded, the upper glacial aquifer is in contact with the full thickness of the Magothy aquifer (Jensen and Soren, 1974-A-4).

Where the upper glacial aquifer lies directly on sandy beds of the Magothy aquifer, good vertical hydraulic continuity exists between the two aquifers. Head losses between the water table in the upper glacial aquifer and the base of the Magothy aquifer in the area of the main ground-water divide in western Suffolk County (a vertical distance of as much as 900 feet) in 1968 generally were less than 2 feet. Furthermore, in areas of Long Island where groundwater withdrawals from both the upper glacial and the Magothy aquifers are large, the cones of depression in their water-level surfaces caused by pumping are similar in areal extent and configuration. These observations confirm the high degree of hydraulic continuity between the two aquifers in many parts of the county (A-4).

In the south shore area, the Gardiners Clay and the Monmouth greensand effectively confine water in the Magothy aquifer; and the high degree of confinement helps to prevent the downward movement of salty ground water into the Magothy aquifer. Wells that tap the Magothy aquifer on the barrier bars yield fresh water and commonly flow at land surface.

Recharge to the Lloyd aquifer results from downward movement of water from the Magothy aquifer and from the upper glacial aquifer through the Raritan clay. The main recharge area of the Lloyd aquifer seems to be in the Ronkonkoma area. Head losses across a thickness of 150 to 180 feet of Raritan clay in the county generally ranged from 6 to 42 feet in 1968 (A-4).

4.3.2 Regional Groundwater Flow

Movement of water in the aquifers of Suffolk County is more rapid horizontally than vertically. This partly reflects the low vertical hydraulic conductivity of the near-horizontal interbedded clay and silt lenses and beds (A-4). The estimated average rates of horizontal movement in the Upper Glacial, Magothy, and Lloyd aquifers are reported on Table 4-2. The reported data indicates that the Upper Glacial aquifer is up to one order of magnitude more permeable than the other two aquifers.

4.3.3 Site Hydrology

Climate

Although greatly modified by the Atlantic Ocean, the climate of Suffolk County is dominated by continental influences because air masses and weather systems affecting Long Island have their origin principally over the land areas of North America. A maritime influence is also significant. Climate conditions are varied because of the effects of topography, elevation, and distance from the ocean. The winter season, which brings weather conditions of moderate severity, lasts about 3 months. The summers are warm, mainly because of the moderating effect of the ocean on night time cooling. The annual average temperature is 61F (See Table 4-3). Precipitation is generally evenly distributed throughout the year (Soil Survey of Suffolk County, New York). The average annual precipitation is 43.4 inches and the mean annual lake evaportaion is 30 inches (Evaporation Maps of United States, U.S. Dept. of Commerce, Weather Bureau, Technical Paper No. 37). Thus, net precipitation is 13.4 inches. The 1-year, 24 hour rainfall is approximately 2.75 inches.

Site Hydrology

Four rounds of groundwater elevation measurements were obtained. The results indicated that groundwater elevation varied from 33.46 ft. (10/17/88) to 37.25 ft. (2/9/89), or a total of 3.79 feet fluctuation. Based on groundwater elevation data of February 9, 1989, groundwater flow at the site is southwest (see Figure 4-3). Groundwater elevation data from the November 14, 1988 round shows groundwater flow towards the south-southwest (see Figure 4-4).

Groundwater elevation varied from 17.52 ft. to 16.56 ft on February 9, 1989 which compares favorably to the regional data (15 feet) from the the Suffolk County Department of Health Services groundwater contour map of 1987 (see figure 4-5). This map indicates regional groundwater to be flowing south.

Ref3 21 of 122

Groundwater usage within the site area is for drinking, lawn watering, crop irrigation, filling of back yard pools, etc. The groundwater source is from the aquifers lying below the site (e.g., Lloyd, Magothy and Upper Glacial aquifers).

4.3.4 Site Soils

Within the property line of the existing asphalt manufacturing facility, there are two main groups of soil, CuB (cut and fill, gently sloping) and RdA (Riverhead sandy loam, 0-3 percent slopes). Cut and fill soils are made up of areas that have been altered in grading operations for housing developments, shopping centers and in the case of the Former Central Suffolk site, for manufacturing purposes. This soil unit is level to gently sloping, from 1 to 8 percent, and generally are large, but some areas are about 5 acres . With regards to the site itself (i.e., former pit area), site soils consist of the CuB type (Soil Survey of Suffolk County, N.Y. - A-5).

Along the southwest corner of the manufacturing facility are soils of the Riverhead sandy loam unit (RdA). This soil is found on outwash plains and consists of deep, well drained, moderately coarse textured soils that formed in a mantle of sandy loam or fine sandy loam over thick layers of coarse sand and gravel. The soils have a moderate to high available moisture capacity. Internal drainage is good. Permeability is moderate to rapid in the surface layer and in the subsoil and very rapid in the substratum 2.0 - 6.3 inches per hour). Soil pH varies from 4.5 to 5.5 (A-5, pgs 36-37).

4.4 Site Contamination

4.4.1 Groundwater Quality

On October 17, 1988, groundwater samples were collected from each of the five monitoring wells on site according to NYSDEC protocols as approved in the Work Plan, and delivered the same day to H2M Laboratory (a NYSDEC Certified Lab) for analysis (see Appendix B-4 for results). The results are summarized on Tables 4-4 (VOC/BNA/Pest. and PCB's) and 4-5 (metals/inorganics). It should be noted that the groundwater wells are noted as MW in the report and GW in Appendix B-4 (Laboratory results) and that MW-1 is the same as GW-1, etc.

<u>Volatile Organics</u>

Very low concentrations of six volatile organic compounds were found in the groundwater varying from a maximum of 12 ppb to 1 ppb. Four of the compounds (4-Methyl-2-Pentanone, Toluene, Ethylbenzene, and Total Xylenes) were also found in the field blank. Only two compounds, 1,1,1-Trichloroethane and

1,1-Dichloroethane, were found in the groundwater and not found in the field blank. These compounds had concentrations of 4 ppb and 1 ppb respectively, which are below drinking water standards and detection limits.

Of significance is the fact that three NYSDEC inactive hazardous waste site are locate just north of the site, upgradient. These sites are located in the Suffolk County Airport where fuel is stored for light and heavy aircraft (NYSDEC Site Nos. 152110,152078, and 152079). However, the upgradient well (MW-1) did not exhibit contamination of 1,1,1 Trichloroethane or 1,1-Dichlorethane.

Base Neutral Compounds

No base neutral compounds were found above detection limits in any groundwater sample analyzed. However, some tentatively identified compounds were found, in particular 1,13-Tetradecadiene. The source of these compounds is not known,

Pesticides and PCB's

No PCB's were found above detection limits in any ground water sample analyzed.

Three pesticides were found in site groundwater. Monitoring well MW-3 had an estimated concentration of 0.04 ppb of gamma-BHC (Lindane); monitoring well MW-4 had 0.17 ppb of 4,4'-DDT and an estimated concentration of 0.14 ppb of Methoxychlor; and monitoring well MW-5 had an estimated concentration of 0.048 ppb of gamma-BHC (Lindane). The 0.17 ppb concentration of 4,4'-DDT found in MW-4 exceeds the standard of 0.01 ppb as outlined in 6 NYCRR Part 702 (Human). Monitoring wells MW-1 and 2 showed no pesticides.

Lindane was also found in the field blank at a concentration of 0.09 ppb. Consequently, the concentrations of Lindane found in MW-3,4, and 5 may have been a result of sampling contamination.

The presence of pesticides at the site may be a result of area farming where these pesticides were used over the years and have migrated overland to the site or drifted and deposited onto the site during application (see Table 4-4). Another potential source is the application of pesticides by the rail road along the tracks which border the northern edge of the asphalt manufacturing facility. However, concentrations of pesticides are all low as denoted by the "J" value (i.e., below detection limit) in the analytical results.

Metals / Inorganics

Concentrations of metals varied greatly. Those which exhibited high concentrations were aluminum (93,600 ppb @ MW-1), iron (80,900 ppb @ MW-1) and manganese (2,770 ppb @ MW-3).

Concentations of iron (80,900 - 49,200 ppb), aluminum (93,600 - 37,000 ppb) and manganese (2,770 - 1,120 ppb) were found consistently high throughout the site. Both iron and manganese concentrations exceed secondary drinking water standards of 300 ppb and 50 ppb, respectively. Manganese concentrations exceed 6 NYCRR Part 702 maximium contaminant level of 300 ppb for human consumption. Other metals exceeding the Maximium Contaminant Levels (MCL's) are chromium (with a concemtration of 161 ppb and a MCL of 50 ppb) and lead (with a concentration of 90 ppb and a MCL of 50 ppb). The source for these metals is not known (see Table 4-5). However, groundwater samples were not filtered and the high metal concentrations are likely a result of metals dissolved from sediment within the sample column and not a reflection of groundwater quality. Metals tested for but found below detection limits were cadmium, cobalt, mercury, selenium, silver, thallium and cyanide.

4.4.2 Soil Quality

Volatile Organics

Six volatile organic compounds were found in low concentrations in site soils (see Table 4-6). Those compounds were:

- o Chloroform (12 ppb)
- o 1,1-Dichloroethene (1J - 5 ppb)
- o 2-Butanone (6J)
- o 1,1,1-Trichloroethane (17 - 6 ppb)
- o Tetrachloroethene (4 ppb)
- o Toluene (1J - 4J ppb)

Chloroform is used in production of fluorocarbon refrigerants and propellants and is also used for home air-conditioning. It is also used as a feed for production of tetrafluoroethylene, which polymerizes to *Teflon* (App. A-15). Chloroform was also found in one soil sample (SS-6) and in the volatile blank QA/QC sample. Therefore, the presence of chloroform may be due to sample contamination, laboratory contamination or potentially (although unlikely) from leaching of the teflon septum seal in the volatile blank cap.

2-Butanone is also known as Methyl ethyl ketone which is a member of the Ketone family of organic chemicals. Ketones are widely used as starting and intermediate ingredients in the production of numerous synthetics, such as resins, and the wide application as solvents (App. A-15). Because they are also found in solvents, the potential source of 2-Butanone could be from any solvents that may have been on site in the past.

1,1,1-Trichloroethane is produced by different chlorinated feedstocks, usually a by-product stream. 1,1,1 Trichloroethane is used for vapor degreasing, cold solvent cleaning, and as a carrier in water- and stain-repellant formulations (App. A-15) . Because a use of 1,1,1 Trichlorathane is for cold solvent cleaning, a potential source for this chemical could have been from the use of solvents for cleaning equipment or parts in the past.

Toluene is an aromatic hydrocarbon which is utilized in high-test gasoline (App. A-15). Therefore, a potential source of toluene could be from vehicular gasoline spills or from overhead aircraft from the nearby airport.

1,1-Dichloroethene was found in low concentrations in four soil samples (SS-1, SS-2, SS-4 and SS-5, see Table 4-6) as well as in the volatile blank QA/QC sample. Therefore, the source of 1,1-Dichloroethene could be from sample contamination or a laboratory false positive.

Tetrachloroethene was found in only one soil sample at a concentration of 4 ppb. Due to the low concentration, the reported concentration could be a laboratory false positive or from laboratory contamination.

Base /Neutral/Acid Extractable Compounds

Eight Base /Neutral/Acid Extractable compounds were identified on site. Seven of the compounds were found below detection limits but were present ("J" values). The only compound found above the detection limit was butylbenzylphthalate at a concentration of 1,600 ppb at soil sample station SS-5. The source of this compound is not known. There were several tentatively identified semivolatile organic compounds found, the source of these compounds is unknown.

Pesticides/PCB's

No PCB's were identifed above detection limits at the site

Ref 3
250/1252

Six pesticides were found at the site. Two at SS-1 location (Dieldrin and 4,4'-DDT), four at SS-2 location (4,4'-DDT, Heptachlor epoxide, Endrin, and delta-BHC), and three at SS-5 location (Heptachlor epoxide, delta-BHC, and 4,4'-DDE). For the most part, concentrations were found below detection limits. Only three of the pesticides were positively identified in concentrations above detection limits; Dieldrin (22 ppb), 4,4'-DDT (78 ppb) and Heptachlor epoxide (12 ppb). The surrounding area has been used for farming for numerous years but there is no information that suggests the site was ever farmed. Therefore, the likely sources of the pesticides is either wind-borne from off the site or from application along the rail road tracks to control weed growth (see Table 4-6).

Metals/Inorganics

Numerous metal and inorganic chemical parameters were identified in the six soils collected and analyzed. Four of the chemical compounds tested for were found below detection limits in all soil samples. Those parameters are: cadmium, mercury, selenium and cyanide (see Table 4-7). Within the site itself (i.e., former pit area) ten parameters were found to be below detection limits (arsenic, beryllium, cadmium,copper, lead, mercury, nickel, selenium, thallium, and cyanide, see SS-3 in Table 4-7). Maximum concentration found for each metal and inorganic chemical parameter, along with the normal range found in soils, is presented in Table 4-8. A review of table 4-8 indicates that only one metal , antimony, is found to be in a concentration which exceeds the common range typically found in soils. Concentrations of antimony were found to exceed the common range found in soils in four of the six soils samples. However, soil sample SS-3, which was taken from the site (i.e., former pit area) had an antimony concentration of 4.2 mg/Kg. In fact, soil sample SS-3 had the lowest concentration of all metals and inorganics with the exception of silver. Therefore, site soils show no signs of contamination. The source of antimony in the site area is not known.

4.4.3 Air Quality

Air quality measurements were obtained from a photoionizing detection instrument, HNu model 101, on a daily basis from October 6 to 14, 1988 at eight air monitoring stations along the perimeter and interior of the site (see Figure 4-6). The HNU instrument was calibrated on a daily basis prior to use. Atmospheric concentrations as measured by the instrument varied from 0 ppm to 2.4 ppm. Forty seven (47) measurements were obtained, forty one (41) were below 1.0 ppm, five (5) were from 1.0 to 1.9 ppm and two (2) were from 2.0 to 2.4 ppm (see Table 4-9).

With regards to the site, HNu readings did not determine that air quality was affected by the alleged hazardous waste disposed on-site.

Air quality, based on the HNu instrument, did vary slightly when the plant was in operation. Air quality readings obtained on October 12 and 14, 1988, when the plant was not in operation, varied from 0.3 to 0.5 ppm and from 0.3 to 0.8 ppm, respectively. Based on the limited HNu data, it appears that the air quality could be slightly affected within the boundary of the site during operations. However, it should be noted that the concentrations detected by the HNu are low and likely reflect normal background conditions. This is based on the fact that an airport is adjacent (north) to the site. Air monitoring data did not determined that air quality was affected by the alleged hazardous waste disposed on-site.

4.4.4 Waste

No hazardous waste materials were found at the site or identified in the record search.

4.4.5 Leachate

No leachate was found at the site.

4.4.6 State of New York Department of Health Laboratory Results

On June 14, 1988, the Suffolk County Department of Health (in response to NYSDOH request) collected groundwater samples from residences located downgradient from the site and forwarded them to NYSDOH Wadsworth Center for Laboratories and Research for analysis. Groundwater samples were analyzed for volatile halogenated indicators, aromatic purgeables, organochloride pesticides and PCB's, TCL base, neutral, and acid extractible organic compounds, and inorganics. The only parameter which showed elevated concentrations was iron ,having a maximum concentration of 0.580 mg/l (see Appendix B-4 for results. Note, samples exceeded standard for iron and one exceeded for manganese).

4.5 Conclusion

There are no records of hazardous waste being disposed of at the site. This is substantiated by laboratory analysis of site groundwater and soils. Organic chemical compounds found at the site are low in concentration and could be a result of the following:

- Sample contamination
- Laboratory contamination
- Laboratory false positives
- Vehicular gasoline spills on site
- Nearby airport
- Solvents which may have been used on site to clean equipment or parts in the past

Ref 3
27 of 122

Asphalt is not a hazardous waste. For the most part, chemical compounds identifed were found in concentrations below detection limits ("J" values). Pesticides were identified at the site. The likely sources of any pesticides found on site are either wind-borne from area farming activities or from pesticide application along the rail road tracks bordering the northern property line.

The only chemical compounds found on site to be above drinking water standards were iron (80,900 to 49,200 ppb) and manganese (2,220 to 1,120 ppb). The source of these chemical constituents is not known.

Based on the results of laboratory analysis and site assessment, it is recommended that no further investigatory action is required.

Ref 3
28 of 102

TABLE 4-1

Era	Period	Some major events during the history of metropolitan New York
CENOZOIC	QUATERNARY Present to 1.5 million years ago	Barrier beaches develop where coastline is underlain by unconsolidated sediments. Four ice ages of the Pleistocene Epoch, two of which are evidenced on Long Island, three in New Jersey. Long Island the product of the depositional effects of the Wisconsin advance; erosional, as well as depositional, features displayed in Appalachian Highlands north of terminal morain. Development of glacial lakes. Postglacial subsidence of coastline; Inner Lowland of Coastal Plain flooded, forming Long Island Sound, New York Bay, and Raritan Bay. Other, more narrow valleys, such as the Hudson, East, Harlem, become estuaries.
	TERTIARY 1.5 million to 65 million years ago	Continued deposition of sediments on the New Jersey portion of the Coastal Plain. No sediments of Tertiary age yet recognized on Long Island. Uparching of the Fall Zone Peneplane; erosion of the region down to the Schooley Peneplane surface by the middle of the period. Uplift of the Schooley Peneplane; differential erosion resulting in the present topography; water gaps formed in the emerging ridges, including those in the Watchung Mountains and at Sparkill in the Palisades, perhaps produced by an ancestral course of the Hudson River.
MESOZOIC	CRETACEOUS 65 million to 136 million years ago	Deposition of sediments, which today are still unconsolidated, when the shoreline advanced landward near the end of the period. The Raritan and Magothy formations form the underlying framework of Long Island. In New Jersey they underlie the Inner Lowland of the Coastal Plain. Still younger sediments of Cretaceous age in New Jersey hold up the cuesta such as the Atlantic Highlands and the Outer Coastal Plain. Development of the Fall Zone Peneplane by the end of the Jurassic Period or the beginning of the Cretaceous Period.
	JURASSIC 136 million to 193 million years ago	No record of the Jurassic in eastern North America. Continued erosion of the Appalachian Highlands.
	TRIASSIC 193 million to 225 million years ago	A series of long basins, such as the New Jersey Lowland (Newark Basin) and the Connecticut Valley Lowland, form in the deeply eroded ancestral Appalachian Highlands. Continental sediments accumulate in these basins. In New Jersey the Newark series contain a distinctive fossil assemblage, including *Icarosaurus*, the first record of aerial locomotion in vertebrates. Intrusions of magma, now the igneous bodies of the Palisades and the Granton sills, and extrusions of lava, now the Watchung Mountains. Similar intrusions and extrusions of magma and lava recognized in the Connecticut Valley Lowland. Development of an extensive erosion surface, the pre-Late Triassic (pre-Newark) Peneplane.
PALEOZOIC	PERMIAN 225 million to 280 million years ago	Climax of the Appalachian Revolution and final destruction of the miogeosyncline. Continued erosion of the older ranges in the ancestral Appalachian Highlands.
	PENNSYLVANIAN 280 million to 310 million years ago	Sedimentation continues in the miogeosyncline, the rock record found in the Appalachian Plateau Province. Beginning of the Appalachian Revolution near the end of the period.
	MISSISSIPPIAN 310 million to 345 million years ago	Sedimentation continues in the miogeosyncline, the rock record found in the Appalachian Plateau Province of the Appalachian Highlands.
	DEVONIAN 345 million to 395 million years ago	Erosion of the Acadian Mountains supply much of the sediments that make up the Catskill Delta in the miogeosyncline. Oldest known forest, containing such trees as *Aneurophyton*, discovered at Gilboa, New York. Continued marine deposition in the miogeosyncline west of the Catskill Delta. Acadian Orogeny destroys the remainder of the eugeosyncline beginning sometime in the middle of the period. Metamorphic rocks of the New England Upland reheated and/or re-metamorphosed. Invasions of predominately granitic magmas.
	SILURIAN 395 million to 435 million years ago	Continued deposition of marine sediments in the miogeosyncline. Continued erosion of the Taconian Highlands; formation of the Shawangunk sands and gravels. Continued deposition in the eugeosyncline farther north.
	ORDOVICIAN 435 million to 500 million years ago	Increased tectonic instability within the eugeosyncline. Taconian Orogeny raises the Taconian Highlands in a part of the eugeosyncline near the end of the period. Extensive regional metamorphism at this time may have formed the New York City group, while erosion of the Taconian Highlands supply much of the sediments that make up the Queenston Delta.
	CAMBRIAN 500 million to 570 million years ago	Deposition of marine sediments in both the eugeosyncline and the miogeosyncline throughout this period.
PRECAMBRIAN 570 million to 4500 million years ago		Probable development of the Appalachian Geosyncline sometime late in the era. Successive ranges of mountains appeared and then were erased by erosion. Only their roots, the metamorphic and igneous rock complex now recognized as the Reading Prong—the Hudson, New Jersey, Housatonic Highlands, and so on—are the remaining vestiges of these Precambrian mountain ranges.

SOURCE : SCHUBERTH, 1968

Ref 3
24 of 122

TABLE 4-2

HYDRAULIC CONDUCTIVITY OF THE UPPER GLACIAL, MAGOTHY, AND LLOYD AQUIFERS

HYDROGEOLOGIC UNIT	DESCRIPTION	ESTIMATED AVERAGE HYDRAULIC CONDUCTIVITY (FEET/DAY)	
		KIMMEL & BRAIDS (1980)	FRANKE & COHEN (1972)
UPPER GLACIAL AQUIFER	MAINLY SAND AND GRAVEL; SOME THIN BEDS OF CLAYEY MATERIAL	470-500 (Babylon Landfill) 190-360 (Islip Landfill)	270
MAGOTHY AQUIFER	MAINLY VERY FINE SAND AND CLAY, SOME COARSE TO FINE SAND	50	50
LLOYD AQUIFER	SAND AND GRAVEL; SOME CLAYEY MATERIAL	40	40

TABLE 4-3

CLIMATE DATA

TABLE 10.—*Temperature and precipitation data at Riverhead, Suffolk County, New York*

Month	Temperature				Precipitation				
	Average daily maximum	Average daily minimum	7 years in 10 will have—		Average monthly total	3 years in 10 will have—		Snowfall	
			Maximum temperature equal to or higher than—	Minimum temperature equal to or lower than—		More than—	Less than—	Average monthly total	4 years in 10 will have more than—
	°F.	°F.	°F.	°F.	In.	In.	In.	In.	In.
January	38	24	52	11	3.6	3.8	2.9	7	6
February	39	25	51	13	3.3	3.9	2.4	7	7
March	46	31	61	21	4.2	5.0	3.0	6	5
April	58	39	74	30	3.6	4.2	2.9	(1)	(1) 2
May	69	49	81	39	3.5	4.6	2.0	0	----------
June	78	58	90	47	2.7	3.5	1.9	0	----------
July	83	64	90	55	3.3	4.0	2.1	0	----------
August	81	64	87	53	4.3	4.8	2.4	0	----------
September	75	57	84	44	3.1	3.7	1.6	0	----------
October	65	48	79	35	3.1	4.0	2.3	0	(1 2)
November	54	38	66	26	4.5	5.8	3.1	(1)	(1) 1
December	42	28	57	14	4.2	5.5	2.9	6	7
Year	61	44	92	7	43.4	46.5	40.6	26	28

[1] Trace.
[2] One year in 10 will have more.

SOURCE : Suffolk County Soil Survey, Suffolk County, N.Y., Table 10, page 97

Fig 3
2 of 12

GROUNDWATER QUALITY RESULTS
Volatile Organics-Base/ Neutral/Acid Extractables-Pesticides/PCB's

RESULTS / CHEMICAL	CONCENTRATIONS (ug/l)								
	MW-1	MW-2	MW-3	MW-4	MW-5	TRIP BLANK	FIELD BLANK	Duplicate (MW-3)	VBLK
VOLATILE ORGANICS									
4-Methyl-2-Pentanone	6J	3J	9J	2J	3J	-	3J		
Toluene	3J	1J	4J	1J	1J	-	4J	2 J	
Ethylbenzene	2J	-	2J	-	-	-	2J		
Xylene(total)	-	4J	16	6J	4J	-	12		
1,1-Dichloroethane	-	-	1J	-	-	-	-		
1,1,1-Trichloroethane	-	-	4J	-	-	-	-		
Methylene Chloride			10B	5J,B	6B			5 J,B	24
Acetone			51B	28B	17B			22 B	23
2-Butanone				4J,B	3J,B			3 J,B	5 J
4-Methyl-2-Pentanone			9J	2J	3J			2 J	
BASE NEUTRAL/ ACID EXTRACTABLES									
bis(2-Ethylhexyl) phthalate	190B	89B	49B	93B	77B		59B	32B	
PESTICIDES/PCB's									
gamma-BHC (Lindane)	-	-	0.04J	-	0.048J	-	0.09		
4,4'-DDT	-	-	-	0.17	-	-	-		
Methoxychlor	-	-	-	0.14J	-	-	-		

Note : J means detected, but level below contract detection limit.
B Also found in method blank

TABLE 4-4

Pg 3 31 of 107

Ref 3
32 of 122

GROUNDWATER QUALITY RESULTS
METALS/INORGANICS

RESULTS / CHEMICAL	CONCENTRATIONS (ppb)						
	MW-1	MW-2	MW-3	MW4	MW-5	FIELD BLANK	Duplicate
Aluminum	93,600	37,000	58,900	49,500	51,700	293	87,600
Antimony	175	108	155	152	116	39B	172
Arsenic	50	50	50	50	50	5	50
Barium	303	233	183	196	228	3B	303
Beryllium	5.0	4B	4B	4B	4B	0.3	5
Cadmium	-	-	-	-	-	-	-
Calcium	8,650	21,100	19,600	22,900	89,300	116B	7,320
Chromium	161	86	69	74	97	5B	101
Cobalt	36B	29B	47B	41B	36B	5B	37B
Copper	113	138	54	86	83	1.4	68
Iron	80,900	49,200	62,400	57,200	62,800	237	77,800
Lead	59	50	46	36	90	5	52
Magnesium	8,770	7,690	8,890	11,300	27,200	57B	8,370
Manganese	1,120	1,770	2,770	1,630	1,850	4B	1,240
Mercury	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Nickel	77	46	33B	43	55	8B	49
Potassium	9,800	8,500	4,900	5,100	12,500	200	13,700
Selenium	-	-	-	-	-	-	-
Silver	3B	2.7	4B	4B	5B	5B	11
Sodium	7,500	7,700	7,200	7,300	19,600	200	8,500
Thallium	-	-	-	-	-	-	-
Vanadium	175	103	124	127	145	1.9	169
Zinc	235	213	136	179	214	5B	163
Cyanide	-	-	-	-	-	-	-

NOTES : B means detected at levels above instrument detection limit and below contract detection limit
- means at or below detection limit

TABLE 4-5

SOIL QUALITY RESULTS
Volatile Organics-Base Neutral/Acid Extractibles-Pesticides/PCB's

RESULTS / CHEMICAL	CONCENTRATIONS (ug/kg) Subsurface								
	SS-1	SS-2	SS-3	SS-4	SS-5	SS-6	VBLK	SBLK 438	PBLK
VOLATILE ORGANICS									
1,1-Dichloroethene	2J	1J	-	3J	5	-	-		
2-Butanone	6J	-	-	-	-	-	5J		
1,1,1-Trichloroethane	14	16	12	15	6	17	-		
Tetrachloroethene	4	-	-	-	-	-	-		
Toluene	2	2J	-	1J	2J	4J	-		
Chloroform	-	-	-	-	-	12	4J		
Methylene Chloride	18B	20B	15B	21B	27B	21B	-		
Acetone	13B	11B	13B	10B	14B	10B	6J		
BASE NEUTRAL/ ACID EXTRACTABLES									
Di-n-butylphthalate	-	-	69J	-	-	-			
Phenol	-	180	-	-	60J	-			
Fluoranthene	-	-	-	-	77J	-			
Pyrene	-	-	-	-	55J	59J			
Butylbenzylphthalate	-	-	-	-	1,600	-		4J	
Benzo(b)fluoranthene	-	-	-	-	41J	-			
Benzo(k)fluoranthene	-	-	-	-	38J	-			
Diethylphthalate	-	-	-	-	-	140J			
bis(2-Ethylhexyl) phthalate	2100B	1300B	330B	680B	2000B	2700B		43	
PESTICIDES/PCB's									
Dieldrin	22	-	-	-	-	-			
4,4'-DDT	78	-	-	-	-	-			
Heptachlor epoxide	-	12	-	-	3J	-			
Endrin	-	3J	-	-	-	-			
Delta-BHC	-	4J	-	-	2J	-			
4,4'-DDE	-	3J	-	-	8J	-			
Aldrin	11B	7B,J	13B	13B	10B	12B			13

Note: J means detected, but level below contract detection limit.

TABLE 4-6

Ref 3 33 of 127

SOIL QUALITY RESULTS
METALS/INORGANICS

RESULTS / CHEMICAL	CONCENTRATIONS (mg/Kg)					
	SS-1	SS-2	SS-3	SS-4	SS-5	SS-6
Aluminum	3,050	3,620	287	3,780	5,140	3,020
Antimony	13.3	17.7	4.2B	14.7	15.5	9.8B
Arsenic	4.6	4.9	-	5.9	5.4	1.7
Barium	13.3B	19.2B	1.2B	14.1B	42.6	9.4B
Beryllium	0.42B	0.41B	-	0.22B	0.43B	0.21B
Cadmium	-	-	-	-	-	-
Calcium	4,670	6,510	55.8B	3,170	7,690	926B
Chromium	10.8	5.2	1.6B	4.8	7.7	4.8
Cobalt	4.2B	5.6B	1.0B	3.1B	4.7B	3.3B
Copper	44.7	23.7	-	4.4B	10.5	3.7B
Iron	7,780	7,910	498	4,660	6,480	4,770
Lead	6.7	5.8	-	7.7	49.5	3.6
Manganese	73.0	90.6	10.7	48.8	114	60.1
Magnesium	2,180	3,660	61.6B	1,060	4,160	872
Mercury	-	-	-	-	-	-
Nickel	3.5B	4.7B	-	2.9B	6.5B	3.7B
Potassium	395B	597	242	330	452	270
Selenium	-	-	-	-	-	-
Silver	2.7B	2.1	1.8B	2.2	1.7B	2.3
Sodium	2,110	2,350	1,960	2,210	2,230	2,100
Thallium	-	-	-	-	-	-
Vanadium	19.8	27.2	3.4B	16.7	28.0	21.4
Zinc	17.9	19.2	2.4B	11.4	41.3	10.0
Cyanide	-	-	-	-	-	-

NOTES B means detected at levels above instrument detection limit and below contract detection limit

TABLE 4-7

Ref 3
35 of 127

TABLE 4-8

MAXIMUM CONCENTRATION OF METAL AND INORGANICS IN SITE SOILS AND COMMON RANGE FOUND IN SOIL

Chemical	Max. Concentration(mg/Kg)	Common Range Found in Soil(mg/Kg)*	NYCRR Part 360 4.4 MC**
Aluminum	5,140	No Data	
Antimony	17.7	2-10	
Arsenic	5.9	1-50	
Barium	42.6	100-3,000	
Beryllium	0.43	0.1-40	
Cadmium	BDL	0.01-0.7	25
Calcium	7,690	700-36,000(1)	
Chromium	10.8	1-1,000	1,000
Cobalt	5.6	1-40	
Copper	44.7	2-100	1,000
Iron	7,910	5,000-50,000(1)	
Lead	49.5	2-200	1,000
Magnesium	4,160	1,200-15,000(1)	
Manganese	114	200-10,000(1)	
Mercury	BDL	0.01-0.3	10
Nickel	6.5	5-500	200
Potassium	597	1,700-33,000(1)	
Selenium	-	0.1-2	
Silver	2.7	0.01-5	
Sodium	2,350	No Data	
Thallium	BDL	No Data	
Vanadium	28	20-500	
Zinc	41.3	10-300	2,500
Cyanide	BDL	No Data	

Sources:

* "Review of In-Place Treatment Techniques for Contaminated Surface Soils" EPA-540/2-84-0036, Nov. 1984

**NYCRR Part 360-4.4(a), "Sewage Sludge and Septage Destined for Land Application"

(1) "The Nature and Properties of Soils," Buckman, H., Brady, N., Macmillan Co. New York, N.Y., 1969

BDL = Below detection limits

AIR QUALITY DATA
(HNu Data-PPM)

DATA / AIR QUALITY STATION	HNu CONCENTRATIONS (PPM)						
	OCT. 6	OCT. 7	OCT. 10	OCT. 11	OCT. 12	OCT. 13	OCT. 14
AMS - 1	0.0	ND	0.2	0.2	0.4	0.3	0.3
AMS - 2	0.0	ND	0.2	0.2	0.4	0.4	0.3
AMS - 3	0.0	ND	0.4	0.3	0.4	0.2	0.4
AMS - 4	0.0	ND	1.0	0.8	0.5	0.8	0.8
AMS - 5	0.0	ND	0.4	1.0-1.2	0.5	1.5	0.8
AMS - 6	0.2	ND	0.4	0.3	0.4	0.8	0.4
AMS - 7	0.5	ND	1.0	2.0-2.4	0.3	0.4	0.3
AMS - 8	ND	ND	1.0	2.0	0.3	0.2	0.8

ND = NO DATA

TABLE 4-9

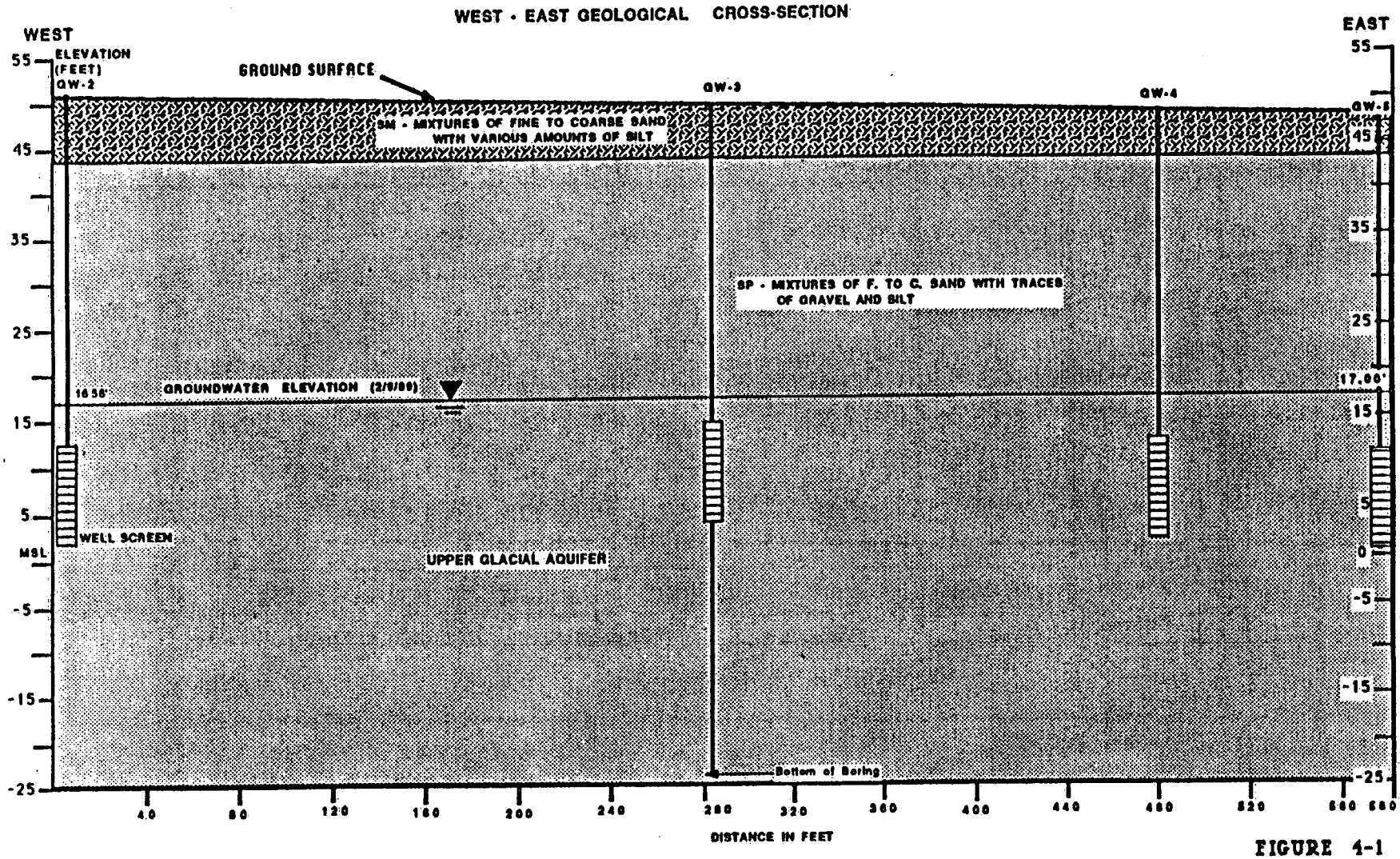

WEST - EAST GEOLOGICAL CROSS-SECTION
WEST
EAST
ELEVATION (FEET)
QW-2
GROUND SURFACE
QW-3
QW-4
QW-5
SM - MIXTURES OF FINE TO COARSE SAND WITH VARIOUS AMOUNTS OF SILT
SP - MIXTURES OF F. TO C. SAND WITH TRACES OF GRAVEL AND SILT
16.58'
GROUNDWATER ELEVATION (2/9/89)
17.00'
WELL SCREEN
UPPER GLACIAL AQUIFER
Bottom of Boring
MSL
55
45
35
25
15
5
0
-5
-15
-25
40
80
120
160
200
240
280
320
360
400
440
480
520
560
580
DISTANCE IN FEET

FIGURE 4-1

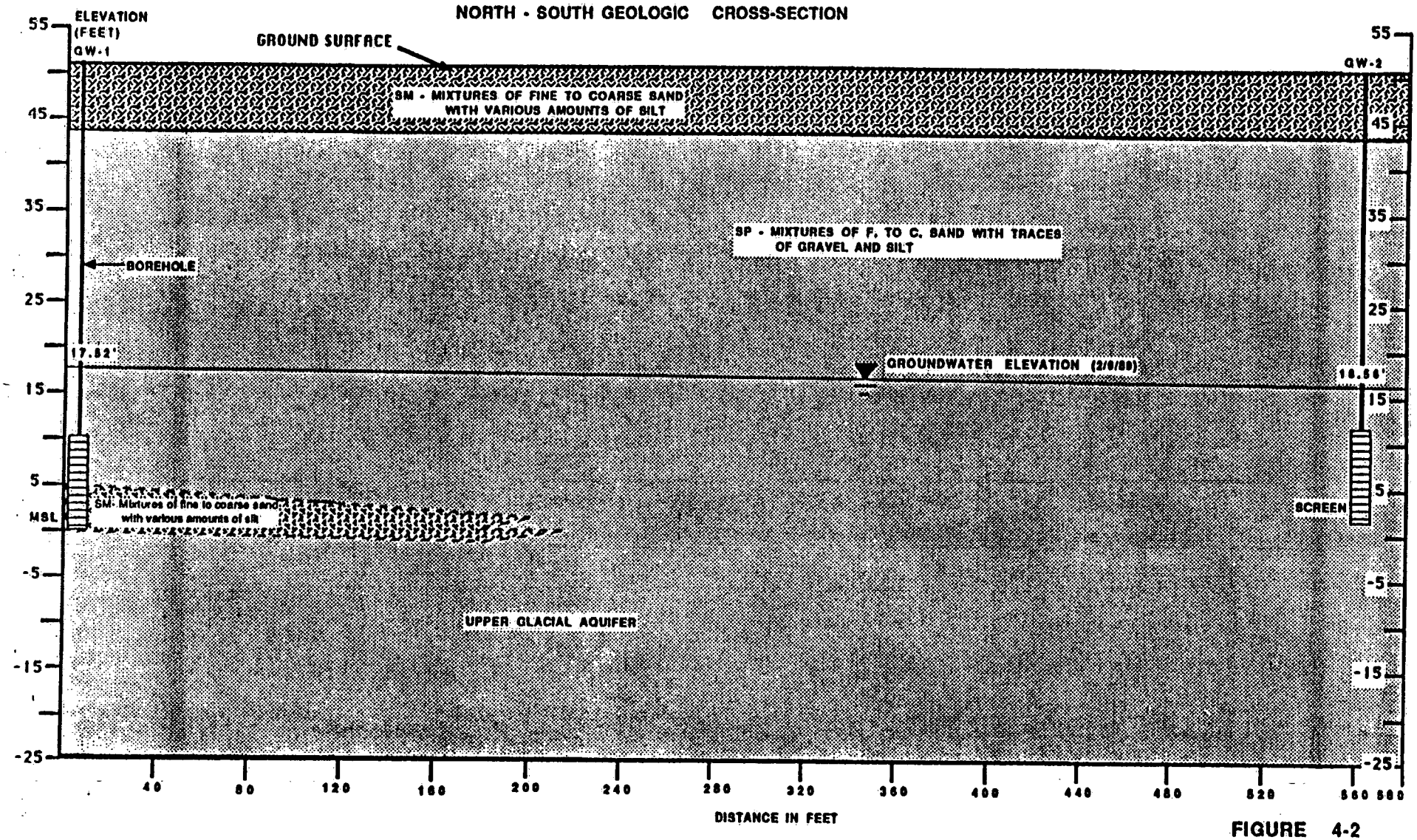
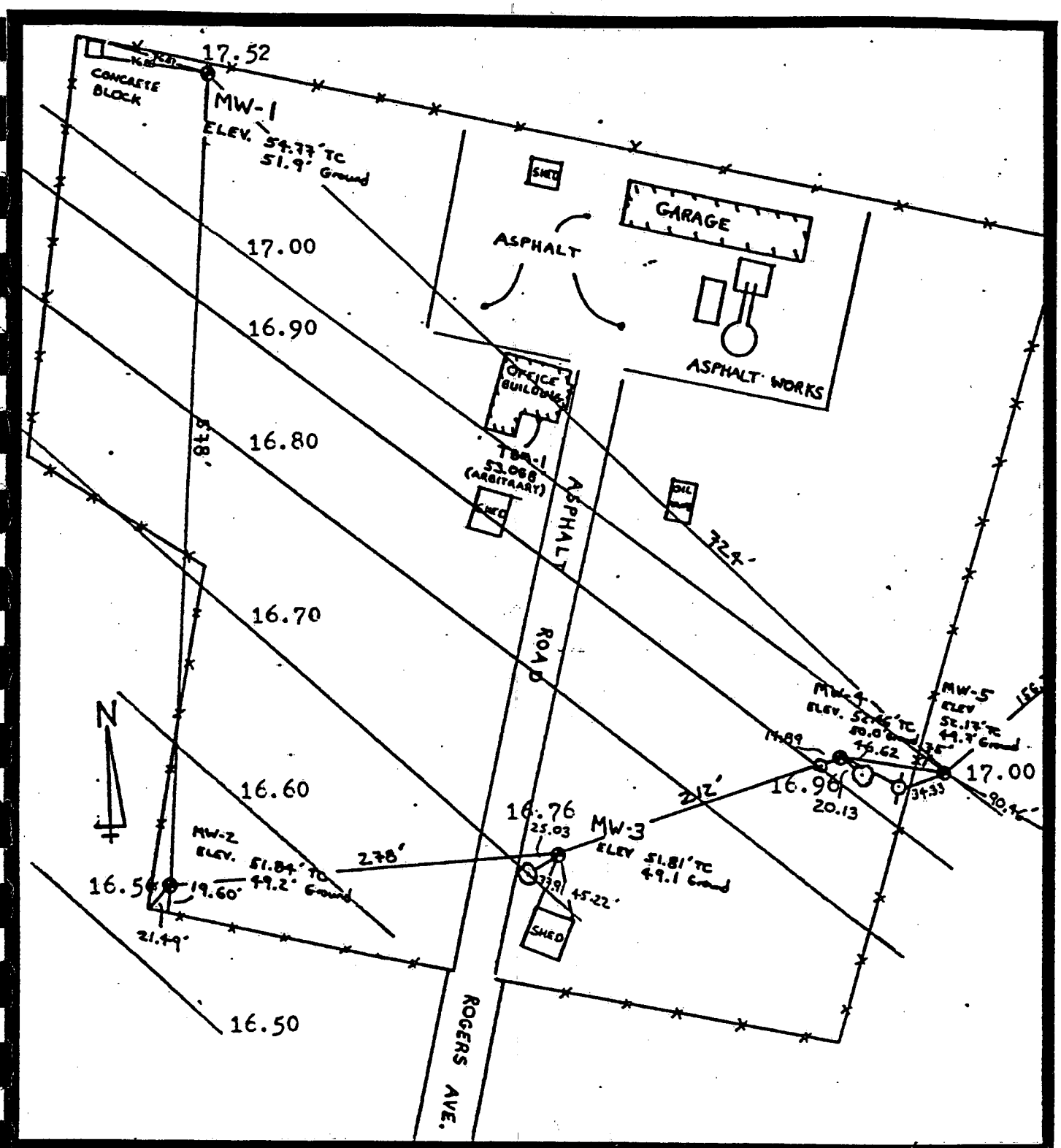

NORTH - SOUTH GEOLOGIC CROSS-SECTION
ELEVATION (FEET)
GW-1
GROUND SURFACE
GW-2
SM - MIXTURES OF FINE TO COARSE SAND WITH VARIOUS AMOUNTS OF SILT
SP - MIXTURES OF F. TO C. SAND WITH TRACES OF GRAVEL AND SILT
BOREHOLE
17.82'
GROUNDWATER ELEVATION (2/9/89)
18.86'
SCREEN
SM- Mixtures of fine to coarse sand with various amounts of silt
UPPER GLACIAL AQUIFER
MSL
55
45
35
25
15
5
-5
-15
-25
40
80
120
160
200
240
280
320
360
400
440
480
520
560
580
DISTANCE IN FEET

FIGURE 4-2

Ref 3
34 of 102

FIGURE 4-3
SITE GROUNDWATER CONTOUR MAP-FEBRUARY 9, 1989



LEGEND

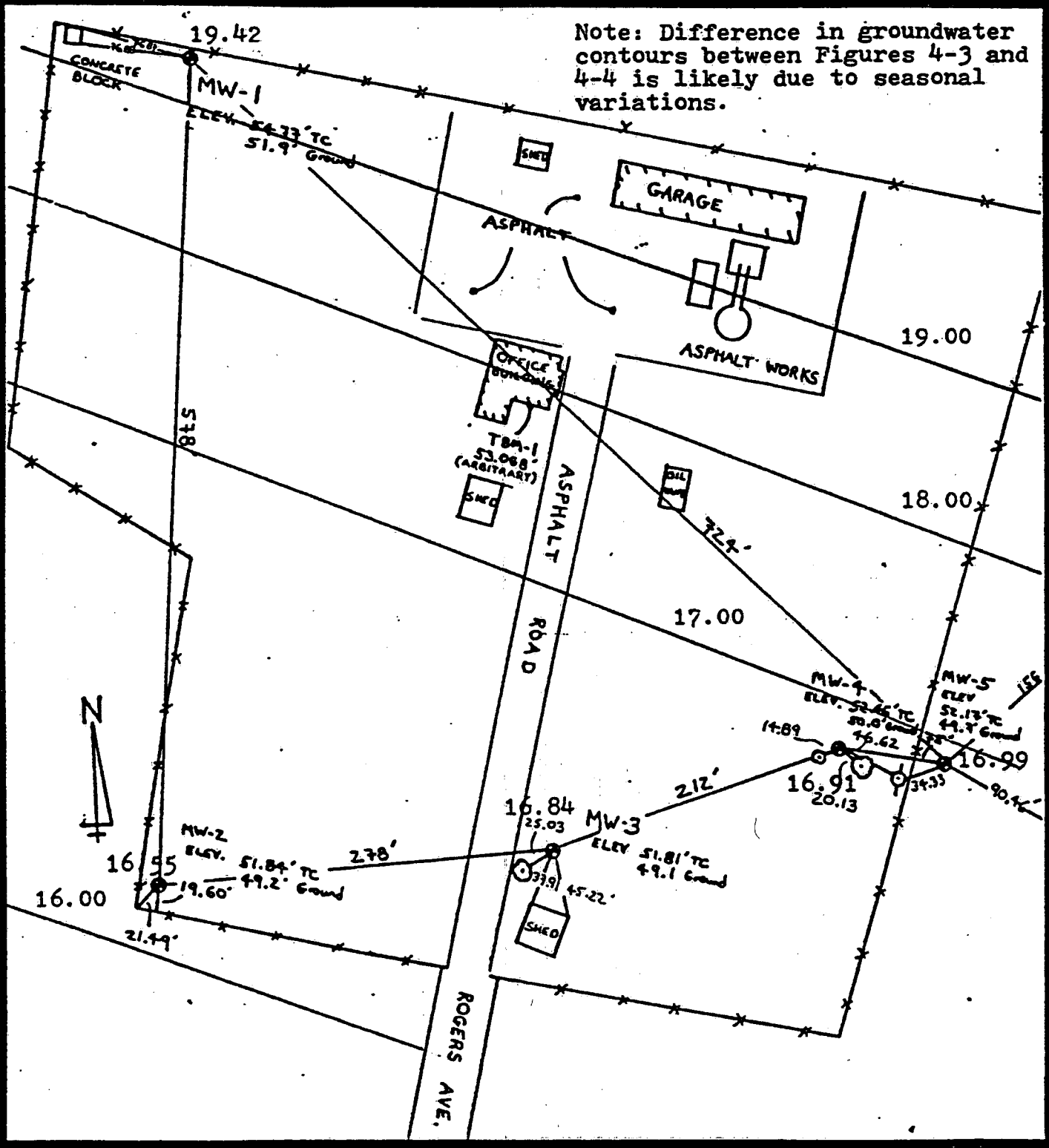
Monitoring Well

17.00 Groundwater Contour Line

17.52 Groundwater Elevation

Ref 3
40 of 124

FIGURE 4-4
SITE GROUNDWATER CONTOUR MAP-NOVEMBER 14, 1988



LEGEND

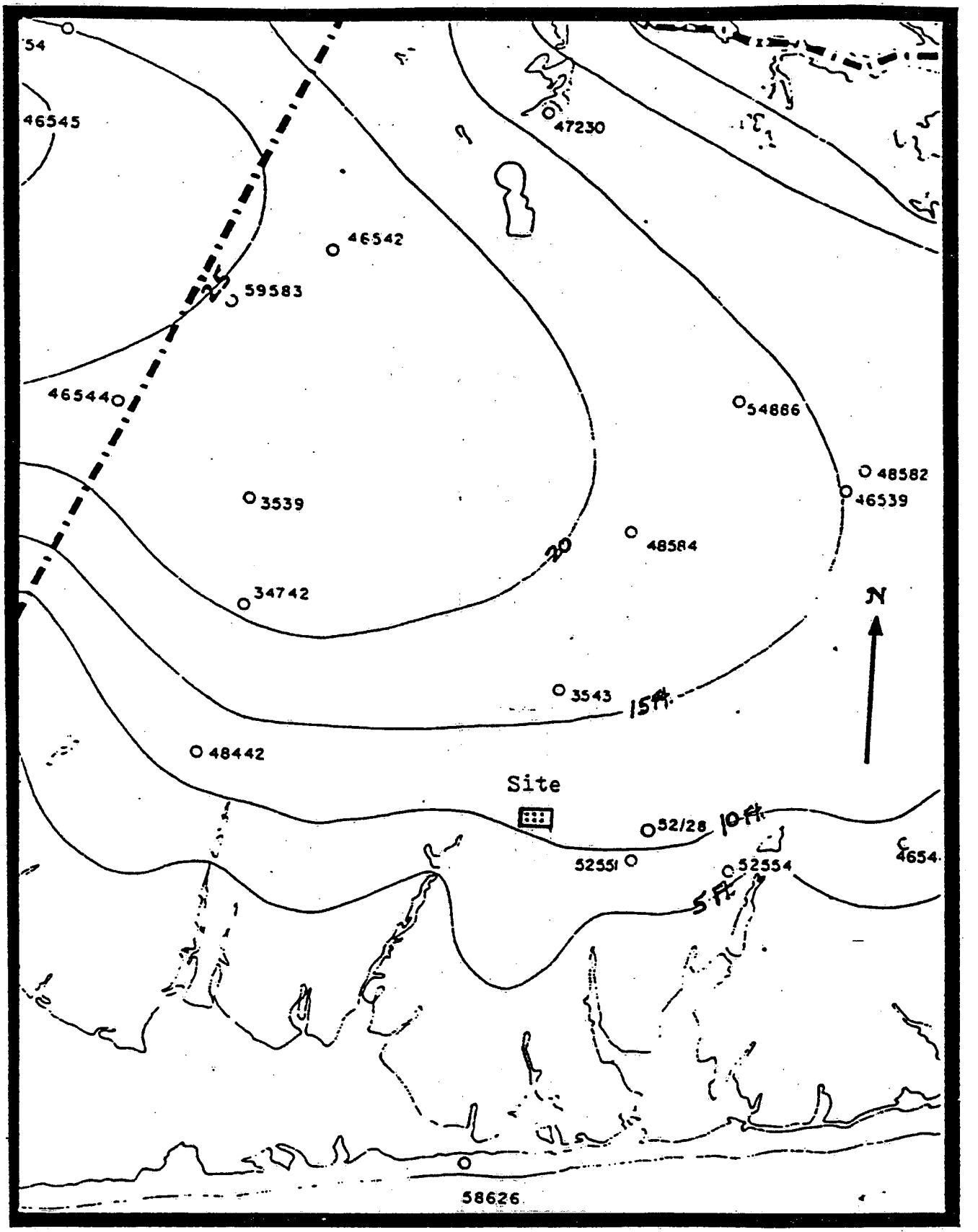
Monitoring Well

18.00 Groundwater Contour Line

19.42 Groundwater Elevation

Ref 3 4/1/87

FIGURE 4-5 REGIONAL GROUNDWATER CONTOURS



SOURCE : GROUNDWATER CONTOUR MAP, MEAN SEA LEVEL 1987, SUFFOLK COUNTY DEPARTMENT OF HEALTH SERVICES

SCALE - MILES

0 0.5 1 2 3

Ref 3
42 of 127

AIR MONITORING STATION LOCATION MAP

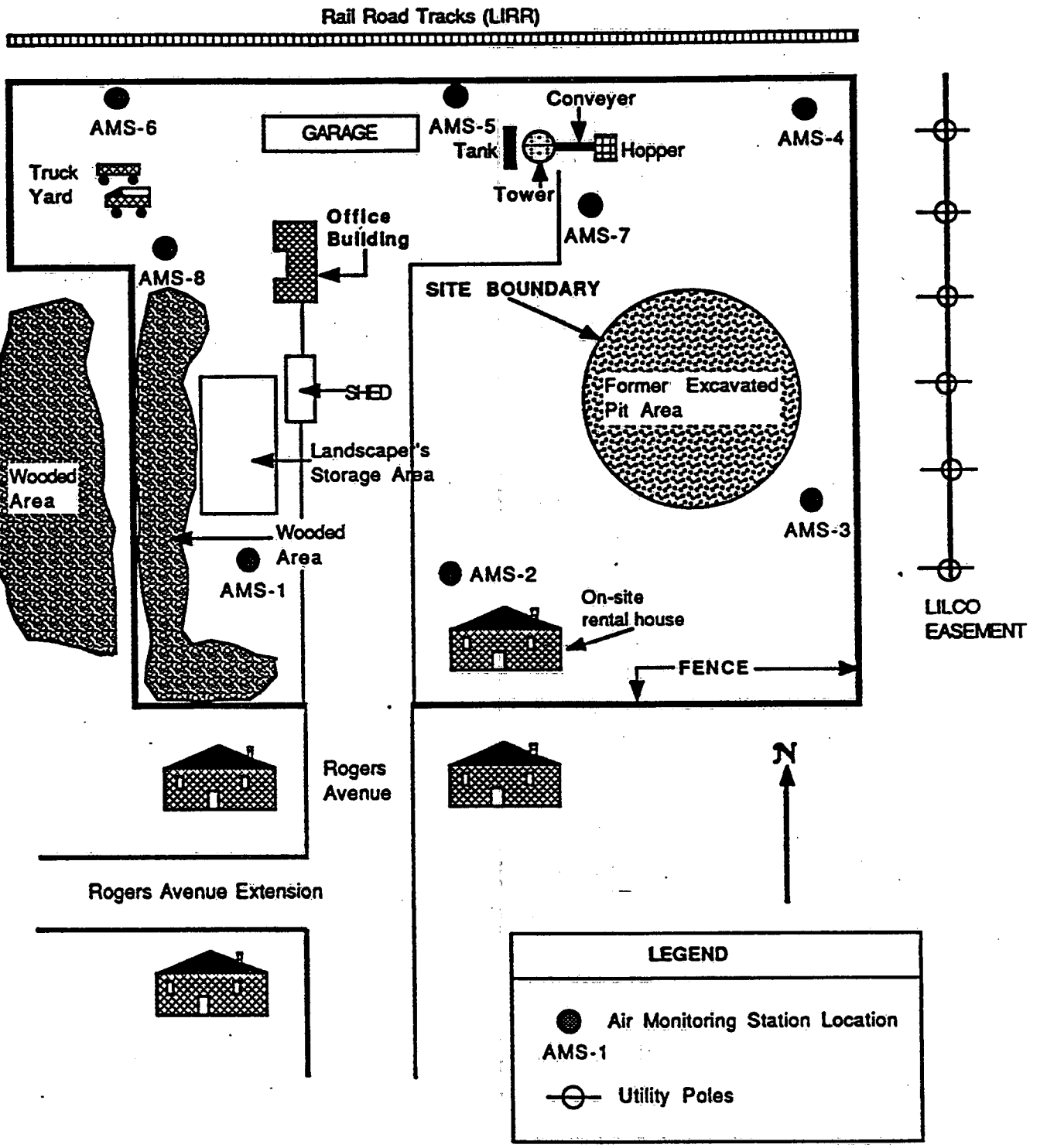


FIGURE 4-6

Rl/3
43 of 127

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 1 - SITE LOCATION AND INSPECTION INFORMATION

I. IDENTIFICATION
01 STATE: | 02 SITE NUMBER:

II. SITE NAME AND LOCATION

01 SITE NAME (Legal, common, or descriptive name of site)	Former Central Suffolk Paving
02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER	100 Rogers Ave.
03 CITY	Westhampton Beach
04 STATE	NY
05 ZIP CODE	11778
06 COUNTY	Suffolk
07 COUNTY CODE	
08 CONG DIST	
09 COORDINATES LATITUDE	40° 49' 49"
LONGITUDE	72° 38' 36"
10 TYPE OF OWNERSHIP (Check one)	☒ A. PRIVATE ☐ B. FEDERAL ☐ C. STATE ☐ D. COUNTY ☐ E. MUNICIPAL ☐ F. OTHER ☐ G. UNKNOWN

III. INSPECTION INFORMATION

01 DATE OF INSPECTION	8 / 5 / 88 (MONTH DAY YEAR)
02 SITE STATUS	☒ ACTIVE ☐ INACTIVE
03 YEARS OF OPERATION	1980 (BEGINNING YEAR) / 1987 (ENDING YEAR) ___ UNKNOWN
04 AGENCY PERFORMING INSPECTION (Check all that apply)	☐ A. EPA ☐ B. EPA CONTRACTOR ☐ C. MUNICIPAL ☐ D. MUNICIPAL CONTRACTOR ☐ E. STATE ☒ F. STATE CONTRACTOR GRB Env. Serv. ☐ G. OTHER

05 CHIEF INSPECTOR	06 TITLE	07 ORGANIZATION	08 TELEPHONE NO.
Rose Russo Barbour	Supervising Engineer	GRB	516 754-5231
09 OTHER INSPECTORS	10 TITLE	11 ORGANIZATION	12 TELEPHONE NO.
Thomas Fox	Geologist	GRE	(516) 754-5231
			( )
			( )
			( )
			( )

13 SITE REPRESENTATIVES INTERVIEWED	14 TITLE	15 ADDRESS	16 TELEPHONE NO.
Mr. Gabriel Pennino	President	100 Rogers Ave. Westhampton Beach, N.Y.	516) 288-5322
			( )
			( )
			( )
			( )
			( )

17 ACCESS GAINED BY (Check one)	18 TIME OF INSPECTION	19 WEATHER CONDITIONS
☒ PERMISSION ☐ WARRANT	2:00 PM	Clear, calm and sunny

IV. INFORMATION AVAILABLE FROM

01 CONTACT	02 OF (Agency/Organization)	03 TELEPHONE NO.
Rose Russo Barbour	GRB Environmental Services Inc.	516) 754-5231

04 PERSON RESPONSIBLE FOR SITE INSPECTION FORM	05 AGENCY	06 ORGANIZATION	07 TELEPHONE NO.	08 DATE
Rose Russo Barbour		GRB	(516)754-5231	6 / 15 / 89 (MONTH DAY YEAR)

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 2 - WASTE INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

01 PHYSICAL STATES (Check all that apply)

- [X] A. SOLID
- [ ] B. POWDER, FINES
- [ ] C. SLUDGE
- [ ] D. OTHER _____ (Specify)
- [ ] E. SLURRY
- [ ] F. LIQUID
- [ ] G. GAS

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

TONS: Waste
CUBIC YARDS: Removed
NO. OF DRUMS: Bulk

03 WASTE CHARACTERISTICS (Check all that apply)

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

Construction and demolition waste

III. WASTE TYPE

CATEGORY	SUBSTANCE NAME	01 GROSS AMOUNT	02 UNIT OF MEASURE	03 COMMENTS
SLU	SLUDGE			construction and demolition
OLW	OILY WASTE			wastes were disposed of at
SOL	SOLVENTS			the site and have been removed.
PSD	PESTICIDES			There have been no reports
OCC	OTHER ORGANIC CHEMICALS			of hazardous wastes being
IOC	INORGANIC CHEMICALS			disposed of at the site
ACD	ACIDS			
BAS	BASES			
MES	HEAVY METALS			

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

CATEGORY	02 SUBSTANCE NAME	03 CAS NUMBER	04 STORAGE/DISPOSAL METHOD	05 CONCENTRATION	06 MEASURE OF CONCENTRATION
	none known				

V. FEEDSTOCKS (See Appendix for CAS Numbers)

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

VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sampling records, reports)

Site inspection and interview with site owner.

Ref 3 450/MR

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 ☐ A. GROUNDWATER CONTAMINATION — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

No release detected

01 ☐ B. SURFACE WATER CONTAMINATION — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

No surface water body lies within or adjacent to the site. The nearest surface water body is 1,200 ft East.

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

None detected when monitoring during drilling with a Photoionizer Detector.

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

None reported or noted during site reconnaissance or drilling activities

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

Construction and demolition waste has been removed.

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

None. Very low concentrations of six volatile organics detected in site soils (1 to 17 ppb).

01 ☐ G. DRINKING WATER CONTAMINATION — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

None

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

None reported

01 ☐ I. POPULATION EXPOSURE/INJURY — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

A house is rented on site and residential dwellings are located adjacent to the site, however, no hazardous wastes have been reported disposed of at the site.

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION
01 STATE | 02 SITE NUMBER

HAZARDOUS CONDITIONS AND INCIDENTS (Continued)

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

None noted or reported

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

None noted or reported

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

None noted or reported

01 ☐ M. UNSTABLE CONTAINMENT OF WASTES (Spills/Runoff/Standing liquids, Leaking drums) — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

No hazardous wastes are known to be stored on site

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

None noted or reported

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

None noted or reported

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

A concerned citizen reported witnessing disposal of C&D material but could not remember the year.

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

None Known

03 TOTAL POPULATION POTENTIALLY AFFECTED: 14,754 within 4 mile radius

COMMENTS

There is no record of hazardous incidents nor were hazardous conditions observed on site.

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

CRB site reconnaissance; interview with Mr. Barnett (concerned citizen); state and local agency files.

EPA FORM 2070-13 (7-81)

Ref 3
4/29/142

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION
PART 4 - PERMIT AND DESCRIPTIVE INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER

II. PERMIT INFORMATION

01 TYPE OF PERMIT ISSUED (Check all that apply)	02 PERMIT NUMBER	03 DATE ISSUED	04 EXPIRATION DATE	05 COMMENTS
☐ A. NPDES				
☐ B. UIC				
☐ C. AIR				
☐ D. RCRA				
☐ E. RCRA INTERIM STATUS				
☐ F. SPCC PLAN				
☐ G. STATE (Specify)				
☒ H. LOCAL (Specify) suffolk				Dept of health registered underground tanks
☐ I. OTHER (Specify)				
☐ J. NONE				

III. SITE DESCRIPTION

01 STORAGE/DISPOSAL (Check all that apply)	02 AMOUNT	03 UNIT OF MEASURE	04 TREATMENT (Check all that apply)
☐ A. SURFACE IMPOUNDMENT			☐ A. INCENERATION
☐ B. PILES			☐ B. UNDERGROUND INJECTION
☐ C. DRUMS, ABOVE GROUND			☐ C. CHEMICAL/PHYSICAL
☒ D. TANK, ABOVE GROUND	12	varies	☐ D. BIOLOGICAL
☒ E. TANK, BELOW GROUND	3	varies	☐ E. WASTE OIL PROCESSING
☐ F. LANDFILL			☐ F. SOLVENT RECOVERY
☐ G. LANDFARM			☐ G. OTHER RECYCLING/RECOVERY
☐ H. OPEN DUMP			☐ H. OTHER (Specify)
☐ I. OTHER (Specify)			

05 OTHER
☐ A. BUILDINGS ON SITE
5

06 AREA OF SITE
10 (Acres)

07 COMMENTS

Underground tanks include two 7500 gal for #2 fuel oil and one 2500 gal for #2 fuel oil

Above ground tanks include one 20,000 gal for asphaltic cement, one 275 gal for liquid detergent and three 275 gal for #2 fuel oil.

Above ground tanks inside building include two 200 gal waste oil

Above ground-outside five empty tanks storage capacities, 7500,8500, 10,000, 10,000 and 2,506

IV. CONTAINMENT

01 CONTAINMENT OF WASTES (Check one)

☐ A. ADEQUATE, SECURE ☐ B. MODERATE ☒ C. INADEQUATE, POOR ☐ D. INSECURE, UNSOUND, DANGEROUS

02 DESCRIPTION OF DRUMS, DIKES, LINERS, BARRIERS, ETC.

No dikes around the above ground tanks

There is no hazardous waste on site

V. ACCESSIBILITY

01 WASTE EASILY ACCESSIBLE: ☐ YES ☒ NO

02 COMMENTS

Previous C&D waste has been removed from the site , Site security is adequate, waste oil tanks are inside a locked building .

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

Site reconnaissance, interview with owner and drilling data.

EPA FORM 2070-13 (7-81)

Ref 3 48 of 122

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 5 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA

I. IDENTIFICATION
01 STATE | 02 SITE NUMBER

I. DRINKING WATER SUPPLY

01 TYPE OF DRINKING SUPPLY (Check as appropriate)

	SURFACE	WELL
COMMUNITY	A. ☐	B. ☒
NON-COMMUNITY	C. ☐	D. ☐

02 STATUS not affected

ENDANGERED	AFFECTED	MONITORED
A. ☐	B. ☐	C. ☐
D. ☐	E. ☐	F. ☐

03 DISTANCE TO SITE
A. 1.5 (mi)
B. ____ (mi)

II. GROUNDWATER

01 GROUNDWATER USE IN VICINITY (Check one)

☒ A. ONLY SOURCE FOR DRINKING ☐ B. DRINKING (Other sources available) COMMERCIAL, INDUSTRIAL, IRRIGATION (No other water sources available) ☐ C. COMMERCIAL, INDUSTRIAL, IRRIGATION (Limited other sources available) ☐ D. NOT USED, UNUSEABLE

02 POPULATION SERVED BY GROUND WATER ____

03 DISTANCE TO NEAREST DRINKING WATER WELL ____ (mi)

04 DEPTH TO GROUNDWATER	05 DIRECTION OF GROUNDWATER FLOW	06 DEPTH TO AQUIFER OF CONCERN	07 POTENTIAL YIELD OF AQUIFER	08 SOLE SOURCE AQUIFER
35 (ft)	southeast	35 (ft)	1,000 (gpd)	☒ YES ☐ NO

09 DESCRIPTION OF WELLS (Including usage, depth, and location relative to population and buildings)

Municipal wells screened in sole source aquifer

10 RECHARGE AREA
☒ YES ☐ NO
COMMENTS Groundwater is recharged by precipitation

11 DISCHARGE AREA
☐ YES ☒ NO
COMMENTS

IV. SURFACE WATER

01 SURFACE WATER USE (Check one)

☒ A. RESERVOIR, RECREATION DRINKING WATER SOURCE ☐ B. IRRIGATION, ECONOMICALLY IMPORTANT RESOURCES ☐ C. COMMERCIAL, INDUSTRIAL ☐ D. NOT CURRENTLY USED

02 AFFECTED/POTENTIALLY AFFECTED BODIES OF WATER

NAME:	AFFECTED	DISTANCE TO SITE
none. Nearest surface water body is 1,200 ft east	☐	1,200 ft. (mi)
	☐	(mi)
	☐	(mi)

V. DEMOGRAPHIC AND PROPERTY INFORMATION

01 TOTAL POPULATION WITHIN

ONE (1) MILE OF SITE	TWO (2) MILES OF SITE	THREE (3) MILES OF SITE
A. 1,341 NO. OF PERSONS	B. ____ NO. OF PERSONS	C. ____ NO. OF PERSONS

02 DISTANCE TO NEAREST POPULATION 0.15 (mi)

03 NUMBER OF BUILDINGS WITHIN TWO (2) MILES OF SITE approx. 830

04 DISTANCE TO NEAREST OFF-SITE BUILDING 0.15 (mi)

05 POPULATION WITHIN VICINITY OF SITE (Provide narrative description of nature of population within vicinity of site, e.g., rural, village, densely populated urban area)

within one-half mile of the site there are approximately 670 people.

EPA FORM 2070-13 (7-81)

V-30

Ref 3
49 of 142

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 5 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA

I. IDENTIFICATION
01 STATE | 02 SITE NUMBER

VI. ENVIRONMENTAL INFORMATION

01 PERMEABILITY OF UNSATURATED ZONE (Check one)

☐ A. $10^{-6} - 10^{-8}$ cm/sec ☐ B. $10^{-4} - 10^{-6}$ cm/sec ☐ C. $10^{-4} - 10^{-3}$ cm/sec ☒ D. GREATER THAN 10^{-3} cm/sec

02 PERMEABILITY OF BEDROCK (Check one)

☒ A. IMPERMEABLE (Less than 10^{-6} cm/sec) ☐ B. RELATIVELY IMPERMEABLE ($10^{-4} - 10^{-6}$ cm/sec) ☐ C. RELATIVELY PERMEABLE ($10^{-2} - 10^{-4}$ cm/sec) ☐ D. VERY PERMEABLE (Greater than 10^{-2} cm/sec)

03 DEPTH TO BEDROCK	04 DEPTH OF CONTAMINATED SOIL ZONE	05 SOIL pH	
approx. 1,600 (ft)	soil is not contaminated (ft)	4.5 -5.5	

06 NET PRECIPITATION	07 ONE YEAR 24 HOUR RAINFALL	08 SLOPE SITE SLOPE	DIRECTION OF SITE SLOPE	TERRAIN AVERAGE SLOPE
12.4 (in)	2.75 (in)	< 3 %	southeast	< 3 %

09 FLOOD POTENTIAL	10
SITE IS IN NA YEAR FLOODPLAIN	NA ☐ SITE IS ON BARRIER ISLAND, COASTAL HIGH HAZARD AREA, RIVERINE FLOODWAY

11 DISTANCE TO WETLANDS (5 acre minimum)

ESTUARINE: A. 0.85 (mi)
OTHER: B. _____ (mi)

12 DISTANCE TO CRITICAL HABITAT (of endangered species)

_____ (mi)
ENDANGERED SPECIES: None

13 LAND USE IN VICINITY

DISTANCE TO:

COMMERCIAL/INDUSTRIAL	RESIDENTIAL AREAS; NATIONAL/STATE PARKS, FORESTS, OR WILDLIFE RESERVES	AGRICULTURAL LANDS - PRIME AG LAND	AGRICULTURAL LANDS - AG LAND
A. 0.75 (mi)	B. 0.15 (mi)	C. NA (mi)	D. 1 (mi)

14 DESCRIPTION OF SITE IN RELATION TO SURROUNDING TOPOGRAPHY

The sites topography is consistent with the surrounding area mainly flat with a slope of less than 3%. The Central Suffolk Paving Site is located on the outskirts of Westhampton Beach , adjacent to the L.I. Railroad tracks. To the north is Suffolk County Airport, to the south is residential housing, to the west is industrial property and to the east is vacant land. The center of town is approximately 1 mile south of the site.

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

Site visit, USGS map, soil survey of Suffolk County, NYSDEC files endangered species information for the area.

Ref 3
500/12R

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 6 - SAMPLE AND FIELD INFORMATION

I. IDENTIFICATION
01 STATE | 02 SITE NUMBER

SAMPLES TAKEN

SAMPLE TYPE	01 NUMBER OF SAMPLES TAKEN	02 SAMPLES SENT TO	03 ESTIMATED DATE RESULTS AVAILABLE
GROUNDWATER	5	NYSDEC CLP Lab- H2M Labs	1/10/89
SURFACE WATER	0		
WASTE	0		
AIR	0		
RUNOFF	0		
SPILL	0		
SOIL	6	NYSDEC CLP Lab- H2M Labs	1/10/89
VEGETATION	0		
OTHER	0		

. FIELD MEASUREMENTS TAKEN

TYPE	02 COMMENTS
Air Quality	Measured daily using a PID (HNu model 101)
Groundwater	Measured three rounds of elevation to nearest 0.01 ft
Topo. Survey	Surveyed wells per NYSDEC Standards

V. PHOTOGRAPHS AND MAPS

01 TYPE ☒ GROUND ☒ AERIAL
02 IN CUSTODY OF GRB and NYSDEC (Name of organization or individual)

03 MAPS ☒ YES ☐ NO
04 LOCATION OF MAPS GRB and NYSDEC offices

V. OTHER FIELD DATA COLLECTED (Describe results of observations)

Boring Logs

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

Field data, NYSDEC region 1 files, USGS(Syosset office)

EPA FORM 2070-13 (7-81)

Ref 3
510f12R

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 7 - OWNER INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER

II. CURRENT OWNER(S)			PARENT COMPANY (If applicable)		
01 NAME: Twin Fork Asphalting	02 D+B NUMBER		08 NAME: NA	09 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD #, etc.): 100 Rogers Ave.	04 SIC CODE		10 STREET ADDRESS (P.O. Box, RFD #, etc.)	11 SIC CODE	
05 CITY: Westhampton Beach	06 STATE: NY	07 ZIP CODE: 11778	12 CITY	13 STATE	14 ZIP CODE
01 NAME: Gabriel Pennino President	02 D+B NUMBER		08 NAME	09 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD #, etc.): NA	04 SIC CODE		10 STREET ADDRESS (P.O. Box, RFD #, etc.)	11 SIC CODE	
05 CITY	06 STATE	07 ZIP CODE	12 CITY	13 STATE	14 ZIP CODE
01 NAME	02 D+B NUMBER		08 NAME	09 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE		10 STREET ADDRESS (P.O. Box, RFD #, etc.)	11 SIC CODE	
05 CITY	06 STATE	07 ZIP CODE	12 CITY	13 STATE	14 ZIP CODE
01 NAME	02 D+B NUMBER		08 NAME	09 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE		10 STREET ADDRESS (P.O. Box, RFD #, etc.)	11 SIC CODE	
05 CITY	06 STATE	07 ZIP CODE	12 CITY	13 STATE	14 ZIP CODE

III. PREVIOUS OWNER(S) (List most recent first)			IV. REALTY OWNER(S) (If applicable, list most recent first)		
01 NAME: Central Suffolk Paving	02 D+B NUMBER		01 NAME: Jim Cap Realty 1973-1976	02 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD #, etc.): 100 Rogers Ave.	04 SIC CODE		03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	
05 CITY: Westhampton Beach	06 STATE: NY	07 ZIP CODE: 11778	05 CITY	06 STATE	07 ZIP CODE
01 NAME: F. Cinefetelli 1976-1977	02 D+B NUMBER		01 NAME: Barbay Realty 1976-1976	02 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE		03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	
05 CITY	06 STATE	07 ZIP CODE	05 CITY	06 STATE	07 ZIP CODE
01 NAME: H.S. Roberts 1967-1973	02 D+B NUMBER		01 NAME: TLC Realty 1977-1980	02 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE		03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	
05 CITY	06 STATE	07 ZIP CODE	05 CITY	06 STATE	07 ZIP CODE

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

Westhampton Beach Town Hall records

Ref 3
52 of 127

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 8 - OPERATOR INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER

CURRENT OPERATOR (Provide if different from owner)

01 NAME	02 D+B NUMBER
Twin Fork Asphalting	

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
100 Rogers Ave.	

05 CITY	06 STATE	07 ZIP CODE
Westhampton Beach	NY	11778

08 YEARS OF OPERATION	09 NAME OF OWNER
1987-Pres.	Mr. Gabriel Pennino

OPERATOR'S PARENT COMPANY (If applicable)

10 NAME	11 D+B NUMBER
NA	

12 STREET ADDRESS (P.O. Box, RFD #, etc.)	13 SIC CODE

14 CITY	15 STATE	16 ZIP CODE

PREVIOUS OPERATOR(S) (List most recent first; provide only if different from owner)

01 NAME	02 D+B NUMBER
Central Suffolk Paving	

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
100 Rogers Ave	

05 CITY	06 STATE	07 ZIP CODE
Westhampton Beach	NY	11778

08 YEARS OF OPERATION	09 NAME OF OWNER DURING THIS PERIOD
1980-1987	not known

01 NAME	02 D+B NUMBER
Sicilian Asphalt Paving	

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
100 Rogers Ave.	

05 CITY	06 STATE	07 ZIP CODE
Westhampton Beach	NY	11778

08 YEARS OF OPERATION	09 NAME OF OWNER DURING THIS PERIOD
1962-1967	not known

01 NAME	02 D+B NUMBER

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE

08 YEARS OF OPERATION	09 NAME OF OWNER DURING THIS PERIOD

PREVIOUS OPERATORS' PARENT COMPANIES (If applicable)

10 NAME	11 D+B NUMBER
NA	

12 STREET ADDRESS (P.O. Box, RFD #, etc.)	13 SIC CODE

14 CITY	15 STATE	16 ZIP CODE

10 NAME	11 D+B NUMBER
Hagartey	

12 STREET ADDRESS (P.O. Box, RFD #, etc.)	13 SIC CODE
not known	

14 CITY	15 STATE	16 ZIP CODE

10 NAME	11 D+B NUMBER

12 STREET ADDRESS (P.O. Box, RFD #, etc.)	13 SIC CODE

14 CITY	15 STATE	16 ZIP CODE

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

Westhampton Beach Town Records

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 9 - GENERATOR/TRANSPORTER INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER

II. ON-SITE GENERATOR

01 NAME	02 D+B NUMBER
NA	
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE

III. OFF-SITE GENERATOR(S)

01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
NA			
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE	05 CITY	06 STATE / 07 ZIP CODE
01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE	05 CITY	06 STATE / 07 ZIP CODE

IV. TRANSPORTER(S)

01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
NA			
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE	05 CITY	06 STATE / 07 ZIP CODE
01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE	05 CITY	06 STATE / 07 ZIP CODE

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

No hazardous wastes are known to have been disposed of on-site

Ref 3
54 of 122

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 10 - PAST RESPONSE ACTIVITIES

I. IDENTIFICATION
01 STATE | 02 SITE NUMBER

. PAST RESPONSE ACTIVITIES None reported, no documentation of activities found

01 ☐ A. WATER SUPPLY CLOSED — 02 DATE — 03 AGENCY
04 DESCRIPTION No

01 ☐ B. TEMPORARY WATER SUPPLY PROVIDED — 02 DATE — 03 AGENCY
04 DESCRIPTION No

01 ☐ C. PERMANENT WATER SUPPLY PROVIDED — 02 DATE — 03 AGENCY
04 DESCRIPTION No

01 ☐ D. SPILLED MATERIAL REMOVED — 02 DATE — 03 AGENCY
04 DESCRIPTION NA

01 ☐ E. CONTAMINATED SOIL REMOVED — 02 DATE — 03 AGENCY
04 DESCRIPTION NA

01 ☐ F. WASTE REPACKAGED — 02 DATE — 03 AGENCY
04 DESCRIPTION NA

01 ☐ G. WASTE DISPOSED ELSEWHERE — 02 DATE — 03 AGENCY
04 DESCRIPTION Solid waste excavated and disposed off-site, location unknown

01 ☐ H. ON SITE BURIAL — 02 DATE — 03 AGENCY
04 DESCRIPTION No hazardous waste found on site

01 ☐ I. IN SITU CHEMICAL TREATMENT — 02 DATE — 03 AGENCY
04 DESCRIPTION NA

01 ☐ J. IN SITU BIOLOGICAL TREATMENT — 02 DATE — 03 AGENCY
04 DESCRIPTION NA

01 ☐ K. IN SITU PHYSICAL TREATMENT — 02 DATE — 03 AGENCY
04 DESCRIPTION NA

01 ☐ L. ENCAPSULATION — 02 DATE — 03 AGENCY
04 DESCRIPTION NA

01 ☐ M. EMERGENCY WASTE TREATMENT — 02 DATE — 03 AGENCY
04 DESCRIPTION NA

01 ☐ N. CUTOFF WALLS — 02 DATE — 03 AGENCY
04 DESCRIPTION NA

01 ☐ O. EMERGENCY DIKING/SURFACE WATER DIVERSION — 02 DATE — 03 AGENCY
04 DESCRIPTION NA

01 ☐ P. CUTOFF TRENCHES/SUMP — 02 DATE — 03 AGENCY
04 DESCRIPTION NA

01 ☐ Q. SUBSURFACE CUTOFF WALL — 02 DATE — 03 AGENCY
04 DESCRIPTION NA

Ref 3
53 of 122

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 10 - PAST RESPONSE ACTIVITIES

I. IDENTIFICATION
01 STATE | 02 SITE NUMBER

II. PAST RESPONSE ACTIVITIES (Continued)

01 ☐ R. BARRIER WALLS CONSTRUCTED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
NA

01 ☐ S. CAPPING/COVERING — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
NA

01 ☐ T. BULK TANKAGE REPAIRED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
NA

01 ☐ U. GROUT CURTAIN CONSTRUCTED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
NA

01 ☐ V. BOTTOM SEALED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
NA

01 ☐ W. GAS CONTROL — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
NA

01 ☐ X. FIRE CONTROL — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
NA

01 ☐ Y. LEACHATE TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
NA

01 ☐ Z. AREA EVACUATED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
NA

01 ☐ 1. ACCESS TO SITE RESTRICTED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
Yes, site is fenced in.

01 ☐ 2. POPULATION RELOCATED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
NA

01 ☒ 3. OTHER REMEDIAL ACTIVITIES — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

Constructionand demolition waste was disposed of on site by previous owner as per 1983 request to the NYSDEC. Since that time material has been removed and filled with clean fill some time in 1987 or early 1988 under the supervision of state representative.

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

Town Records, NYSDEC files, interview with current owner

EPA FORM 2070-13 (7-81)

Ref 3
56/122

GRB

GRB Environmental Services, Inc.
Consulting Environmental Engineers and Scientists

Interview Mr. Pennino using data collection check list Sec. IA, Interview Owner:

1) Permits: The only permit needed would be an air emission permit, filed with the D.E.C. Air Resources Dept. which has been completed (stack test) and filed.

2) The only previous owner that Mr. Pennino has knowledge about is Central Suffolk Paving, who Mr. Pennino bought the property from.

3) Process: Sand and Gravel is heated in a large tumbler by fire to remove water. The sand and gravel is then mixed with C.A.-20, Asphalt Cement. The Asphalt Cement is held in a large tank next to the Asphalt Plant (see plot plan). There is no residue produced or anything to dispose of. There are no chemicals other than the asphalt cement used in the process of producing the asphalt.

4) There are three (3) underground storage tanks on the property that hold #2, fuel oil. See plot plan for general area in which they are situated. Also diesel fuel and motor oil are stored on site but above ground.

5) Landscaper - Its a small operation, does mostly underground sprinkler system installations. Pesticides: Mr. Pennino is not sure if landscaper is storing any pesticides on site but thinks its unlikely.

6) Mr. Pennino stressed that there is a electrical cable warning underground on the north-west corner of the property (near the area where MW1 will be placed).

Finish interviewing Mr. Pennino at approximately 9:35 A.M.

Gabriel Pennino
President
9/8/88.

P.O. Box 629 East Northport, NY 11731
Phone:

R/3
5/1/12

GRB ENVIRONMENTAL SERVICES, INC

TELEPHONE CONVERSATION RECORD

Date: August 26, 1989

Person Called: Mr. Charles Barnett

Called by: Mr. Tom Fox of GRB Environmental Services

Phone Number : (516) 288-3628

Project: Central Suffolk Paving Phase II Inactive Hazardous Waste Investigation

---

Summary of Conversation

I was informed by Mr. Barnett that he was a member of the Citizen Advisory Committee (CAC) and was living near the site at the time of the "illegal dumping", sand mining and construction debris disposal was taking place. Mr. Barnett could recall in great detail what was put into an open pit (miscellaneous construction debris) at the site but could not recall the date or even the year in which the "illegal" dumping occured. Mr. Barnett stated that he was the one who brought the situation to the DEC's attention. Mr. Barnett stated that there was a file at the Village Hall of Westhampton Beach containing all of the correspondance with the CAC and NYSDEC.

Ref 3
58 of 122

CONSULTING GROUND WATER
GEOLOGISTS AND ENGINEERS
ROUX ASSOCIATES INC

ROUX

THE HUNTINGTON ATRIUM
775 PARK AVENUE
SUITE 255
HUNTINGTON NEW YORK 11743 516 673 7200 FAX # 516 673 7216

RECEIVED
ENVIRONMENTAL
SCIENCE DEPARTMENT
AUG 9 - 1988
GIBBS & HILL INC.

August 2, 1988

Mr. N. Hinsey
Gibbs & Hill, Inc.
11 Penn Plaza
New York, NY 10001-2059

Re: NYSDEC Phase II Investigations
Site #152092 Magnetometer Survey

Dear Mr. Hinsey:

A magnetometer survey was conducted at the former Central Suffolk Paving site on July 26, 1988 at the proposed well locations, shown on the attached figures, to detect buried ferromagnetic objects which might be encountered during drilling activities.

The Schonstedt Model GA-52B flux-gate magnetometer which was used provides a continuous audio signal which increases from the idling frequency of 40 H_z as surface and/or subsurface ferromagnetic material is approached.

The well locations are designated in the Phase II Work Plan furnished by the NYSDEC. At each proposed well location, an area of approximately 300 square feet was screened in detail with the magnetometer. If no detections of ferromagnetic material were made within the survey area, the location center was marked with red spray paint indicating the proposed well number. If detections were made, the surrounding area was screened until a clear location was found. Before leaving the location, two distances from the location center to permanent site reference points were made and recorded to the nearest foot in case the paint indicator becomes obliterated.

The proposed well locations shown on Figure 1 are individually shown in detail, with respect to site reference points, on Figures 2-4.

cc: GRB

Several of the proposed well locations showed sporatic magnetometer responses due to surface metal, nearby fences, and rocks containing magnetite. Overhead power lines associated with the LILCO easement may interfere with some drilling activities. Two possible locations for MW-5 were chosen due to this limitation. All of the locations shown on the attached figures were judged to be acceptable drilling sites with respect to buried ferromagnetic materials.

Please call if you have questions regarding the survey.

Sincerely,

Peter C. Breen

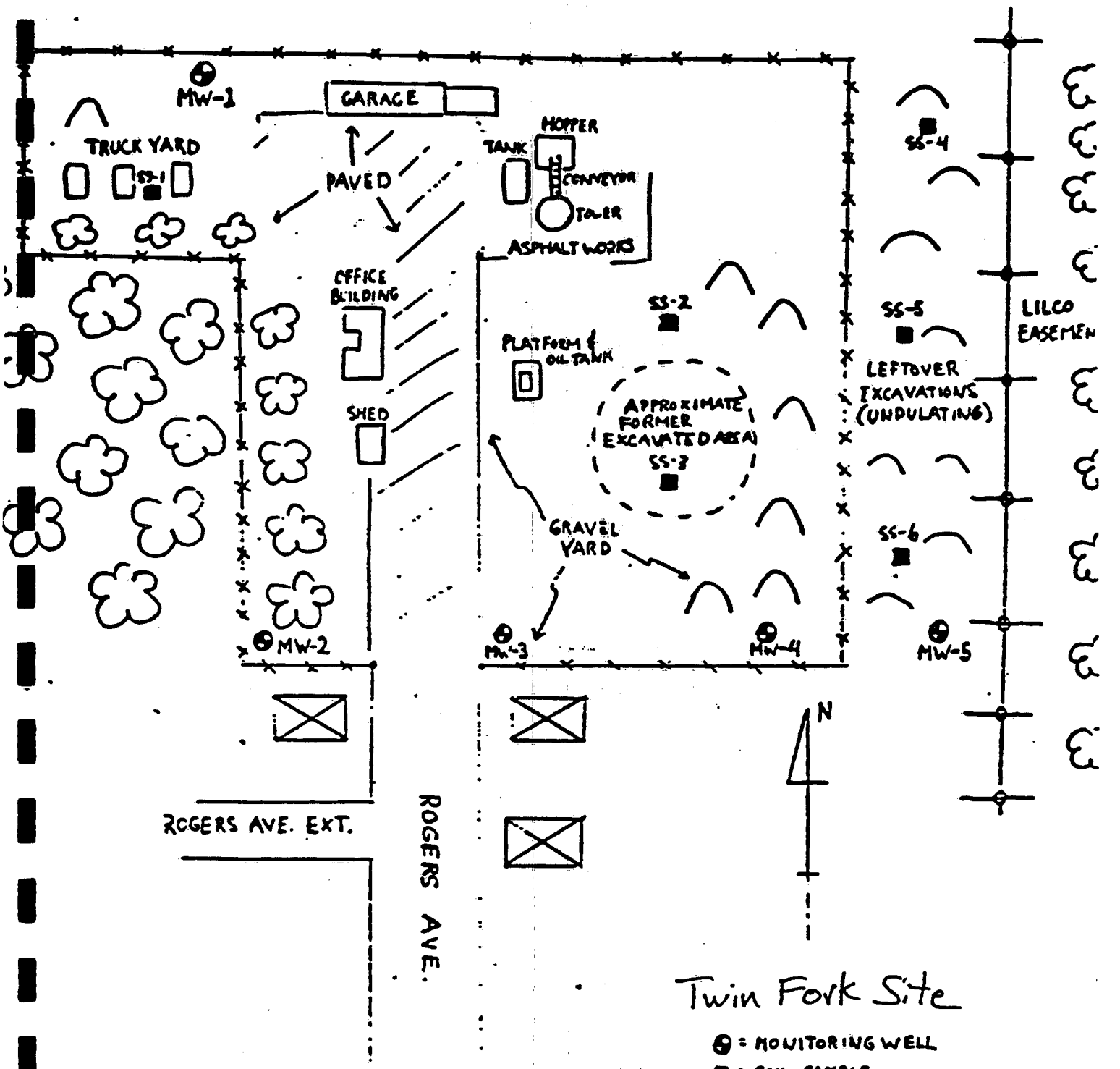
Peter C. Breen
Hydrogeologist

PCB:g

Encl.

Ref 3
60 of 122

SUFFOLK COUNTY AIRPORT PROPERTY



Twin Fork Site

= MONITORING WELL
= SOIL SAMPLE
= CHAIN LINK FENCE
= SAND OR CRUSHED STONE MOUNDS
= POWER LINES
= RESIDENCE

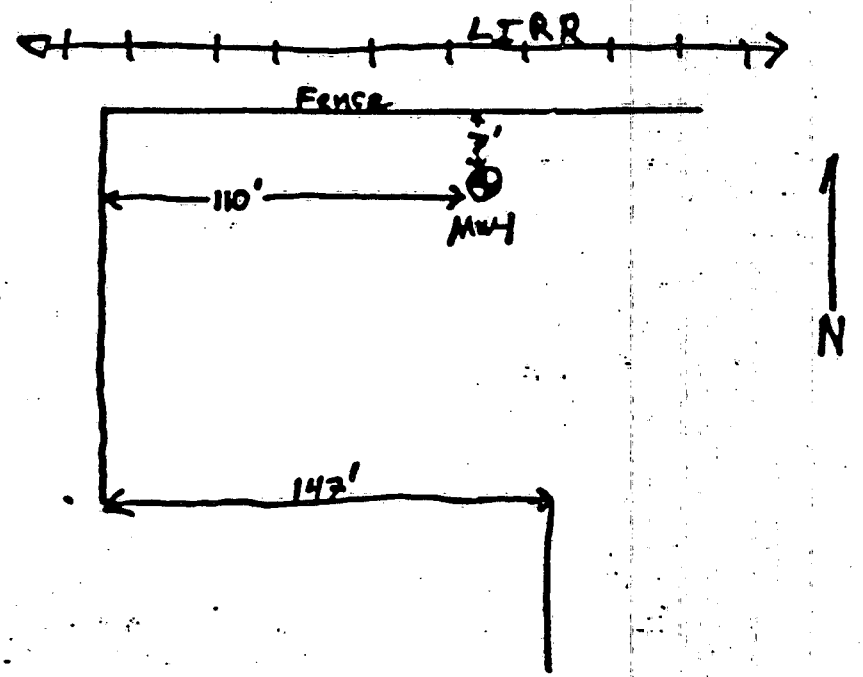
—SITE SKETCH—
FIGURE 1

—NTS— 3-1-3

Figure 1

Location of MW-1 -NTS-

Ref 3, 61 of 122



Location of MW-2 -NTS-

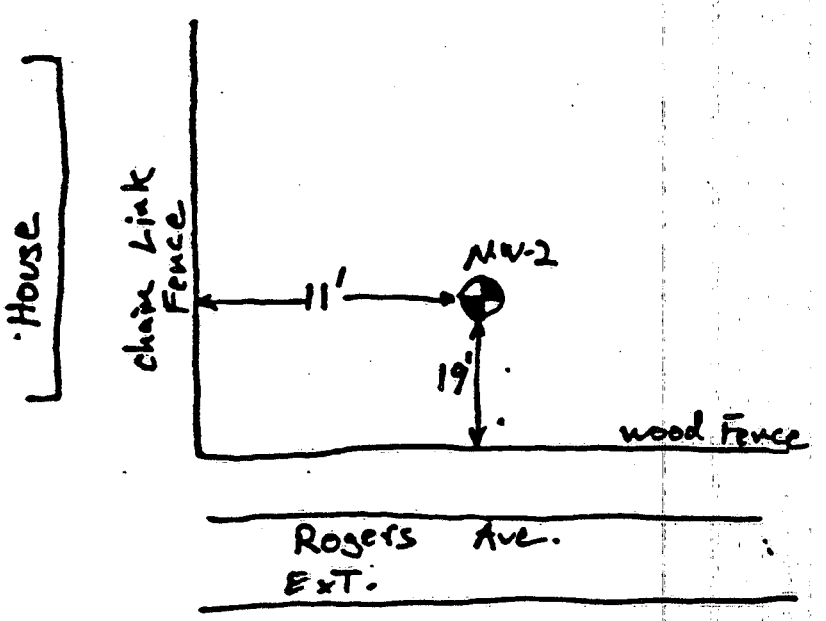
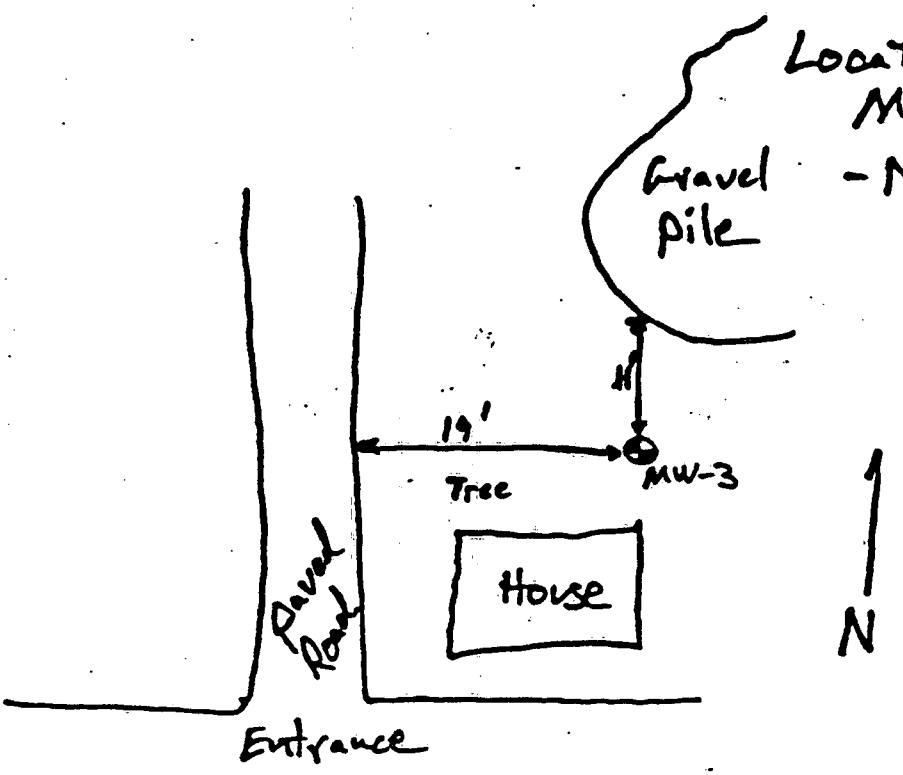


Figure 2-Twin Fork

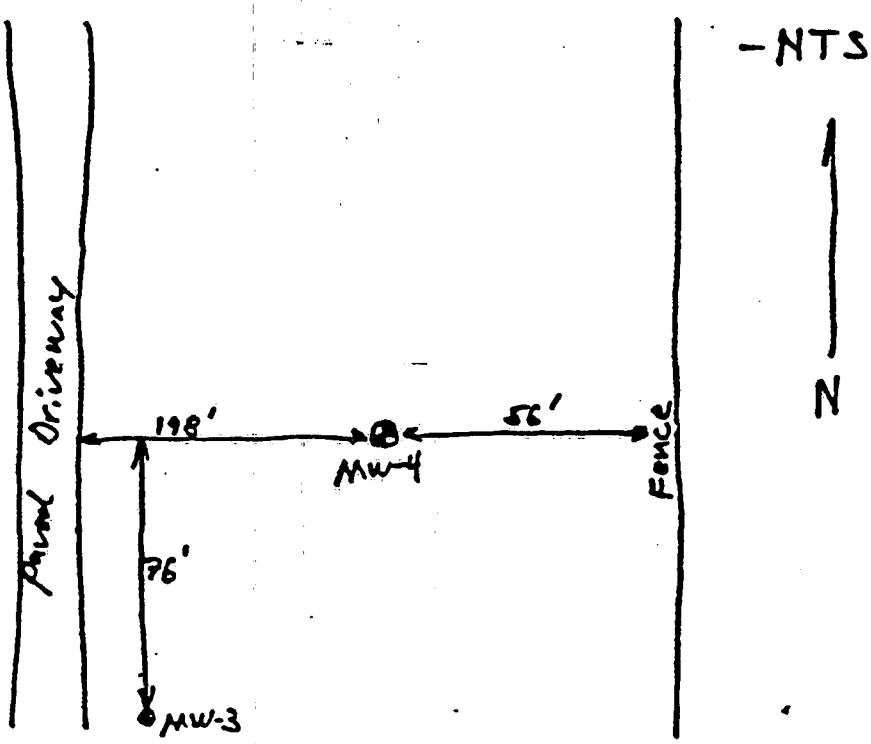
Ref 3, 12R 624

Location of MW-3

-NTS-



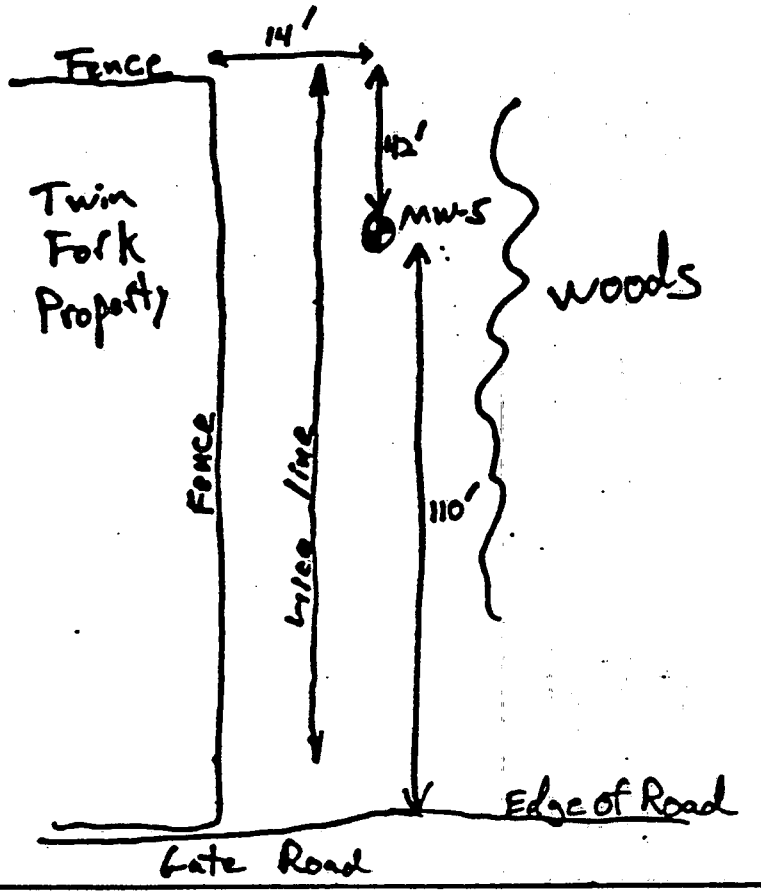
-NTS-



Location of MW-4

Figure 3 - Twin Forks

Location of MW-5
-NTS-



Location of MW-5
(Alternate)
-NTS-

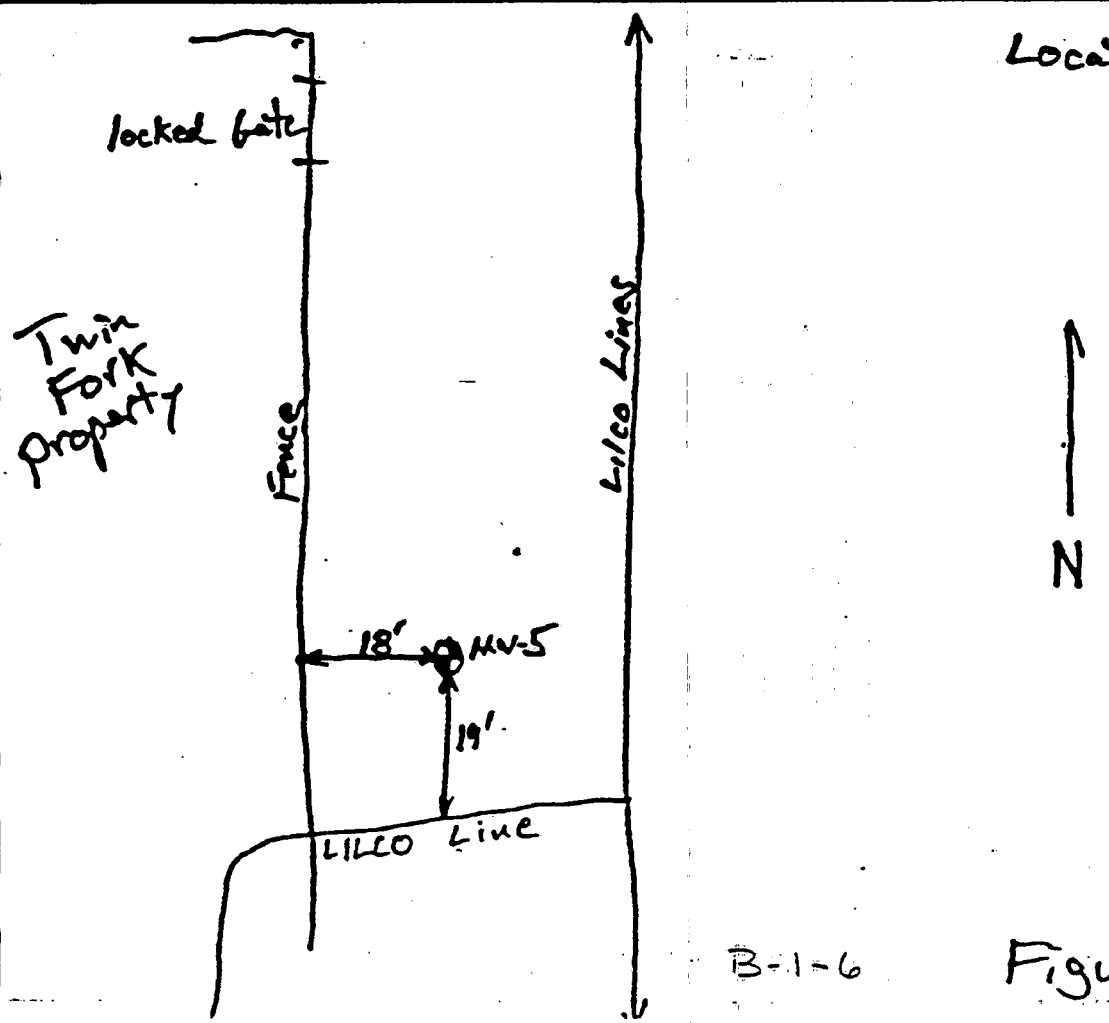


Figure 4-Twin Fork

Ref 3 640/12

GRB

Job No.: _____

Boring: MW-1

Summary of Drilling and Sampling Information

Client: NYSDEC

Project: Central Suffolk Paving

Rig: CME-75

Site: West Hampton Beach

Contractor: Marine Pollution Control Inc.

Driller: Marine Pollution Control In

Drilling Method:

Auger Drilling 0 ft. to 47½ ft. Dia. 6 in.

___ ft. to ___ ft. Dia. ___ in.

___ ft. to ___ ft. Dia. ___ in.

Drilling Fluid Used: ___ Yes X No Type: -

Sampler Hammer: Weight 140 lbs. Casing Hammer: Weight - lbs.

Drop 24 in. Drop - in.

Rock Core Diameter - in. Type core barrel/bit: -

Date/Time Drilling Started: 10/10/88 9:00 AM Completed: 11:30 AM

Down Time: - hrs. Cause(s) -

Log Summary: Soil: Fine, Medium and corse grained gtc sands with some gravel and silts

Rock: -

No. Samples: Split Spoon 10 Other: -

Undisturbed: - -

No. Permeability Tests: Constant Head - Pressure -

Falling Head - Other: -

No. and Type of Other Tests: -

Piezometer Installation:

Pipe: Type: PVC Dia. 2 in. Depth: From 2½ ft. to 35 ft.

Screen: Type: PVC - 20 slot Dia. 2 in. Depth: From 35 ft. to 45 ft.

Filter Material: Type: Moray sand Depth: From 33 ft. to 46 ft.

Seal Material: Type: Bentonite seal Depth: From 30 ft. to 32 ft.

cement/ Bentonite Depth: From 0 ft. to 30 ft.

Grout Depth: From ___ ft. to ___ ft.

Remarks: No problems for the most part

Inspector: Thomas Fox

BORING LOG

Ref 3 65 of 102

Sheet 1 of 2

PROJECT: Central Suffolk Phase 11 PROJECT NO. BORING NO. MW-1

Location: Westhampton Beach Coord: Ground Elev:

Contractor: MPC Date Started: 10/10/88 G.W.L. 35 ft Hour: Date:

Inspector: Tom Fox Date Completed: 10/10/88 G.W.L. Hour: Date:

Notes:

Depth Ft	Elev Ft.	Sample Type & No	Test Type & No	Blows Casing Per Ft	Blows Sampler 6"	Blows Sampler 6"	Recovery in.	RQD %	Drilling Rate Min/Ft	Graphic Symbol	Description and Remarks
0		ss-1			4 3	3 5	24		9:00		Fine to medium grained sand brown slightly loose moist, (well sorted)
5		ss-2			1 1	1 6	18		9:10		1 ft. fine sand and silt, brown, tight, moist. 1 ft. med, grained quartz sand, white loose moist, well sorted
10		ss-3			2 3	5 6	18		9:20		med, grained quartz sand white loose moist, well sort
15		ss-4			3 5	7 10	20		9:30		med. grained quartz sand white (well sorted) loose moist
20		ss-5			2 3	3 5	18		9:45		med. grained quartz sand, white loose, moist, sorted little gravel
25		ss-6			2 4	8 11	16		9:55		med. grained quartz sand white, loose, moist, sorted
30		ss-7			3 7	7 7	16		10:20		med. grained quartz sand white (sorted) loose, moist
35		ss-8			3 7		18		10:40		med. grained quartz sand, light brown- white sorted, wet slightly loose
40											

I.D. Casing	Wgt. Hammer on Casing	Material Notations
I.D. Spoon	Wgt. Hammer on Spoon	
Type Core Drill	Drop Hammer on Casing	
Core Dia.	Drop Hammer on Spoon	
Sample & Test Notations		

GRB Environmental Services, Inc.
Consulting Environmental Engineers and Scientists

R-2-2

BORING LOG

Ref 3 66 of 122

Sheet 2 of 2

PROJECT:	PROJECT NO.		BORING NO. MW-1
Location:	Coord:		Ground Elev:
Contractor:	Date Started:	G.W.L. Hour:	Date:
Inspector:	Date Completed:	G.W.L. Hour:	Date:
Notes:			

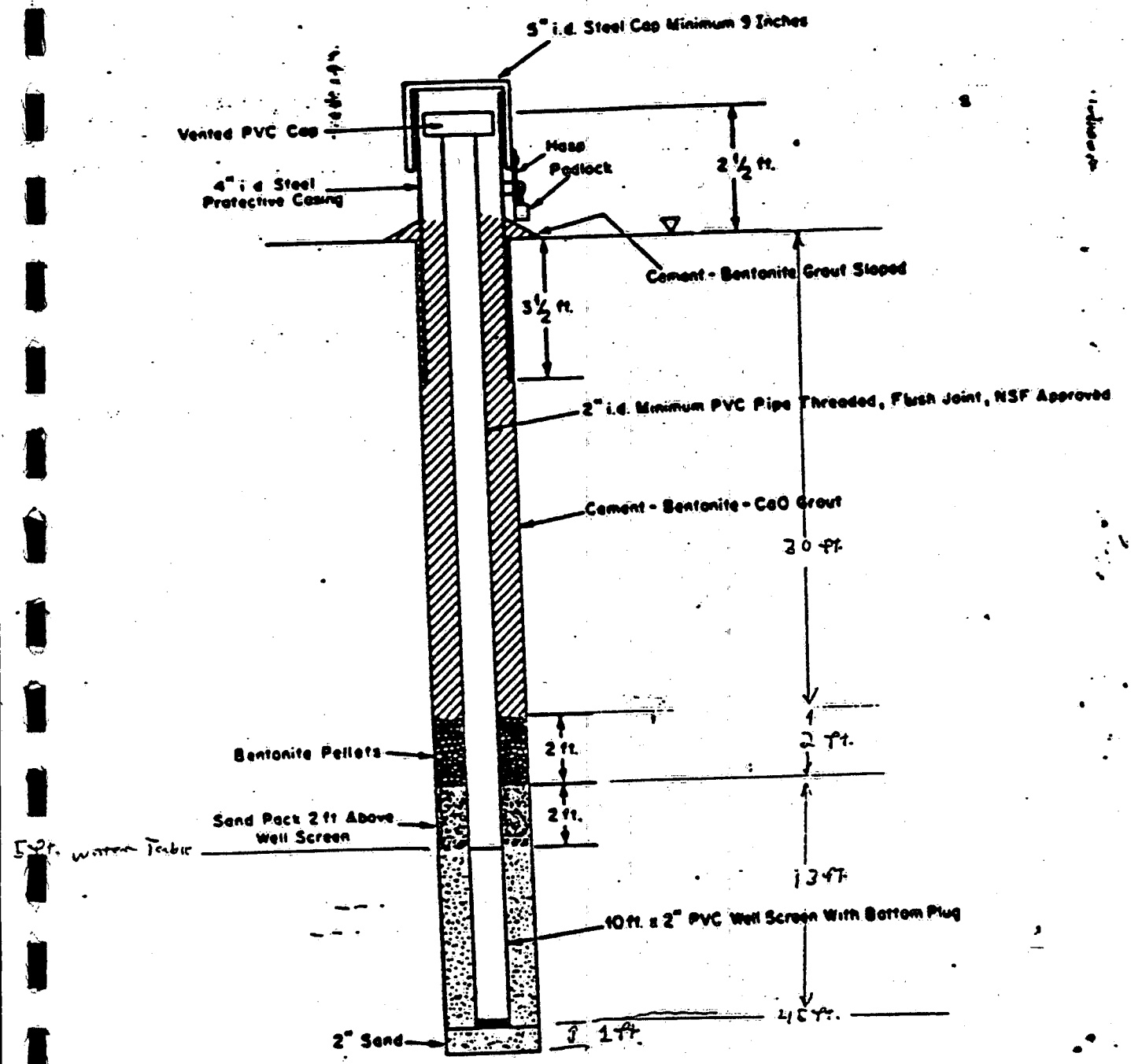
Depth Ft	Elev Ft	Sample Type & No	Test Type & No	Blows Casing Per Ft	Blows Sampler 6"	Blows Sampler 6"	Recovery in.	RQD %	Drilling Rate Min./Ft	Graphic Symbol	Description and Remarks
40		ss-9			4 6	5 7	22		11:00		1 ft. fine grained sand and silt brown compacted, wet, some corse grained sand
45		ss-10			4 6	4 9	24		11:20		20" fine grained sand and silt, brown, compacted, wet some corse graines 4" med. grained quartz sand unsorted, silt, loose, wet
0											End Boring 11:20 AM
5											
0											
5											
0											
5											
0											

I.D. Casing	Wgt. Hammer on Casing	Material Notations
I.D. Spoon	Wgt. Hammer on Spoon	
Type Core Drill	Drop Hammer on Casing	
Core Dia.	Drop Hammer on Spoon	
Sample & Test Notations		

GRB Environmental Services, Inc.
Consulting Environmental Engineers and Scientists

MW-1

Ref 3
67 of 127



OVERBURDEN WELL

Figure 1

3-2-4

Ref 3
68 of 122

PHOTOIONIZER DETECTOR DATA
(HNu Data)

SITE NAME : TWIN FORK ASPHALT INC.
(FORMER CONTRAL SUFFOLK PAVING SITE)
ADDRESS: 100 ROGERS AVENUE, TOWN OF SOUTHAMTON, SUFFOLK COUNTY
NYSDEC I.D. NUMBER: 152092

GRB

DATE: 10/10/88
BOREHOLE NO. MW-1
INSPECTOR T.F
INSTRUMENT HNU PI-101
DATE CALIBRATED 10/10/88 - checked

WEATHER CONDITIONS
Sunny, mild, temps in the 60's

SAMPLE NUMBER	DEPTH (FEET)	HNu READING	COMMENTS
			* Background is 0.5 ppm
SS 1	0-2	0.6 - 3.0	- Needle very jumpy
2	5-7	2.0 - 3.0	- " " "
3	10-12	2.0 - 10.0	- Very Jumpy
4	15-17	2.0 - 10.0	- Rechecked Calibration, It's OK.
5	20-22	2.0 - 10.0	- Cleaned Bulb, seemed to Help
6	25-27	5.0	- Working well
7	30-32	2.0	
8	35-37	2.0	
9	45-47	2.0	
10	45-47	2.0	
			The HNU seemed to be
			very susceptible to moisture today

Ref 3 69 of 127

GRB

Job No.: _____

Boring: MW-2

Summary of Drilling and Sampling Information

Client: NYSDEC

Project: Central Suffolk Phase III

Rig: CME-75

Site: West Hampton Beach

Contractor: MPC

Driller: MPC

Drilling Method:

Auger Drilling 0 ft. to 46½ ft. Dia. 6 in.

____ ft. to ____ ft. Dia. ____ in.

____ ft. to ____ ft. Dia. ____ in.

Drilling Fluid Used: ___ Yes X No Type: -

Sampler Hammer: Weight 140 lbs. Drop 24 in.

Casing Hammer: Weight - lbs. Drop - in.

Rock Core Diameter - in. Type core barrel/bit: -

Date/Time Drilling Started: 10/11/88 9:20 AM Completed: 10/11/88 11:20 AM

Down Time: - hrs. Cause(s) -

Log Summary: Soil: Fine medium to corse grained sands some gravels

Rock: -

No. Samples: Split Spoon 10 Other: -

Undisturbed: -

No. Permeability Tests: Constant Head - Pressure -

Falling Head - Other: -

No. and Type of Other Tests: -

Piezometer Installation:

Pipe: Type: PVC Dia. 2 in. Depth: From 0 ft. to 35 ft.

Screen: Type: PVC Slot 20 Dia. 2 in. Depth: From 35 ft. to 45 ft.

Filter Material: Type: Moray sands Depth: From 33 ft. to 46 ft.

Seal Material: Type: Bentonite Seal Depth: From 31 ft. to 33 ft.

cement/bentonite Depth: From 0 ft. to 31 ft.

grout Depth: From ____ ft. to ____ ft.

Remarks: No problems encountered

Inspector Thomas Fox

3-2-6

BORING LOG

Ref 3: 70 of 122

Sheet 1 of 2

PROJECT: Central Suffolk Phase 11 PROJECT NO. BORING NO. MW-2

Location: Westhampton Beach Coord: Ground Elev:

Contractor: MPC Date Started: 10/11/88 G.W.L. 35 ft. Hour: 9:20 Date:

Inspector: Tom Fox Date Completed: 10/11/88 G.W.L. Hour: 11:35 Date:

Notes:

Depth Ft	Elev Ft	Sample Type & No	Test Type & No	Blows Casing Per Ft:	Blows Sampler 6	Blows Sampler 6"	Recovery in.	RQD %	Drilling Rate Min/Ft	Graphic Symbol	Description and Remarks
0		ss-1			4 6	5 7	24		9:20		1 ft: silty sand, brown, compacted, dry(under blackto some gravel 1 ft. med grained sand,brown unsorted,loose,moist some gravel
5		ss-2			1 1	1 4	18		9:30		1'med. grained sand, brown unsorted loose,moist,some gravel 1' med. grained quartz sand, white,sorted,loose,moist
10		ss-3			2 5	2 9	18		9:45		med.grained quartz sand,white sorted,loose,moist
15		ss-4			2 4	2 9	16		10:00		med.grained quartz sand white sorted,loose,moist
20		ss-5			2 6	4 8	18		10:15		med. grained quartz sand, white sorted,loose,moist
25		ss-6			2 6	6 7	18		10:35		med.grained quartz sand, white sorted,loose,moist
30		ss-7			6 6	6 6	18		10:45		med. grained quartz sand, white, sorted,loose,moist
35		ss-8			1 4	3 6	6		11:05		med. grained quartz sand white sorted,loose,moist water table at 35 ft.
40											

I.D. Casing	Wgt. Hammer on Casing	Material Notations
I.D. Spoon	Wgt. Hammer on Spoon	
Type Core Drill	Drop Hammer on Casing	
Core Dia.	Drop Hammer on Spoon	
Sample & Test Notations		

GRB Environmental Services, Inc.
Consulting Environmental Engineers and Scientists

3-2-7

Ref 3 71 of 127

BORING LOG

Sheet 2 of 2

PROJECT: PROJECT NO. BORING NO. MW-2

Location: Coord: Ground Elev:

Contractor: Date Started: G.W.L. Hour: Date:

Inspector: Date Completed: G.W.L. Hour: Date:

Notes:

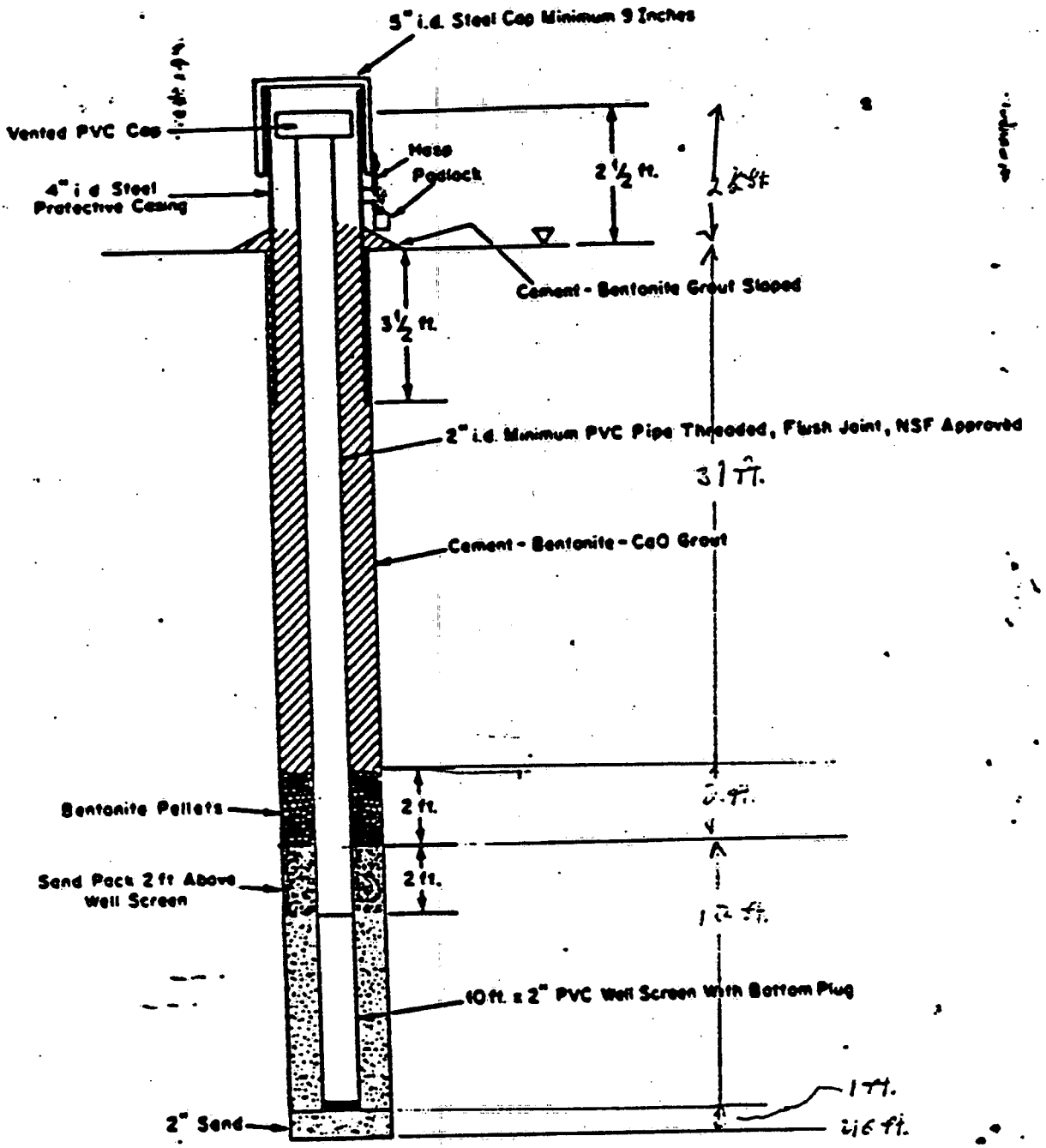
Depth Ft	Elev Ft	Sample Type & No	Test Type & No	Blows Casing Per Ft	Blows Sampler 6	Blows Sampler 6"	Recovery % in.	RQD %	Drilling Rate Min/Ft	Graphic Symbol	Description and Remarks
40		ss-9			3	3	16		11:18		med. to corse grained quartz sand, white to light brown loose, wet, some gravel slightly sorted
					6	3					
45		ss-10			3	3	10		11:30		med to coarse grained quartz sand, white, loose, wet, with gravel
					3	3					
0											End of split spoon sample at 11:35 AM
5											
0											
5											
0											
5											
0											

I.D. Casing	Wgt. Hammer on Casing	Material Notations
I.D. Spoon	Wgt. Hammer on Spoon	
Type Core Drill	Drop Hammer on Casing	
Core Dia.	Drop Hammer on Spoon	
Sample & Test Notations		

GRB Environmental Services, Inc.
Consulting Environmental Engineers and Scientists

MW2

Ref 3
72 of 127



OVERBURDEN WELL

Figure 1

PHOTOIONIZER DETECTOR DATA
(HNu Data)

SITE NAME : TWIN FORK ASPHALT INC.
(FORMER CONTRAL SUFFOLK PAVING SITE)
ADDRESS: 100 ROGERS AVENUE, TOWN OF SOUTHAMTON, SUFFOLK COUNTY
NYSDEC I.D. NUMBER: 152092

GRB

DATE: 10/11/88
BOREHOLE NO. MW2
INSPECTOR T.F
INSTRUMENT HNU HY-101
DATE CALIBRATED 10/11/88 checked

WEATHER CONDITIONS
Sunny, mild, Temps in 60's

SAMPLE NUMBER	DEPTH (FEET)	HNu READING ppm	COMMENTS
SS 1	0-2	0.0	HNU working well
2	5-7	0.3	
3	10-12	0.3	
4	15-17	0.2	
5	20-22	0.2	
6	25-27	0.2	
7	30-32	0.2	
8	35-37	0.2	
9	40-42	0.3	
10	45-47	0.3	

Ref 3
7 of 12R

GRB

Job No.: _____
Boring: MW-3

Summary of Drilling and Sampling Information

Client: NYSDEC
Project: Cenral Suffolk Phase 11
Rig: CME-75
Site: West Hampton Beach
Contractor: MPC
Driller: MPC

Drilling Method:
Auger Drilling — 0 ft. to 47½ ft. Dia. 6 in.
____ ft. to ____ ft. Dia. ____ in.
____ ft. to ____ ft. Dia. ____ in.

Drilling Fluid Used: ___ Yes X No Type: _____
Sampler Hammer: Weight - lbs. Casing Hammer: Weight - lbs.
Drop - in. Drop - in.
Rock Core Diameter - in. Type core barrel/bit: -
Date/Time Drilling Started: 10/7/88 9:00 AM Completed: 10/7/88 10:00 AM
Down Time: - hrs. Cause(s) _____

Log Summary: Soil: Medium to corse grained gtc sand, very well sorted clean
Rock: none
No. Samples: Split Spoon - Other: -
Undisturbed: - -
No. Permeability Tests: Constant Head - Pressure -
Falling Head - Other: -
No. and Type of Other Tests: -

Piezometer Installation:
Pipe: Type: PVC Dia. 2 in. Depth: From 2½ ft. to 35 ft.
Screen: Type: PVC slot 20 Dia. 2 in. Depth: From 35 ft. to 45 ft.
Filter Material: Type: Moray Sand Depth: From 32 ft. to 46 ft.
Seal Material: Type: Bentonite Seal Depth: From 29½ ft. to 32 ft.
Cement Bent. Grout Depth: From 0 ft. to 29½ ft.
Depth: From ____ ft. to ____ ft.

Remarks: Very little problems drilling, but HNu Photo ionizer was not working

Inspector: Thomas Fox

GRB

Job No.: _____

Boring: MW-3

Summary of Drilling and Sampling Information

Client: NYSDEC

Project: Central Suffolk Phase 11

Rig: CME-75 Two support trucks

Site: West Hampton Beach

Contractor: MPC

Driller: MPC

Drilling Method:

Auger Drilling — 0 ft. to 70 ft. Dia. 6 in.

0 ft. to 40 ft. Dia. 6 in.

___ ft. to ___ ft. Dia. ___ in.

Drilling Fluid Used: ___ Yes X No Type: _____

Sampler Hammer: Weight 140 lbs. Drop 24 in.

Casing Hammer: Weight - lbs. Drop - in.

Rock Core Diameter - in. Type core barrel/bit: -

Date/Time Drilling Started: 10/6/88 9:00 AM Completed: 10/6/88 4:45 PM

Down Time: - hrs. Cause(s) _____

Log Summary: Soil: Medium to corse grained gtc sand, very well sorted, clean

Rock: none

No. Samples: Split Spoon 15 Other: -

Undisturbed: - -

No. Permeability Tests: Constant Head - Pressure -

Falling Head - Other: -

No. and Type of Other Tests: -

Piezometer Installation:

Pipe: Type: - Dia. - Depth: From ___ ft. to ___ ft.

Screen: Type: - Dia. - Depth: From ___ ft. to ___ ft.

Filter Material: Type: _____ Depth: From ___ ft. to ___ ft.

Seal Material: Type: _____ Depth: From ___ ft. to ___ ft.

Depth: From ___ ft. to ___ ft.

Depth: From ___ ft. to ___ ft.

Remarks: Split spoon every 5 ft.

Drilled to a depth of 70 ft., NYSDEC representatives used boring to test new "Down Hole" EM-39 Logging Device. Drill Rig was then moved to drill to a depth of 40 ft.

Inspector Thomas Fox

BORING LOG

Sheet 1 of 2

PROJECT: Central Suffolk phase 11 PROJECT NO. BORING NO. MW-3

Location: Westhampton Beach Coord: Ground Elev:

Contractor: MPC Date Started 10/6/88 G.W.L. 35 ft Hour: 10:40 Date:

Inspector: Tom Fox Date Completed: 10/6/88 G.W.L. Hour: 3:50 Date:

Notes: Well was installed on 10/7/88

Depth Ft	Elev Ft	Sample Type & No	Test Type & No	Blows Casing Per Ft	Blows Sampler 6"	Blows Sampler 6"	Recovery in.	RQD %	Drilling Rate Min/Ft	Graphic Symbol	Description and Remarks
0		ss-1			2 3	3 5	24		10:45		Fine to med. grained sand, brown, loose, moist well sorted
5		ss-2			1 2	1 3	17		11:00		Fine to med. grained sand light brown, loose, moist well sorted
10		ss-3			2 4	3 4	16		11:10		Med. grained quartz sand, light brown, loose, moist some gravel
15		ss-4			1 6	2 6	20		11:30		Med. to coarse grained quartz sand, white, very clean, loose moist
20		ss-5			3 6	5 6	18		11:45		med. to coarse grained quartz sand, white very clean loose moist
25		ss-6			2 7	5 9	18		12:00		med. to coarse grained quartz sand, white very clean, loose moist, some gravel (pebble size)
30		ss-7			1 7	4 10	14		12:15		med. to corse grained quartz sand, white to light brown (clean), loose, moist, some pebble sized gravel
35		ss-8			4 4	4 7	8		12:25		Med. to coarse grained quartz sand, light brown, loose, wet water table at approx. 35 ft.
40											

I.D. Casing	Wgt. Hammer on Casing	Material Notations
I.D. Spoon	Wgt. Hammer on Spoon	
Type Core Drill	Drop Hammer on Casing	
Core Dia.	Drop Hammer on Spoon	
Sample & Test Notations		

GRB Environmental Services, Inc.
Consulting Environmental Engineers and Scientists

6-2-13

Ref 3 77 of 127

BORING LOG

Sheet 2 of 2

PROJECT: PROJECT NO. BORING NO. MW-3

Location: Coord: Ground Elev:

Contractor: Date Started: G.W.L. Hour: Date:

Inspector: Date Completed: G.W.L. Hour: Date:

Notes:

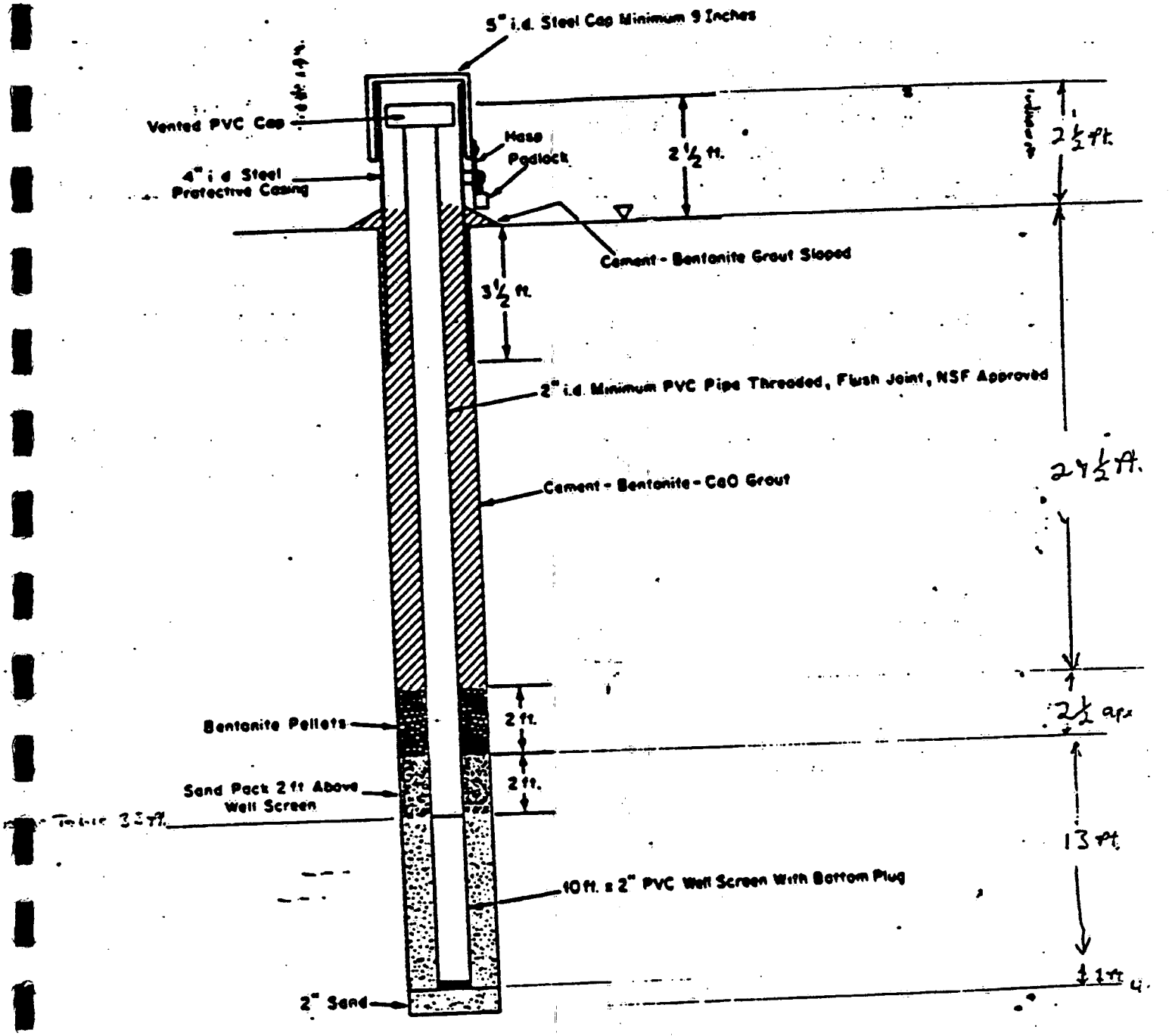
Depth Ft	Elev Ft.	Sample Type & No	Test Type & No	Blows Casing Per Ft	Blows Sampler 6"	Blows Sampler 6"	Recovery in.	RQD %	Drilling Rate Min./Ft	Graphic Symbol	Description and Remarks
40		ss-9			1	2	24		1:30		med. to coarse grained quartz sand, brown, loose, wet calm shell fragments ?
					2	3					
45		ss-10			2	4	20		2:00		med. to coarse grained quartz sand, brown, loose, wet clam shell fragments
					4	5					
50		ss-11			1	2	10		2:25		med. to coarse grained quartz sand, light brown, loos wet, some gravel
					3	4					
55		ss-12			2	3	8		2:47		med. to coarse grained quartz sand and gravel, light brown to tan, wet
					4	3					
60		ss-13			5	5	8		3:06		Coarse grained quartz sand, some gravel, light brown to tan
					6	11					
65		ss-14			1	2	0		3:20		No sample recovered
					5	11					
70		ss-15			2	1	6		3:40		coarse grained quartz sand some gravel, light brown to tan, loose, wet
					12	20					
75											End boring at 3:50
0											

I.D. Casing	Wgt. Hammer on Casing	Material Notations
I.D. Spoon	Wgt. Hammer on Spoon	
Type Core Drill	Drop Hammer on Casing	
Core Dia.	Drop Hammer on Spoon	
Sample & Test Notations		

GRB Environmental Services, Inc.
Consulting Environmental Engineers and Scientists

Ref 3 78 of 122

MW3 - completed 10/7/88
GW3



OVERBURDEN WELL

Figure 1

3-2-15

PHOTOIONIZER DETECTOR DATA
(HNu Data)

SITE NAME : TWIN FORK ASPHALT INC.
(FORMER CONTRAL SUFFOLK PAVING SITE)
ADDRESS: 100 ROGERS AVENUE, TOWN OF SOUTHAMTON,
SUFFOLK COUNTY
NYSDEC I.D. NUMBER: 152092

GRB

DATE: 10/6/88
BOREHOLE NO. MW 3
INSPECTOR T.F.
INSTRUMENT HNU - PI-101
DATE CALIBRATED 10/6/88 - Checked

WEATHER CONDITIONS
Breezy Cool 55°F - 60°F
Dry, sunny

SAMPLE NUMBER	DEPTH (FEET)	HNu READING PPM	COMMENTS
SS1	0-2	0.0	
2	5-7	0.0	
3	10-12	0.0	
4	15-17	0.0	
5	20-22	0.0	
6	25-27	0.0	
7	30-32	1.2	- Water Table apx. 35 ft. deep
8	35-37	0.0	
9	40-42	0.0	
10	45-47	0.0	
11	50-52	0.0	
12	55-57	0.0	
13	60-62	—	no sample recovered
14	65-67	0.0	

Ref 3 8 of 12

GRB

Job No.: _____

Boring: MW-4

Summary of Drilling and Sampling Information

Client: NYSDEC

Project: Central Suffolk Phase II

Rig: CME-75

Site: Westhampton Beach

Contractor: MPC

Driller: MPC

Drilling Method:

Hollow Stem Augers — 0 ft. to 46 ft. Dia. 6 in.

____ ft. to ____ ft. Dia. ____ in.

____ ft. to ____ ft. Dia. ____ in.

Drilling Fluid Used: ___ Yes X No Type: -

Sampler Hammer: Weight 140 lbs. Drop 24 in.

Casing Hammer: Weight - lbs. Drop - in.

Rock Core Diameter - in. Type core barrel/bit: -

Date/Time Drilling Started: 10/12/88 9:00 AM Completed: 10/12/88 11:40 AM

Down Time: - hrs. Cause(s) -

Log Summary: Soil: Fine, medium and corse grained sands, little gravel

Rock: -

No. Samples: Split Spoon 10 Other: -

Undisturbed: - -

No. Permeability Tests: Constant Head - Pressure -

Falling Head - Other: -

No. and Type of Other Tests: -

Piezometer Installation:

Pipe: Type: PVC Dia. 2 in. Depth: From 2½ ft. to 35 ft.

Screen: Type: PVC slot 20 Dia. 2 in Depth: From 35 ft. to 45 ft.

Filter Material: Type: Moray Sand Depth: From 33 ft. to 46 ft.

Seal Material: Type: Bentonite Seal Depth: From 31 ft. to 33 ft.

Cement/ Bentonite grout Depth: From 0 ft. to 31 ft.

Depth: From ____ ft. to ____ ft.

Remarks: No problems encountered

Inspector Thomas Fox

BORING LOG

Sheet 1 of 2

PROJECT: Central Suffolk PhaseII PROJECT NO. BORING NO. MW-4

Location: Westhampton Beach Coord: Ground Elev:

Contractor: MPC Date Started: 10/12/88 G.W.L. 35 ft Hour: 9:15 Date:

Inspector: Tom Fox Date Completed: 10/12/88 G.W.L. Hour: 11:40 Date:

Notes:

Depth Ft	Elev Ft	Sample Type & No	Test Type & No	Blows Casing Per Ft	Blows Sampler 6"	Blows Sampler 6"	Recovery in.	RQD %	Drilling Rate Min/Ft	Graphic Symbol	Description and Remarks
0		ss-1			3	3	20		9:15		fine sand and silt,brown cohesive,moist
					3	4					
5		ss-2			1	2	24		9:35		1 ft. fine sand &silt, brown cohesive,moist 1 ft.med.grained quartz sa white,well sorted,loose,moist little gravel
					2	6					
10		ss-3			2	2	24		9:50		med.grained quartz sand,whi well sorted,loose,moist little gravel
					4	6					
15		ss-4			2	2	24		10:02		med.to slightly coarse gra quartz sand,white,loose moist,sorted,little gravel
					3	8					
20		ss-5			1	2	24		10:15		med.to coarse grained quartz sand white, loose, moist (sorted
					5	12					
25		ss-6			1	4	24		10:23		med.to corse grained quartz sand,white,loose, moist little gravel,sorted
					4	8					
30		ss-7			3	5	20		10:40		med.to coarse grained quart sand,white,loose,moist little gravel,sorted
					7	10					
35		ss-8			3	3	20		10:55		med.to coarse grained quartz sand,white,loose,wet,little gravel
					6	9					
40											

I.D. Casing	Wgt. Hammer on Casing	Material Notations
I.D. Spoon	Wgt. Hammer on Spoon	
Type Core Drill	Drop Hammer on Casing	
Core Dia.	Drop Hammer on Spoon	
Sample & Test Notations		

GRB Environmental Services, Inc.
Consulting Environmental Engineers and Scientists

B-2-18

BORING LOG

Sheet 2 of 2

PROJECT: | PROJECT NO. | BORING NO. MW-4 Ref 3

Location: | Coord: | Ground Elev: 820/122

Contractor: | Date Started: | G.W.L. | Hour: | Date:

Inspector: | Date Completed: | G.W.L. | Hour: | Date:

Notes:

Depth Ft	Elev Ft.	Sample Type & No	Test Type & No	Blows Casing Per Ft	Blows Sampler 6"	Blows Sampler 6"	Recovery % in.	RQD %	Drilling Rate Min./Ft.	Graphic Symbol	Description and Remarks
40		ss-9			6	6	20		11:00		med. to very coarse grained quartz sand, white, unsorted with gravel, wet
					6	8					
45		ss-10			1	5	18		11:30		med. to coarse grained quartz sand, white, slightly sorted some gravel, wet
					2	5					
0											End of boring at 11:40
5											
0											
5											
0											
5											
0											

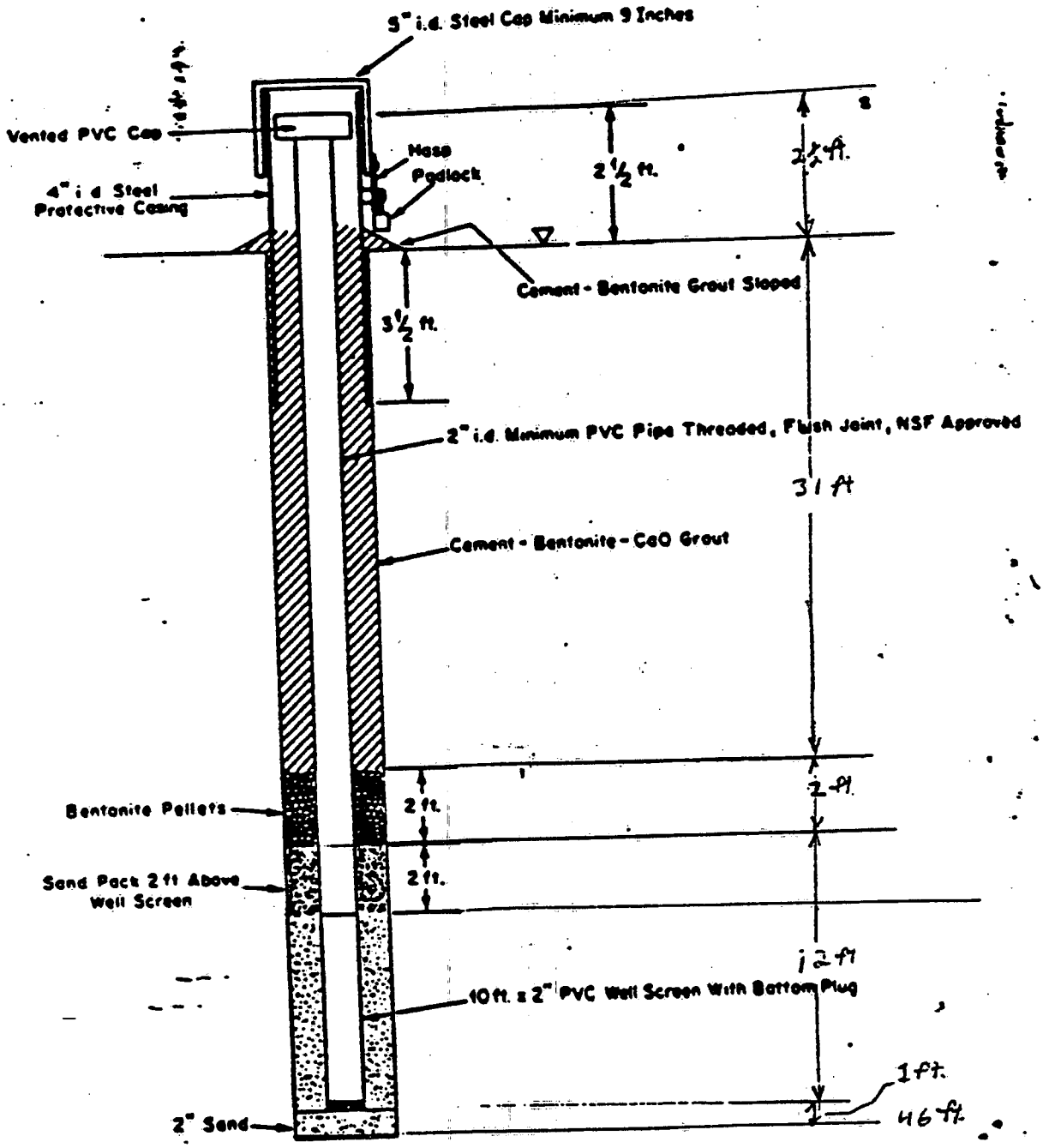
I.D. Casing	Wgt. Hammer on Casing	Material Notations
I.D. Spoon	Wgt. Hammer on Spoon	
Type Core Drill	Drop Hammer on Casing	
Core Dia.	Drop Hammer on Spoon	
Sample & Test Notations		

GRB Environmental Services, Inc.
Consulting Environmental Engineers and Scientists

B-2-19

MW-4 Completed 10/12/88

Ref 3
83 of 122



OVERBURDEN WELL

Figure 1

B-2-20

Ref 3
84 of 122

PHOTOIONIZER DETECTOR DATA
(HNu Data)

SITE NAME : TWIN FORK ASPHALT INC.
(FORMER CONTRAL SUFFOLK PAVING SITE)
ADDRESS: 100 ROGERS AVENUE, TOWN OF SOUTHAMTON,
SUFFOLK COUNTY
NYSDEC I.D. NUMBER: 152092

GRB

DATE: 10/12/88
BOREHOLE NO. MW-4
INSPECTOR Tom Fox
INSTRUMENT HNU - PI-101
DATE CALIBRATED 10/12/88 - checked

WEATHER CONDITIONS
clean (sunny) cool w/ temp in 45-50°F, windy

SAMPLE NUMBER	DEPTH (FEET)	HNu READING	COMMENTS
S-1	0-2	0.3	
2	5-7	0.4	
3	10-12	1.2	
4	15-17	1.0	
5	20-22	1.2	
6	25-27	0.3	
7	30-32	1.2	
8	35-37	0.3	
9	40-42	1.0	
10	45-47	1.0	

Ref 3
85 of 128

GRB

Job No.: _____

Boring: MW-5

Summary of Drilling and Sampling Information

Client: NYSDEC

Project: Central Suffolk Phase II

Rig: CME-75

Site: Westhampton Beach

Contractor: MPC

Driller: MPC

Drilling Method:

Hollow Stem Auger — 0 ft. to 46 ft. Dia. 6 in.

___ ft. to ___ ft. Dia. ___ in.

___ ft. to ___ ft. Dia. ___ in.

Drilling Fluid Used: ___ Yes X No Type: -

Sampler Hammer: Weight 140 lbs. Drop 24 in.

Casing Hammer: Weight - lbs. Drop - in.

Rock Core Diameter - in. Type core barrel/bit: -

Date/Time Drilling Started: 10/13/88 9:20 AM Completed: 10/13/88 11:10 AM

Down Time: - hrs. Cause(s) -

Log Summary: Soil: Fine, medium and corse grained guartz sands some gravel

Rock: -

No. Samples: Split Spoon 10 Other: -

Undisturbed: - -

No. Permeability Tests: Constant Head - Pressure -

Falling Head - Other: -

No. and Type of Other Tests: -

Piezometer Installation:

Pipe: Type: PVC Dia. 2 in. Depth: From 2½ ft. to 35 ft.

Screen: Type: PVC slot 20 Dia. 2 in. Depth: From 35 ft. to 45 ft.

Filter Material: Type: Moray Sand Depth: From 33 ft. to 46 ft.

Seal Material: Type: Bentonite Seal Depth: From 31 ft. to 33 ft.

Cement/ Bentonite Depth: From 0 ft. to 31 ft.

Grout Depth: From ___ ft. to ___ ft.

Remarks: No problems Encountered

Inspector Thomas Fox

3-2-22

BORING LOG

Sheet 1 of 2 Ref 3 86 of 124

PROJECT: Central Suffolk Phase II PROJECT NO. BORING NO. MW-5

Location: Westhampton Beach Coord: Ground Elev:

Contractor: MPC Date Started: 10/13/88 G.W.L. 35 ft. Hour: 9:20 Date:

Inspector: Tom Fox Date Completed 10/13/88 G.W.L. Hour: 11:10 Date:

Notes:

Depth Ft	Elev Ft	Sample Type & No	Test Type & No	Blows Casing Per Ft	Blows Sampler 6"	Blows Sampler 6"	Recovery % in.	RQD %	Drilling Rate Min./Ft	Graphic Symbol	Description and Remarks
0		ss-1			1	3	24		9:20		Fine sand and silt, brown cohesive, very moist
					4	1					
5		ss-2			2	3	24		9:36		1' coarse grained quartz sand white loose, moist, sorted 1' fine sand and silt, brown cohesive, very moist
					4	7					
10		ss-3			2	2	18				med. grained quartz sand, white loose, moist, well sorted
					3	7					
15		ss-4			2	3	12		9:52		med. grained quartz sand, white loose, moist, sorted
					3	9					
20		ss-5			2	2	12		10:05		med. to coarse grained quartz sand, white, loose, moist slightly sorted
					3	5					
25		ss-6			2	7	24		10:20		med. to coarse grained quartz sand, white, loose, moist, sorted
					10	14					
30		ss-7			4	5	20		10:30		med. grained quartz sand, white, loose, wet, slightly sorted
					6	7					
35		ss-8			2	3	20		10:40		med. to coarse grained quartz sand, white loose, wet, slightly sorted, water table at 35 ft.
					4	10					
40											

I.D. Casing	Wgt. Hammer on Casing	Material Notations
I.D. Spoon	Wgt. Hammer on Spoon	
Type Core Drill	Drop Hammer on Casing	
Core Dia.	Drop Hammer on Spoon	
Sample & Test Notations		

GRB Environmental Services, Inc.
Consulting Environmental Engineers and Scientists

B-2-2-3

BORING LOG

Ref 3 87 of 127

Sheet 2 of 2

PROJECT: | PROJECT NO. | BORING NO. MW-5

Location: | Coord: | Ground Elev:

Contractor: | Date Started: | G.W.L. | Hour: | Date:

Inspector: | Date Completed: | G.W.L. | Hour: | Date:

Notes:

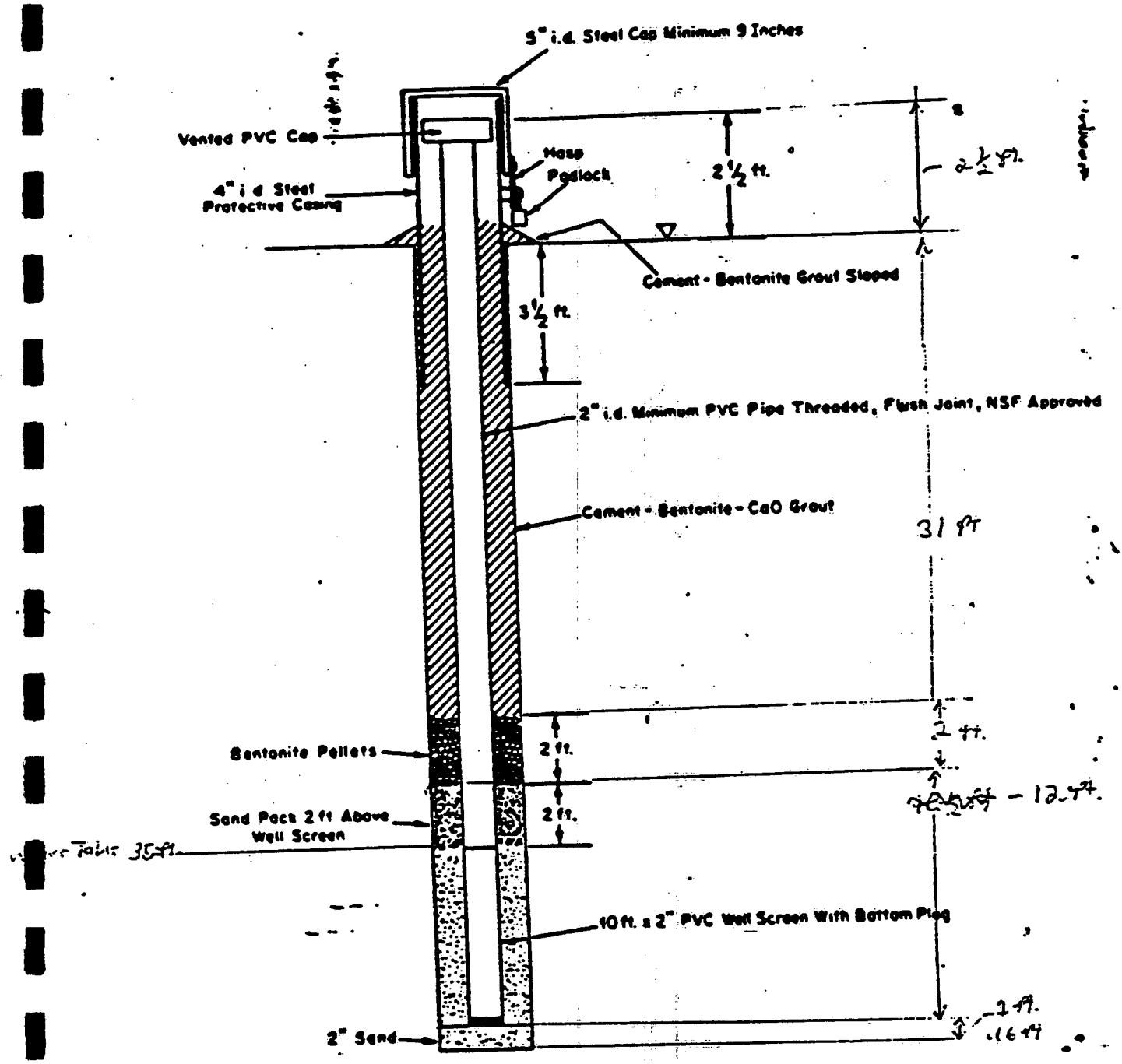
Depth Ft.	Elev Ft.	Sample Type & No.	Test Type & No	Blows Casing Per Ft.	Blows Sampler 6"	Blows Sampler 6"	Recovery % in	RQD %	Drilling Rate Min./Ft.	Graphic Symbol	Description and Remarks
40		ss-9			4	3	24		10:50		med. to coarse grained quart sand, white, loose, wet, sorted
					2	2					
45		ss-10			2	5	24		11:05		med. to coarse grained quart sand white, loose, wet, sorted
					11	11					
0											End of boring at 11:10 AM
5											
0											
5											
0											
5											
0											

I.D. Casing	Wgt. Hammer on Casing	Material Notations
I.D. Spoon	Wgt. Hammer on Spoon	
Type Core Drill	Drop Hammer on Casing	
Core Dia.	Drop Hammer on Spoon	
Sample & Test Notations		

GRB Environmental Services, Inc.
Consulting Environmental Engineers and Scientists

MW5 - Completed 10/13/88

Ref 3
88 of 127



OVERBURDEN WELL

Figure 1

Ref 3
84 of 127

PHOTOIONIZER DETECTOR DATA
(HNu Data)

SITE NAME : TWIN FORK ASPHALT INC.
(FORMER CONTRAL SUFFOLK PAVING SITE)
ADDRESS: 100 ROGERS AVENUE, TOWN OF SOUTHAMTON, SUFFOLK COUNTY
NYSDEC I.D. NUMBER: 152092

GRB

DATE: 10/13/88
BOREHOLE NO. HAWS
INSPECTOR Tom Fox
INSTRUMENT HNU - PI-101
DATE CALIBRATED 10/13/88 - checked

WEATHER CONDITIONS
Sunny, Mild, Temps in the low 60's, Breezy

SAMPLE NUMBER	DEPTH (FEET)	HNu READING P.P.M.	COMMENTS
SS 1	0-2	0.3	
2	5-7	0.3	
3	10-12	0.3	
4	15-17	0.7	
5	20-22	0.3	
6	25-27	0.5	
7	30-32	0.7	
8	35-37	1.3	— Ground Water Interface
9	40-42	0.3	
10	45-47	0.3	

#3 Ref 90 of 127

GRB

Job No.: _____

Boring: Exploritory Boring B-1

Summary of Drilling and Sampling Information

Client: NYSDEC

Project: Central Suffolk Phase 11

Rig: CME-75

Site: Westhampton Beach

Contractor: MPC

Driller: MPC

Drilling Method:

Hollow Stem Auger — 0 ft. to 10 ft. Dia. 6 in.

___ ft. to ___ ft. Dia. ___ in.

___ ft. to ___ ft. Dia. ___ in.

Drilling Fluid Used: ___ Yes X No Type: -

Sampler Hammer: Weight 140 lbs. Drop 24 in.

Casing Hammer: Weight - lbs. Drop - in.

Rock Core Diameter - in. Type core barrel/bit: ___

Date/Time Drilling Started: 10/14/88 9:00 AM Completed: 10/14/89 , 10:00 AM

Down Time: - hrs. Cause(s) ___

Log Summary: Soil: Silty sands (fill material?) and at 8-10 ft. clean quartz sands typical of the native soils.

Rock: -

No. Samples: Split Spoon 5 Other: -

Undisturbed: - -

No. Permeability Tests: Constant Head - Pressure -

Falling Head - Other: -

No. and Type of Other Tests: -

Piezometer Installation: None insatalled

Pipe: Type: ___ Dia. ___ Depth: From ___ ft. to ___ ft.

Screen: Type: ___ Dia. ___ Depth: From ___ ft. to ___ ft.

Filter Material: Type: ___ Depth: From ___ ft. to ___ ft.

Seal Material: Type: ___ Depth: From ___ ft. to ___ ft.

Depth: From ___ ft. to ___ ft.

Depth: From ___ ft. to ___ ft.

Remarks: Mr. Pennino had shown me (Tom Fox) the area in which the open pit was situated. I had driller start boring at the center of area, see lo book for sketch.

Inspector ___

BORING LOG

Sheet 1 of 1

PROJECT: Central Suffolk Phase II PROJECT NO. BORING NO. B-1

Location: Westhampton Beach Coord: Ground Elev:

Contractor: MPC Date Started: 10/14/88 G.W.L. Hour: 9:05 Date:

Inspector: Tom Fox Date Completed: 10/14/88 G.W.L. Hour: 10:00 Date:

Notes:

Depth Ft.	Elev Ft.	Sample Type & No	Test Type & No.	Blows Casing Per Ft.	Blows Sampler 6"	Blows Sampler 6"	Recovery %	RQD %	Drilling Rate Min./Ft.	Graphic Symbol	Description and Remarks
0		ss-1			4	10	24		9:05		Fine sand &silt,brown, cohesive,moist,some gravel
2					15	7					
		ss-2			4	5	24		9:10		silty sand&gravel,slightly cohesive,moist
4					5	8					
5		ss-3			1	1	24		9:20		Fine sand &silt,loose,light brown,slightly moist
6					1	6					
		ss-4			3	3	24		9:35		Fine sand & silt light brown, moist
8					4	8					
		ss-5			2	4	24		9:45		Fine to med. grained sand light brown to white,loose
10					8	4					moist (native soils)
											End of boring at 8-10 ft. 10:00 AM
5											
0											
5											
0											
5											
0											

I.D. Casing	Wgt. Hammer on Casing	Material Notations
I.D. Spoon	Wgt. Hammer on Spoon	
Type Core Drill	Drop Hammer on Casing	
Core Dia.	Drop Hammer on Spoon	
Sample & Test Notations		

GRB Environmental Services, Inc.
Consulting Environmental Engineers and Scientists

PHOTOIONIZER DETECTOR DATA
(HNu Data)

SITE NAME : TWIN FORK ASPHALT INC.
(FORMER CONTRAL SUFFOLK PAVING SITE)
ADDRESS: 100 ROGERS AVENUE, TOWN OF SOUTHAMTON,
SUFFOLK COUNTY
NYSDEC I.D. NUMBER: 152092

GRB

DATE: 10/14/88
BOREHOLE NO. B-1
INSPECTOR Tom Fox
INSTRUMENT HNU - PI-101
DATE CALIBRATED 10/14/88 - Checked

WEATHER CONDITIONS
Very mild, sunny temps
in the 60's, [illegible]

SAMPLE NUMBER	DEPTH (FEET)	HNu READING	COMMENTS
SS 1	0-2	0.3	
2	2-4	0.3	
3	4-6	0.3	
4	6-8	0.3	
5	8-10	0.3	- 1152 95 sample

Ref 3 93 of 102

LABORATORIES, INC.

March 6, 1989

Mr. Lawrence J. Alden
New York State Department
of Environmental Conservation
Division of Solid and Hazardous Waste
50 Wolf Road
Albany, New York 12233-0001

Re: Data Validation
File: 4398-001-517

Dear Larry,

Please find enclosed the report on the validation of data packages submitted by H2M Labs, Inc. The samples validated were collected from the Central Suffolk Paving Site on 10-17-88 and 11-14-88. The following table itemizes the site identification laboratory sample number and parameters validated.

SITE ID	LABORATORY SAMPLE NUMBER	PARAMETERS VOA	BNA	PEST	METALS	CN
SS-1	869987				X	X
SS-2	869988				X	X
SS-3	869989				X	X
SS-4	869990				X	X
SS-5	869991				X	X
SS-6	869992				X	X
GW#1	870457/870465	X	X	X	X	X
GW#2	870458/870466	X	X	X	X	X
GW#3	870459/870467	X	X	X	X	X
GW#4	870460/870468	X	X	X	X	X
GW#5	870461/870469	X	X	X	X	X
Duplicate	870462/870470	X	X	X	X	X
Field Blank	870463/870471	X	X	X	X	X
Trip Blank	870464	X	X	X		
SS-1	872585	X	X	X		
SS-2	872586	X	X	X		
SS-3	872587	X	X	X		
SS-4	872588	X	X	X		
SS-5	872589	X	X	X		
SS-6	872590	X	X	X		

The data packages were received at OBG Laboratories, Inc. on January 10, 1989. Following the review by our chemists a report is typed identifying the excursions from the 1987 NYS DEC CLP requirements.

OBG Laboratories, Inc.
Box 4942 / 1304 Buckley Road / Syracuse, New York 13221 / (315) 457-1494

E-4-1

Ref 3 94 of 127

Should you have any questions pertaining to the comments please feel free to contact us.

Very truly yours,
OBG Laboratories, Inc.

David R. Hill

David R. Hill
Vice President

enc.
cc:Mr. Norman Hinsey, Gibbs & Hill

B-4-2

Group #	Sample #	Matrix	VOA	BNA	Pest/PCB	CN	Total Phenols	Metals
	SS-1	Soil	No	No	No	Yes	No	Yes
	SS-2	Soil	No	No	No	Yes	No	Yes
	SS-3	Soil	No	No	No	Yes	No	Yes
	SS-4	Soil	No	No	No	Yes	No	Yes
	SS-5	Soil	No	No	No	Yes	No	Yes
	SS-6	Soil	No	No	No	Yes	No	Yes
	GW#1	Water	Yes	Yes	Yes	Yes	No	Yes
	GW#2	Water	Yes	Yes	Yes	Yes	No	Yes
	GW#3	Water	Yes	Yes	Yes	Yes	No	Yes
	GW#4	Water	Yes	Yes	Yes	Yes	No	Yes
	GW#5	Water	Yes	Yes	Yes	Yes	No	Yes
	Duplicate	Water	Yes	Yes	Yes	Yes	No	Yes
	Field Blank	Water	Yes	Yes	Yes	Yes	No	Yes
	Trip Blank	Water	Yes	Yes	Yes	No	No	No
	SS-1	Soil	Yes	Yes	Yes	No	No	No
	SS-2	Soil	Yes	Yes	Yes	No	No	No
	SS-3	Soil	Yes	Yes	Yes	No	No	No
	SS-4	Soil	Yes	Yes	Yes	No	No	No
	SS-5	Soil	Yes	Yes	Yes	No	No	No
	SS-6	Soil	Yes	Yes	Yes	No	No	No

Pg 3 95 of 102

Ref 3 96 of 127

CENTRAL SUFFOLK PAVING SITE VOLATILES

I ANALYSES

All analyses were conducted within the seven (7) day NYSDEC holding period.

II SURROGATE RECOVERIES

Typographical errors on Form 2A:

1. Lab code is not HP001
2. SDG No. is not GW#1
3. It is not necessary to list VSTD on Form 2A.

All surrogate recoveries for waters and soils were within QC limits.

III MS/MSD

As noted in the case narrative, the percent recoveries for Trichloroethene (MS,MSD), Benzene (MS,MSD) and Chlorobenzne (MSD were outside of QC limits for the water sample spiked. All % RPD were within limits, however.

All QC criteria were met for the spiked soil sample.

IV INITIAL CALIBRATION

Soils - There appears not to be a separate 5-point initial calibration for low level soils. The use of separate calibration methods which reflect the two different low and medium soil/sediment methods are required to be used (Exhibit E, Page E-12, Section 2.1.1). All CCCs and SPCCs for the initial calibration passed QC criteria.

Ion 72 instead of 43 is to be used for the quantitation of 2-Butanone, see Exhibit D, D-II-36, Table 3.

Also Total Xylenes are to be quantitated as m-Xylene (Exhibit D, D-II-33, Section 9.4.2). M-Xylene is not listed in the quantitation report for the files used to construct the initial calibration, nor is it listed in the quantitation report for the continuing calibration standard of 11-17-88.

Waters - There are a few problems with the initial calibration:

1. The initial calibration was reconstructed on 12-9-88, after the samples were analyzed. This is indicated on Forms VI and VII, as well as on Quant Reports for the 20,50,100,150 and 200ppb standards for all analytes other than Acetone.

2. The 20,50,100,150 and 200 standards were run in duplicate and nine standard points used to construct the curve for all analytes but Acetone, Carbon Disulfide, 1,1-Dichloroethene, 1,2-Dichloropropane. The method calls for an initial 5-point calibration (Exhibit E, E-12, Section 2.1.1).

CENTRAL SUFFOLK PAVING SITE VOLATILES CONTINUED

3. Acetone had to be recalibrated because of contamination problems. This was learned after speaking with an H2M representative.

4. Various analytes are not referenced to the correct internal standard. These are listed below:

ANALYTE	REFERENCED I.S.	CORRECT I.S.
2-Butanone	Bromochloro-methane(BCM)	1,4-Difluorobenzene(DF)
Vinyl Acetate	BCM	DFB
1,2-Dichloroethane	DFB	BCM
4-Methyl-2-Pentanone	DFB	Chlorobenzene-D5(CBD5)
Toluene-D8	DFB	CBD5
Dibromochloromethane	CBD5	DFB
Bromoform	CBD5	DFB

See Exhibit E, E-13, Table 2.1.)

5. Chloroethane concentrations used were 40,100,200,300 and 400ppb, rather than those specified in Exhibit E, E-12, Section 2.1.1. This was learned after speaking with an with an H2M representative.

6. Xylenes are not being quantitated against m-Xylene (see Exhibit D, D-II-33, Section 9.4.2).

7. The run time is very short (29.75 minutes) with all analytes eluting within approximately 16.16 minutes. There is a concern of co-elution of analytes that share common ions. This would adversely affect quantitation of analytes.

8. CCC analytes barely passed the 30.0 percent RSD criteria for validation of the initial calibration (see Exhibit E, E-14, Section 2.3.1.).

V CONTINUING CALIBRATIONS

Soils (11-17-88) - % Difference for Vinyl Chloride is calculated to be greater than 25%.

$$\frac{1.07 - 1.43}{1.43} = \frac{-0.36}{1.42} \times 100\% = -25.17\%$$

Since the criteria was not met, corrective action should have been taken prior to sample analysis (see Exhibit E, E-16, Section 2.6.2.).

Another concern is the very high %D noted for the 1,2-Dichloroethane-D4 surrogate (+132%). This is not consistent with the RF noted during initial calibration.

All other CCCs and SPCCs pass.

Waters (10-20-88) - % Difference for the following analytes was greater than 50%; Bromomethane (-57.10%), 2-Butanone (+60.69%) and 2-Hexanone (+70.75%).

All CCCs and SPCCs pass contract-specified criteria. Chloroethane was tested at 100ppb, rather than 50ppb (see Exhibit E, E-16, Section 2.6.3.1.).

VI INTERNAL STANDARD AREA CONSISTENCY

The areas listed on the Quant Report (ΛVO516::QT) do not match those listed on Form 8A for the continuing calibration run at 16:54 on 10-20-88.

All internal standard criteria were met for samples (water) tested on 10-20-88.

There is a typographical error on the Volatile Internal Standard Area Summary Sheet for the Finnigan instrument. The lower limit for ISI(BCM) should be 20380.

All internal standard areas pass criteria for the soils tested. A greater concern is a retention time shift of more than 30 seconds noted for the following samples:

SAMPLE	IS1	IS2	IS3
SS#1	+115	+86	+112 seconds
SS#2			+35
SS#3	+47	+47	+34
SS#4	+38	+41	+62
SS#6	+38		
SS#5	-48	-53	-71
SS#1MS	-48	56	-71
SS#1MSD	-45	-53	-74

If the retention time for any internal standard changes by more than 30 seconds, the chromatographic system must be inspected for malfunctions and corrections made as required (Exhibit E, Page E-23, Section 6.1.1). This was not done or accounted for.

VII METHOD BLANK ANALYSIS

For the soil samples tested on 11-17-88, a 5.0ml water sample was used as a blank. A method blank is ....a purified solid matrix for soil/sediment samples carried through the entire analytical scheme (see Exhibit E, Page E-17, Section 3.0).

VIII ANALYTE IDENTIFICATION

The following do not meet the requirements for qualitative verification as detailed in Exhibit E, Page E-25, Section 6.1.3.2.1. Ions that are above 10% in the standard, but not present in the sample, are unaccounted for. The same is true for the ions present in the sample that are not present in the standard.

CENTRAL SUFFOLK PAVING SITE VOLATILES CONTINUED

SAMPLE	ANALYTES
GW#2	Acetone
GW#3	1,1,1-Trichloroethane (reference mass spectrum is incorrect!)
GW#4	Acetone
GW#5	Acetone
Field Blank	2-Butanone
SS-1	Acetone, 1,1-Dichloroethene, 2-Butanone, 1,1,1-Trichloroethane, Tetrachloroethene Toluene
SS-2	1,1-Dichloroethene, 2-Butanone, Toluene
SS-3	1,1-Dichloroethene, 2-Butanone
SS-4	1,1-Dichloroethene, 2-Butanone
SS-5	1,1-Dichloroethene, Chloroform, 2-Butanone 1,1,1-Trichloroethane, Toluene
SS-6	2-Butanone

The following do not meet the requirements for tentative identification as detailed in Exhibit D, D-II-31, Section 8.2.2.:

SAMPLE	ANALYTE (TIC)
SS-2	2,3-Dimethyl-1-Butene
SS-3	2,3-Dimethyl-1-Butene (base peak is missing!)
SS-4	2,3-Dimethyl-1-Butene
SS-5	2,3-Dimethyl-1-Butene
SS-6	2,3-Dimethyl-1-Butene (not listed as choice)

In addition, in accordance with Exhibit D, D-II-30, Section 8.2.1., the following peaks required library searches:

SAMPLE	RETENTION TIME
GW1	12.06 minutes
GW2	12.12
GW5	12.09

The library searches were included, but not required, for the following:

SAMPLE	RETENTION TIME
GW3	18.89 minutes
Trip Blank	17.63

X MISCELLANEOUS

1. Some RICs are not normalized to the largest non-solvent peak. Examples are SS-1, SS-2, SS-3, SS-4, SS-5, SS-6, 20µg/L Surr. STD.,]VBLK (PU9364), SS-1MS and SS-1MSD (see Exhibit B, B-10).

2. For the soil data package (Finnigan output), internal standard and surrogate spiking compounds are not labelled by name or retention time (see Exhibit B, B-10).

CENTRAL SUFFOLK PAVING SITE VOLATILES CONTINUED

3. For the water data package (Hewlett-Packard output), quantitation ion is not listed (see Exhibit B, B-11).

4. Mass spectra are not labelled with GC/MS instrument ID (see Exhibit B, B-11).

5. Reference mass spectrum for 1,1,1-Trichloroethane (see GW3) is incorrect and exhibits extraneous ions.

6. Photocopy quality is poor and not readable in some instances. Examples are continuing chain of custody for 11-14-88, mass listing for BFB analyzed on 10-27-88, quantitation report for 200µg/L surr. std. run on 10-27-88.

7. O-Xylene is listed in Quant Report for GW#1, but not on Form 1.

CENTRAL SUFFOLK PAVING SITE SEMIVOLATILES

I ANALYSES

All samples were extracted within run within ten days of verified time of sample receipt. All extracts injected within forty days of extraction.

II TUNING

The tuning compound DFTPP was not indentified as MMDDDFTI # (Exhibit B, pg. B-32).

III CALIBRATION

The semivolatile standards are not identified as MMDDFSI # (Exhibit B, pg. B-32).

The reason for using secondary ions for quantitation was not documented in the case narrative (Exhibit E, pg. E-30):

COMPOUND	PRIMARY ION	QUANTITATION ION
2,4-Dimethylphenol	107	122
2,4-Dinitrotoluene	165	89

The relative retention time of each compound from the calibration runs agree within 0.06 relative retention time units.

Continuing calibrations were within the minimum relative response factor for the system performance check compounds and the percent difference for each calibration check compound. The following compounds exhibit an increased percent difference:

COMPOUNDS	12/01 % D	12/2 % D	12/9 % D
Benzyl Alcohol	3.4	15.7	73.1
Benzoic Acid	75.6	43.2	33.9
4-Nitrophenol	60.6	54.9	59.4
4-Nitroaniline	40.7	9.0	22.3

The calculation used to determine the percent difference is correct in magnitude, however, incorrect in sign (Exhibit E, pg. E-33).

$$\text{Eq. 2.3 \% Difference} = \frac{\overline{RRF_I} - RRF_C}{\overline{RRF_I}} \times 100$$

The semivolatile continuing calibration check form is labelled FORM VI SV-1, this should be changed to FORM VII (Exhibit E, pg. E-34).

IV METHOD BLANK

Semivolatile blanks are not identified as MMDDFXBI # (Exhibit B, pg. B-31).

It is unclear why the method blank file >P5208 was reported on the summary sheet (FORM IV-SV) instead of file >P5225 that was reanalyzed with the sample batch. A copy of the instrument log was not included in the package document file >P5208.

CENTRAL SUFFOLK PAVING SITE SEMIVOLATILES CONTINUED

For the soil samples extracted on 11/17/88, a water sample was used for a blank. The method blank should be a purified solid matrix for soil/sediment samples that should be carried through the extraction (Exhibit #, pg. E-17).

V SURROGATE RECOVERY

All surrogate recoveries were within specified QC limits.

There were rounding errors in the calculation for percent recovery for nitrobenzene-d_5, 2-Fluorobiphenyl and 2,4,6-Tribromophenol. For example:

	S1 NBZ	S3 TPH	S6 TPP
SS-1 RA			
Form II SV-2	34	59	52
% From Quant	35	58	53
Quant. Result	34.77	57.97	53.20

VI MATRIX SPIKE/MATRIX SPIKE DUPLICATE

The relative percent difference between the matrix spike and matrix spike duplicate calculation is based on the percent spike recovery instead of the sample value. The sign of the value is also incorrect (Exhibit E, pg. E-40).

$$\text{Eq. 5.2} \quad RPD = \frac{D_1 - D_2}{(D_1 + D_2)/2} \times 100$$

Where: D_1 = First Sample Value
D_2 = Second Sample Value

VII ANALYTE IDENTIFICATION

The following do not meet the requirements for qualitative verification as detailed in Exhibit E, pg. E-43, sec. 6.1.3.2.1. All ions present in the standard mass spectra, at a relative intensity greater than 10%, must be accounted for in the samples.

SAMPLE	ANALYTES
SS-2	Phenol
SS-4	Phenol,Fluoranthene (Extraneous Ions)
SS-6	Diethylphthalate

CENTRAL SUFFOLK PAVING SITE - SEMI VOLTILES WATER DATA

I EXTRACTIONS

All samples were initially extracted within the contract-specified holding times. Samples requiring re-extraction (GW#3MS, GW#5 and the Field Blank) were extracted outside of the 5-day holding period.

II ANALYSES

All analyses were completed within the contract-specified holding times.

III SURROGATE RECOVERIES

All surrogate recoveries were within specified QC limits. As noted in the case narrative, samples GW#3MS, GW#5 and the Field Blank had to be re-extracted because of spike recoveries outside of QC limits. The comment regarding high Tribromophenol recoveries is not clear. It is true that the response factor for this analyte was low on 10/28/88, as compared to the initial calibration (0.184 vs. 0.308, or -40.3%). However, if there has been no degradation in the standard, surrogate measurement in sample is equally affected by the RF for that day.

IV MATRIX SPIKE & MATRIX SPIKE DUPLICATE (MS/MSD)

Five out of eleven RPDs were outside of limits. One of 22 percent recoveries was outside of limits. Some analytes were spiked at slightly higher amounts than the contract-specified amounts of 100ppb base/neutral and 200ppb acid/phenols (see Exhibit D, D-III-20, section 2.4.7.1.).

V INITITAL CALIBRATION

No logbook injection records were included for the initial calibration. All CCCs and SPCCs for the initial calibration passed QC criteria. Much fluctuation of internal standard areas was noted for the five point initial calibration runs. The following do not meet contract-specified QC limits for internal standard areas based on the 50ng standard:

STANDARD	INTERNAL STANDARD
20ng	None Meet Criteria
80ng	DCB, NPT, ANT
120ng	DCB, NPT, ANT, PHN
160ng	DCB, NPT, ANT, PHN

DCB=1,4-Dichlorobenzene-d4
NPT=Naphthalene-d8
ANT-Acenaphthalene-d10
PHN=Phenanthrene-d10

VI CONTINUING CALIBRATIONS

10-28-88: All CCCs and SPCCs passed cirteria

11-2-88: All CCCs and SPCCs passed criteria
RF for Benzoic Acid extremely low (0.014, -84.4%)
RF for Hexachlorocyclopentadiene low (0.072, -72.2%)
RF for 2,4-Dinitrophenol barely passed (0.054, 65.4%)

CENTRAL SUFFOLK PAVING SITE - SEMIVOLATILE WATER DATA (Cont'd.)

11-8-88: All CCCs and SPCCs passed criteria
Benzoic Acid RF low (0.022, -75.4%)
2,4,6-Tribromophenol RF low (0.104, -66.3%)

11-20-88: All CCCs and SPCCs passed criteria
4-Chloroaniline RF low (0.144, -76.3%)
3,3'-Dichlorobenzidine RF high (0.342, +61.1%)

VII TUNING

All DFTPPs met contract-specified criteria. The total ion chromatograms for files >DF305, >DF314, DF317 and >DF327 indicated heavy carryover and displayed inconsistent heights ranging from 40,000 to 150,000 counts.

VIII INTERNAL STANDARD AREA SUMMARY

All internal standard criteria were met.

IX LIBRARY SEARCHES

The following do not meet the tentative identification criteria as detailed in Exhibit D, D-II-31, section 8.2.2:

SAMPLE	ANALYTES (TIC)	REASONS
GW#1	Ethoxy-methylbutane	M/E 43, 87, 88
GW#2	1,13-Tetradecadiene	M/E 250, 194
GW#3	1,13-Tetradecadiene	M/E 250, 194
GW#4	1,13-Tetradecadiene	M/E 250, 194
GW#5 RE	Unknown Alkane (RT=9.64)	How was conclusion reached
	Unknown ALkene (RT=9.78)	How was conclusion reached
Duplicate	1,13-Tetradecadiene	M/E 250, 194
	9-Octadecenoic Acid(z)-methyl	Hard to distinguish isomer
SBLK-394	1,13-Tetradecadiene	M/E 250, 194
SBLK-401	1,13-Tetradecadiene	M/E 250, 194
	10-Undecenoic Acid, Methyl E	M/E 74, 166
SBLK-415	4-Penten-2-one	M/E 45

X LABELLING

A "B" qualifier should have been used for the following (see Exhibit B, pg. 36, section B):

SAMPLE	ANALYTE
SBLK-394	Bis(2-ethylhexyl)phthalate
	All TIC also found in samples
SBLK-401	Bis(2-ethylhexyl)phthalate

CENTRAL SUFFOLK PAVING SITE PESTICIDE/PCBs - SOILS

I HOLDING TIMES

All soil samples extracted within ten days. All soil samples analyzed within forty days.

II METHOD BLANK ANALYSIS

As noted in the case narrative, the method blank associated with the soil samples was 1000ml of water. For soil samples, the method blank should be "a purified solid matrix for soil/sediment samples, carried through the entire analytical scheme (extraction, concentration and analysis). For soil/sediment samples, a solid matrix suitable for pesticide analysis is available from EMSL-LV.".

The method blank PBLK (B-416) had Aldrin contamination at 13.µg/kg and was confirmed on the SPB-608 column. Aldrin was also reported in samples: SS-1 (11.µg/kg), SS-2 (7.0µg/kg), SS-3 (13.µg/kg), SS-4 (13.µg/kg), SS-5 (10.µg/kg) and SS-6 (12.µg/kg). This violates the method blank criteria outlined in Exhibit E-46, 1.2.1.1.

III MATRIX SPIKE/MATRIX SPIKE DUPLICATE (MS/MSD)

Soil samples should be reported as µg/kg, not µg/L as reported on MS/MSD Form.

For soil samples, a matrix spike solution should be created with a concentration of 2.0µg/ml of Lindane, Heptachlor, Aldrin and 5.0µg/ml of Dieldrin, Endrin and 4,4'DDT. To the MS and MSD, 400µl of this spike solution is added. The concentration added to the MS and MSD of SS-1 was 59 and 148µg/kg, respectively.

All spike recoveries and RPD meet the QC requirements.

IV SURROGATE SPIKE ANALYSIS

All surrogate recoveries are within the QC Advisory Limits. No surrogate recoveries were reported for primary column.

V PESTICIDE ORGANICS ANALYSIS

On Pesticide Organics Analysis Data Sheet, some errors in filling out the form are: 1) no pH was reported, 2) GPC cleanup reported as an "X" instead of yes or no, 3) % Moisture reported is 86-96% (most likely H2M reported % solids). Aldrin contamination was reported in the method blank as well as SS-1 (11.µg/kg), SS-2 (7.µg/kg), SS-3 (13.µg/kg), SS-3 (13.µg/kg), SS-4 (13.µg/kg), SS-5 (10.µg/kg) and SS-6 (12µg/kg). Positive values reported for Dieldrin (22µg/kg) and 4-4'DDT (78.µg/kg) in SS-1 and Heptachlor Epoxide (12.µg/kg) in SS-2 are most likely due to low levels of AR1254 and/or AR1248 in these samples. Peaks from these PCBs appear to fall within the R.T. windows for these single component pesticides, resulting in false positive values.

As noted in the case narrative, Lindane and 4,4'DDE in samples SS-2 and SS-5 were quantitated on the SPB-608 column. This column should only be used for confirmation since it failed the Evaluation mix linearity criteria.

VI PESTICIDE EVALUATION STANDARDS SUMMARY

As noted in the case narrative, Aldrin, Endrin and 4,4'DDT fail the 10% RSD linearity criteria on the SPB-608 column. Therefore, this column should be used only for confirmation.

VII PESTICIDE/PCB STANDARDS SUMMARY

The following standards fall outside their respective retention time windows:

PEST/PCB	RT	RT WINDOW	STANDARD	COLUMN/DATE
Heptachlor	6.68	6.25- 6.51	INDA/INDB Run 1678/1688	Primary/12-2-88
EndoSulfate	19.04	18.66-14.42*	" "	" "
AR1221	4.58	4.49- 4.07*	" "	" "
Alpha BHC	16.93	16.88- 1.98*	INDA/INDB Run 728/729	SPB608/12-17-88

*Indicates probable typographical error.

All calibration factors are incorrectly calculated by area divided by picograms instead of area divided by nanograms injected as outlined in Exhibit B-46 (Equation 1.6).

The identification of alpha and gamma chlordane is reversed on the 1.5% SP2250 + 1.95% SP2401 column. Gamma chlordane elutes before alpha chlordane on this column (see Exhibit D-IV-47 (Table 7).

VIII CHROMATOGRAPHY

Evaluation Standard mixtures should be attenuated such that Eval A is 20% above baseline, Eval B is half scale and Eval C is full scale (with 0.1Ng/L of DBC), Also, individual mixes and multicomponent standards should be approximately one half scale (see Exhibit D-IV-34, 4.3).

The computer reproductions of chromatograms are not attenuated to ensure that peak response for compounds of interest are greater than 25% of full scale. To adjust the attenuation to such a varying degree, linearity must be proven over the full range. With computer reproductions of chromatograms at varying scales, visual identification and comparison of individual and multicomponent peaks is difficult.

CENTRAL SUFFOLK PAVING SITE PESTICIDE/PCBs - WATERS

I HOLDING TIMES

All water samples extracted within five days. All water samples analyzed within forty days.

II MATRIX SPIKE/MATRIX SPIKE DUPLICATE (MS/MSD)

As noted in the case narrative, 10 out of 12 spike recoveries are outside the QC limits for GW3MS and MSD. The RPD fails in 2 out of 6 instances. On the water Pesticide Matrix Spike/Matrix Spike Duplicate Recovery Form, the Matrix Spike - Sample No. is missing (should be GW#3), as well as the Level (Low). Also, the spike added should be 0.2µg/L and 0.5µg/L for the various pesticides, and the MS and MSD concentration (µg/L) is ten times too high.

III SURROGATE SPIKE ANALYSIS

Surrogate recoveries were apparently reported for the capillary (confirmation column) only. Primary column recoveries are missing. The case narrative notes that 5 out of 10 surrogate recoveries are below the Advisory QC Limits (24% - 154%). Samples that failed are: GW#1 (2.7%), GW#3 (3.1%), GW#4 (0%), GW#3MS (17%) and GW#3MSD (11%). Using the information from the data, particularly the extract volume from the GC shot log, the DBC percent recoveries are off by a factor of two (2). A sample calculation for PBLK B-10-21 from the confirmation run follows:

$$\frac{\text{Area}}{\text{DBC}} \div \frac{\text{Calibration}}{\text{Factor}} \div \frac{\mu l}{\text{Injected}} \div \text{Sample Size} \times \text{Extract Volume} \times \frac{1000ml}{1L} = \frac{\text{Conc.}}{\text{DBC}} \div \frac{\text{Conc.}}{\text{Added}} \times 100 = \%R$$

$$513507 \div 5718000 \div 2\mu l \div 1000ml \times 5.0ml \times \frac{1000ml}{1L} = 0.225\mu g/L \div 1.0\mu g/L = 23\%$$

The percent recovery reported for PBLK B-10-21 is 47%.

Apparently, all surrogate recoveries are incorrect.

IV PESTICIDE ORGANICS ANALYSIS

As noted in the case narrative, gamma chlordane was found in the sample duplicate on both primary and confirmation columns. This was not reported as a positive result.

V EVALUATION STANDARDS SUMMARY

Linearity and 4,4'DDT and Endrin percent breakdown meet the criteria in all cases.

A matrix interference at the DBC retention time prevented a retention time percent difference on the primary column for GW#1, GW#2, GW#3, GW#4, GW#5 and the Field Blank. This also occurred on the confirmation column for GW#4. Sample GW#3 failed on the confirmation column, (%D = 0.323, criteria is <0.3%).

As noted in the case narrative, the percent difference for DBC on the confirmation column was calculated relative to INDA instead of EVAL A. Apparently, the criteria had not stabilized.

CENTRAL SUFFOLK PAVING SITE PESTICIDE/PCBs - WATERS (Cont'd.)

VI PESTICIDE/PCB STANDARD SUMMARY

In standard AR1221, the retention time falls outside its retention time window:

PEST/PCB	R.T.	R.T. WINDOW	STANDARD	COLUMN/TIME
AR1221	19.95	16.90-17.00	AR1221 Run#634	SPB608/11-21-88,2:13

All calibration factors are incorrectly calculated by area divided by picograms instead of area divided by nanograms injected as outlined in Exhibit B-46 (Equation 1.6).

VII CHROMATOGRAPHY

For the confirmation column, the computer reproductions are attenuated at various scales making visual comparisons of chromatograms difficult. Peak response (for compounds of interest) should be attenuated to be <25% of full scale deflection to be within the linear range (see Exhibit D-IV-39, 6.2.1-6.2.5.

CENTRAL SUFFOLK PAVING SITE INORGANICS - WATERS

I ANALYSIS DATA SHEETS

The inorganic data sheets contain calcium and magnesium values from both the ICP and Flame AA techniques. The case narrative states that calcium and magnesium were analyzed on the PE2380 system. Therefore, the ICP results should not be reported.

Standards for Flame AA do not show the 5% criterion (see Exhibit E, pg. 71).

II INITIAL AND CONTINUING CALIBRATION VERIFICATIONS

The CCV data for cyanide is missing. Therefore, all cyanide data is not contract compliant.

The ICV "Found Value" data for antimony, analyzed by ICP techniques, is missing. A review of the raw data shows an antimony result of 5130.ppb which corresponds to a 102.6 percent recovery.

The ICV's for calcium and magnesium by ICP need not be reported. They were run by Flame AA.

III CRDL STANDARDS

The following analytes, analyzed by Flame AA techniques, do not have CRDL results listed on the CRDL standard form as required in Exhibit E, pg. 71: K, MG, CA, NA.

The CRDL "True Value" for Lead, analyzed by Furnace AA techniques, should be at the 5.ppb level and not the reported 4.ppb level.

IV BLANKS

The CCB and preparation blank data for the water cyanide group is missing. Therefore, all cyanide is not contract compliant.

The last lead CCB result is incorrectly recorded in the ICB column.

V ICP INTERFERENCE CHECK SAMPLE

All reported values are contract compliant.

VI SPIKE RECOVERIES

A spike for CA, MG, K, NA is not required.

The post digestion spiked sample results for selenium should be reported to the IDL level of 5.ppb. It was reported to 1.ppb.

VII DUPLICATE RESULTS

Calcium and magnesium results, analyzed by ICP techniques, need not be reported. The acceptable reported results are from Flame AA techniques.

VIII LABORATORY CONTROL SAMPLE RESULTS

An LCS for antimony and silver appears to have been analyzed. The "True Values", however, are not supplied and thus percent recovery calculations cannot be performed.

CENTRAL SUFFOLK PAVING SITE INORGANICS - WATERS (Cont'd.)

IX STANDARD ADDITION RESULTS

All results are contract compliant.

X ICP SERIAL DILUTION RESULTS

It appears that CR, BE, CO and NI do not meet the 10.% difference criteria and, therefore, all results should be flagged with an "E". This is difficult to determine because ICP IDLs are not supplied.

XI HOLDING TIMES

All analyses were conducted within the prescribed holding times.

XII DETECTION LIMITS

IDLs are not supplied for the ARL3410 ICP system. Therefore, all analytes determined by ICP techniques should be considered not in compliance.

All cadmium data is not being consistently reported. The level listed on the instrument detection limit form is not the same as those given on other data sheets.

The ICP linear range determination for antimony is missing. All antimony results are thus not contract compliant.

The IDLs supplied for the PE2380 and the CRDL are almost always the same. This is statistically very unlikely.

XIII COMMENTS

The rounding rules of Exhibit B, pg. 21, are not being adhered to.

The Flame AA raw data is not being supplied as specified in Exhibit B, pg. 22.

The summary forms are not being submitted in the proper order as specified in Exhibit B, pg. 21.

The source and prep date of the calibration standards and the instrument system used to perform the results are not clearly supplied as specified in Exhibit B, pg. 23.

Data validation would be enhanced if the pages were numbered.

The presentation of the data would be enhanced if all data was condensed onto one form (ex., Analysis Data Sheets).

CENTRAL SUFFOLK PAVING SITE INORGANICS - SOILS

I ANALYSIS DATA SHEETS

As stated in the case narrative, silver and cadmium wre reanalyzed by Flame AA techniques. Upon careful inspection of the raw data, it appears that ICP values for silver and cadmium were reported on the inorganic analysis data sheets, even though the Flame AA method is referenced. This data is, therefore, invalid.

Standards for Flame AA do not show the 5% criterion (see Exhibit E, pg. 71).

II INITIAL & CONTINUING CALIBRATION VERIFICATIONS

The CCV data for cyanide is missing. Therefore, all cyanide data is not contract compliant.

III CRDL STANDARDS

The potassium results, analyzed by Flame AA techniques, is missing (see Exhibit E, pg. 71).

Cadmium and silver results are reported in the wrong column. They should be reported under the AA column and not under the ICP column.

IV BLANKS

The CCB and preparation blank data for the soil syanide group is missing. Therefore, all cyanide data is not contract compliant.

The preparation blank is reportd as a water matrix. It should be reported as a solid matrix (see Exhibit E, pg. 74).

V ICP INTERFERENCE CHECK SAMPLE

Percent recovery results for CA, MG, FE and AL were incorrectly calculated from the "A" column and not from the "AB" column. The contract specifies that "AB" interferent results must be reported. These are missing.

VI SPIKE RECOVERIES

All data reported correctly and flagged properly.

VII DUPLICATE RESULTS

The control limit column is improperly reported. The absolute value of the CRDL needs to be corrected for sample weight, percent solids and reported in ppm (see Exhibit E, pg. 79).

VIII LABORATORY CONTROL SAMPLE RESULTS

Protocol states that a solid LCS should be used with soil samples (see Exhibit E, pg. 80). The %R should be reported to one decimal place (see Exhibit B).

IX STANDARD ADDITION RESULTS

All data is contract compliant.

CENTRAL SUFFOLK PAVING SITE INORGANICS - SOILS (Cont'd.)

X ICP SERIAL DILUTION RESULTS

Many errors are present:

- -Initial sample results do not match the sample results found on the data sheets.
- -Results are not being corrected for dilutions
- -The reported percent differences cannot be confirmed from the limited data given on the serial dilution form.
- -It appears that vanadium and zinc percent differences are 16.5% and 25.0% respectively. If this is the case, all associated soil samples must be flagged with an "E".

XI HOLDING TIMES

All analyses were conducted within the prescribed holding times.

XII DETECTION LIMITS

The instrument detection limits for cadmium and silver are not supplied for the PE2380. Cadmium and silver data is, therefore, not in compliance.

XIII COMMENTS

The rounding rules of Exbibit B, pg. 21, are not being adhered to.

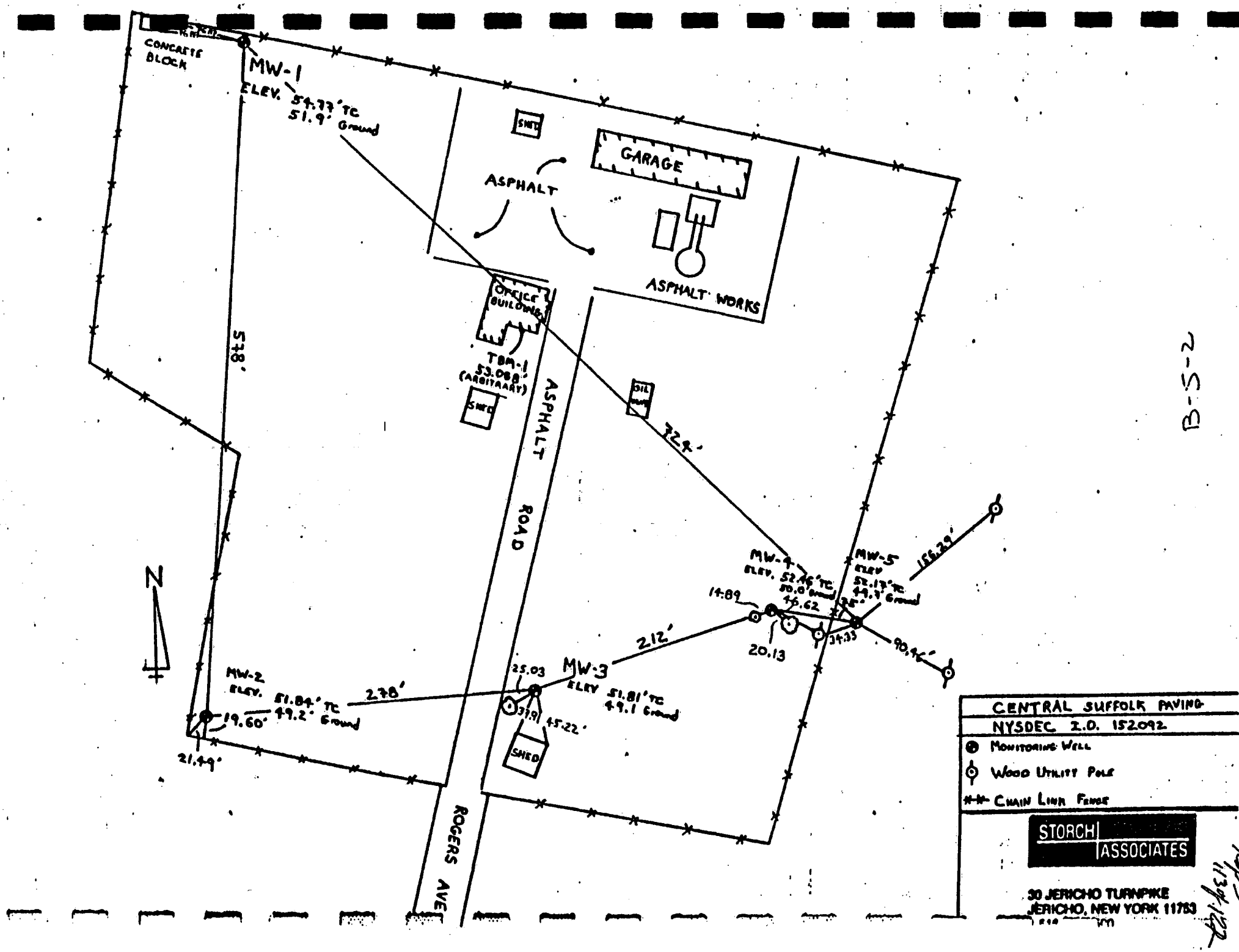
The Flame AA raw data is not being supplied as specified in Exhibit B, pg. 22.

The summary forms are not being submitted in the proper order as specified in Exhibit B, pg. 21.

The source and prep date of the calibration standards and the instrument system used to perform the results are not clearly supplied as specified in Exhibit B, pg. 23.

Data validation would be enhanced if the pages were numbered.

It would be helpful if the preparation blank and the LCS were better labelled so they could be easier to trace through the document.



B-5-2

Ref 3
113 of 122

Ref 3
114 of 122

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

October 11, 1988

Thomas C. Jorling
Commissioner

Mr. Thomas P. Fox
GRB Environmental Services, Inc.
P.O. Box 629
East Northport, New York 11731

Dear Mr. Fox:

We have reviewed the Significant Habitat Program and the Natural Heritage Program files with respect to your request of 9/20/88 regarding a Phase II Hazardous Waste Investigation in the Westhampton Beach area.

We have identified two areas of concern. Enclosed is a list of rare species and communities known from the vicinity of this project and an explanation of the Natural Heritage Program ranks. Further inquiries regarding rare plants and natural communities should be directed to: Mr. Robert Zaremba, NY Natural Heritage Wildlife Resources Center, Delmar, New York 12054, (518) 439-7486. Further information on endangered, threatened, or species of special concern should be directed to me at (516) 751-7900 ext. 248.

Our files are continually growing as new habitats and occurrences of rare species and communities are discovered. In most cases, site-specific or comprehensive surveys for plant and animal occurrences have not been conducted. For these reasons, we can only provide data which have been assembled from our files. We cannot provide a definitive statement on the presence or absence of species, habitats or natural communities. This information should <u>not</u> be substituted for on-site surveys that may be required for environmental assessment.

This response applies only to known occurrences of rare animals, plants and natural communities and/or significant wildlife habitats. You should contact our regional offices(s), Division of Regulatory Affairs, at the address(es) on the enclosed list for information regarding any regulated areas or permits that may be required (e.g., regulated wetlands) under state law.

Ref 3
115 of 122

If this project is still active one year from now, we recommend that you contact us again so that we may update this response.

If we can be of further assistance, please do not hesitate to contact us.

Sincerely,

Michael S. Scheibel

Michael S. Scheibel
Senior Wildlife Biologist

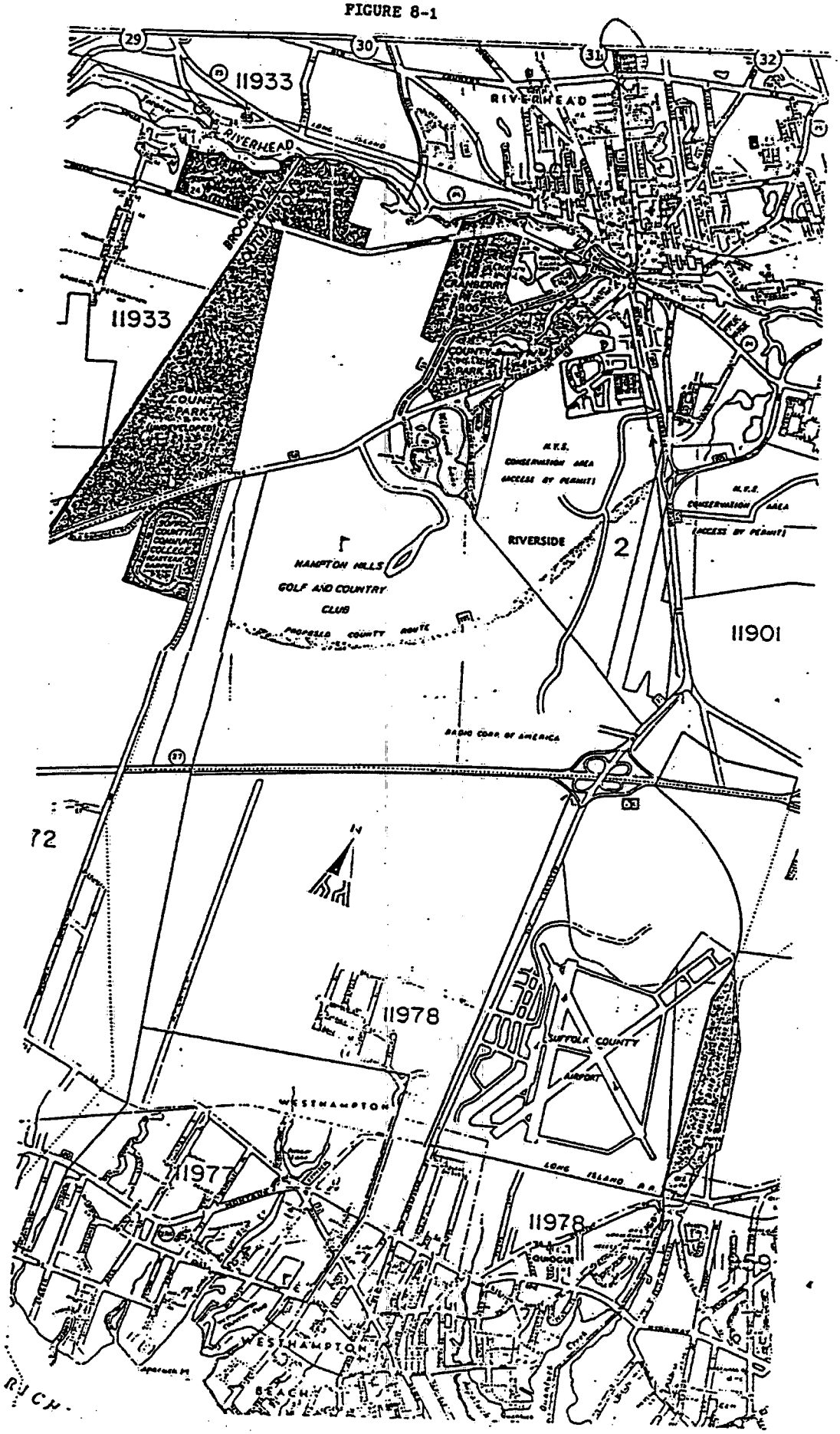
MSS/sjmr
enc.

Rare plants and communities found within a 1½ mile radius of the Twin Forks property, Westhampton Beach, NY.

1. Lespedeza (Lespedeza stuevi); NHP Rank S2.S3
2. Pitchpine - heath barrens: NHP Rank S2.S3

Ref 3
117 of 122

FIGURE 8-1



C-52

Ref 3
118 of 122

UPDATED SITE REGISTRY

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

CENTRAL SUFFOLK PAVING SITE
SITE NUMBER 152092

Ref 3
119 of 122

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF SOLID AND HAZARDOUS WASTE
INACTIVE HAZARDOUS WASTE DISPOSAL SITE REPORT

CLASSIFICATION CODE: 5 **REGION:** 1 **SITE CODE:** 152092

NAME OF SITE : CENTRAL SUFFOLK PAVING
STREET ADDRESS: 100 ROGERS AVENUE
TOWN/CITY: WESTHAMPTON BEACH **COUNTY** SUFFOLK **ZIP CODE** 11978

SITE TYPE: Open Dump __ Structure __ Lagoon __ Landfill X Treatment Pond __
ESTIMATED SIZE: 40 Feet Wide by 100 feet long by 20 feet deep pit

SITE OWNER/OPERATOR INFORMATION:
CURRENT OWNER NAME.....: Twin Fork Asphalt, Inc.
CURRENT OWNER ADDRESS...: 100 Rogers Avenue, Westhampton Beach, N.Y. 11978
OWNER(s) DURING USE.....: Central Suffolk Paving
OPERATOR DURING USE.....: Central Suffolk Paving
OPERATOR ADDRESS.....: 100 Rogers Avenue, Westhampton Beach, N.Y. 11978
PERIOD ASSOCIATED WITH HAZARDOUS WASTE: From ___ To ___

SITE DESCRIPTION:

The former Central Suffolk Paving Site (NYSDEC site No. 152092) is located in Westhampton Beach, Suffolk County, New York, NYSDEC Region 1. Currently, an asphalt manufacturing plant is in operation at the site. The name of the corporation is Twin Fork Asphalt, Inc. which is operated under the direction of Mr. Gabriel Pennino. There are no records to demonstrate that hazardous waste was produced or disposed of on site.

The site came to the attention of the NYSDEC when an area resident reported that dumping had occured at the site (when the site was owned and operated under different ownership-Central Suffolk Paving) during evening hours. The waste was described as construction and demolition debris which was disposed of in an on-site pit (100 x 40 x 20 ft. deep). When the site changed ownership, the material in the pit was excavated and removed. Clean fill was put in its place.

HAZARDOUS WASTE DISPOSED: Confirmed __ Suspected __
TYPE: No hazardous waste was found to be disposed of on site.

SITE CODE: 152092

ANALYTICAL DATA AVAILABLE:

Air _X_ Surface Water ___ Groundwater _X_ Soil _X_ Sediment ___

CONTRAVENTION OF STANDARDS:

Groundwater: Maximum concentrations of iron were found to be 80.9 ppm and manganese to be 2.22 ppm

Drinking Water ___ Surface Water ___ Air ___

LEGAL ACTION:

TYPE___: State: None Federal: None
STATUS: No legal action is occuring at this time

REMEDIAL ACTION: None necessary

Proposed - None Under design - None In Progress - None Completed - None required
NATURE OF ACTION: No remedial action is required

GEOTECHNICAL INFORMATION:
SOIL TYPE: Sandy Loam
GROUNDWATER DEPTH: 35 Feet

ASSESSMENT OF ENVIRONMENTAL PROBLEMS:

Groundwater and soil quality data, as well as file search, did not demonstrate that any hazardous waste were disposed on site.

ASSESSMENT OF HEALTH PROBLEMS:

Medium	Contaminants Available	Migration Potential	Potentially Exposed Population	Need for Investigation
Air				
Surface Soil				
Groundwater				
Surface Water				

Health Department Site Inspection Date: _____

Ref 3 file 121 of 12

Pete 1

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

SUFFOLK ASPHALT SUPPLY INC. — FAC-ID NO. 9-OREA

NAME OF FACILITY: CENTRAL SUFFOLK PAVING	OWNER/OFFICER: IRISH HALLIWELL		PAGE 1 OF
COMPANY NAME	CONTACT		TEL. 288-5683
PLANT ADDRESS: 100 ROGERS AVE	VILLAGE: WESTHAMPTON	TOWN: SOUTHHAMPTON	ZIP: 11978
MAILING ADDRESS			

DATE 5/13/83	TIME 0900	ORIG. (PERIODIC) RE.	(WASTE) NO WASTE	(H&H)	SEWAGE SYSTEM PUBLIC (PRIVATE)

INDUSTRY: ASPHALT BATCH PLANT

SPDES OR PDES PERMIT? YES (NO) PERMIT NO.	360 PERMIT? YES (NO) PERMIT NO.

SCAVENGER: SHERIDEN		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
OIL & ELECTRIC	#2	
INCIN. NAME: NONE	WASTE BURNED	RATE

DRUM STORAGE (YES) NO	NUMBER STORED INDOORS 3 OUTDOORS 5	TYPE OF MATERIAL STORED (WASTE) (RAW)
STORAGE TANKS (YES) NO	NUMBER OF TANKS ABOVEGROUND (7) UNDERGROUND (4)	TYPE OF MATERIAL STORED WASTE (RAW)
OPEN PROCESS TANKS YES (NO)	NUMBER OF OPEN PROCESS TANKS	ANY ART. XII VIOLATIONS (YES) NO

STORAGE TANKS	(1) 20,000 AC (ASPHALT CEMENT)	ABOVE GROUND
	(2) 6,000 } #2 OIL	BELOW
SEE NOTE	(1) 5,000 } #2 OIL	BELOW
ON BACK	(1) 200 TON ASPHALT STORAGE TANK	ABOVE
	(1) 500 MOTOR OIL	ABOVE
	(1) 500 HYDRAULIC OIL	ABOVE
	(1) 2,000 #2	BELOW
	(9) 75,000 EMPTY TANKS	ABOVE
	(2) 275 #2 HEATING OIL	ABOVE
	(1) 275 SOLVENT LUB FOR TRUCKS	ABOVE

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 [signature]	TITLE [signature]	INSPECTOR Gary Chmurzynski

5/81 TJK

INDUSTRIAL WASTE PROCESS

NO.	PROCESS	CHEMICALS USED AND APPROXIMATE QUANTITY	DISCHARGE	DISCHARGE TO
1	Asphalt Batch Plant	AC oil - #2 oil - aggregate	asphalt	Trucks - Roads
2	(5) Compressors	oil	waste oil	Re-use as lubricant
3	Fuel oil degreasing	(1) 35 gal drum fuel oil	waste fuel oil	H & H
4	oil changes	Lube oil	waste oil	H & H
5	outdoor container storage - several open containers waste oil - spilled on ground			

Note: (1) storage of waste oil & waste diesel fuel for degreasing noted on NW side of maintenance bldg. Large spills from this noted on bare ground. All spills must be cleaned up, and store waste oils in garage. Spill material on ground may be re-used as aggregate or it must be taken to a lined landfill approved by state
— Hold all scavenger receipts —

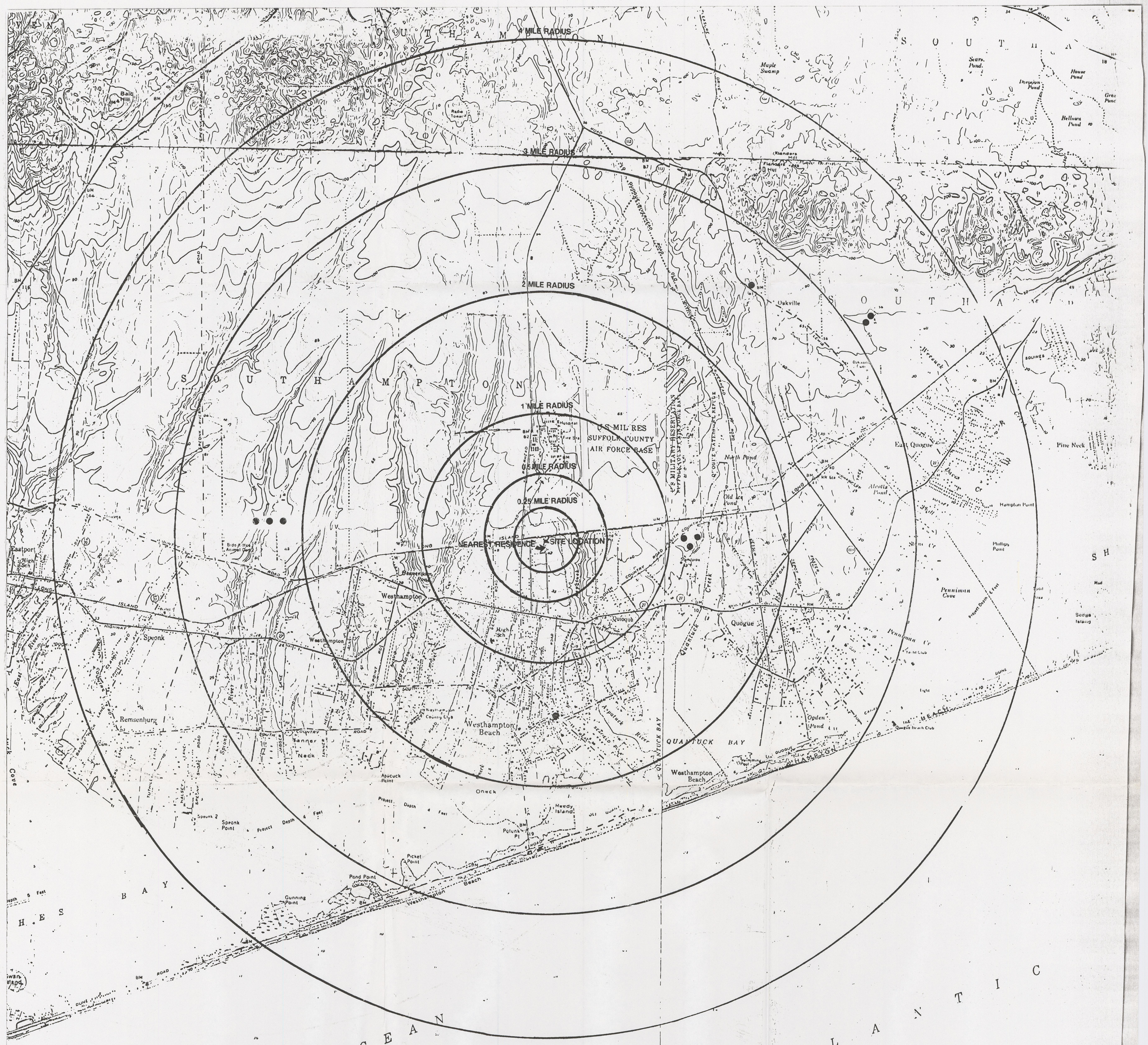
AIR POLLUTION SOURCES

18-155:

NO.	PROCESS	CONTROL TYPE	EP'S	CHEMICALS OR PRODUCTS USED	AMOUNT CONSUM.	HOURS OF OPERA.	TYPE OF EMISSION
1	Asphalt Batch Plant	Baghouse	1	AC - Aggregate	—	—	Dust

Reg. 3
p. 122, 8/122

REFERENCE 4



CENTRAL SUFFOLK PAVING SITE

WESTHAMPTON BEACH, SUFFOLK COUNTY, NEW YORK

4-MILE RADIUS VICINITY MAP

● SUFFOLK COUNTY MUNICIPAL AUTHORITY WELL(S)

SCALE 1:24 000

KILOMETERS 1 .5 0 1 2
METERS 1000 0 1000 2000
MILES 1 .5 0 1
FEET 1000 0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10 000

CONTOUR INTERVAL 5 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

DEPTH CURVES AND SOUNDINGS IN FEET–DATUM IS MEAN LOWER LOW WATER
THE RELATIONSHIP BETWEEN THE TWO DATUMS IS VARIABLE
SHORELINE SHOWN REPRESENTS THE APPROXIMATE LINE OF MEAN HIGH WATER
THE MEAN RANGE OF TIDE IS APPROXIMATELY 0.6 FEET

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY, DENVER, COLORADO 80225, OR RESTON, VIRGINIA 220
AND SYMBOLS IS AVAILABLE ON REQUEST

Ref. 4 p. 1 of 1

REFERENCE 5

Reference 5

Page 1 of 1

DEC 22 1983

SOLID WASTE MGMT. SECTION
DEC REGION 1

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

NOTICE OF COMPLETE APPLICATION

Applicant: Central Suffolk Paving, Inc.

Date: December 21, 1983

Address: 100 Rogers Avenue

Westhampton Beach, NY 11978

Permits applied for and application number(s): Mined Land Reclamation and Part 360 Permit for Use of a Construction and Demolition Debris Disposal Site, 10-83-1425

Project description and location. Town/City of Southampton County of Suffolk

Mining permit (1 year) to mine sand and gravel from a 40' X 100± l.f. affected area to 20' deep of a 9.4 acre parcel and place construction and demolition debris in resultant pit to raise grade to within 2' of original grade. Place and grade sand and gravel to a 2' elevation above existing surrounding grade. Project site is 1,200± l.f. east of Old Riverhead Road, north of Rogers Avenue Extension, Village of Westhampton Beach, New York.

SEQR DETERMINATION: (check appropriate box)

- ☐ SEQR-1 Project is not subject to SEQR because it is an exempt, excluded or a Type II action.
- ☐ SEQR-2 Project is a Type I action; it has been determined that the project will not have a significant effect on the environment. A Negative Declaration has been prepared and is on file.
- ☒ SEQR-3 Project is an unlisted action; it has been determined that the project will not have a significant effect on the environment.
- ☐ SEQR-4 A draft environmental impact statement has been prepared on this project and is on file.
- ☐ SEQR-5 A final environmental impact statement has been prepared on this project and is on file

SEQR LEAD AGENCY New York State DEC

AVAILABILITY FOR PUBLIC COMMENT: Applications may be reviewed at the address listed below. Comments on the project must be submitted to the Contact Person indicated below by no later than January 20, 1983

CONTACT PERSON: Daniel J. Larkin
NYSDEC, Bldg. 40, SUNY--Room 219 (516) 751-7900
Stony Brook, NY 11794

TO THE APPLICANT:

1. THIS IS NOT A PERMIT
2. This is to advise you that your application is complete and a review has commenced. Additional information may be requested from you at a future date, if deemed necessary, in order to reach a decision on your application.
3. Your project is classified MAJOR. Accordingly, a decision will be made within 90 days of the date of this Notice. If a public hearing is necessary, you will be notified within 60 days and the hearing will commence within 90 days of the date of this notice. If a hearing is held, the final decision will be made within 60 days after the hearing is completed.
4. Publication of this Notice in a newspaper is: ☐ required ☒ not required
If required, please consult the accompanying transmittal letter for further instructions.

CC: Chief Executive Officer Mayor, Village of Westhampton Beach
Environmental Notice Bulletin, Room 509, 50 Wolf Road, Albany N.Y. 12233-0001
File

R. Galli
J. Heil
Southampton Town Supervisor

APPLICANT

REFERENCE 6

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Page 1 of 1

PERMIT

Under the Environmental Conservation Law, Article 27, Title 7, Part 360

FACILITY NO. 52 D 22 / 52 H 168 — NO — RF — DM —

EXPIRATION DATE 6/30/85

PERMIT NO. 10-83-1425 / 3164

☐ CONSTRUCTION ☒ INITIAL ISSUE ☐ REISSUANCE
☒ OPERATION ☐ RENEWAL ☐ MODIFICATION

PERMIT ISSUED TO	ADDRESS OF PERMITTEE	TELEPHONE NO.
Central Suffolk Paving	100 Rogers Avenue Westhampton Beach, NY 11978	(516) 288-5683

LOCATION OF PROJECT		Environmental Conservation Regional Office
Town: Southampton	County: Suffolk	Bldg. 40, SUNY Campus—Room 219 Stony Brook, New York 11794

DESCRIPTION OF PROJECT	ON-SITE SUPERVISOR
Use of a Construction and Demolition Debris Disposal Site.	Nick Garone

GENERAL CONDITIONS

1. The permittee shall file in the office of the Environmental Conservation Region specified above, a notice on intention to commence work at least 48 hours in advance of the time of commencement and shall also notify said office promptly in writing of the completion of the work.
2. The permitted work shall be subject to inspection by an authorized representative of the Department of Environmental Conservation who may order the work suspended if the public interest so requires.
3. As a condition of the issuance of this permit, the applicant has accepted expressly, by the execution of the application, the full legal responsibility for all damages, direct or indirect, of whatever nature, and by whomever suffered, arising out of the project described herein and has agreed to indemnify and save harmless the State from suits, actions, damages and costs of every name and description resulting from the said project.
4. All work carried out under this permit shall conform to the approved plans and specifications. Any amendments must be approved by the Department of Environmental Conservation prior to their implementation.
5. The permittee is responsible for obtaining any other permits, approvals, easements and rights-of-way which may be required for this project.
6. By acceptance of this permit, the permittee agrees that the permit is contingent upon strict compliance with Part 360 and the special conditions. Any variances granted by the Department of Environmental Conservation to Part 360 must be in writing and attached hereto.

SPECIAL CONDITIONS

Project site is 1200± l.f. east of Old Riverhead Road, north of Rogers Avenue Extension, Village of Westhampton Beach.

SPECIAL CONDITIONS

1. Bottom of landfill to be minimum of five (5) feet above groundwater.
2. Material for disposal shall be inert, such as concrete, rubble, asphalts, stumps, bricks, stone and brush.
3. Material not allowed for disposal shall be paper, plastics, woven material, refuse, garbage, putresible material, leaves, grass, plaster, gypsum.
4. Fill shall not extend above natural grade.
5. Fill shall be operated during normal daylight working hours.
6. Final cover shall include 2 feet of sand and one foot of topsoil/loam seeded.
7. Site shall be operated so as to not constitute a fire hazard.
8. Incoming loads shall be monitored for non-permitted material. Unpermitted material shall be removed.
9. Site access to be controlled by fencing/gate.

RECEIVED MAY 16 1984 OLID WASTE MANAGEMENT DEC REGION I

ISSUE DATE	ISSUING OFFICER	SIGNATURE
April 11, 1984	Daniel J. Larkin Regional Permit Administrator	X [signature]

cc: P. Barbato
J. Malone, SCDHS

PERMITTEE COPY

REFERENCE 7

Ref. 7, p. 117

DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

HYDROLOGIC FRAMEWORK OF LONG ISLAND, NEW YORK

By D.A. Smolensky, H.T. Buxton, and P.K. Shernoff

Prepared in cooperation with the
NEW YORK CITY DEPARTMENT OF ENVIRONMENTAL PROTECTION,
NASSAU COUNTY DEPARTMENT OF PUBLIC WORKS,
SUFFOLK COUNTY WATER AUTHORITY and DEPARTMENT OF HEALTH SERVICES

HYDROLOGIC INVESTIGATIONS ATLAS
Published by the Geological Survey, 1989

INTRODUCTION

Long Island, N.Y., is underlain by a mass of unconsolidated geologic deposits of clay, silt, sand, and gravel that overlie southward-sloping consolidated bedrock. These deposits are thinnest in northern Queens County (northwestern Long Island), where bedrock crops out, and increase to a maximum thickness of 2,000 ft in southeastern Long Island. This sequence of unconsolidated deposits consists of several distinct geologic units ranging in age from late Cretaceous through Pleistocene, with some recent deposits near shores and streams. These units are differentiated by age, depositional environment, and lithology in table 1.

Investigations of ground-water availability and flow patterns may require information on the internal geometry of the hydrologic system that geologic correlations and interpretation alone cannot provide; hydrologic interpretations in which deposits are differentiated on the basis of water-transmitting properties are generally needed also. This set of maps and vertical sections depicts the hydrogeologic framework of the unconsolidated deposits that form Long Island's ground-water system. These deposits can be classified into eight major hydrogeologic units (table 1). The hydrogeologic interpretations presented herein are not everywhere consistent with strict geologic interpretation owing to facies changes and local variations in the water-transmitting properties within geologic units.

These maps depict the upper-surface altitude of seven of the eight hydrogeologic units, which, n ascending order, are: consolidated bedrock, Lloyd aquifer, Raritan confining unit, Magothy aquifer, Monmouth greensand, Jameco aquifer, and Gardiners Clay. The upper glacial aquifer—the uppermost unit—is at land surface over most of Long Island and is, therefore, not included. The ine north-south hydrogeologic sections shown below depict the entire sequence of inconsolidated deposits and, together with the maps, provide a detailed three- dimensional nterpretation of Long Island's hydrogeologic framework.

The structure-contour map that shows the upper-surface altitude of the Cretaceous deposits is ncluded to illustrate the erosional unconformity between the Cretaceous and overlying 'leistocene deposits. Pleistocene erosion played a major role in determining the shape and extent f the Lloyd aquifer, the Raritan confining unit, and the Magothy aquifer, and thus partly etermined their hydrogeologic relation with subsequent (post-Cretaceous) deposits.

PREVIOUS HYDROGEOLOGIC INVESTIGATIONS

The first attempt to map the complete sequence of geologic units on an islandwide scale was ıde by Suter and others (1949) despite a paucity of data. The most recent report to interpret hydrogeology of Long Island on an islandwide scale was by McClymonds and Franke (1972) ich gives the estimated thickness of the Lloyd, Magothy, Jameco, and upper glacial aquifers. cent investigations have provided more detailed information in several local areas.

The hydrogeologic framework of Kings and Queens Counties has been evaluted by Buxton and ernoff (U.S. Geological Survey, written comm., 1985), and the northern part of N

EROSIONAL AND DEPOSITIONAL HISTORY

The unconsolidated deposits that comprise the hydrogeologic framework of Long Island reflect the island's erosional and depositional history.

Present-day depositional environments show the close relation between environment of deposition and type and rate of sediments deposited. These relations can be applied to the present sequence of sediments and their structure and characteristics to identify and correlate recurring intervals of deposition, nondeposition, and (or) erosion in the paleo-environments.

This study used a theoretical sedimentation model to help define the structure and configuration of the individual hydrogeologic units. The model was used to help conceptualize the type, location, and thickness of sediments on the basis of a sequence of changing physical environments through geologic time.

The following paragraphs briefly summarize the paleo-environments in Long Island's geologic past and their correlation with the present hydrogeologic units on Long Island.

Consolidated bedrock on Long Island (sheet 2) is of Precambrian and/or Paleozoic age, and its surface configuration is defined as a peneplain (Suter and others, 1949). Because Paleozoic and lower Mesozoic deposits are absent above bedrock, the period when erosion on the bedrock surface occurred cannot be dated.

The overlying Cretaceous age sediments can be characterized by three periods of deposition, each separated by an interval of nondeposition and (or) erosion. The lowermost Cretaceous sediments on Long Island, which form the Raritan Formation, were probably deposited in an environment dominated by streams and coalescing deltas (Buxton and others, 1981). These deposits exhibit a distinct fining upward that may be a result of changing stream gradients and (or) a prograding shoreline. The formation has been divided into two members—the Lloyd Sand Member (Lloyd aquifer) and a conformable overlying unnamed clay member (Raritan confining unit). These members are differentiated primarily by grain size. The intervening conformity is relatively flat lying and dips gradually to the southeast (sheet 2).

The first interval of nondeposition (or erosion) is shown by a distinct unconformity that separates the fine-grained clay member of the Raritan Formation from the coarse basal zone of the Matawan Group and Magothy Formation, undifferentiated (Magothy aquifer). This unconformity is shown on the surface configuration of the Raritan clay member (sheet 2) and indicates little erosion.

After the interval of nondeposition, the Magothy Formation was deposited in an environment again dominated by streams and coalescing deltas (Doriski and Wilde-Katz, 1983). Its coarse basal zone indicates an environment of high energy that decreased rapidly, causing an upward gradation to the fine sands and clays that form the bulk of this unit.

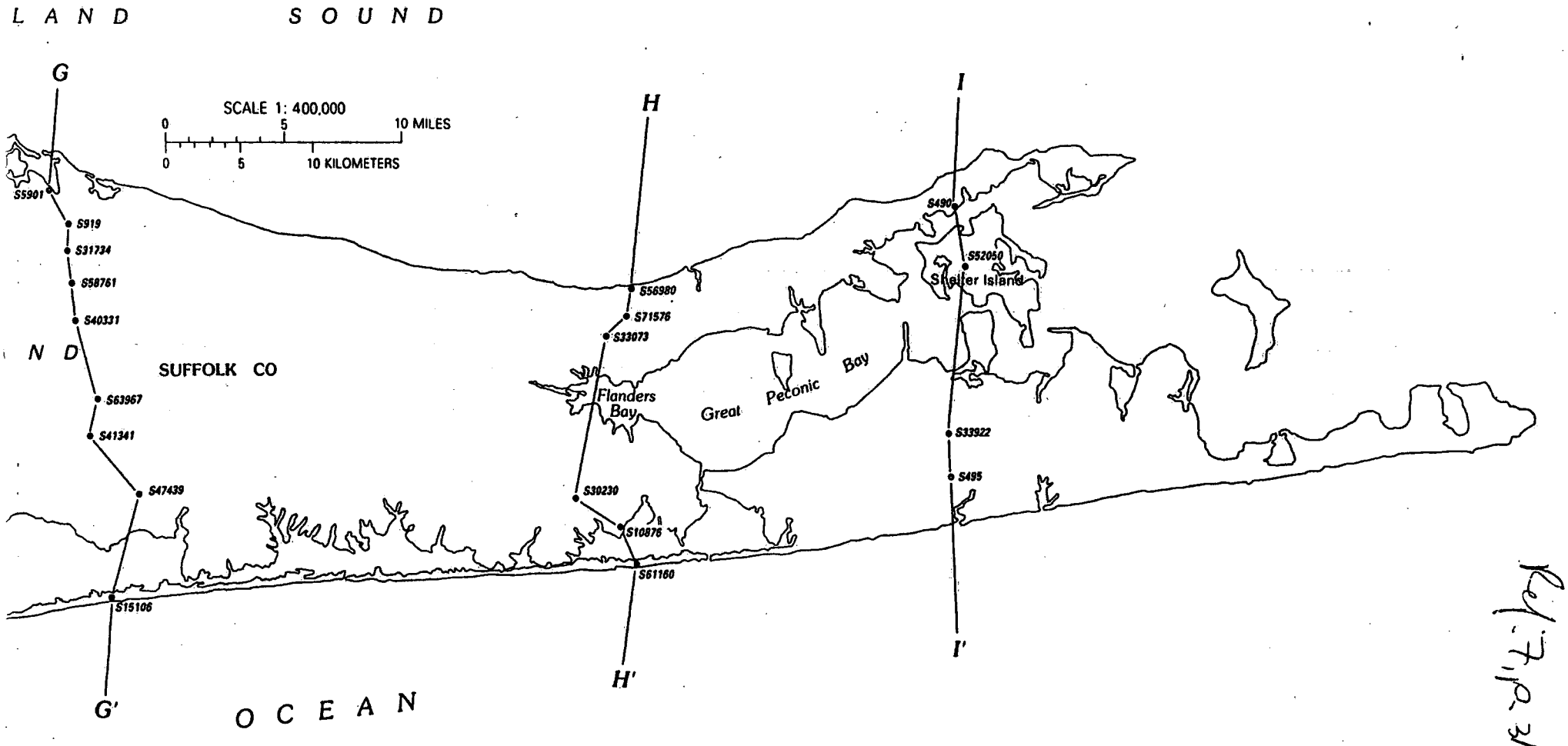
The Monmouth Group (Monmouth greensand) unconformably overlies the Matawan Group and Magothy Formation, undifferentiated. The unconformity between these units indicates a second interval of nondeposition or erosion during the Cretaceous on Long Island. The surface of this deposit is gently rolling with no severe erosion (sheet 3). The clay and silty sand material that forms the Monmouth Group (sheet 3) was deposited by a transgressing sea. The abundance of glauconite indicates a quiet marine environment.

Although Tertiary deposits are reported offshore south of Long Island, they are not present onshore. Whether Tertiary deposition

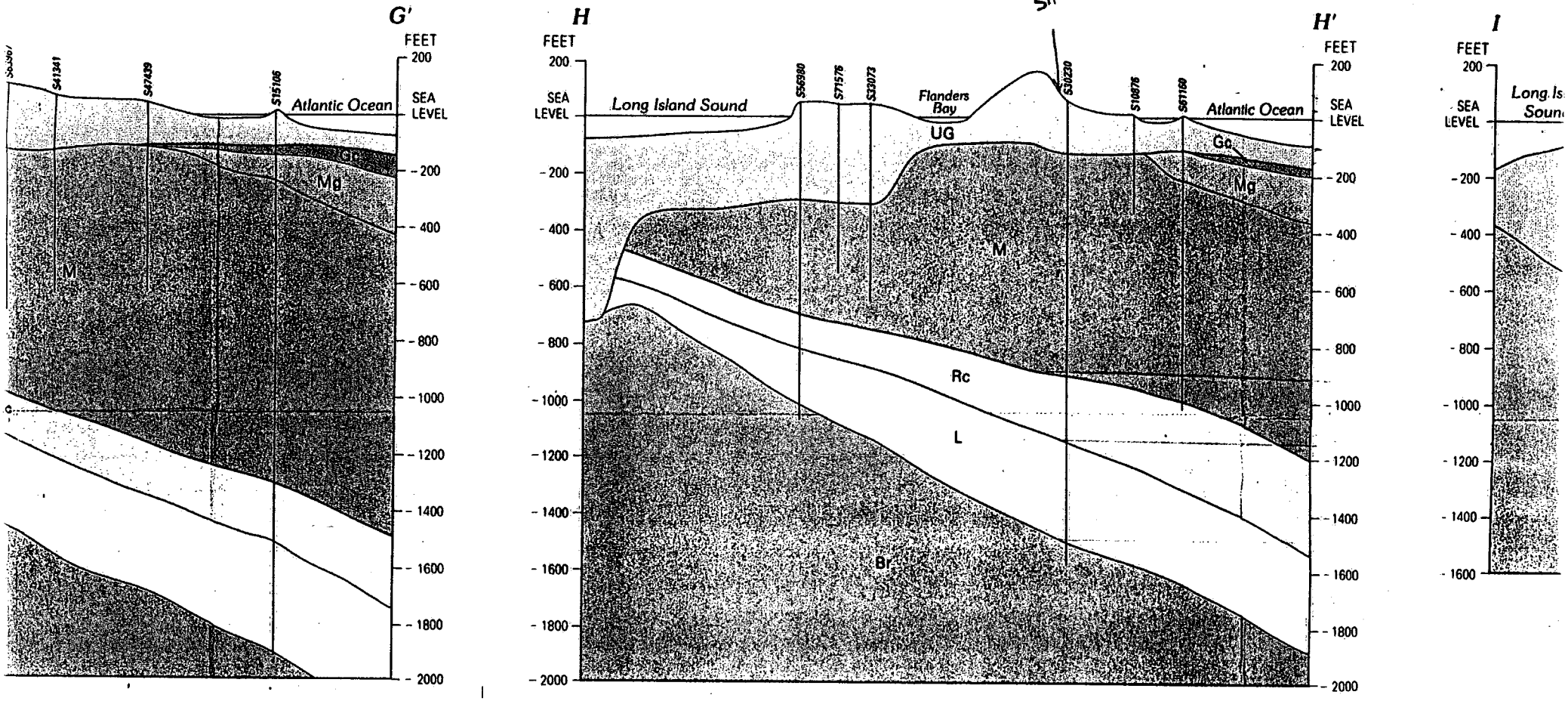
rat[redacted]d vi[redacted] Suff[redacted]ount[redacted]w Y[redacted].S. [redacted]
156–C, 127 p.
and shallow structure of the Long Island Atlantic inner
y Corps of Engineers, Coastal Engineering Research
:hnical paper 76–2, 123 p.
nd geological character of Long Island Sound: U.S.
:oastal Engineering Research Center, Fort Belvoir, Va.,

logic framework of the New Jersey coastal plain; U.S.
Report 84–730, 61 p.

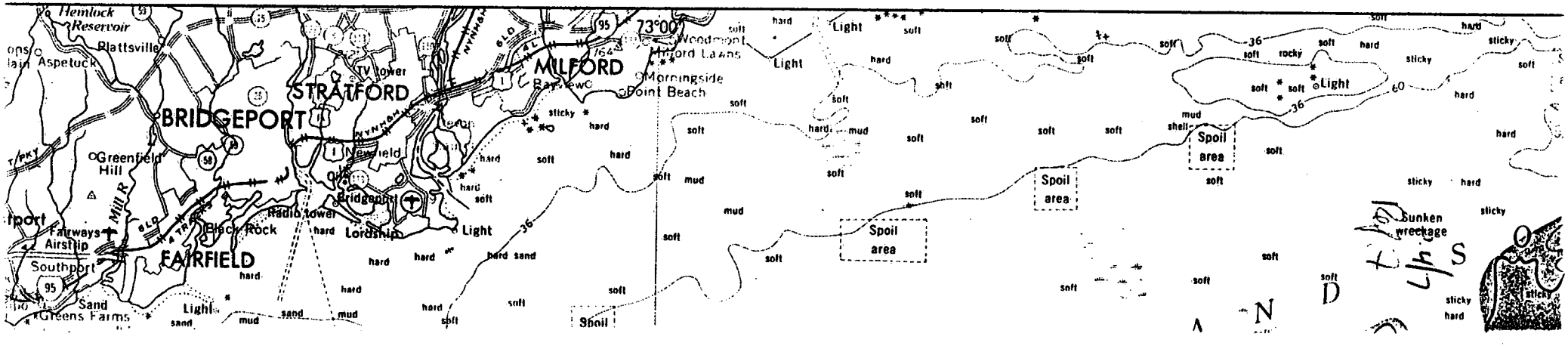
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted] Color[redacted]yellow[redacted] clay is red locally.
Paleozoic and Precambrian		Bedrock	Bedrock		Crystalline metamorphic an rocks; muscovite-biotite s and granite. A soft, claye weathered bedrock locally 70 ft thick.



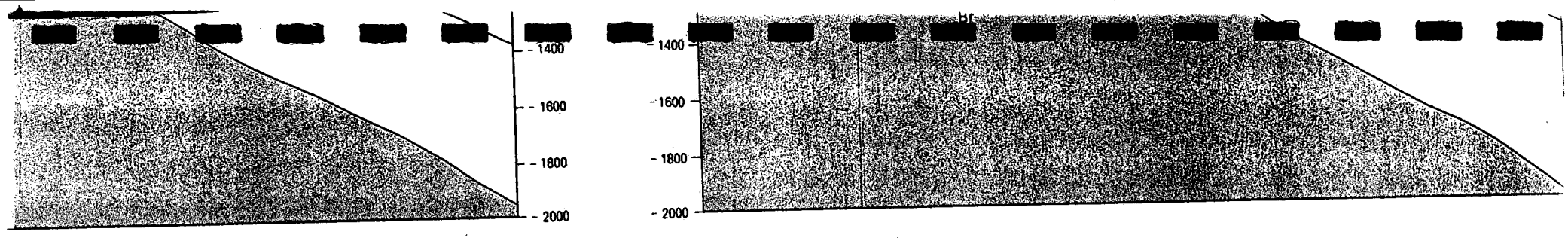
00
200

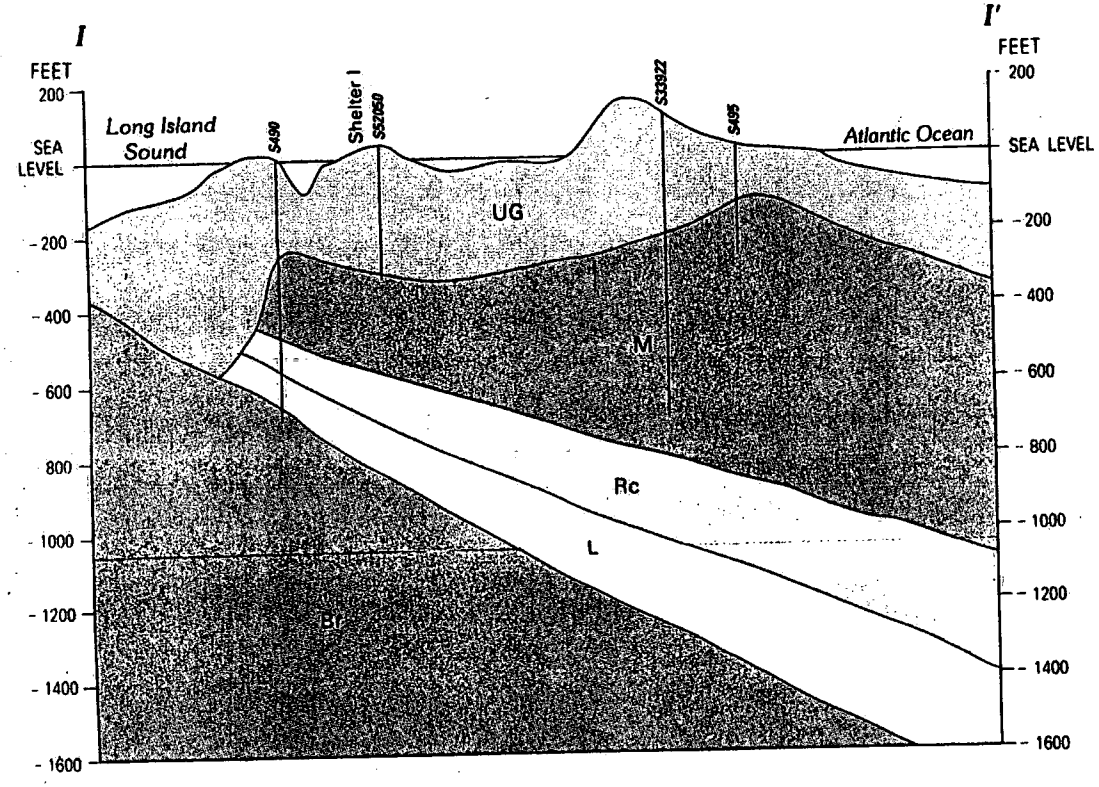


G'
H
H'
I
FEET
SEA LEVEL
Atlantic Ocean
Long Island Sound
Flanders Bay
Atlantic Ocean
Long Is Soun
site
S41341
S47439
S15106
S56980
S71576
S33073
S30230
S10876
S61160
Gc
Mg
M
UG
Rc
L
Br
200
400
600
800
1000
1200
1400
1600
1800
2000



Hemlock Reservoir
Plattsville
Aspetuck
BRIDGEPORT
STRATFORD
MILFORD
Woodmont
Milford Lawns
Morningside
Point Beach
Bayview
Greenfield Hill
Newfield
Bridgeport
Radio tower
Black Rock
Lordship
Fairways Airstrip
Southport
FAIRFIELD
Sand
Greens Farms
Mill R
73°00'
Light
Spoil area
Sunken wreckage
soft
hard
mud
sand
sticky
rocky





EXPLANATION

HYDROGEOLOGIC UNIT

- UG — Upper glacial aquifer
- Gc — Gardiners Clay
- Jameco aquifer
- Mg — Monmouth greensand
- M — Magothy aquifer
- Rc — Raritan confining unit
- L — Lloyd aquifer
- Br — Bedrock

S34 — WELL AND NUMBER line indicates depth or well. Prefix letter or S) indicates King Nassau or Suffolk C

Hydrogeolo

0 5 10 MILES

0 5 10 KILOMETERS

VERTICAL SCALE IS GREATLY EXAGGERATED

NATIONAL GEODETIC VERTICAL DATUM OF 1929

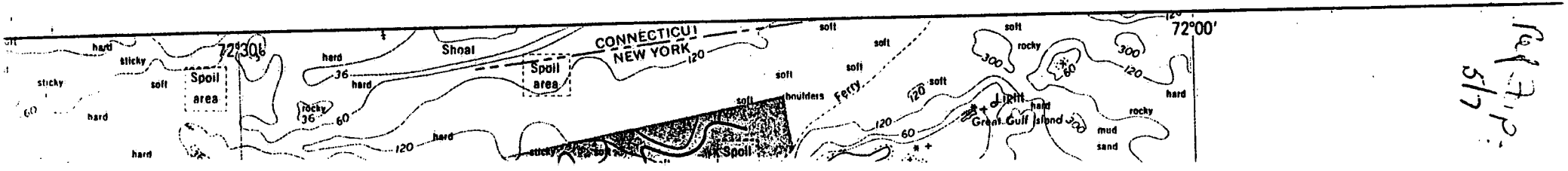


Table 1.—Hydrogeologic units of Long Island and their water bearing properties [illegible] feet [illegible]; ft, f[illegible]

System	Series	Geologic unit	Hydrogeologic unit	Approximate maximum thickness (ft)	Character of deposits	Water bearing properties
Quaternary	Holocene	Recent deposits: Salt marsh deposits, stream alluvium, shoreline deposits and fill	Recent deposits	50	Sand, gravel, clay, silt, organic mud, peat, loam, and shells. Colors are gray, brown, green, black, and yellow.	Beach deposits are highly permeable; marsh deposits poorly permeable. Locally hydraulically connected to underlying aquifers.
	Pleistocene	Upper Pleistocene deposits	Upper glacial aquifer	700	Till composed of clay, sand, gravel, and boulders, forms Harbor Hill and Ronkonkoma terminal moraines. Outwash deposits consist of quartzose sand, fine to very coarse, and gravel, pebble to boulder sized. Also contains lacustrine, marine, and reworked deposits. Local units are Port Washington aquifer and confining unit, "20-foot clay," and clay at Smithtown.	Till is poorly permeable. Outwash deposits are moderately to highly permeable. Glaciolacustrine and marine clay deposits are mostly poorly permeable but locally have thin, moderately permeable layers of sand and gravel. Average horizontal hydraulic conductivity is approximately 270 ft/d; conductivity of morainal material is approximately 50 percent of outwash deposits; anisotropy is approximately 10:1.
		unconformity				
		Gardiners Clay	Gardiners Clay	150	Clay, silt, and few layers of sand. Colors are grayish green and brown. Contains marine shells and glauconite.	Poorly permeable; constitutes a confining layer for underlying aquifer. Some sand lenses may be permeable. Average vertical hydraulic conductivity is approximately 0.001 ft/d.
		unconformity				
		Jameco Gravel	Jameco aquifer	200	Sand, fine to very coarse, and gravel to large-pebble size; few layers of clay and silt. Gravel is composed of crystalline and sedimentary rocks. Color is mostly brown.	Moderately to highly permeable. Confined by overlying Gardiners clay. Average horizontal hydraulic conductivity is 200 to 300 ft/d; anisotropoy is approximately 10:1.
Cretaceous	Upper Cretaceous	Monmouth Group	Monmouth greensand	200	Interbedded marine deposits of clay, silt, and sand, dark-greenish gray, greenish-black, greenish, dark-gray, and black, containing much glauconite.	Poorly permeable: primarily a confining unit for underlying Magothy aquifer. Average vertical hydraulic conductivity is approximately 0.001 ft/d.
		unconformity				
		Matawan Group – Magothy Formation, undifferentiated	Magothy aquifer	1,100	Sand, fine to medium clayey in part; interbedded with lenses and layers of coarse sand and sandy and solid clay. Gravel is common in basal zone. Sand and gravel are quartzose. Lignite, pyrite, and iron oxide concretions are common. Colors are gray, white, red, brown, and yellow.	Most layers are poorly to moderately permeable; some are highly permeable locally. Water is unconfined in uppermost parts, elsewhere is confined. Constitutes principal aquifer for public supply. Average horizontal hydraulic conductivity is 50 ft/d; anistrophy is approximately 100:1.
		unconformity				
		Raritan Formation: Unnamed clay member	Raritan confining unit	200	Clay, solid and silty; few lenses and layers of sand. Lignite and pyrite are common. Colors are gray, red, and white, commonly variegated.	Poorly to very poorly permeable; constitutes confining layer for underlying Lloyd aquifer. Average vertical hydraulic conductivity is approximately 0.001 ft/d.
		Raritan Formation			Sand, fine to coarse, and gravel, commonly with clayey matrix; some	Poorly to moderately permeable. Water is confined by overlying Raritan [illegible]

Ref. 7 p. 6/7

Quaternary	Pleistocene	Upper Pleistocene deposits	Upper glacial aquifer	700	Till composed of [illegible] sand, [illegible] and b[illegible] form[illegible] Hill [illegible] Ronkonkoma terminal moraines. Outwash deposits consist of quartzose sand, fine to very coarse, and gravel, pebble to boulder sized. Also contains lacustrine, marine, and reworked deposits. Local units are Port Washington aquifer and confining unit, "20-foot clay," and clay at Smithtown.	[illegible]ill is p[illegible]ermea[illegible]twash[illegible] deposits are moderately to highly permeable. Glaciolacustrine and marine clay deposits are mostly poorly permeable but locally have thin, moderately permeable layers of sand and gravel. Average horizontal hydraulic conductivity is approximately 270 ft/d; conductivity of morainal material is approximately 50 percent of outwash deposits; anisotropy is approximately 10:1.
		unconformity				
		Gardiners Clay	Gardiners Clay	150	Clay, silt, and few layers of sand. Colors are grayish green and brown. Contains marine shells and glauconite.	Poorly permeable; constitutes a confining layer for underlying aquifer. Some sand lenses may be permeable. Average vertical hydraulic conductivity is approximately 0.001 ft/d.
		unconformity				
		Jameco Gravel	Jameco aquifer	200	Sand, fine to very coarse, and gravel to large-pebble size; few layers of clay and silt. Gravel is composed of crystalline and sedimentary rocks. Color is mostly brown.	Moderately to highly permeable. Confined by overlying Gardiners clay. Average horizontal hydraulic conductivity is 200 to 300 ft/d; anisotropoy is approximately 10:1.
Cretaceous	Upper Cretaceous	Monmouth Group	Monmouth greensand	200	Interbedded marine deposits of clay, silt, and sand, dark-greenish gray, greenish-black, greenish, dark-gray, and black, containing much glauconite.	Poorly permeable; primarily a confining unit for underlying Magothy aquifer. Average vertical hydraulic conductivity is approximately 0.001 ft/d.
		unconformity				
		Matawan Group – Magothy Formation, undifferentiated	Magothy aquifer	1,100	Sand, fine to medium clayey in part; interbedded with lenses and layers of coarse sand and sandy and solid clay. Gravel is common in basal zone. Sand and gravel are quartzose. Lignite, pyrite, and iron oxide concretions are common. Colors are gray, white, red, brown, and yellow.	Most layers are poorly to moderately permeable; some are highly permeable locally. Water is unconfined in uppermost parts, elsewhere is confined. Constitutes principal aquifer for public supply. Average horizontal hydraulic conductivity is 50 ft/d; anistrophy is approximately 100:1.
		unconformity				
		Raritan Formation: Unnamed clay member	Raritan confining unit	200	Clay, solid and silty; few lenses and layers of sand. Lignite and pyrite are common. Colors are gray, red, and white, commonly variegated.	Poorly to very poorly permeable; constitutes confining layer for underlying Lloyd aquifer. Average vertical hydraulic conductivity is approximately 0.001 ft/d.
		Raritan Formation: Lloyd Sand Member	Lloyd aquifer	500	Sand, fine to coarse, and gravel, commonly with clayey matrix; some lenses and layers of solid and silty clay; locally contains thin lignite layers. Sand and most of gravel are quartzose. Colors are yellow, gray, and white; clay is red locally.	Poorly to moderately permeable. Water is confined by overlying Raritan clay. Average horizontal hydraulic conductivity is 40 ft/d; anisotropy is approximately 10:1.
Paleozoic and Precambrian		Bedrock	Bedrock		Crystalline metamorphic and igneous rocks; muscovite-biotite schist, gneiss, and granite. A soft, clayey zone of weathered bedrock locally is more than 70 ft thick.	Poorly permeable to virtually impermeable; constitutes lower boundary of ground-water reservoir. Some hard fresh water is contained in joints and fractures but is impractical to develop at most places.

Pg. 7 p. 7/7

REFERENCE 8

Job No.: _____

GRB

Boring: MW-1

Summary of Drilling and Sampling Information

Client: NYSDEC

Project: Central Suffolk Paving

Rig: CME-75

Site: West Hampton Beach

Contractor: Marine Pollution Control Inc.

Driller: Marine Pollution Control In

Drilling Method:

Auger Drilling 0 ft. to 47½ ft. Dia. 6 in.

___ ft. to ___ ft. Dia. ___ in.

___ ft. to ___ ft. Dia. ___ in.

Drilling Fluid Used: ___ Yes X No Type: -

Sampler Hammer: Weight 140 lbs. Casing Hammer: Weight - lbs.

Drop 24 in. Drop - in.

Rock Core Diameter - in. Type core barrel/bit: -

Date/Time Drilling Started: 10/10/88 9:00 AM Completed: 11:30 AM

Down Time: - hrs. Cause(s) -

Log Summary: Soil: Fine, Medium and corse grained gtc sands with some gravel and silts

Rock: -

No. Samples: Split Spoon 10 Other: -

Undisturbed: - -

No. Permeability Tests: Constant Head - Pressure -

Falling Head - Other: -

No. and Type of Other Tests: -

Piezometer Installation:

Pipe: Type: PVC Dia. 2 in. Depth: From 2½ ft. to 35 ft.

Screen: Type: PVC - 20 slot Dia. 2 in. Depth: From 35 ft. to 45 ft.

Filter Material: Type: Moray sand Depth: From 33 ft. to 46 ft.

Seal Material: Type: Bentonite seal Depth: From 30 ft. to 32 ft.

cement/ Bentonite Grout Depth: From 0 ft. to 30 ft.

Depth: From ___ ft. to ___ ft.

Remarks: No problems for the most part

Inspector Thomas Fox

BORING LOG

Ref. 8 Sheet 2 of 23

PROJECT: Central Suffolk Phase 11 PROJECT NO. BORING NO. MW-1

Location: Westhampton Beach Coord: Ground Elev:

Contractor: MPC Date Started: 10/10/88 G.W.L. 35 ft Hour: Date:

Inspector: Tom Fox Date Completed: 10/10/88 G.W.L. Hour: Date:

Notes:

Depth Ft	Elev Ft.	Sample Type & No	Test Type & No	Blows Casing Per Ft	Blows Sampler 6"	Blows Sampler 6"	Recovery in.	RQD %	Drilling Rate Min/Ft.	Graphic Symbol	Description and Remarks
0		ss-1			4	3	24		9:00		Fine to medium grained sand brown slightly loose moist, (well sorted)
					3	5					
5		ss-2			1	1	18		9:10		1 ft. fine sand and silt, brown, tight, moist. 1 ft. med, grained quartz sand, white loose moist, well sorted
					1	6					
10		ss-3			2	3	18		9:20		med, grained quartz sand white loose moist, well sort
					5	6					
15		ss-4			3	5	20		9:30		med. grained quartz sand white (well sorted) loose moist
					7	10					
20		ss-5			2	3	18		9:45		med. grained quartz sand, white loose, moist, sorted little gravel
					3	5					
25		ss-6			2	4	16		9:55		med. grained quartz sand white, loose, moist, sorted
					8	11					
30		ss-7			3	7	16		10:20		med. grained quartz sand white (sorted) loose, moist
					7	7					
35		ss-8			3	7	18		10:40		med. grained quartz sand, light brown- white sorted, wet slightly loose
40											

I.D. Casing	Wgt. Hammer on Casing	Material Notations
I.D. Spoon	Wgt. Hammer on Spoon	
Type Core Drill	Drop Hammer on Casing	
Core Dia.	Drop Hammer on Spoon	
Sample & Test Notations		GRB Environmental Services, Inc. Consulting Environmental Engineers and Scientists

BORING LOG

Ref 8 Sheet 3 of 23

PROJECT:	PROJECT NO.		BORING NO. MW-1
Location:	Coord:		Ground Elev:
Contractor:	Date Started:	G.W.L. Hour:	Date:
Inspector:	Date Completed:	G.W.L. Hour:	Date:
Notes:			

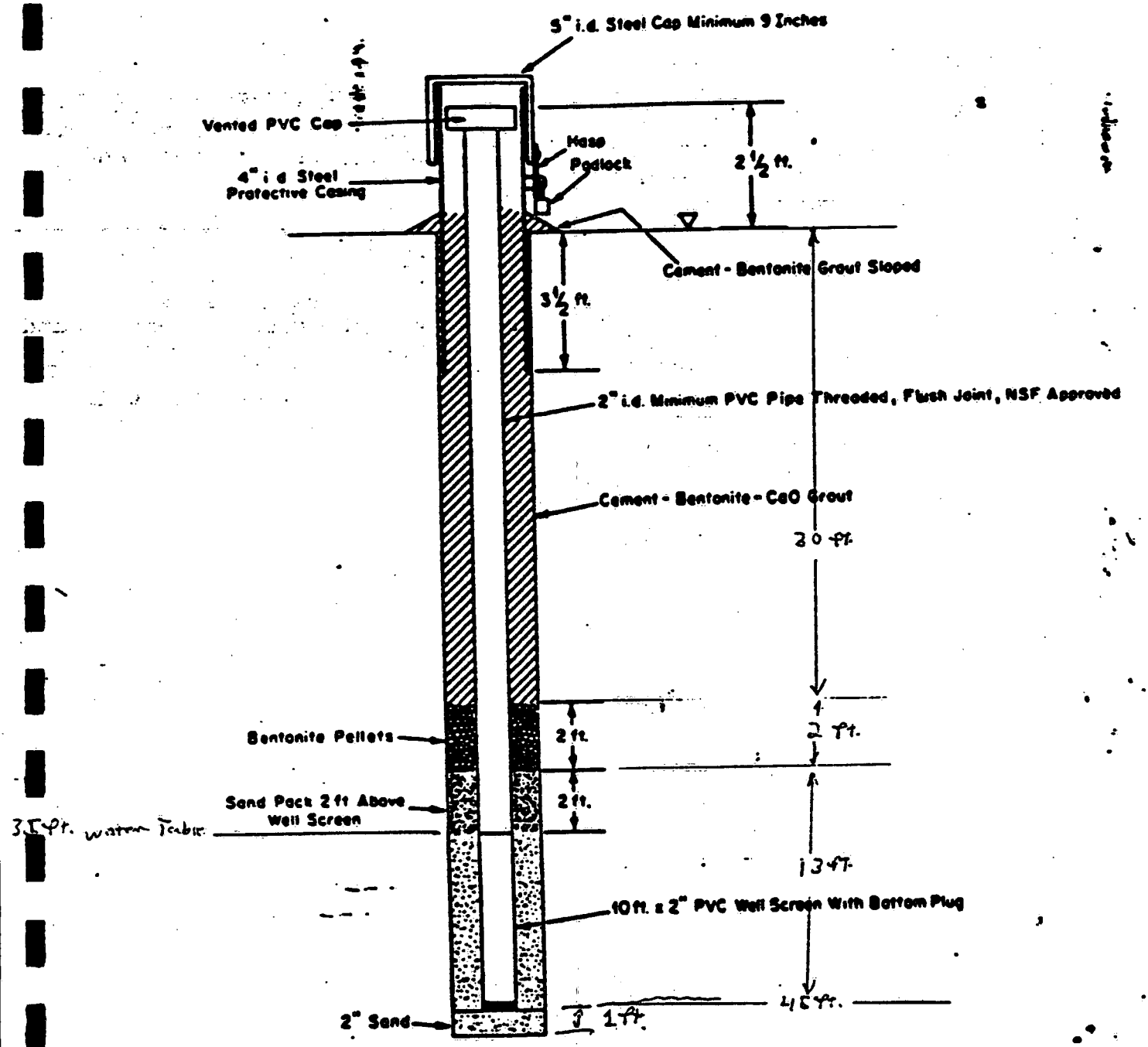
Depth Ft	Elev Ft	Sample Type & No	Test Type & No	Blows Casing Per Ft	Blows Sampler 6"	Blows Sampler 6"	Recovery % in.	RQD %	Drilling Rate Min./Ft	Graphic Symbol	Description and Remarks
40		ss-9			4	5	22		11:00		1 ft. fine grained sand and silt brown compacted, wet, some corse grained sand
					6	7					
45		ss-10			4	4	24		11:20		20" fine grained sand and silt, brown, compacted, wet some corse graines 4" med. grained quartz sand unsorted, silt, loose, wet
					6	9					
0											End Boring 11:20 AM
5											
0											
5											
0											
5											
0											

I.D. Casing	Wgt. Hammer on Casing	Material Notations
I.D. Spoon	Wgt. Hammer on Spoon	
Type Core Drill	Drop Hammer on Casing	
Core Dia.	Drop Hammer on Spoon	
Sample & Test Notations		

GRB Environmental Services, Inc.
Consulting Environmental Engineers and Scientists

Mw-1

Ref-8 p.4/23



OVERBURDEN WELL

Figure 1

Ref 8 p-5/23

GRB

Job No.: _____

Boring: MW-2

Summary of Drilling and Sampling Information

Client: NYSDEC

Project: Central Suffolk Phase III

Rig: CME-75

Site: West Hampton Beach

Contractor: MPC

Driller: MPC

Drilling Method:

Auger Drilling 0 ft. to 46½ ft. Dia. 6 in.

____ ft. to ____ ft. Dia. ____ in.

____ ft. to ____ ft. Dia. ____ in.

Drilling Fluid Used: ___ Yes X No Type: -

Sampler Hammer: Weight 140 lbs. Casing Hammer: Weight - lbs.

Drop 24 in. Drop - in.

Rock Core Diameter - in. Type core barrel/bit: -

Date/Time Drilling Started: 10/11/88 9:20 AM Completed: 10/11/88 11:20 AM

Down Time: - hrs. Cause(s) -

Log Summary: Soil: Fine medium to corse grained sands some gravels

Rock: -

No. Samples: Split Spoon 10 Other: -

Undisturbed: -

No. Permeability Tests: Constant Head - Pressure -

Falling Head - Other: -

No. and Type of Other Tests: -

Piezometer Installation:

Pipe: Type: PVC Dia. 2 in. Depth: From 0 ft. to 35 ft.

Screen: Type: PVC Slot 20 Dia. 2 in. Depth: From 35 ft. to 45 ft.

Filter Material: Type: Moray sands Depth: From 33 ft. to 46 ft.

Seal Material: Type: Bentonite Seal Depth: From 31 ft. to 33 ft.

cement/bentonite Depth: From 0 ft. to 31 ft.

grout Depth: From ____ ft. to ____ ft.

Remarks: No problems encountered

Inspector Thomas Fox

3-2-6

BORING LOG

Ref 8p Sheet 6 of 23

PROJECT: Central Suffolk Phase 11 PROJECT NO. BORING NO. MW-2

Location: Westhampton Beach Coord: Ground Elev:

Contractor: MPC Date Started: 10/11/88 G.W.L. 35 ft. Hour: 9:20 Date:

Inspector: Tom Fox Date Completed: 10/11/88 G.W.L. Hour: 11:35 Date:

Notes:

Depth Ft	Elev Ft	Sample Type & No	Test Type & No	Blows Casing Per Ft	Blows Sampler 6	Blows Sampler 6"	Recovery in.	RQD %	Drilling Rate Min/Ft	Graphic Symbol	Description and Remarks
0		ss-1			4 6	5 7	24		9:20		1 ft; silty sand, brown, compacted, dry(under blackto some gravel 1 ft. med grained sand,brown unsorted,loose,moist some gravel
5		ss-2			1 1	1 4	18		9:30		1'med. grained sand, brown unsorted loose,moist,some gravel 1' med. grained quartz sand, white,sorted,loose,moist
10		ss-3			2 5	2 9	18		9:45		med.grained quartz sand,white sorted,loose,moist
15		ss-4			2 4	2 9	16		10:00		med.grained quartz sand white sorted,loose,moist
20		ss-5			2 6	4 8	18		10:15		med. grained quartz sand, white sorted,loose,moist
25		ss-6			2 6	6 7	18		10:35		med.grained quartz sand, white sorted,loose,moist
30		ss-7			6 6	6 6	18		10:45		med. grained quartz sand, white, sorted,loose,moist
35		ss-8			1 4	3 6	6		11:05		med. grained quartz sand white sorted,loose,moist water table at 35 ft.
40											

I.D. Casing	Wgt. Hammer on Casing	Material Notations
I.D. Spoon	Wgt. Hammer on Spoon	
Type Core Drill	Drop Hammer on Casing	
Core Dia.	Drop Hammer on Spoon	
Sample & Test Notations		

GRB Environmental Services, Inc.
Consulting Environmental Engineers and Scientists

BORING LOG

Ref. 8 Sheet 7 of 23

PROJECT: PROJECT NO. BORING NO. MW-2

Location: Coord: Ground Elev:

Contractor: Date Started: G.W.L. Hour: Date:

Inspector: Date Completed: G.W.L. Hour: Date:

Notes:

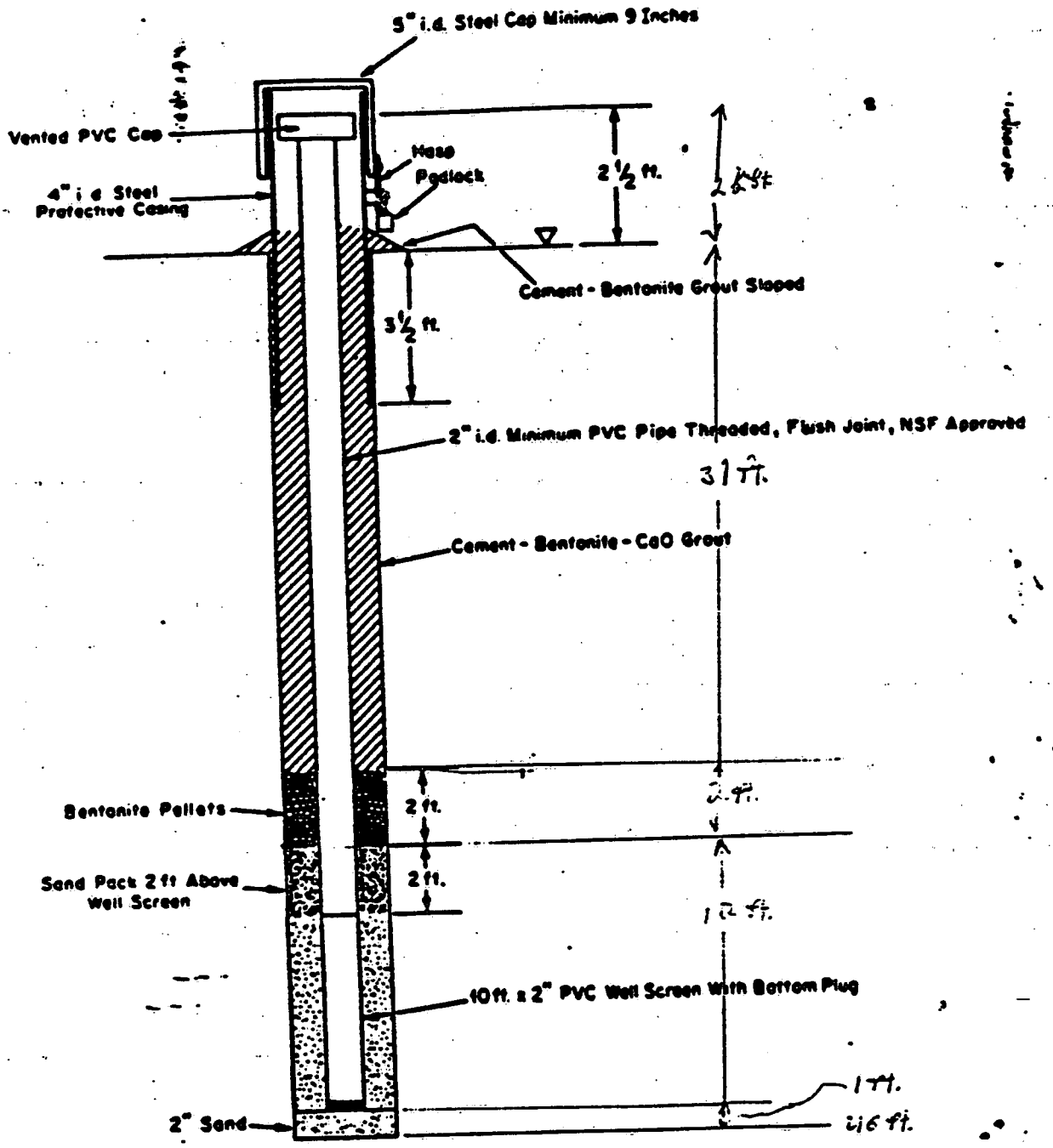
Depth Ft	Elev Ft	Sample Type & No	Test Type & No	Blows Casing Per Ft	Blows Sampler 6	Blows Sampler 6	Recovery in.	RQD %	Drilling Rate Min/Ft	Graphic Symbol	Description and Remarks
40		ss-9			3	3	16		11:18		med. to corse grained quartz sand, white to light brown loose, wet, some gravel slightly sorted
					6	3					
45		ss-10			3	3	10		11:30		med to coarse grained quartz sand, white, loose, wet, with gravel
					3	3					
0											End of split spoon sample at 11:35 AM
5											
0											
5											
0											
5											
0											

I.D. Casing	Wgt. Hammer on Casing	Material Notations
I.D. Spoon	Wgt. Hammer on Spoon	
Type Core Drill	Drop Hammer on Casing	
Core Dia.	Drop Hammer on Spoon	
Sample & Test Notations		

GRB Environmental Services, Inc.
Consulting Environmental Engineers and Scientists

Rep. 8, p. 8/23

MW2



OVERBURDEN WELL

Figure 1

Ref. 8 p. 9/23

GRB

Job No.: _____

Boring: MW-3

Summary of Drilling and Sampling Information

Client: NYSDEC

Project: Cenral Suffolk Phase 11

Rig: CME-75

Site: West Hampton Beach

Contractor: MPC

Driller: MPC

Drilling Method:

Auger Drilling — 0 ft. to 47½ ft. Dia. 6 in.

___ ft. to ___ ft. Dia. ___ in.

___ ft. to ___ ft. Dia. ___ in.

Drilling Fluid Used: ___ Yes X No Type: _____

Sampler Hammer: Weight - lbs. Drop - in.

Casing Hammer: Weight - lbs. Drop - in.

Rock Core Diameter - in. Type core barrel/bit: -

Date/Time Drilling Started: 10/7/88 9:00 AM Completed: 10/7/88 10:00 AM

Down Time: - hrs. Cause(s) _____

Log Summary: Soil: Medium to corse grained gtc sand, very well sorted clean

Rock: none

No. Samples: Split Spoon - Other: -

Undisturbed: - -

No. Permeability Tests: Constant Head - Pressure -

Falling Head - Other: -

No. and Type of Other Tests: -

Piezometer Installation:

Pipe: Type: PVC Dia. 2 in. Depth: From 2½ ft. to 35 ft.

Screen: Type: PVC slot 20 Dia. 2 in. Depth: From 35 ft. to 45 ft.

Filter Material: Type: Moray Sand Depth: From 32 ft. to 46 ft.

Seal Material: Type: Bentonite Seal Depth: From 29½ ft. to 32 ft.

Cement Bent. Grout Depth: From 0 ft. to 29½ ft.

Depth: From ___ ft. to ___ ft.

Remarks: Very little problems drilling, but HNu Photo ionizer was not working

Inspector: Thomas Fox

Ref. 8 p-10/23

GRB

Job No.: _____

Boring: MW-3

Summary of Drilling and Sampling Information

Client: NYSDEC

Project: Central Suffolk Phase 11

Rig: CME-75 Two support trucks

Site: West Hampton Beach

Contractor: MPC

Driller: MPC

Drilling Method:

Auger Drilling — 0 ft. to 70 ft. Dia. 6 in.

0 ft. to 40 ft. Dia. 6 in.

___ ft. to ___ ft. Dia. ___ in.

Drilling Fluid Used: ___ Yes X No Type: _____

Sampler Hammer: Weight 140 lbs. Drop 24 in.

Casing Hammer: Weight - lbs. Drop - in.

Rock Core Diameter - in. Type core barrel/bit: -

Date/Time Drilling Started: 10/6/88 9:00 AM Completed: 10/6/88 4:45 PM

Down Time: - hrs. Cause(s) _____

Log Summary: Soil: Medium to corse grained gtc sand, very well sorted, clean

Rock: none

No. Samples: Split Spoon 15 Other: -

Undisturbed: - -

No. Permeability Tests: Constant Head - Pressure -

Falling Head - Other: -

No. and Type of Other Tests: -

Piezometer Installation:

Pipe: Type: - Dia. - Depth: From ___ ft. to ___ ft.

Screen: Type: - Dia. - Depth: From ___ ft. to ___ ft.

Filter Material: Type: _____ Depth: From ___ ft. to ___ ft.

Seal Material: Type: _____ Depth: From ___ ft. to ___ ft.

Depth: From ___ ft. to ___ ft.

Depth: From ___ ft. to ___ ft.

Remarks: Split spoon every 5 ft.

Drilled to a depth of 70 ft., NYSDEC representatives used boring to test new "Down Hole" EM-39 Logging Device. Drill Rig was then moved to drill to a depth of 40 ft.

Inspector Thomas Fox

BORING LOG

Ref. P, Sheet 11 of 23

PROJECT: Central Suffolk phase 11 PROJECT NO. BORING NO. MW-3

Location: Westhampton Beach Coord: Ground Elev:

Contractor: MPC Date Started: 10/6/88 G.W.L. 35 ft Hour: 10:40 Date:

Inspector: Tom Fox Date Completed: 10/6/88 G.W.L. Hour: 3:50 Date:

Notes: Well was installed on 10/7/88

Depth Ft	Elev Ft.	Sample Type & No	Test Type & No	Blows Casing Per Ft	Blows Sampler 6"	Blows Sampler 6"	Recovery in.	RQD %	Drilling Rate Min./Ft.	Graphic Symbol	Description and Remarks
0		ss-1			2	3	24		10:45		Fine to med. grained sand, brown, loose, moist well sorted
					3	5					
5		ss-2			1	1	17		11:00		Fine to med. grained sand light brown, loose, moist well sorted
					2	3					
10		ss-3			2	3	16		11:10		Med. grained quartz sand, light brown, loose, moist some gravel
					4	4					
15		ss-4			1	2	20		11:30		Med. to coarse grained quartz sand, white, very clean, loose moist
					6	6					
20		ss-5			3	5	18		11:45		med. to coarse grained quartz sand, white very clean loose moist
					6	6					
25		ss-6			2	5	18		12:00		med. to coarse grained quartz sand, white very clean, loose moist, some gravel (pebble size)
					7	9					
30		ss-7			1	4	14		12:15		med. to corse grained quartz sand, white to light brown (clean), loose, moist, some pebble sized gravel
					7	10					
35		ss-8			4	4	8		12:25		Med. to coarse grained quartz sand, light brown, loose, wet water table at approx. 35 ft.
					4	7					
40											

I.D. Casing	Wgt. Hammer on Casing	Material Notations
I.D. Spoon	Wgt. Hammer on Spoon	
Type Core Drill	Drop Hammer on Casing	
Core Dia.	Drop Hammer on Spoon	
Sample & Test Notations		

GRB Environmental Services, Inc.
Consulting Environmental Engineers and Scientists

BORING LOG

Ref. R, Sheet 12 of 23

PROJECT: PROJECT NO. BORING NO. MW-3

Location: Coord: Ground Elev.:

Contractor: Date Started: G.W.L. Hour: Date:

Inspector: Date Completed: G.W.L. Hour: Date:

Notes:

Depth Ft	Elev Ft.	Sample Type & No	Test Type & No	Blows Casing Per Ft	Blows Sampler 6"	Blows Sampler 6"	Recovery in.	RQD %	Drilling Rate Min./Ft	Graphic Symbol	Description and Remarks
40		ss-9			1	2	24		1:30		med.to coarse grained quartz sand,brown,loose,wet calm shell fragments ?
					2	3					
45		ss-10			2	4	20		2:00		med.to coarse grained quartz sand,brown,loose,wet clam shell fragments
					4	5					
50		ss-11			1	2	10		2:25		med.to coarse grained quartz sand,light brown,loose wet,some gravel
					3	4					
55		ss-12			2	3	8		2:47		med.to coarse grained quartz sand and gravel,light brown to tan,wet
					4	3					
60		ss-13			5	5	8		3:06		Coarse grained quartz sand, some gravel,light brown to tan
					6	11					
65		ss-14			1	2	0		3:20		No sample recovered
					5	11					
70		ss-15			2	1	6		3:40		coarse grained quartz sand some gravel, light brown to tan, loose,wet
					12	20					
75											End boring at 3:50
0											

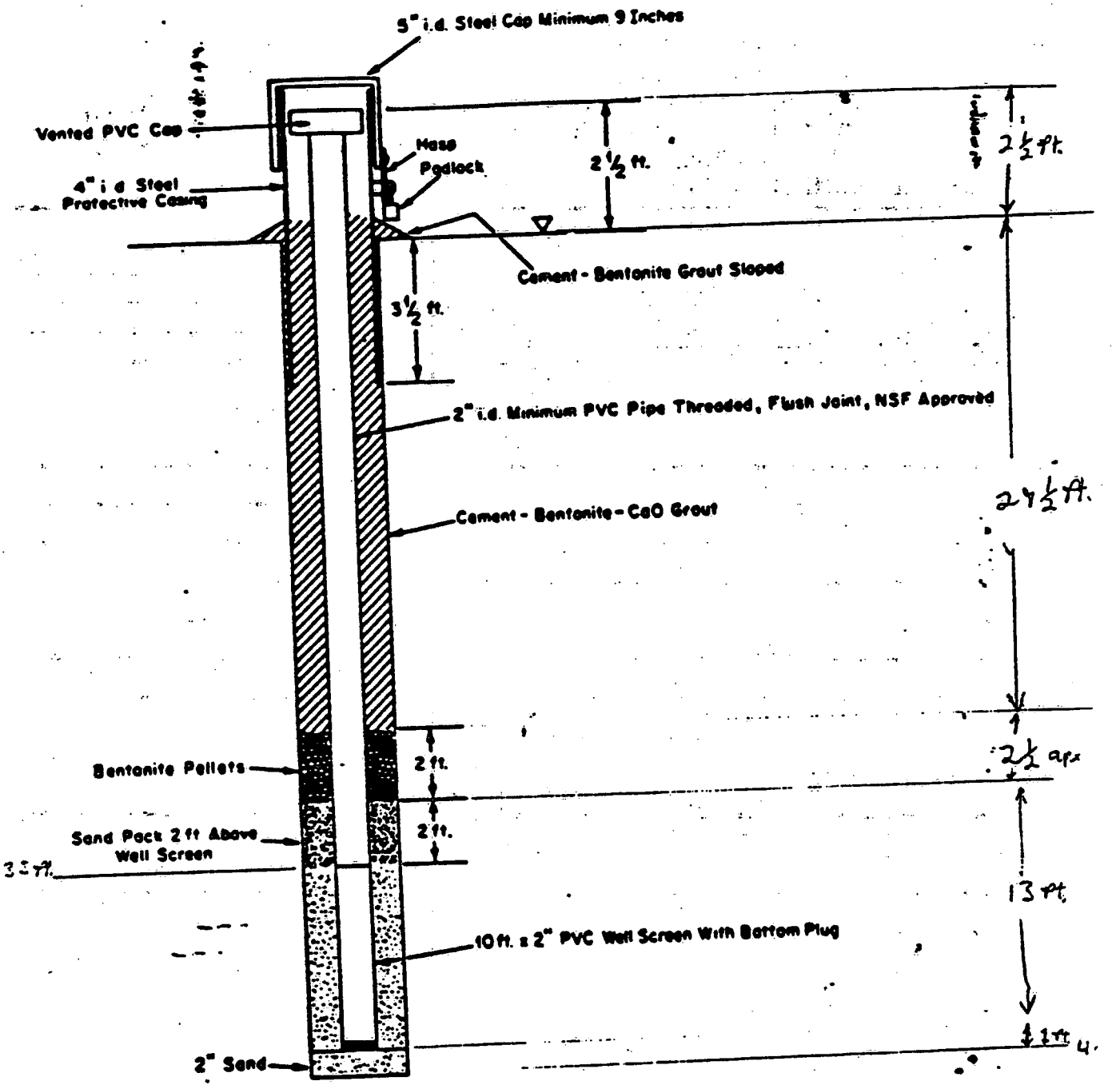
I.D. Casing	Wgt. Hammer on Casing	Material Notations
I.D. Spoon	Wgt. Hammer on Spoon	
Type Core Drill	Drop Hammer on Casing	
Core Dia.	Drop Hammer on Spoon	
Sample & Test Notations		

GRB Environmental Services, Inc.
Consulting Environmental Engineers and Scientists

R-5-16

MW3 - completed 10/7/88
GW3

Ref. 8 p. 13/23



OVERBURDEN WELL

Figure 1

3-2-15

Ref. 8, p 14/23

GRB

Job No.: _____

Boring: MW-4

Summary of Drilling and Sampling Information

Client: NYSDEC

Project: Central Suffolk Phase II

Rig: CME-75

Site: Westhampton Beach

Contractor: MPC

Driller: MPC

Drilling Method:

Hollow Stem Augers — 0 ft. to 46 ft. Dia. 6 in.

___ ft. to ___ ft. Dia. ___ in.

___ ft. to ___ ft. Dia. ___ in.

Drilling Fluid Used: ___ Yes X No Type: -

Sampler Hammer: Weight 140 lbs. Drop 24 in.

Casing Hammer: Weight - lbs. Drop - in.

Rock Core Diameter - in. Type core barrel/bit: -

Date/Time Drilling Started: 10/12/88 9:00 AM Completed: 10/12/88 11:40 AM

Down Time: - hrs. Cause(s) -

Log Summary: Soil: Fine, medium and corse grained sands, little gravel

Rock: -

No. Samples: Split Spoon 10 Other: -

Undisturbed: - -

No. Permeability Tests: Constant Head - Pressure -

Falling Head - Other: -

No. and Type of Other Tests: -

Piezometer Installation:

Pipe: Type: PVC Dia. 2 in. Depth: From 2½ ft. to 35 ft.

Screen: Type: PVC slot 20 Dia. 2 in Depth: From 35 ft. to 45 ft.

Filter Material: Type: Moray Sand Depth: From 33 ft. to 46 ft.

Seal Material: Type: Bentonite Seal Depth: From 31 ft. to 33 ft.

Cement/ Bentonite grout Depth: From 0 ft. to 31 ft.

Depth: From ___ ft. to ___ ft.

Remarks: No problems encountered

Inspector Thomas Fox

BORING LOG

Ref. 8, Sheet 15 of 23

PROJECT: Central Suffolk PhaseII PROJECT NO. BORING NO. MW-4

Location: Westhampton Beach Coord: Ground Elev:

Contractor: MPC Date Started: 10/12/88 G.W.L. 35 ft Hour: 9:15 Date:

Inspector: Tom Fox Date Completed: 10/12/88 G.W.L. Hour: 11:40 Date:

Notes:

Depth Ft	Elev Ft	Sample Type & No	Test Type & No	Blows Casing Per Ft	Blows Sampler 6"	Blows Sampler 6"	Recovery in.	RQD %	Drilling Rate Min/Ft	Graphic Symbol	Description and Remarks
0		ss-1			3	3	20		9:15		fine sand and silt,brown cohesive,moist
					3	4					
5		ss-2			1	2	24		9:35		1 ft. fine sand &silt, brown cohesive,moist 1 ft.med.grained quartz sa white,well sorted,loose,moist little gravel
					2	6					
10		ss-3			2	2	24		9:50		med.grained quartz sand,whi well sorted,loose,moist little gravel
					4	6					
15		ss-4			2	2	24		10:02		med.to slightly coarse gra quartz sand,white,loose moist,sorted,little gravel
					3	8					
20		ss-5			1	2	24		10:15		med.to coarse grained quartz sand white, loose, moist (sorted
					5	12					
25		ss-6			1	4	24		10:23		med.to corse grained quartz sand,white,loose, moist little gravel,sorted
					4	8					
30		ss-7			3	5	20		10:40		med.to coarse grained quart sand,white,loose,moist little gravel,sorted
					7	10					
35		ss-8			3	3	20		10:55		med.to coarse grained quartz sand,white,loose,wet,little gravel
					6	9					
40											

I.D. Casing	Wgt. Hammer on Casing	Material Notations
I.D. Spoon	Wgt. Hammer on Spoon	
Type Core Drill	Drop Hammer on Casing	
Core Dia.	Drop Hammer on Spoon	
Sample & Test Notations		

GRB Environmental Services, Inc.
Consulting Environmental Engineers and Scientists

B-2-18

BORING LOG

Ref. 8, Sheet 16 of 23

PROJECT:		PROJECT NO.		BORING NO. MW-4	
Location:	Coord:			Ground Elev:	
Contractor:	Date Started:		G.W.L.	Hour:	Date:
Inspector:	Date Completed:		G.W.L.	Hour:	Date:
Notes:					

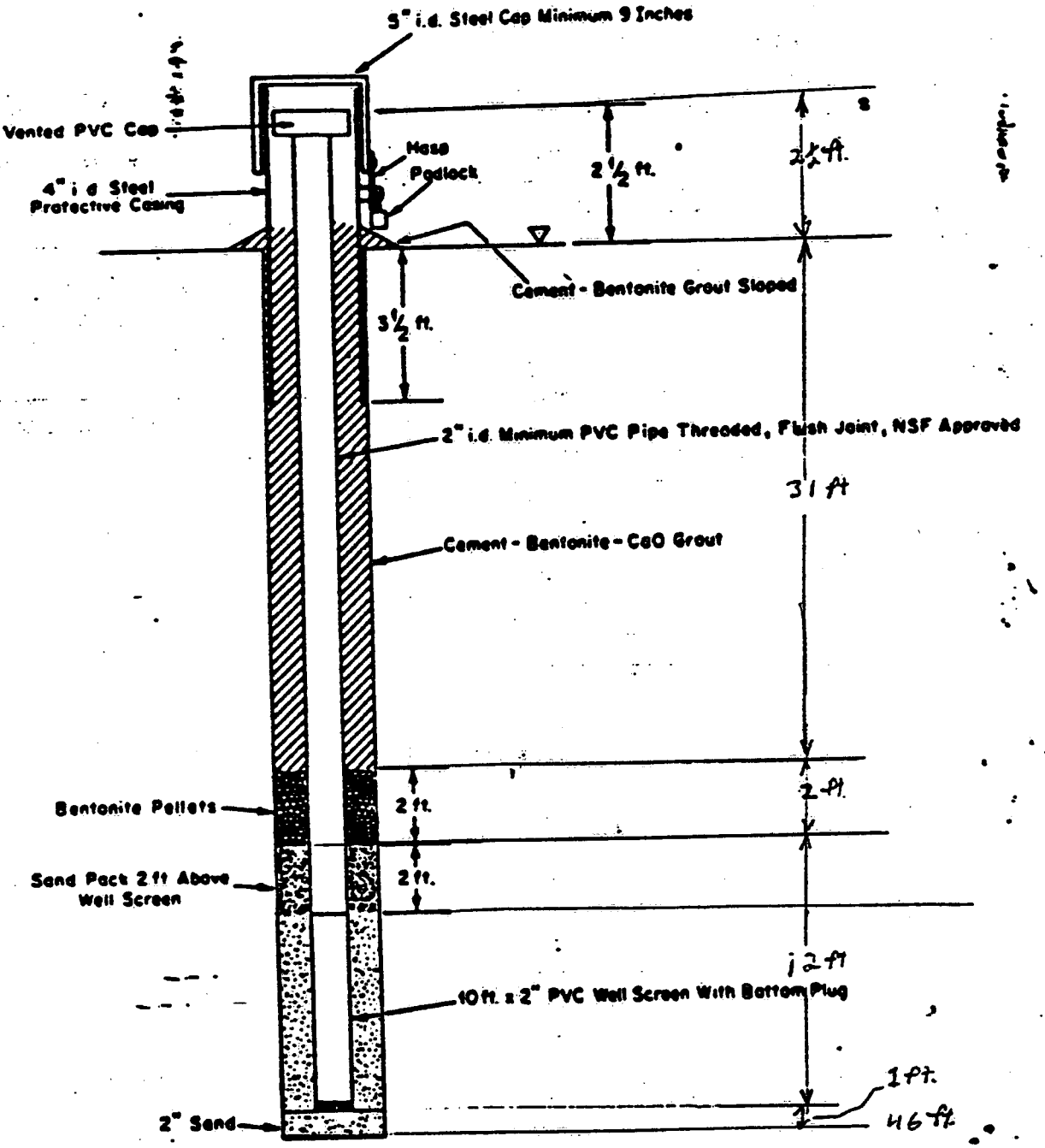
Depth Ft	Elev Ft.	Sample Type & No	Test Type & No	Blows Casing Per F:	Blows Sampler 6"	Blows Sampler 6"	Recovery % in.	RQD %	Drilling Rate Min./Ft.	Graphic Symbol	Description and Remarks
40		ss-9			6	6	20		11:00		med.to very coarse grained quartz sand,white,unsorted with gravel,wet
					6	8					
45		ss-10			1	5	18		11:30		med.to coarse grained quartz sand,white,slightly sorted some gravel, wet
					2	5					
0											End of boring at 11:40
5											
0											
5											
0											
5											
0											

I.D. Casing	Wgt. Hammer on Casing	Material Notations
I.D. Spoon	Wgt. Hammer on Spoon	
Type Core Drill	Drop Hammer on Casing	
Core Dia.	Drop Hammer on Spoon	
Sample & Test Notations		

GRB Environmental Services, Inc.
Consulting Environmental Engineers and Scientists

Ref 8, p. 17/23

MW-4 Completed 10/12/88



OVERBURDEN WELL

Figure 1

Ref. B/P. 18/23

GRB

Job No.: _____

Boring: MW-5

Summary of Drilling and Sampling Information

Client: NYSDEC

Project: Central Suffolk Phase II

Rig: CME-75

Site: Westhampton Beach

Contractor: MPC

Driller: MPC

Drilling Method:

Hollow Stem Auger 0 ft. to 46 ft. Dia. 6 in.

____ ft. to ____ ft. Dia. ____ in.

____ ft. to ____ ft. Dia. ____ in.

Drilling Fluid Used: ___ Yes X No Type: -

Sampler Hammer: Weight 140 lbs. Casing Hammer: Weight - lbs.

Drop 24 in. Drop - in.

Rock Core Diameter - in. Type core barrel/bit: -

Date/Time Drilling Started: 10/13/88 9:20 AM Completed: 10/13/88 11:10 AM

Down Time: - hrs. Cause(s) -

Log Summary: Soil: Fine, medium and corse grained guartz sands some gravel

Rock: -

No. Samples: Split Spoon 10 Other: -

Undisturbed: - -

No. Permeability Tests: Constant Head - Pressure -

Falling Head - Other: -

No. and Type of Other Tests: -

Piezometer Installation:

Pipe: Type: PVC Dia. 2 in. Depth: From 2½ ft. to 35 ft.

Screen: Type: PVC slot 20 Dia. 2 in. Depth: From 35 ft. to 45 ft.

Filter Material: Type: Moray Sand Depth: From 33 ft. to 46 ft.

Seal Material: Type: Bentonite Seal Depth: From 31 ft. to 33 ft.

Cement/ Bentonite Depth: From 0 ft. to 31 ft.

Grout Depth: From ____ ft. to ____ ft.

Remarks: No problems Encountered

Inspector Thomas Fox

B-2-22

BORING LOG

Ref. 8, Sheet 19 of 23

PROJECT: Central Suffolk Phase II PROJECT NO. BORING NO. MW-5

Location: Westhampton Beach Coord: Ground Elev:

Contractor: MPC Date Started: 10/13/88 G.W.L. 35 ft. Hour: 9:20 Date:

Inspector: Tom Fox Date Completed 10/13/88 G.W.L. Hour: 11:10 Date:

Notes:

Depth Ft	Elev Ft	Sample Type & No	Test Type & No	Blows Casing Per Ft	Blows Sampler 6"	Blows Sampler 6"	Recovery % in	RQD %	Drilling Rate Min./Ft	Graphic Symbol	Description and Remarks
0		ss-1			1	3	24		9:20		Fine sand and silt, brown cohesive, very moist
					4	1					
5		ss-2			2	3	24		9:36		1'coarse grained quartz sand white loose, moist,sorted 1' fine sand and silt, brown cohesive, very moist
					4	7					
10		ss-3			2	2	18				med.grained quartz sand,white loose,moist,well sorted
					3	7					
15		ss-4			2	3	12		9:52		med.grained quartz sand,white loose,moist,sorted
					3	9					
20		ss-5			2	2	12		10:05		med.to coarse grained quartz sand,white,loose,moist slightly sorted
					3	5					
25		ss-6			2	7	24		10:20		med.to coarse grained quartz sand,white,loose,moist,sorted
					10	14					
30		ss-7			4	5	20		10:30		med. grained quartz sand, white,loose,wet,slightly sorted
					6	7					
35		ss-8			2	3	20		10:40		med.to coarse grained quartz sand,white loose,wet, slightly sorted, water table at 35 ft.
					4	10					
40											

I.D. Casing	Wgt. Hammer on Casing	Material Notations
I.D. Spoon	Wgt. Hammer on Spoon	
Type Core Drill	Drop Hammer on Casing	
Core Dia.	Drop Hammer on Spoon	
Sample & Test Notations		

GRB Environmental Services, Inc.
Consulting Environmental Engineers and Scientists

BORING LOG

Ref 8 Sheet 20 of 23

PROJECT:	PROJECT NO.		BORING NO. MW-5
Location:	Coord:		Ground Elev:
Contractor:	Date Started:	G.W.L. Hour:	Date:
Inspector:	Date Completed:	G.W.L. Hour:	Date:
Notes:			

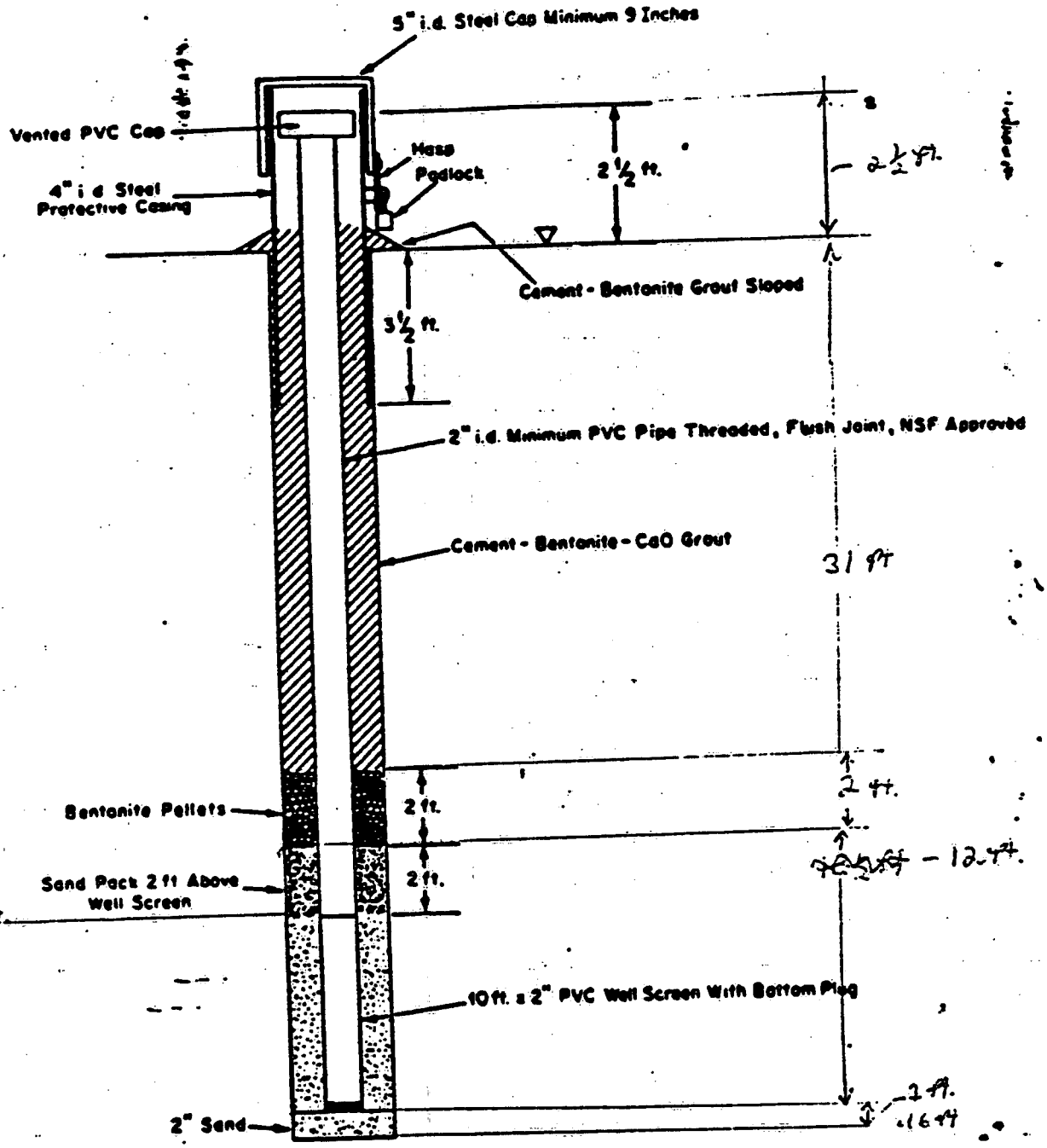
Depth Ft.	Elev Ft.	Sample Type & No.	Test Type & No.	Blows Casing Per Ft.	Blows Sampler 6"	Blows Sampler 6"	Recovery in %	RQD %	Drilling Rate Min./Ft.	Graphic Symbol	Description and Remarks
40		ss-9			4	3	24		10:50		med. to coarse grained quart sand, white, loose, wet, sorted
					2	2					
45		ss-10			2	5	24		11:05		med. to coarse grained quart sand white, loose, wet, sorted
					11	11					
0											End of boring at 11:10 AM
5											
0											
5											
0											
5											
0											

I.D. Casing	Wgt. Hammer on Casing	Material Notations
I.D. Spoon	Wgt. Hammer on Spoon	
Type Core Drill	Drop Hammer on Casing	
Core Dia.	Drop Hammer on Spoon	
Sample & Test Notations		

GRB Environmental Services, Inc.
Consulting Environmental Engineers and Scientists

Ref. S.P. 2 of 23

MW5 - Completed 10/13/88



OVERBURDEN WELL

Figure 1

Ref 8, p. 22/23

GRB

Job No.: _____

Boring: Exploritory Boring B-1

Summary of Drilling and Sampling Information

Client: NYSDEC

Project: Central Suffolk Phase 11

Rig: CME-75

Site: Westhampton Beach

Contractor: MPC

Driller: MPC

Drilling Method:

Hollow Stem Auger 0 ft. to 10 ft. Dia. 6 in.

___ ft. to ___ ft. Dia. ___ in.

___ ft. to ___ ft. Dia. ___ in.

Drilling Fluid Used: ___ Yes X No Type: -

Sampler Hammer: Weight 140 lbs. Drop 24 in.

Casing Hammer: Weight - lbs. Drop - in.

Rock Core Diameter - in. Type core barrel/bit: ___

Date/Time Drilling Started: 10/14/88 9:00 AM Completed: 10/14/89 , 10:00 AM

Down Time: - hrs. Cause(s) ___

Log Summary: Soil: Silty sands (fill material?) and at 8-10 ft. clean quartz sands typical of the native soils.

Rock: -

No. Samples: Split Spoon 5 Other: -

Undisturbed: - -

No. Permeability Tests: Constant Head - Pressure -

Falling Head - Other: -

No. and Type of Other Tests: -

Piezometer Installation: None insatalled

Pipe: Type: ___ Dia. ___ Depth: From ___ ft. to ___ ft.

Screen: Type: ___ Dia. ___ Depth: From ___ ft. to ___ ft.

Filter Material: Type: ___ Depth: From ___ ft. to ___ ft.

Seal Material: Type: ___ Depth: From ___ ft. to ___ ft.

___ Depth: From ___ ft. to ___ ft.

___ Depth: From ___ ft. to ___ ft.

Remarks: Mr. Pennino had shown me (Tom Fox) the area in which the open pit was situated. I had driller start boring at the center of area, see lo book for sketch.

Inspector ___

BORING LOG

Ref 8 Sheet 23 of 23

PROJECT: Central Suffolk Phase II PROJECT NO. BORING NO. B-1

Location: Westhampton Beach Coord: Ground Elev:

Contractor: MPC Date Started: 10/14/88 G.W.L. Hour: 9:05 Date:

Inspector: Tom Fox Date Completed: 10/14/88 G.W.L. Hour: 10:00 Date:

Notes:

Depth Ft.	Elev. Ft.	Sample Type & No	Test Type & No.	Blows Casing Per Ft.	Blows Sampler 6"	Blows Sampler 6"	Recovery %	RQD %	Drilling Rate Min./Ft.	Graphic Symbol	Description and Remarks
0		ss-1			4	10	24		9:05		Fine sand &silt,brown,
					15	7					cohesive,moist,some gravel
2		ss-2			4	5	24		9:10		silty sand&gravel,slightly
4					5	8					cohesive,moist
5		ss-3			1	1	24		9:20		Fine sand &silt,loose,light
6					1	6					brown,slightly moist
		ss-4			3	3	24		9:35		Fine sand & silt
8					4	8					light brown, moist
		ss-5			2	4	24		9:45		Fine to med. grained sand
10					8	4					light brown to white,loose
											moist (native soils)
											End of boring at 8-10 ft. 10:00 AM
5											
0											
5											
0											
5											
0											

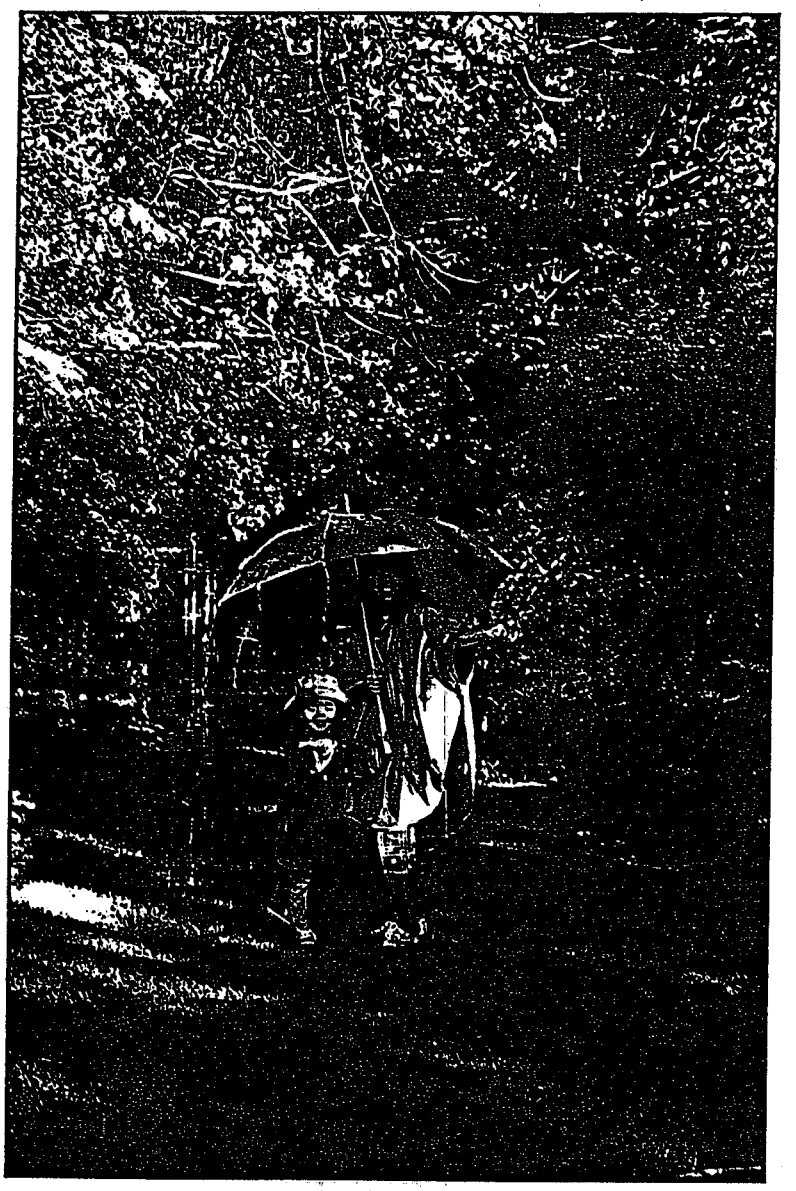
I.D. Casing	Wgt. Hammer on Casing	Material Notations
I.D. Spoon	Wgt. Hammer on Spoon	
Type Core Drill	Drop Hammer on Casing	
Core Dia.	Drop Hammer on Spoon	
Sample & Test Notations		

GRB Environmental Services, Inc.
Consulting Environmental Engineers and Scientists

REFERENCE 9

Ref. 9, p. 1 of 9

SUFFOLK COUNTY WATER AUTHORITY



1994 ANNUAL REPORT

Ref. 9, p. 2 of 9

AUTHORITY PROFILE

The SCWA 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 Authority is neither an agency of New York State nor Suffolk County Government.

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, construction costs, and for paying outstanding debts.

The Suffolk County Water Authority is the largest groundwater supplier in the nation and has been operating for more than 40 years. Currently, the SCWA serves approximately 1.1 million Suffolk County residents. The Authority is operated solely for the benefit of the customers it serves.

STATISTICAL HIGHLIGHTS 1985-1994

	For Fiscal Year Ended May 31 1994	For Fiscal Year Ended May 31 1985	10-Year Growth	Percent Increase
Customers	311,997	256,531	55,466	22%
Population Served	1,125,590	860,000	265,590	31%
Miles of Main	4,623	3,716	907	24%
Fire Hydrants	28,515	23,805	4,710	20%
Water Pumped (billion gallons)	53.6	39.6	14	35%
Employees	593	447	146	33%

FINANCIAL HIGHLIGHTS 1985-1994

Gross Revenues	$ 83,538,000	$ 42,071,000	$ 41,467,000	99%
Operating and Maintenance Expense, Except Depreciation	51,910,000	25,926,000	25,984,000	100%
Water Plant at Cost	629,985,000	308,416,000	321,569,000	104%
Bonded Indebtedness	334,375,000	146,560,000	187,815,000	128%
Total Earnings in the Business at the Close of Period	$135,714,000	$82,899,000	$52,815,000	64%

COVER: A WALK IN THE RAIN

About 45 inches of precipitation falls on Long Island each year. Half is lost to evaporation; the other half is recharged to the ground where it slowly seeps into the underground aquifer system at a rate of about 1,000,000 gallons per square inch per day. Some of the water in the deepest part of the aquifer system is thousands of years old.

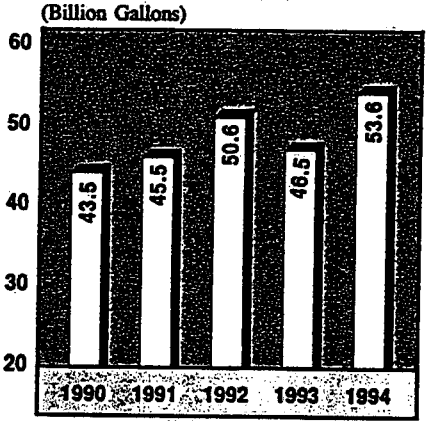
This report is printed on recycled paper.

Ref. 9, p. 3 of 9

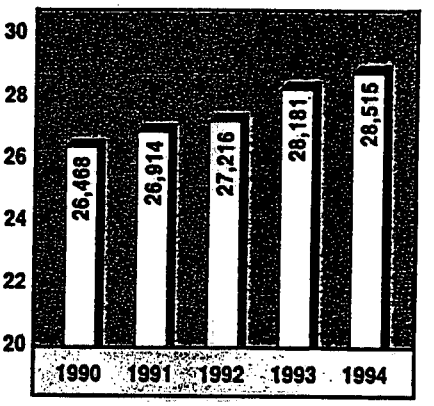
HIGHLIGHTS 1993-1994

	May 31 1994	May 31 1993
Total Revenues	$ 83,538,000	$ 72,577,000
Operating and Maintenance Expense except depreciation	51,910,000	46,330,000
Interest on Bonds and Notes; including amortization of debt discount and expense	17,149,000	12,624,000
Depreciation	11,376,000	10,199,000
Revenues Invested in Facilities for the year	2,365,000	(17,255,000)
Revenues Invested in Facilities (since June 1, 1951)	135,714,000	133,349,000
Total Water Plant at Cost	629,985,000	593,436,000
Net Additions to Water Plant	25,801,000	43,717,000
Customers (Active Services)	311,997	308,352
Miles of Main in Service	4,623	4,564
Fire Hydrants in Service	28,515	28,181
Water Production (Billion Gallons)	53.6	46.5

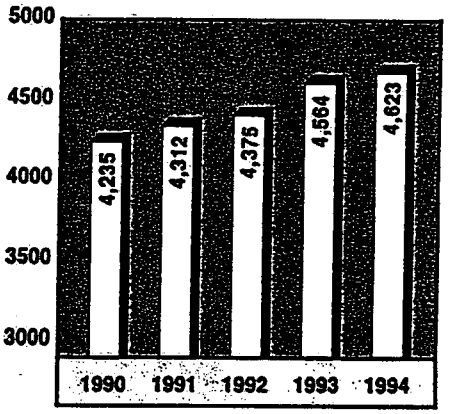
WATER PUMPAGE
(Billion Gallons)



FIRE HYDRANTS IN SERVICE



MILES OF MAIN



PLANT FACILITIES 1993-1994

Service Areas of Plants	WELLS Active		WELLS Inactive		Pumping Plants No.		Pumping Plants Capacity - 1,000 Gallons Daily*		Storage Facilities No.		Storage Facilities 1,000 Gallons		Active Services	
BABYLON	46	45	0	2	19	19	80,928	81,072	7	7	7,220	7,220	56,080	56,235
BAY SHORE	48	49	9	9	21	22	91,872	91,872	7	7	6,012	6,012	50,433	50,884
PATCHOGUE	71	70	5	5	29	30	115,776	117,648	11	10	12,230	12,000	62,402	62,951
HUNTINGTON	54	53	2	3	22	22	67,104	67,104	11	11	11,842	11,842	30,716	30,984
PT. JEFFERSON	72	74	4	5	33	36	116,064	119,736	9	9	8,854	8,854	47,173	47,865
SMITHTOWN	45	46	3	2	20	20	83,520	83,520	6	6	6,100	6,100	25,611	25,838
WESTHAMPTON	35	34	0	2	14	14	29,808	31,680	4	4	4,050	4,050	22,220	23,220
EAST HAMPTON	33	38	3	3	19	21	26,388	27,108	5	5	5,720	5,720	13,717	14,020
TOTALS	404	409	26	31	177	184	611,460	619,740	60	59	62,028	61,798	308,352	311,997

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

AS OF MAY 31, 1993 ☐ AS OF MAY 31, 1994 ☐

Ref. 9, p. 48, 9

RUN DATE: 11/10/93 @ 18:32 SCWA Production Control Department

BUS DATE: 11/10/93 D.E.C. PRODUCTION REPORT PRODCTN PAGE 26

PERIOD: 10/93 ZONE: 20 MOR-WESTHAMPTON LOW

PUMP STATION	PUMPAGE (THOUSANDS)	AVERAGE FLOW (GPM)	WELL NO	OPERATING HOURS	AQUIFER	NYS WELL NUMBER
LAMBERT AV - MASTIC	18,360	990	1	165	M	S-071881
			2	144	M	S-071882
MAIN ST	41,370	965	1	714	M	S-096232
MARGIN DR EAST #1	126	700	1	3	M	S-018729
MARGIN DR EAST #2	2,561	725	2	131	G	S-052943
MARGIN DR EAST #3	[illegible]	1,700	7	393	M	S-100691
MEETING HOUSE RD	10,270	725	1	99	G	S-020688
			2	0	G	S-020688
			20	O/S	G	S-064716
			22	137	G	S-096673
OLD COUNTRY RD	15,960	470	1	191	G	S-016892
			2	190	G	S-016893
			3	184	G	S-065905
OLD NECK RD	2,550	531	1	40	G	S-046712
			2	40	M	S-046713
QUOGUE-RIVERHEAD RD.	4,732	1,177	1	67	M	S-094286
RAILROAD AV	17,200	1,257	1	71	M	S-032359
			2	104	G	S-081473
SPINNEY RD	23,270	729	1	263	G	S-023194
			2	269	G	S-053593

ZONE: 20 STATIONS LISTED: 11 163,053

PEAK DAY FOR ZONE 8,249,000 GALLONS ON 10/05/93

Ref-T, p-5 of 7

RUN DATE: 11/10/93 @ 18:32 SCWA Production Control Department

BUS DATE: 11/10/93 D.E.C. PRODUCTION REPORT PRODCTN PAGE 27

PERIOD: 10/93 ZONE: 21 RIVERHEAD INT

PUMP STATION	PUMPAGE (THOUSANDS)	AVERAGE FLOW (GPM)	WELL NO	OPERATING HOURS	AQUIFER	NYS WELL NUMBER
MORICHES RIVERHEAD R	648	300	1	36	G	S-053522
			2	0	G	S-053851

ZONE: 21 STATIONS LISTED: 1 648

PEAK DAY FOR ZONE 306,000 GALLONS ON 10/13/93

Ref. 9, p. 6 of 9

Table 6. Household, Family, and Group Quarters Characteristics: 1990

[For definitions of terms and meanings of symbols, see text]

State / County / Place and [In Selected States] County Subdivision	Persons in households	All households	Family households: Total	Family households: Married-couple family	Family households: Female householder, no husband present	Nonfamily households: Total	Nonfamily households: Householder living alone: Total	Nonfamily households: Householder living alone: 65 years and over: Total	Nonfamily households: Householder living alone: 65 years and over: Female	Persons per— Household	Persons per— Family	Persons in group quarters: Total	Persons in group quarters: Institutionalized persons	Persons in group quarters: Other persons in group quarters
The State	17 445 190	6 639 322	4 489 312	3 315 845	919 266	2 150 010	1 806 263	700 816	544 735	2.63	3.22	545 265	267 122	278 143
COUNTY														
Albany County	278 399	115 824	71 455	54 534	13 355	44 369	35 050	13 559	10 777	2.40	3.04	14 195	4 286	9 909
Allegany County	45 639	17 011	12 318	10 231	1 466	4 693	3 943	1 927	1 478	2.68	3.15	4 831	398	4 433
Bronx County	1 163 368	424 112	288 609	146 234	118 610	135 503	119 218	46 431	35 780	2.74	3.35	40 421	28 534	11 887
Broome County	204 344	81 843	54 819	44 163	8 183	27 024	22 037	9 065	7 203	2.50	3.05	7 816	3 420	4 396
Cattaraugus County	80 833	30 456	21 657	17 395	3 228	8 799	7 543	3 651	2 789	2.65	3.18	3 401	1 035	2 366
Cayuga County	77 968	29 075	20 927	16 660	3 127	8 148	6 874	3 418	2 680	2.68	3.19	4 345	3 955	390
Chautauqua County	136 558	53 696	37 203	29 942	5 506	16 493	14 035	6 849	5 459	2.54	3.07	5 337	2 557	2 780
Chemung County	90 460	35 275	24 808	19 646	4 058	10 467	8 992	4 387	3 505	2.56	3.08	4 735	3 788	947
Chenango County	50 896	19 141	13 821	11 438	1 670	5 320	4 451	2 085	1 602	2.66	3.14	872	840	32
Clinton County	77 971	29 123	20 839	17 279	2 594	8 284	6 429	2 626	2 111	2.68	3.14	7 998	4 282	3 716
Columbia County	60 884	23 696	16 882	13 658	2 339	6 814	5 689	2 759	2 078	2.57	3.04	2 098	1 825	273
Cortland County	45 664	17 247	11 799	9 461	1 681	5 448	4 070	1 860	1 513	2.65	3.13	3 299	510	2 789
Delaware County	45 233	17 646	12 374	10 224	1 552	5 272	4 458	2 308	1 746	2.56	3.07	1 992	660	1 332
Dutchess County	240 984	89 567	64 757	53 635	8 353	24 810	19 884	7 705	6 051	2.69	3.18	18 478	11 475	7 003
Erie County	944 115	376 994	254 472	192 646	49 968	122 522	105 083	45 370	35 665	2.50	3.09	24 417	13 138	11 279
Essex County	34 824	13 721	9 498	7 805	1 204	4 223	3 520	1 682	1 280	2.54	3.07	2 328	2 223	105
Franklin County	42 549	16 284	11 265	8 976	1 677	5 019	4 197	2 064	1 612	2.61	3.16	3 991	3 012	979
Fulton County	53 276	20 995	14 602	11 601	2 242	6 393	5 412	2 894	2 281	2.54	3.05	915	700	215
Genesee County	58 858	21 614	16 050	13 269	2 054	5 564	4 671	2 312	1 840	2.72	3.19	1 202	800	402
Greene County	42 080	16 596	11 642	9 465	1 612	4 954	4 245	2 033	1 488	2.54	3.05	2 659	2 474	185
Hamilton County	5 197	2 153	1 508	1 266	170	645	550	241	172	2.41	2.89	82	82	-
Herkimer County	64 636	24 936	17 576	14 347	2 369	7 360	6 246	3 402	2 594	2.59	3.11	1 161	840	321
Jefferson County	103 614	37 851	28 163	23 155	3 680	9 688	8 005	3 772	2 996	2.74	3.19	7 329	2 589	4 740
Kings County	2 266 401	828 199	555 284	335 295	177 871	272 915	236 977	92 972	71 504	2.74	3.40	34 263	16 651	17 612
Lewis County	26 475	9 253	7 056	5 985	744	2 197	1 889	964	728	2.86	3.32	321	307	14
Livingston County	56 777	21 197	15 178	12 558	1 896	6 019	4 643	2 043	1 610	2.68	3.14	5 595	2 212	3 383
Madison County	64 006	23 567	17 162	14 137	2 176	6 405	5 050	2 326	1 808	2.72	3.17	5 114	776	4 338
Monroe County	691 387	271 944	182 813	140 622	34 008	89 131	71 166	25 702	20 400	2.54	3.11	22 581	8 405	14 176
Montgomery County	50 956	20 185	14 028	11 058	2 202	6 157	5 432	3 081	2 408	2.52	3.06	1 025	960	65
Nassau County	1 266 740	431 515	344 502	286 638	43 950	87 013	73 804	35 544	28 221	2.94	3.30	20 608	9 799	10 809
New York County	1 428 973	716 422	301 041	187 016	92 055	415 381	348 134	87 139	64 439	1.99	2.99	58 563	13 988	44 575
Niagara County	216 912	84 809	59 732	47 221	9 822	25 077	22 119	10 080	7 797	2.56	3.10	3 844	2 358	1 486
Oneida County	236 328	92 562	63 735	50 430	10 385	28 827	24 950	11 640	9 110	2.55	3.12	14 508	9 522	4 986
Onondaga County	453 012	177 898	118 575	91 978	21 081	59 323	47 047	18 082	14 374	2.55	3.12	15 961	5 859	10 102
Ontario County	92 094	34 929	25 143	20 792	3 210	9 786	7 716	3 414	2 675	2.64	3.10	3 007	1 497	1 510
Orange County	293 491	101 506	77 111	63 207	10 401	24 395	19 975	8 404	6 611	2.89	3.35	4 156	6 211	7 945
Orleans County	39 588	14 428	10 685	8 608	1 484	3 743	3 119	1 482	1 146	2.74	3.20	2 258	2 053	205
Oswego County	116 928	42 434	30 905	25 013	4 231	11 529	9 150	4 027	3 158	2.76	3.22	4 843	899	3 944
Otsego County	55 592	21 725	14 768	12 258	1 795	6 957	5 414	2 679	2 056	2.56	3.06	4 925	746	4 179
Putnam County	82 838	28 094	22 549	19 675	2 028	5 545	4 410	1 594	1 202	2.95	3.32	1 103	299	804
Queens County	1 924 375	720 149	490 915	351 675	102 674	229 234	196 008	82 433	65 305	2.67	3.25	27 223	18 938	8 285
Rensselaer County	148 564	57 612	39 356	30 925	6 446	18 256	14 715	6 211	4 881	2.58	3.13	5 865	1 538	4 327
Richmond County	371 574	130 519	99 059	78 198	16 249	31 460	27 314	10 516	8 305	2.85	3.33	7 403	5 222	2 181
Rockland County	257 325	84 874	66 583	55 520	8 357	18 291	15 067	6 038	4 838	3.03	3.46	8 150	4 994	3 156
St. Lawrence County	101 384	37 964	26 784	21 809	3 663	11 180	8 924	4 223	3 303	2.67	3.16	10 590	3 232	7 358
Saratoga County	177 151	66 425	48 363	40 835	5 597	18 062	14 204	5 263	4 073	2.67	3.14	4 125	2 224	1 901
Schenectady County	144 981	59 181	39 702	31 284	6 556	19 479	16 611	7 649	6 063	2.45	3.01	4 304	2 201	2 103
Schoharie County	29 759	11 257	8 127	6 705	1 016	3 130	2 522	1 249	916	2.64	3.10	2 100	450	1 650
Schuyler County	18 176	6 818	5 025	4 140	618	1 793	1 471	753	571	2.67	3.11	486	474	12
Seneca County	32 452	12 285	8 998	7 421	1 156	3 287	2 708	1 296	981	2.64	3.09	1 231	670	561
Steuben County	97 128	37 299	26 447	21 446	3 615	10 852	9 194	4 286	3 374	2.60	3.11	1 960	1 690	270
Suffolk County	1 292 470	424 719	340 593	282 081	44 113	84 126	67 834	29 961	23 450	3.04	3.40	29 394	16 882	12 512
Sullivan County	63 858	24 576	17 090	13 848	2 344	7 486	6 216	2 916	2 095	2.60	3.13	5 419	2 829	2 590
Tioga County	51 974	18 838	14 470	12 192	1 640	4 368	3 670	1 594	1 252	2.76	3.17	363	318	45
Tompkins County	82 093	33 338	19 049	15 488	2 661	14 289	9 066	2 608	2 105	2.46	2.98	12 004	848	11 156
Ulster County	156 774	60 807	42 213	33 839	6 186	18 594	14 799	5 988	4 628	2.58	3.09	8 530	3 653	4 877
Warren County	58 122	22 559	15 788	12 740	2 254	6 771	5 519	2 591	2 070	2.58	3.09	1 087	513	574
Washington County	55 682	20 256	15 023	12 218	2 032	5 233	4 295	2 160	1 649	2.75	3.21	3 648	3 519	129
Wayne County	87 841	31 977	23 961	19 787	3 046	8 016	6 443	2 948	2 354	2.75	3.17	1 282	962	320
Westchester County	845 770	320 030	227 827	180 205	37 133	92 203	79 330	33 373	26 725	2.64	3.16	29 096	16 022	13 074
Wyoming County	38 731	13 897	10 528	8 857	1 175	3 369	2 847	1 391	1 088	2.79	3.23	3 776	3 709	67
Yates County	22 158	8 419	6 100	5 111	698	2 319	1 909	996	782	2.63	3.09	652	269	383
PLACE AND COUNTY SUBDIVISION														
Adams village, Jefferson County	1 742	726	469	379	78	257	231	131	112	2.40	3.04	11	11	-
Adams town, Jefferson County	4 966	1 839	1 335	1 115	177	504	424	220	183	2.70	3.20	11	11	-
Adams Center CDP, Jefferson County	1 675	591	455	378	64	136	102	45	36	2.83	3.22	-	-	-
Addison village, Steuben County	1 842	711	505	378	94	206	171	106	87	2.59	3.05	-	-	-
Addison town, Steuben County	2 645	995	730	556	127	265	215	118	97	2.66	3.08	-	-	-
Afton village, Chenango County	838	337	238	207	26	99	86	52	38	2.49	3.01	-	-	-
Afton town, Chenango County	2 972	1 092	814	670	98	278	219	108	81	2.72	3.13	-	-	-
Airmont CDP, Rockland County	7 540	2 282	2 042	1 817	169	240	196	97	77	3.30	3.51	295	216	79
Akron village, Erie County	2 895	1 185	790	621	137	395	350	224	176	2.44	3.04	11	-	11
Alabama town, Genesee County	1 998	678	545	468	48	133	118	59	42	2.95	3.30	-	-	-
Albany city, Albany County	91 458	42 121	20 308	12 695	6 193	21 813	16 239	5 659	4 481	2.17	2.94	9 624	2 338	7 286
Albertson CDP, Nassau County	5 166	1 808	1 484	1 261	153	324	291	177	150	2.86	3.21	-	-	-
Albion village, Orleans County	5 710	2 317	1 504	1 061	347	813	704	350	284	2.46	3.06	153	121	32
Albion town, Orleans County	6 259	2 394	1 625	1 211	316	769	659	319	249	2.61	3.19	1 919	1 887	32
Albion town, Oswego County	2 028	638	528	442	54	110	81	26	12	3.18	3.45	15	15	-
Alden village, Erie County	2 443	955	667	558	77	288	251	134	103	2.56	3.13	14	-	14
Alden town, Erie County	8 587	2 991	2 411	2 100	226	580	491	259	200	2.87	3.25	1 785	1 771	14
Alexander village, Genesee County	445	150	123	102	12	27	23	14	13	2.97	3.28	-	-	-
Alexander town, Genesee County	2 233	742	621	543	47	121	99	41	33	3.01	3.28	-	-	-
Alexandria town, Jefferson County	3 899	1 505	1 091	878	133	414	345	186	139	2.59	3.05	50	21	29
Alexandria Bay village, Jefferson County	1 154	504	309	222	64	195	171	95	76	2.29	2.94	40	21	19
Alfred village, Allegany County	1 055	487	191	177	12	296	197	59	52	2.17	2.81	3 504	-	3 504
Alfred town, Allegany County	2 287	958	517	460	36	441	308	87	76	2.39	3.02	3 504	-	3 504
Allegany village, Cattaraugus County	1 944	754	459	383	57	295	193	114	91	2.58	3.06	36	36	-
Allegany town, Cattaraugus County	6 410	2 399	1 720	1 464	196	679	520	266	209	2.67	3.12	1 917	36	1 881
Allegany Reservation, Cattaraugus County	1 139	419	289	187	82	130	107	44	31	2.72	3.30	4	-	4
Allen town, Allegany County	406	137	109	99	6	28	26	14	8	2.96	3.40	-	-	-
Alma town, Allegany County	838	293	240	210	17	53	45	28	15	2.86	3.16	8	8	-
Almond village	458	185	133	108	22	52	47	27	21	2.48	3.00	-	-	-
Allegany County	442	175	128	103	22	47	43	25	20	2.53	3.04	-	-	-
Steuben County	16	10	5	5	-	5	4	2	1	1.60	2.00	-	-	-

Ref. 9, p. 7 of

SUFFOLK COUNTY WATER AUTHORITY

Edward J. Rosavitch, P.E.
Chief Engineer

Administrative Offices: 4060 Sunrise Highway, Oakdale, NY 11769-0901
(516) 563-0202
Fax No.: (516) 589-5277

January 26, 1990

Ms. Rose Barbour
GRB Environmental Services, Inc.
P.O. Box 629
East Northport, N.Y. 11731

Re: Your letter of January 12, 1990

Dear Ms. Barbour:

Please be advised that the Suffolk County Water Authority has two (2) well fields located within a three mile radius of the site shown on your enclosed map. These facilities are identified as Meeting House Road and Old Country Road. Meeting House Road well field is located on the west side of Meeting House Road, approximately 2,500 feet north of Montauk Highway in Quiogue, Town of Southampton while Old Country Road well field is located 1,631 feet north of Old Country Road and 3,324 feet east of Evergreen Avenue in Westhampton, Town of Southampton.

The distribution system of the Suffolk County Water Authority is fully integrated in your area of interest. Therefore, it cannot be determined as to exactly how many customers are served by each well field. However, it is estimated that approximately 12,000 people are served by the above well fields at this time.

If we can be of any further assistance, please advise.

Very truly yours,

E. J. Rosavitch

E. J. Rosavitch, P.E.
Chief Engineer

EJR:jn
Encl.

cc + enclosure - Mr. W. C. Hazlitt
Mr. D. T. Ross
Ms. L. Mansi
Mr. S. R. Dassler
Mr. T. Cassidy

Ref. 9, p. 8 & 9 December 1995

EBASCO SERVICES INCORPORATED **PROJECT NOTES**

Central

TO: File Suffolk Pavingsite **DATE:** 12-98

FROM: Christine Kovari **PROJECT NUMBER:** 40010

SUBJECT: Municipal Well population **SITE NAME:**

Suffolk County Water Authority

County average population → 3.04

Wells		Municipal well #	aquifer
0 - 1/4 →	none		
1/4 - 1/2 →	none		
1/2 - 1 →	none		
1 - 2 →	meeting house Road	(#1)	upper glacial
		* (#2)	not in service
		* (#20)	~~on standby~~ active now glacial
		(#22)	upper glacial
	main street	(#1)	magothy
2-3 →	old countryed	(#1)	glacial
		(#2)	glacial
		(#3)	glacial
	Quogue - Riverhead Rd.	(#1)	magothy
3-4 →	Spinney Road.	(#1)	glacial
		(#2)	glacial

EBASCO SERVICES INCORPORATED **PROJECT NOTES**

TO: File. Central Suffolk Pump Site DATE: 12/85

FROM: Christine Karr PROJECT NUMBER: 40010

SUBJECT: Water Supply Info. SITE NAME:

= [illegible]

311,997 (Service connections SCWA) x 3.04 (persons/household)

[illegible] ÷ 404 404 (wells in SCWA interconnected System)

= [illegible]

= 2348 persons | well

distance ring		Population upper glacial	Population magothy	
0 - 1/4		0	0	
1/4 - 1/2		0	0	
1/2 - 1		0	0	
1 - 2	JH 3 2(2348)	JH ~~4696~~ [illegible]	2348	= [illegible]
2 - 3	3(2348)	7044	2348	= [illegible]
3 - 4	2(2348)	4696	0	= 4696
	total :	JH ~~16436~~ [illegible]	4696	= 23480

Pr[illegible]

[illegible] = 10 [illegible] = 11

[illegible] = [illegible] = 27

[illegible] = [illegible] = 213

[illegible] = 700.75 = 701 + 9392 = 10,093

[illegible] = 7247.00 = 7247 + 9392 = 10,139

[illegible] = [illegible] = 2010 + 4696 = 6706

[illegible]

REFERENCE 10

Ref-10, p-1 of 1

11046/2-91

RECORD OF TELEPHONE CONVERSATION

DATE 1-19-96

TO File # 40010
NAME/FILE NO.

FROM J. Hottinger

CLIENT/PROJECT Central Suffolk Paving

SUBJECT Water Supply Info

CHARGE: DEPT. NO. _____ CLIENT SYMBOL _____ OFS NO. _____

DISCUSSION WITH JH → Bob Dassler, Engineer, Suffolk County Hlth Authority
516-563-0317

JH asked Bob the following Questions:

1) Is number 20 well still out-of-service?
NO; it is in use.

2) Is there any other water supply Co. w/in 4 miles of site? No.

3) Is groundwater a sole source for drinking water in area, & used for irrigation and pool filling, etc.?
Yes; Surface water is not used. Surface water on Long Island is groundwater.

BY [signature] 1-19-96
NAME TITLE DEPT. NO.

CC:

REFERENCE 11

Ref. 11, p. 189

FROST ASSOCIATES

P.O. Box 495, Essex, Connecticut 06426
(860) 767-7644 FAX (860) 767-1971

January 17, 1996

To: Foster Wheeler\ Ebasco Services Inc.
P.O Box 661
Lyndhurst, New Jersey 07071

Attn: Edgar Aguado

Fr: Frost Associates
P.O. Box 495
Essex, Conn 06426

Tel: (203) 767-7644
Fax: (203) 767-1971

Sub: Suffolk Paving
100 Rogers Ave., West Hampton Beach, LI

CERCLIS: NYD986881324

Job: 40010

Site Longitude: 72-38-37 72.643608
Site Latitude : 40-49-52 40.831108

The CENTRACTS report below identifies the population, households, and private water wells of each Block Group that lies within, or partially within, the 4, 3, 2, 1, .5, and .25, mile "rings" of the latitude and longitude coordinates above. CENTRACTS may have up to ten radii of any length. 1000 block groups, and 15000 block group sides.

CENTRACTS uses the 1990 Block Group population and Block Group house count data found in the Census Bureau's 1990 STF-1A files. The sources of water supply data are from the Bureau's 1990 STF-3A files. The boundary line coordinates of the Block Groups were extracted from the Census Bureau's 1990 TIGER/Line Files.

CENTRACTS reports are created with programs written by Frost Associates, P.O. Box 495, Essex, Conn. The code was written using Microsoft's Quick-Basic Ver. 4.5.

Latitude and Longitude coordinates identifying a site are entered in degrees and decimal degrees. One or more county files holding Block Group boundary lines are selected for use by CENTRACTS by determining whether the site coordinates fall within the minimum and maximum Lat\Lon coordinates of each county in the state.

Each Block Group line segment has Lat\Lon coordinates representing the "From" and "To" ends of that line. All coordinates from the selected county files are read and converted from degrees, decimal degrees to X\Y miles from the site location. Each line segment is then examined whether it lies within or partially within the maximum ring from the site.

The unique Block Group ID numbers of each line segment that lie within the maximum ring are retained. All Block Group boundary lines matching the Block Group numbers are then extracted from the respective county files to obtain all sides of the included Block Groups. Boundary records are then sorted in adjacent side order to determine the shape and area of each Block Group polygon.

Ref. 11, p. 2 of 9

A method to solve for the area of a polygon is to take one-half the sum of the products obtained by multiplying each X-coordinate by the difference between the adjacent Y-coordinates. For a polygon with coordinates at adjacent angles A, B, C, D, and E. The formula can be expressed:

Area = 1/2{Xa(Ye-Yb)+ Xb(Ya-Yb)+ Xc(Yb-Yd)+ Xd(Yc-Ye)+ Xe(Yd-Ya)}

For each ring, the selected Block Groups will be inside, outside, or intersected by the ring. When a polygon is intersected, the partial Block Group area within that ring is calculated using the method described below.

When a ring intersects a Block Group, the intersect points are solved and plotted at the points where the ring enters and exits the shape. The chord line, a line within the circle connecting the intersect points is determined. This chord line is used to calculate the segment area, the half moon shape between the chord line and the ring, and the sub-polygon created by the chord line and the Block Group boundaries that lie outside the ring.

The segment area is subtracted from the sub-polygon area to determine the area of the sub-polygon outside the ring. The area outside the ring is then subtracted from the area of the entire polygon to arrive at the inside area. This inside area is then divided by the tract's total area to determine the percentage of area within the ring. This process is repeated for each block group that is intersected by one of the rings. The total area, partial area, and percentage of partial area of those block groups within, or partially within a ring, are held in memory for the report.

On occasion, the algorithm described above is unable to determine the area of the partial area. Within the report program is a "Paint" routine which allows an enclosed shape to be highlighted. Another routine calculates the percentage of highlighted screen pixels to the pixels within the polygon. A manual entry is allowed. Both the "paint" method and manual entry method over ride the calculated method.

CENTRACTS lists, starting on page 4, all Block Groups in State, County, Census Tract, and Block Group ID order that lie within, or partially within, the maximum ring. Each Block Group is identified by a City or Town name and by the Block Group's State, County, Tract and Block Group ID number. Following is the Block Group's 1990 populu tion and house count extracted from the Census Bureau's 1990 STF-1A files.

The next four columns display water source data from the 1990 STF-3A files. The first column is "Units with Public system or private company source of water", followed by "Units with individual well, Drilled, source of water"; "Units with individual well, Dug, source of water" and "Units with Other source of water".

For each ring, CENTRACTS then shows the Block Groups that are within that ring, the Block Group's total area in square miles, the partial area of the Block Group within that ring, and the partial percentage within the ring. The areas of the included Block Group and the partial areas are then totaled.

The last section tallies the demographic data within each ring. The percentage of area for each Block Group is multiplied times the census data for that Block Group and totaled for all Block Group's within the ring. Ring totals are then determined by subtracting the three mile data from the four mile, the two mile from the three mile, one from the two, etc... Population on private wells is calculated using the formula: ((Drilled + Dug Wells) / Households) * Population

Ref. 11, p. 3 of 9

Suffolk Paving
100 Rogers Ave., West Hampton Beach, LI

No.	City	Block Group ID	Blk Grp People	House Holds	Public Water	Drilled Wells	Dug Wells	Other
1	Southampton	36103 1904011	2275	912	36	391	466	0
2	Southampton	36103 1904012	1279	702	650	9	45	2
3	Southampton	36103 1904014	956	547	9	16	541	0
4	Southampton	36103 1904021	538	402	223	31	142	0
5	Southampton	36103 1904022	105	44	0	0	34	0
6	Southampton	36103 1904023	533	218	207	0	18	0
7	Southampton	36103 1904024	131	64	5	11	21	0
8	Southampton	36103 1904025	44	14	0	11	0	0
9	Southampton	36103 1904026	201	136	16	28	96	0
10	Southampton	36103 1905011	296	244	94	5	148	0
11	Southampton	36103 1905012	373	279	86	16	183	0
12	Southampton	36103 1905013	277	309	95	8	195	0
13	Southampton	36103 1905014	169	178	8	0	172	0
14	Southampton	36103 1905015	520	252	110	33	115	0
15	Southampton	36103 1905016	1037	684	101	66	511	0
16	Southampton	36103 1905017	294	272	6	13	227	0
17	Southampton	36103 1905018	16	480	302	0	175	0
18	Southampton	36103 1905019	724	357	70	53	229	12
19	Southampton	36103 1905021	398	244	260	1	6	0
20	Southampton	36103 1905022	286	225	187	3	27	0
21	Southampton	36103 1905023	912	668	617	19	58	0
22	Southampton	36103 1905024	310	621	595	2	9	0
23	Southampton	36103 1905025	203	282	244	0	35	0
24	Southampton	36103 1905026	46	869	843	0	0	0
25	Southampton	36103 1906012	1011	823	585	21	220	0
26	Southampton	36103 1906013	1215	731	484	25	200	0
27	Southampton	36103 1906014	106	210	163	3	46	0
28	Southampton	36103 1906015	343	400	299	7	86	0
29	Southampton	36103 1906016	238	230	199	2	30	0
30	Southampton	36103 1906017	211	442	415	4	39	0
31	Southampton	36103 1906018	650	366	92	45	222	0
32	Southampton	36103 1906027	3	154	111	0	40	0
	Totals:		15700	12359	7112	823	4336	14

Suffolk Paving
100 Rogers Ave., West Hampton Beach, LI

Ref. 11, p. 489

City	Census Tract ID	Tract People	House Count	Public Water	Drilled Wells	Dug Wells	Other Sources
Southampton	36103 1904011	2275	912	36	391	466	0
Southampton	36103 1904012	1279	702	650	9	45	2
Southampton	36103 1904014	956	547	9	16	541	0
Southampton	36103 1904021	538	402	223	31	142	0
Southampton	36103 1904022	105	44	0	0	34	0
Southampton	36103 1904023	533	218	207	0	18	0
Southampton	36103 1904024	131	64	5	11	21	0
Southampton	36103 1904025	44	14	0	11	0	0
Southampton	36103 1904026	201	136	16	28	96	0
Southampton	36103 1905011	296	244	94	5	148	0
Southampton	36103 1905012	373	279	86	16	183	0
Southampton	36103 1905013	277	309	95	8	195	0
Southampton	36103 1905014	169	178	8	0	172	0
Southampton	36103 1905015	520	252	110	33	115	0
Southampton	36103 1905016	1037	684	101	66	511	0
Southampton	36103 1905017	294	272	6	13	227	0
Southampton	36103 1905018	16	480	302	0	175	0
Southampton	36103 1905019	724	357	70	53	229	12
Southampton	36103 1905021	398	244	260	1	6	0
Southampton	36103 1905022	286	225	187	3	27	0
Southampton	36103 1905023	912	668	617	19	58	0
Southampton	36103 1905024	310	621	595	2	9	0
Southampton	36103 1905025	203	282	244	0	35	0
Southampton	36103 1905026	46	869	843	0	0	0
Southampton	36103 1906012	1011	823	585	21	220	0
Southampton	36103 1906013	1215	731	484	25	200	0
Southampton	36103 1906014	106	210	163	3	46	0
Southampton	36103 1906015	343	400	299	7	86	0
Southampton	36103 1906016	238	230	199	2	30	0
Southampton	36103 1906017	211	442	415	4	39	0
Southampton	36103 1906018	650	366	92	45	222	0
Southampton	36103 1906027	3	154	111	0	40	0
	Sub Totals:	15700	12359	7112	823	4336	14

Suffolk Paving
100 Rogers Ave., West Hampton Beach, LI

For Radius of 4 Mi., Circle Area = 50.265482

No.	City	Block Group ID	Total Area	Partial Area	% Within Radius
1	Southampton	36103 1904011	4.698882	1.590365	33.85
2	Southampton	36103 1904012	9.872664	5.543226	56.15
3	Southampton	36103 1904014	8.758560	0.805364	9.20
4	Southampton	36103 1904021	5.701385	3.943493	69.17
5	Southampton	36103 1904022	3.895608	3.895608	100.00
6	Southampton	36103 1904023	3.447380	3.447380	100.00
7	Southampton	36103 1904024	2.365374	2.365374	100.00
8	Southampton	36103 1904025	1.733201	1.523124	87.88
9	Southampton	36103 1904026	0.371477	0.371477	100.00
10	Southampton	36103 1905011	0.540453	0.540453	100.00
11	Southampton	36103 1905012	0.685360	0.685360	100.00
12	Southampton	36103 1905013	0.788137	0.788137	100.00
13	Southampton	36103 1905014	0.486837	0.486837	100.00
14	Southampton	36103 1905015	0.923458	0.923458	100.00
15	Southampton	36103 1905016	1.718795	1.306817	76.03
16	Southampton	36103 1905017	0.475955	0.475955	100.00
17	Southampton	36103 1905018	7.186221	2.595767	36.12
18	Southampton	36103 1905019	0.759822	0.311064	40.94
19	Southampton	36103 1905021	0.838691	0.838691	100.00
20	Southampton	36103 1906027	10.361043	0.228020	2.20
21	Southampton	36103 1905023	0.848336	0.848336	100.00
22	Southampton	36103 1905024	1.254896	1.254896	100.00
23	Southampton	36103 1905025	1.033546	1.033546	100.00
24	Southampton	36103 1905026	2.466897	2.454042	99.48
25	Southampton	36103 1906012	1.861833	0.349289	18.76
26	Southampton	36103 1906013	1.357362	1.354444	99.79
27	Southampton	36103 1906014	1.193302	1.193302	100.00
28	Southampton	36103 1906015	1.100619	1.100619	100.00
29	Southampton	36103 1906016	0.401637	0.401637	100.00
30	Southampton	36103 1906017	3.661520	3.375780	92.20
31	Southampton	36103 1906018	0.515891	0.042898	8.32
32	Southampton	36103 1905022	0.405375	0.405375	100.00
	Totals:		81.710526	46.480125	

For Radius of 3 Mi., Circle Area = 28.274334

No.	City	Block Group ID	Total Area	Partial Area	% Within Radius
1	Southampton	36103 1904011	4.698882	0.357458	7.61
2	Southampton	36103 1904012	9.872664	1.289911	13.07
4	Southampton	36103 1904021	5.701385	2.005986	35.18
5	Southampton	36103 1904022	3.895608	3.894843	99.98
6	Southampton	36103 1904023	3.447380	3.447380	100.00
7	Southampton	36103 1904024	2.365374	2.332259	98.60
8	Southampton	36103 1904025	1.733201	0.246493	14.22
9	Southampton	36103 1904026	0.371477	0.371477	100.00
10	Southampton	36103 1905011	0.540453	0.540453	100.00
11	Southampton	36103 1905012	0.685360	0.685360	100.00
12	Southampton	36103 1905013	0.788137	0.784080	99.49

Suffolk Paving
100 Rogers Ave., West Hampton Beach, LI

13	Southampton	36103 1905014	0.486837	0.486837	100.00
14	Southampton	36103 1905015	0.923458	0.435033	47.11
15	Southampton	36103 1905016	1.718795	0.211808	12.32
16	Southampton	36103 1905017	0.475955	0.029585	6.22
17	Southampton	36103 1905018	7.186221	1.129151	15.71
19	Southampton	36103 1905021	0.838691	0.838691	100.00
21	Southampton	36103 1905023	0.848336	0.848336	100.00
22	Southampton	36103 1905024	1.254896	1.254896	100.00
23	Southampton	36103 1905025	1.033546	1.033546	100.00
24	Southampton	36103 1905026	2.466897	1.430839	58.00
26	Southampton	36103 1906013	1.357362	0.193715	14.27
27	Southampton	36103 1906014	1.193302	0.813899	68.21
28	Southampton	36103 1906015	1.100619	1.100619	100.00
29	Southampton	36103 1906016	0.401637	0.401637	100.00
30	Southampton	36103 1906017	3.661520	1.743448	47.62
32	Southampton	36103 1905022	0.405375	0.405375	100.00
	Totals:		59.453369	28.313118	

For Radius of 2 Mi., Circle Area = 12.566371

No.	City	Block Group ID	Total Area	Partial Area	% Within Radius
4	Southampton	36103 1904021	5.701385	0.485528	8.52
5	Southampton	36103 1904022	3.895608	2.590557	66.50
6	Southampton	36103 1904023	3.447380	2.668710	77.41
7	Southampton	36103 1904024	2.365374	0.480212	20.30
9	Southampton	36103 1904026	0.371477	0.371477	100.00
10	Southampton	36103 1905011	0.540453	0.540453	100.00
11	Southampton	36103 1905012	0.685360	0.498854	72.79
12	Southampton	36103 1905013	0.788137	0.013386	1.70
13	Southampton	36103 1905014	0.486837	0.236971	48.68
14	Southampton	36103 1905015	0.923458	0.011735	1.27
17	Southampton	36103 1905018	7.186221	0.055135	0.77
19	Southampton	36103 1905021	0.838691	0.838691	100.00
21	Southampton	36103 1905023	0.848336	0.848336	100.00
22	Southampton	36103 1905024	1.254896	0.714180	56.91
23	Southampton	36103 1905025	1.033546	0.704109	68.13
28	Southampton	36103 1906015	1.100619	0.647123	58.80
29	Southampton	36103 1906016	0.401637	0.151782	37.79
30	Southampton	36103 1906017	3.661520	0.330827	9.04
32	Southampton	36103 1905022	0.405375	0.405375	100.00
	Totals:		35.936317	12.593443	

For Radius of 1 Mi., Circle Area = 3.141593

No.	City	Block Group ID	Total Area	Partial Area	% Within Radius
5	Southampton	36103 1904022	3.895608	0.872272	22.39
6	Southampton	36103 1904023	3.447380	0.691613	20.06
9	Southampton	36103 1904026	0.371477	0.235709	63.45
10	Southampton	36103 1905011	0.540453	0.077604	14.36
19	Southampton	36103 1905021	0.838691	0.575079	68.57
21	Southampton	36103 1905023	0.848336	0.241902	28.51

Ref. 11, p. 7 & 9

23	Southampton	36103 1905025	1.033546	0.042040	4.07
32	Southampton	36103 1905022	0.405375	0.405375	100.00
	Totals:		11.380866	3.141593	

For Radius of .5 Mi., Circle Area = 0.785398

No.	City	Block Group ID	Total Area	Partial Area	% Within Radius
5	Southampton	36103 1904022	3.895608	0.257735	6.62
6	Southampton	36103 1904023	3.447380	0.117372	3.40
9	Southampton	36103 1904026	0.371477	0.008599	2.31
19	Southampton	36103 1905021	0.838691	0.126042	15.03
32	Southampton	36103 1905022	0.405375	0.275650	68.00
	Totals:		8.958530	0.785398	

For Radius of .25 Mi., Circle Area = 0.196350

No.	City	Block Group ID	Total Area	Partial Area	% Within Radius
5	Southampton	36103 1904022	3.895608	0.076406	1.96
6	Southampton	36103 1904023	3.447380	0.004659	0.14
19	Southampton	36103 1905021	0.838691	0.017275	2.06
32	Southampton	36103 1905022	0.405375	0.098009	24.18
	Totals:		8.587053	0.196350	

Suffolk Paving
100 Rogers Ave., West Hampton Beach, LI

Ref. 11, p. 8 of 9

========== Site Data ==========

Population:	10468.89
Households:	8948.69
Drilled Wells:	429.16
Dug Wells:	2678.57
Other Water Sources:	6.04

========== Partial (RING) data ==========

---- Within Ring: 4 Mile(s) and 3 Mile(s) ----

Population:	4395.06
Households:	3247.28
Drilled Wells:	251.96
Dug Wells:	1233.34
Other Water Sources:	5.77

** Population On Private Wells: 2010.30

---- Within Ring: 3 Mile(s) and 2 Mile(s) ----

Population:	2435.40
Households:	2729.74
Drilled Wells:	97.76
Dug Wells:	739.90
Other Water Sources:	0.26

** Population On Private Wells: 747.33

---- Within Ring: 2 Mile(s) and 1 Mile(s) ----

Population:	2510.74
Households:	2202.50
Drilled Wells:	51.86
Dug Wells:	562.86
Other Water Sources:	0.00

** Population On Private Wells: 700.75

---- Within Ring: 1 Mile(s) and .5 Mile(s) ----

Population:	843.66
Households:	566.03
Drilled Wells:	24.75
Dug Wells:	118.12
Other Water Sources:	0.00

** Population On Private Wells: 212.95

Ref. 11, p. 9 of 9

Suffolk Paving
100 Rogers Ave., West Hampton Beach, LI

---- Within Ring: .5 Mile(s) and .25 Mile(s) ----

Population:	203.91
Households:	142.57
Drilled Wells:	2.09
Dug Wells:	17.00
Other Water Sources:	0.00

** Population On Private Wells: 27.31

---- Within Ring: .25 Mile(s) and 0 Mile(s) ----

Population:	80.13
Households:	60.58
Drilled Wells:	0.75
Dug Wells:	7.34
Other Water Sources:	0.00

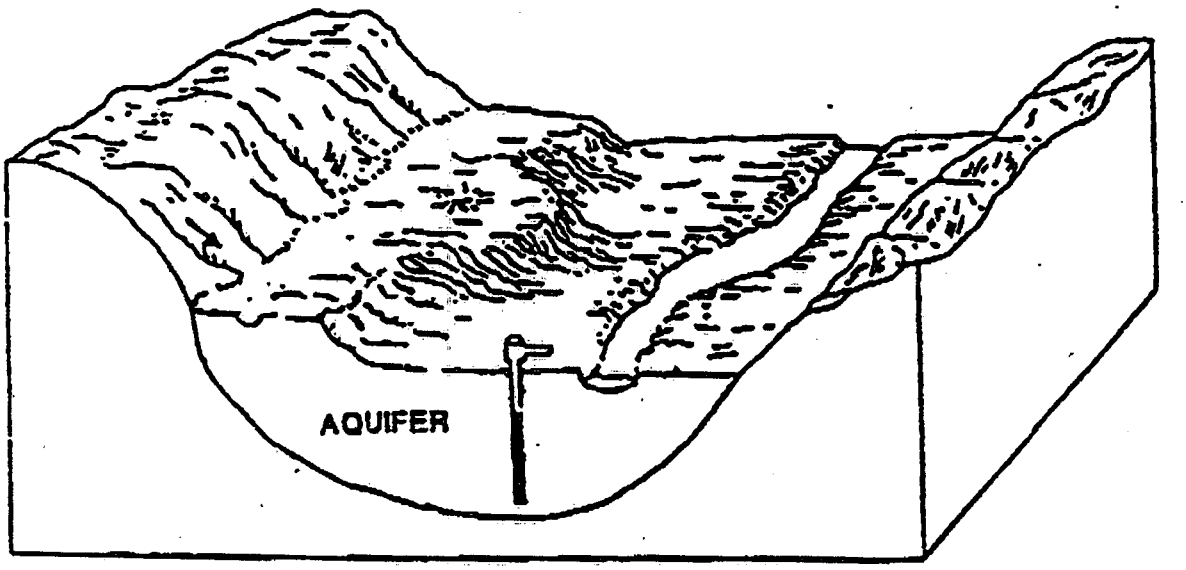
** Population On Private Wells: 10.70

REFERENCE 12

Ref. 12, p. 1 of 5

Department of Environmental Conservation

NEW YORK STATE WELLHEAD PROTECTION PROGRAM



Submittal
to
United States Environmental Protection Agency

New York State Department of Environmental Conservation
MARIO M. CUOMO, *Governor* THOMAS C. JORLING, *Commissioner*

September 1990

Ref. 12, P. 28, 5

NEW YORK STATE WELLHEAD PROTECTION PROGRAM

SUBMITTAL
TO
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
IN
APPLICATION FOR IMPLEMENTATION FUNDS

NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF WATER
ALBANY, NY

SEPTEMBER 1990

Ref. 12, p. 3 of 5.

TABLE OF CONTENTS

PREFACE
ACKNOWLEDGEMENTS

		Page No.
CHAPTER 1	WELLHEAD PROTECTION PROGRAM SUMMARY AND PURPOSE	
1.1.	Introduction	1
1.2.	Background - Groundwater and Groundwater Management in New York State	1
1.3.	Wellhead Protection Program: Purpose and Goal	3
1.4.	Wellhead Protection Program: Summary	4
1.5.	Evaluation of Wellhead Protection Program Progress	6
CHAPTER 2	DUTIES AND RESPONSIBILITIES	
2.1.	Introduction	7
2.2.	Federal Agencies: General Responsibilities	7
2.3.	State Agencies: General Responsibilities	8
2.4.	Regional Planning Agencies	10
2.5	County and Local Governments	10
2.6.	Public Water Supply Systems	11
2.7.	Coordination	11
2.8.	Summary	12
CHAPTER 3	WELLHEAD PROTECTION AREA DELINEATION	
3.1.	Introduction and Institutional Processes	15
3.2.	Delineation Criteria, Thresholds and Methods	17
3.3.	Phasing Considerations	25
3.4.	Summary	25
CHAPTER 4	SOURCE IDENTIFICATION	
4.1.	Categories of Potential Groundwater Contamination Sources	28
4.2.	Contamination Source Inventory Procedures	29
4.3.	Completion, Refinement and Update of Contamination Source Inventory	30
CHAPTER 5	SOURCE MANAGEMENT	
5.1.	Introduction	31
5.2.	Existing Source Control Programs	31
5.3.	Future Management Considerations	38
5.4.	Summary	43

Ref. 12, P. 485

TABLE OF CONTENTS
(Continued)

		Page No.
CHAPTER 6	CONTINGENCY PLANNING	
6.1.	Introduction	48
6.2.	Emergency Planning Program	48
6.3.	Emergency Equipment Stockpiles	49
6.4.	Wellhead Protection Program Submittal	50
CHAPTER 7	NEW WELLS	
7.1.	Institutional Processes	51
7.2.	Wellhead Protection for New Wells	52
CHAPTER 8	SUMMARY OF PUBLIC PARTICIPATION IN THE DEVELOPMENT OF THE WELLHEAD PROTECTION PROGRAM	54

Ref. 12, p. 5 of 5

TABLE 3.1.
WELLHEAD PROTECTION AREA
DELINEATION SUMMARY

Geographic Region	Aquifer Area	Wellhead Protection Area Baseline Delineation
Long Island	Magothy & Lloyd Aquifers	Deep Flow Recharge Area
	Glacial Aquifer	Simplified Variable Shape: 1,500 ft. radius upgradient 500 ft. radius downgradient
Upstate	Unconsolidated Aquifers	Aquifer Boundaries (land surface)
	Bedrock Aquifers	Fixed Radius: 1,500 ft. radius

REFERENCE 13

NATIONAL WETLANDS INVENTORY

UNITED STATES DEPARTMENT OF THE INTERIOR

4-MILE RADIUS - WETLAND ACREAGE - AIR PATHWAY

15-MILE SURFACE WATER PATHWAY - WETLAND FRONTAGE MAP

CENTRAL SUFFOLK PAVING SITE

SCALE 1:24000

Other information concerning the wetland resources depicted on this document may be available. For information, contact:

Regional Director (ARDA) Region V
U.S. Fish and Wildlife Service
300 Westgate Center Drive
Hadley, MA 01035

WETLAND LEGEND

E – Primarily represents upland areas, but may include unclassified wetlands such as man-modified areas, non photo-identifiable areas and/or unintentional omissions.

ECOLOGICAL SYSTEM

E – ESTUARINE

M – MARINE

P – PALUSTRINE

L – LACUSTRINE

R – RIVERINE

MODIFYING TERMS

In order to more adequately describe wetland and deepwater habitats one or more of the water regime, water chemistry, soil, or special modifiers may be applied at the class or lower level in the hierarchy. The typical modifier may also be applied to the ecological system.

WATER REGIME(1): Non-Tidal: Permanently Flooded, Intermittently Exposed, Permanently Flooded-Intermittently Exposed, Semipermanently Flooded, Seasonally Flooded, Saturated, Temporarily Flooded, Intermittently Flooded, Temporarily Flooded-Intermittently Flooded. Tidal: Subtidal, Irregularly Exposed, Regularly Flooded, Irregularly Flooded. Lunar: Irregularly Flooded.

WATER CHEMISTRY: Salinity: Hyperhaline, Euhaline, Mesohaline, Oligohaline, Polyhaline, Mixohaline (Brackish), Fresh. Alkalinity: Hyperalkaline, Eualkaline, Oligoalkaline, Acmeoalkaline. pH Modifiers for all Fresh Waters: Acid, Circumneutral, Alkaline.

SOIL: Organic, Mineral.

SPECIAL MODIFIERS: Beaver, Diked/Impounded, Farmed, Artificial, Rubble, Excavated, Partially Drained/Ditched.

(1) Interpretation on the water regime modifiers found on this legend, but not found in the classification system, may be obtained from the above-listed source.

Ref. 13, p. 2 of 3

DOCUMENTATION FOR WETLANDS CALCULATIONS

The following procedures were used to determine the wetlands values for the surface water and air pathways.

Surface Water Pathway

A map wheel, set to the same scale as the National Wetlands Inventory Maps' scale, was used to measure the wetlands frontage along the surface water stream segments. Only the eligible wetlands, as defined in the U.S.EPA Hazard Ranking System Guidance Manual, November 1992, Highlight A-8, were measured for the surface water pathway.

Air Pathway

A transparent grid, with one acre grids which corresponded to the National Wetlands Inventory Maps' scale, was overlain on the NWI maps and the acreage was tabulated for each radii in the study area. Only the eligible wetlands, as defined in the U.S.EPA Hazard Ranking System Guidance Manual, November 1992, Highlight A-8, were measured for the surface water pathway.

acreage for Air PATHWAY:

0 - 0.25 miles = 0 acres
0.25 - 0.5 miles = 10 acres
0.5 - 1 mile = 18 acres
1 - 2 miles = 260 acres
2 - 3 miles = 215 acres
3 - 4 miles = 540 acres

Ref. 13 p. 3 of 3

FOSTER WHEELER ENVIRONMENTAL CORPORATION

BY J.H. DATE 1-25-96 SHEET ____ OF ____

CHKD. BY ____ DATE ____ OFS NO. ____ DEPT. NO. ____

CLIENT

PROJECT 8310-0076-0000-40010 Central Suffolk Pairing

SUBJECT Stream miles + ~~Acreage of wet~~ JH wetland miles

Stream miles

⊕ Aspatuck Creek to Quantuck Bay = 4" ÷ *2.55 = 1.57

Quantuck Creek to Quantuck Bay = 4.75" ÷ 2.55 = 1.86

Quantuck Bay to Quogue Canal = 2" ÷ 2.55 = 0.78

Quogue Canal to Shinnecock Bay = 6.25" ÷ 2.55 = 2.45

Shinnecock Bay to Atlantic Ocean = 15" ÷ 2.55 = 5.88

Atlantic to end of TDL = 11" ÷ 2.55 = 4.31

= 14.99 from PPE ⊗ to Atlantic excluding 1.86 miles of tidally influenced Quantuck Creek.

* 2.55 inches = 1 stream mile on map which.

Wetlands in Miles

Aspatuck Creek	=	3.5"	=	1.37 miles
Quantuck Creek	=	2"	=	0.78 miles
Quantuck Bay	=	4"	=	1.57 miles
Canal (Quogue)	=	8.5"	=	3.33 miles
Shinnecock Bay	=	45"	=	17.65 miles
Coastal	=	19"	=	7.45 miles

JANIS HOTHINGER

REFERENCE 14

Ref. 14, p. 182

U.S. DEPARTMENT OF THE INTERIOR

BRUCE BABBITT, Secretary

U.S. GEOLOGICAL SURVEY

Gordon P. Eaton, Director

For information on the water program in New York write to
District Chief, Water Resources Division
U.S. Geological Survey
U.S. Post Office and Courthouse
P.O. Box 1669
Albany, New York 12201

or

For information on the water program in Long Island write to
Subdistrict Chief, Water Resources Division
U.S. Geological Survey
5 Aerial Way
Syosset, New York 11791

1994

Ref. 14, p. 2 of 2

Discharge measurements made at low-flow partial-record stations during water year 1993--Continued

Station No.	Station name	Location	Drainage area (mi²)	Period of record	Measurements Date	Measurements Discharge (ft³/s)
		Streams on Long Island				
01304600	Big Fresh Pond Outlet at North Sea, N.Y.	Lat 40°55'49", long 72°25'04", Suffolk County, at culvert on Noyack Road, at North Sea, 3.5 mi northwest of Southampton.	--	1951-69 1971-93	6-29-93	.39
01304630	Mill Creek at Noyack, N.Y.	Lat 40°59'35", long 72°21'00", Suffolk County, 50 ft upstream from culvert on Noyack Road, 0.25 mi west of Noyack.	--	1958-93	6-29-93	.66
01304650	Ligonee Brook at Sag Harbor, N.Y.	Lat 40°59'21", long 72°18'12", Suffolk County, at culvert on Brick Kiln Road, 0.75 mi southwest of Sag Harbor.	--	1953-69 1973-93	6-29-93	.03
01304730	Paxabogue Pond Outlet at Sagaponack, N.Y.	Lat 40°55'48", long 72°17'16", Suffolk County, at culvert on Sagg St., at Sagaponack, and 1 mi southeast of Bridgehampton.	--	1953-78 1980-86 1988-93	6-29-93	1.3
01304745	Weesuck Creek at East Quogue, N.Y.	Lat 40°50'52", long 72°34'42", Suffolk County, at culvert on State Highway 27A, 0.5 mi northeast of East Quogue.	--	1974-93	6-30-93	1.8
01304760	Quantuck Creek at Quogue, N.Y.	Lat 40°49'57", long 72°37'08", Suffolk County, at culvert in Old Meeting House Road, 1 mi northwest of Quogue.	--	1958-69 1974-93	6-30-93	2.1
01304780	Aspatuck Creek near Westhampton Beach, N.Y.	Lat 40°49'04", long 72°38'13", Suffolk County, at culvert on Brook Road, at Westhampton Beach.	--	1959-88 1990-93	6-30-93	1.2
01304800	Beaverdam Creek at Westhampton Beach, N.Y.	Lat 40°49'28", long 72°39'42", Suffolk County, at culvert on Old Country Road, 100 ft northwest of State Highway 27A, and 1 mi northwest of Westhampton.	--	1953-88 1990-93	6-30-93	2.0
01304820	Speonk River at Speonk, N.Y.	Lat 40°49'08", long 72°41'29", Suffolk County, at culvert on State Highway 27A, 0.75 mi east of Speonk.	--	1974-93	6-30-93	.95
01304880	Seatuck Creek at Eastport, N.Y.	Lat 40°49'30", long 72°43'43", Suffolk County, 15 ft downstream from culvert on State Highway 27A, at Eastport.	--	1958-93	6-30-93	4.2
01304900	Little Seatuck Creek at Eastport, N.Y.	Lat 40°49'12", long 72°44'23", Suffolk County, at culvert on Moriches Blvd., 0.75 mi southwest of Eastport.	--	1955-69 1974-93	6-30-93	3.5
01304960	Forge River at Moriches, N.Y.	Lat 40°48'22", long 72°50'00", Suffolk County, at culvert on State Highway 27A, at Moriches.	--	1948-50 1952-93	6-30-93	6.0

REFERENCE 15

Department of Environmental Conservation

Division of Water

New York State Water Quality 1994

Submitted Pursuant to Section 305(b) of the Federal Clean Water Act

June 1994

New York State Department of Environmental Conservation
MARIO M. CUOMO, *Governor* LANGDON MARSH, *Commissioner*

Ref. 15, p. 2 of 11

NEW YORK STATE WATER QUALITY 1994

Submitted Pursuant to
Section 305(b) of the
Federal Clean Water Act
Amendments of 1977 (PL 95-217)

Prepared by:

Quality Evaluation Section
Bureau of Monitoring & Assessment
Division of Water
New York State Department of Environmental Conservation
50 Wolf Road - Room 328
Albany, N.Y. 12233-3503

Ref. 15; p. 3 of 11

TABLE OF CONTENTS

Part I: Executive Summary/Overview 1

Part II: Snapshot of New York State's Waters 5

Part III: Surface Water Assessment

Chapter One - Summary Data
- Methodology 9
- Overall Use Support 9
- Individual Use Support 10
- Sources of Water Quality Impairment 18
- Pollutants Causing Water Quality Impairment 21

Chapter Two - Public Health/Aquatic Life Concerns
- Size of Waters Affected by Toxics 25
- Fish Consumption Advisories 33
- Pollution-Caused Fishkills 43
- Bathing Beach Closures 47
- Shellfish Area Closures 55

Chapter Three - Lakes Water Quality Assessment 63
Chapter Four - Estuary and Coastal Information 87
Chapter Five - Wetlands Information 89

Part IV: Groundwater Quality

- Overview 95
- Management 97

Part V: Water Pollution Control Program

Chapter One - Planning 103
Chapter Two - Implementation 111
Chapter Three - Compliance 117
Chapter Four - Surface Water Monitoring Programs 121
Chapter Five - Research 125
Chapter Six - Special State Concerns & Recommendations 127

APPENDIX A: Waterbody-Specific Information

- Lake Erie-Niagara River Drainage Basin 135
- Allegheny River Drainage Basin 145

Ref 15, p. 4 of 11

TABLE OF CONTENTS

Part I: Executive Summary/Overview 1

Part II: Snapshot of New York State's Waters 5

Part III: Surface Water Assessment

Chapter One - Summary Data
- Methodology 9
- Overall Use Support 9
- Individual Use Support 10
- Sources of Water Quality Impairment 18
- Pollutants Causing Water Quality Impairment 21

Chapter Two - Public Health/Aquatic Life Concerns
- Size of Waters Affected by Toxics 25
- Fish Consumption Advisories 33
- Pollution-Caused Fishkills 43
- Bathing Beach Closures 47
- Shellfish Area Closures 55

Chapter Three - Lakes Water Quality Assessment 63
Chapter Four - Estuary and Coastal Information 87
Chapter Five - Wetlands Information 89

Part IV: Groundwater Quality

- Overview 95
- Management 97

Part V: Water Pollution Control Program

Chapter One - Planning 103
Chapter Two - Implementation 111
Chapter Three - Compliance 117
Chapter Four - Surface Water Monitoring Programs 121
Chapter Five - Research 125
Chapter Six - Special State Concerns & Recommendations 127

APPENDIX A: Waterbody-Specific Information

- Lake Erie-Niagara River Drainage Basin 135
- Allegheny River Drainage Basin 145

1994 305(B) BASIN INVENTORY

PRIORITY WATER PROBLEMS LIST

SEGMENT NAME	SEG ID	COUNTY	SEGMENT TYPE	SEGMENT SIZE		CLASS	PRIMARY USE IMPAIRED	SEVERITY	PRIMARY POLLUTANT	PRIMARY SOURCE
DRAINAGE BASIN: Atlantic-Long Island Sound										
Sub-Basin: Atlantic Ocean										
ACABONACK HARBOR	1701-0047	Suffolk	Bay	112.0	A	SA	Shellfishing	Impaired	Pathogens	Urban Runoff
AGAWAM LAKE	1701-0117	Suffolk	Lake	65.0	A	C	Fish Survival	Threatened	Pathogens	Urban Runoff
ANITYVILLE CREEK	1701-0087	Suffolk	River	2.5	Mi.	C(T)	Fish Survival	Threatened	Pathogens	Urban Runoff
ARTHUR KILL	1701-0010	Richmond	Estuary	2300.0	A	SD	Fish Survival	Impaired	Oxygen Demand	Municipal
ARTIST LAKE	1701-0135	Suffolk	Lake	26.0	A	B	Fish Survival	Threatened	Pathogens	Urban Runoff
ASPATUCK CREEK	1701-0114	Suffolk	River	2.0	Mi.	C	Fish Survival	Threatened	Pathogens	Urban Runoff
ATLANTIC OCEAN	1701-0014	Kings	Ocean	3.0	Mi.	SA	Shellfishing	Precluded	Pathogens	CSO's
AWIXA CREEK	1701-0093	Suffolk	River	2.0	Mi.	C	Fish Survival	Threatened	Pathogens	Urban Runoff
BEAVERDAM CREEK	1701-0104	Suffolk	River	4.0	Mi.	C	Fish Survival	Threatened	Pathogens	Urban Runoff
BELMONT LAKE	1701-0021	Suffolk	Lake	26.0	A	C	Fishing	Impaired	Priority Organics	Urban Runoff
BERGEN BASIN	1701-0009	Queens	Estuary	72.0	A	I	Aesthetics	Impaired	Aesthetics	CSO's
BIG FRESH POND	1701-0128	Suffolk	Lake	78.0	A	B	Fish Survival	Threatened	Pathogens	Urban Runoff
BRIGHTWATERS POND	1701-0023	Suffolk	Lake	5.0	A	C	Fishing	Threatened	Nutrients	Urban Runoff
BROWN CREEK	1701-0097	Suffolk	River	2.5	Mi.	C	Fish Survival	Threatened	Pathogens	Urban Runoff
CAMAANS POND	1701-0061	Nassau	Lake	20.0	A	C	Bathing	Precluded	Nutrients	Urban Runoff
CANAAN LAKE	1701-0018	Suffolk	Lake	26.0	A	B(T)	Bathing	Precluded	Nutrients	Land Disposal
CARLLS RIVER	1701-0089	Suffolk	River	5.5	Mi.	C(T)	Fish Survival	Threatened	Pathogens	Urban Runoff
CARMANS RIVER	1701-0102	Suffolk	River	9.0	Mi.	C(TS)	Fish Survival	Threatened	Pathogens	Urban Runoff
CHAMPLINS CREEK	1701-0019	Suffolk	River	2.5	Mi.	C(TS)	Fish Propagation	Impaired	Thermal Changes	Hydromodification
CORCLES HBR INLET	1701-0162	Suffolk	Bay	2.0	A	SA	Shellfishing	Impaired	Pathogens	Other Source
COLD SPRING POND	1701-0127	Suffolk	Bay	188.0	A	SA	Shellfishing	Threatened	Pathogens	Urban Runoff
CONEY ISLAND CR.	1701-0008	Kings	Estuary	30.0	A	I	Fishing	Precluded	Oxygen Demand	CSO's
CONNETQUOT CREEK	1701-0092	Suffolk	River	7.0	Mi.	C(T)	Fish Survival	Threatened	Pathogens	Urban Runoff
COOPERS NECK POND	1701-0116	Suffolk	Lake	7.0	A	C	Fish Survival	Threatened	Pathogens	Urban Runoff
CUTCHOGUE HARBOR	1701-0045	Suffolk	Bay	66.0	A	SA	Shellfishing	Precluded	Pathogens	Urban Runoff
DERING HARBOR	1701-0080	Suffolk	Bay	150.0	A	SA	Shellfishing	Impaired	Pathogens	Urban Runoff
FLANDERS BAY	1701-0030	Suffolk	Bay	1444.0	A	SA	Shellfishing	Precluded	Pathogens	Urban Runoff
FORT POND	1701-0122	Suffolk	Lake	175.0	A	B	Fish Survival	Threatened	Pathogens	Urban Runoff
FREEPORT RESERV.	1701-0025	Nassau	Lake(R)	17.0	A	A	Fishing	Impaired	Nutrients	Urban Runoff
FRESH CREEK	1701-0013	Kings	Estuary	40.0	A	I	Fishing	Impaired	Aesthetics	CSO's
FRESH KILLS	1701-0012	Richmond	Estuary	144.0	A	SC	Fishing	Precluded	Aesthetics	Land Disposal
GARDINERS BAY	1701-0164	Suffolk	Bay	219.0	A	SA	Shellfishing	Precluded	Pathogens	Industrial

(continued on next page...)

Ref. 15, p. 58/11

1994 305(B) BASIN INVENTORY

PRIORITY WATER PROBLEMS LIST

SEGMENT NAME	SEG ID	COUNTY	SEGMENT TYPE	SEGMENT SIZE	CLASS		PRIMARY USE IMPAIRED	SEVERITY	PRIMARY POLLUTANT	PRIMARY SOURCE
DRAINAGE BASIN: Atlantic-Long Island Sound										
. Sub-Basin: Atlantic Ocean										
MECOX BAY	1701-0034	Suffolk	Bay	1045.0	A	SA	Shellfishing	Precluded	Pathogens	Storm Sewers
MILBURN POND	1701-0052	Nassau	Lake	5.0	A	C	Bathing	Precluded	Nutrients	Urban Runoff
MILL CREEK	1701-0106	Suffolk	River	1.0	Mi.	B	Fish Survival	Threatened	Pathogens	Urban Runoff
MILL POND	1701-0113	Suffolk	Lake	90.0	A	B	Fish Survival	Threatened	Pathogens	Urban Runoff
MORICHES BAY	1701-0038	Suffolk	Bay	7038.0	A	SA	Shellfishing	Precluded	Pathogens	Storm Sewers
MUD CREEK	1701-0101	Suffolk	River	4.0	Mi.	C	Fish Survival	Threatened	Pathogens	Urban Runoff
NAPEAGUE BAY	1701-0166	Suffolk	Bay	15.0	A	SA	Shellfishing	Precluded	Pathogens	Other Source
NEGUNTATOGUE CR	1701-0088	Suffolk	River	2.0	Mi.	C	Fish Survival	Threatened	Pathogens	Urban Runoff
NORTH SEA HARBOR	1701-0027	Suffolk	Bay	154.0	A	SA	Shellfishing	Precluded	Pathogens	Storm Sewers
NORTHWEST CREEK	1701-0046	Suffolk	Bay	169.0	A	SA	Shellfishing	Impaired	Pathogens	Other Source
NOYACK BAY	1701-0167	Suffolk	Bay	243.0	A	SA	Shellfishing	Impaired	Pathogens	Other Source
OLD TOWN POND	1701-0118	Suffolk	Lake	7.0	A	C	Fish Survival	Threatened	Pathogens	Urban Runoff
ORIENT HARBOR	1701-0168	Suffolk	Bay	71.0	A	SA	Shellfishing	Impaired	Pathogens	Storm Sewers
ORONOC CREEK	1701-0094	Suffolk	River	6.0	Mi.	C(T)	Fish Survival	Threatened	Pathogens	Urban Runoff
OYSTER POND	1701-0169	Suffolk	Bay	115.0	A	SA	Shellfishing	Precluded	Pathogens	Other Source
PAERDEGAT BASIN	1701-0003	Kings	Bay	68.0	A	I	Fishing	Precluded	Aesthetics	CSO's
PATCHOGUE LAKE	1701-0055	Suffolk	Lake	50.0	A	B	Bathing	Precluded	Silt (Sediment)	Storm Sewers
PATCHOGUE RIVER	1701-0099	Suffolk	River	4.0	Mi.	C(TS)	Fish Survival	Threatened	Pathogens	Urban Runoff
PECONIC RIVER	1701-0108	Suffolk	River	15.0	Mi.	C	Fish Survival	Threatened	Pathogens	Urban Runoff
PENATAQUIT CREEK	1701-0092	Suffolk	River	1.0	Mi.	C	Fish Survival	Threatened	Pathogens	Urban Runoff
PHILLIPS POND	1701-0120	Suffolk	Lake	20.0	A	C	Fish Survival	Threatened	Pathogens	Urban Runoff
QUANTUCK BAY	1701-0042	Suffolk	Bay	730.0	A	SA	Shellfishing	Precluded	Pathogens	Storm Sewers
QUANTUCK CREEK	1701-0115	Suffolk	River	3.0	Mi.	B	Fish Survival	Threatened	Pathogens	Urban Runoff
RARITAN BAY	1701-0002	Richmond	Bay	12410.0	A	SA	Shellfishing	Precluded	Pathogens	Municipal
RICHMOND CREEK	1701-0043	Richmond	River	1.0	Mi.	C	Aesthetics	Impaired	Aesthetics	On-site Systems
RICHMOND CREEK	1701-0150	Richmond	Estuary	65.0	A	SC	Fishing	Stressed	Aesthetics	Land Disposal
SAG HARBOR ACCESS	1701-0035	Suffolk	Bay	208.0	A	SA	Shellfishing	Precluded	Pathogens	Storm Sewers
SAGAPONACK POND	1701-0146	Suffolk	Bay	160.0	A	SA	Shellfishing	Stressed	Pathogens	Storm Sewers
SAMPANNMS CREEK	1701-0090	Suffolk	River	5.0	Mi.	C(T)	Fish Survival	Threatened	Pathogens	Urban Runoff
SANTAPOGUE CREEK	1701-0016	Suffolk	River	2.0	Mi.	C(T)	Fishing	Impaired	Unknown Toxicity	Source Unknown
SAWMILL CREEK	1701-0109	Suffolk	River	2.0	Mi.	D	Fish Survival	Threatened	Pathogens	Urban Runoff
SEBONAC CREEK	1701-0051	Suffolk	Bay	430.0	A	SA	Shellfishing	Impaired	Pathogens	Urban Runoff

(continued on next page...)

Ref. 15 p. C 8 of 11

Ref. 15.P. 7 of 11

1994 305(B) BASIN INVENTORY

PRIORITY WATER PROBLEMS LIST

SEGMENT NAME	SEG ID	COUNTY	SEGMENT TYPE	SEGMENT SIZE		CLASS	PRIMARY USE IMPAIRED	SEVERITY	PRIMARY POLLUTANT	PRIMARY SOURCE
DRAINAGE BASIN: Atlantic-Long Island Sound										
Sub-Basin: Atlantic Ocean										
SHEEPSHEAD BAY	1701-0148	Kings	Bay	91.0	A	I>SC	Fishing	Stressed	Aesthetics	CSO's
SHELLBANK BASIN	1701-0001	Queens	Bay	24.0	A	I	Fish Propagation	Precluded	Oxygen Demand	CSO's
SHELTER IS. SOUND	1701-0170	Suffolk	Bay	178.0	A	SA	Shellfishing	Precluded	Pathogens	Municipal
SHINNECOCK BAY	1701-0033	Suffolk	Bay	289.0	A	SA	Shellfishing	Precluded	Pathogens	Storm Sewers
SMITH PD (RSEVLT)	1701-0136	Nassau	Lake	5.0	A	C	Fishing	Impaired	Priority Organics	Urban Runoff
SMITH POND	1701-0026	Nassau	Lake	20.0	A	C	Fishing	Impaired	Nutrients	Urban Runoff
SOUTH OYSTER BAY	1701-0041	Nassau	Bay	3050.0	A	SA	Shellfishing	Precluded	Pathogens	Urban Runoff
SOUTHHOLD HARBOR	1701-0044	Suffolk	Bay	180.0	A	SA	Shellfishing	Impaired	Pathogens	Urban Runoff
SOUTHOLD BAY	1701-0171	Suffolk	Bay	180.0	A	SA	Shellfishing	Impaired	Pathogens	Storm Sewers
SPRING LAKE	1701-0022	Suffolk	Lake	2.0	A	B	Fishing	Impaired	Priority Organics	Urban Runoff
STIRLING BASIN	1701-0049	Suffolk	Bay	55.0	A	SA	Shellfishing	Precluded	Pathogens	Urban Runoff
SWAN RIVER	1701-0100	Suffolk	River	4.0	Mi.	C(TS)	Fish Survival	Threatened	Pathogens	Urban Runoff
TERRELL RIVER	1701-0103	Suffolk	River	3.0	Mi.	C(TS)	Fish Survival	Threatened	Pathogens	Urban Runoff
TERRY CREEK	1701-0110	Suffolk	River	2.0	Mi.	C	Fish Survival	Threatened	Pathogens	Urban Runoff
THREE MILE HARBOR	1701-0036	Suffolk	Bay	363.0	A	SA	Shellfishing	Precluded	Pathogens	Storm Sewers
THURSTON BASIN	1701-0152	Richmond	Bay	38.0	A	I>SC	Fishing	Stressed	Aesthetics	CSO's
TIANA BAY	1701-0112	Suffolk	Bay	250.0	A	SA	Shellfishing	Threatened	Pathogens	Urban Runoff
TUTHILLS CREEK	1701-0098	Suffolk	River	2.5	Mi.	C(TS)	Fish Survival	Threatened	Pathogens	Urban Runoff
U.MASSAPEQUA RES.	1701-0017	Nassau	Lake(R)	20.0	A	A	Fishing	Stressed	Priority Organics	Urban Runoff
WAINSCOTT POND	1701-0144	Suffolk	Lake	38.0	A	C	Fishing	Stressed	Oxygen Demand	Agriculture
WANTAGH POND	1701-0159	Nassau	Lake	19.0	A	A	Fishing	Threatened	Priority Organics	Urban Runoff
WEESUCK CREEK	1701-0111	Suffolk	River	1.0	Mi.	C	Shellfishing	Threatened	Pathogens	Urban Runoff
WEST HILL POND	1701-0026	Suffolk	Lake	20.0	A	C	Fishing	Impaired	Nutrients	Other Source
WEST NECK HARBOR	1701-0132	Suffolk	Bay	625.0	A	SA	Shellfishing	Threatened	Pathogens	Urban Runoff
WICKAPOGUE POND	1701-0119	Suffolk	Lake	13.0	A	C	Fish Survival	Threatened	Pathogens	Urban Runoff
WILLETS CREEK	1701-0091	Suffolk	River	2.0	Mi.	C	Fish Survival	Threatened	Pathogens	Urban Runoff
WOOLEY POND	1701-0048	Suffolk	Bay	10.0	A	SA	Shellfishing	Precluded	Pathogens	Urban Runoff

(continued on next page...)

Ref. 15, p. 8 of 11

APPENDIX H
NEW YORK STATE WATER QUALITY CLASSIFICATIONS[1]

FRESH SURFACE WATERS

Class N fresh surface waters. (a) The best usages of Class N waters are the enjoyment of water in its natural condition and, where compatible, as a source of water for drinking or culinary purposes, bathing, fishing, fish propagation, and recreation.

(b) There shall be no discharge of sewage, industrial wastes, or other wastes, waste effluents or any sewage effluents not having had filtration resulting from at least 200 feet of lateral travel through unconsolidated earth. A greater distance may be required if inspection shows that, due to peculiar geologic conditions, this distance is inadequate to protect the water from pollution.

(c) These waters shall contain no deleterious substances, hydrocarbons or substances that would contribute to eutrophication, nor shall they receive surface runoff containing any such substance.

Class AA-Special (AA-S) fresh surface waters.

(a) The best usages of Class AA-S waters are: a source of water supply for drinking, culinary or food processing purposes; primary and secondary contact recreation; and fishing. The waters shall be suitable for fish propagation and survival.

(b) These waters shall contain no floating solids, settleable solids, oil, sludge deposits, toxic wastes, deleterious substances, colored or other wastes or heated liquids attributable to sewage, industrial wastes or other wastes.

(c) There shall be no discharge or disposal of sewage, industrial wastes or other wastes into these waters.

(d) These waters shall contain no phosphorus and nitrogen in amounts that will result in growths of algae, weeds and slimes that will impair the waters for their best usages.

[1]From Water Quality Regulations for Surface Waters and Groundwaters, 6NYCRR Parts 700-705 Effective September 1, 1991, NYSDEC Division of Water, Albany, New York.

Ref-15, p-9 of 11

Class A-Special (A-S) fresh surface waters.

(a) The best usages of Class A-S waters are: a source of water supply for drinking, culinary or food processing purposes; primary and secondary contact recreation; and fishing. The waters shall be suitable for fish propagation and survival.

(b) This classification may be given to those international boundary waters that, if subjected to approved treatment, equal to coagulation, sedimentation, filtration and disinfection with additional treatment, if necessary, to reduce naturally present impurities, meet or will meet New York State Department of Health drinking water standards and are or will be considered safe and satisfactory for drinking water purposes.

Class AA fresh surface waters.

(a) The best usages of Class AA waters are: a source of water supply for drinking, culinary or food processing purposes; primary and secondary contact recreation; and fishing. The waters shall be suitable for fish propagation and survival.

(b) This classification may be given to those waters that, if subjected to approved disinfection treatment, with additional treatment if necessary to remove naturally present impurities, meet or will meet New York State Department of Health drinking water standards and are or will be considered safe and satisfactory for drinking water purposes.

Class A fresh surface waters.

(a) The best usages of Class A waters are: a source of water supply for drinking, culinary or food processing purposes; primary and secondary contact recreation; and fishing. The waters shall be suitable for fish propagation and survival.

(b) This classification may be given to those waters that, if subjected to approved treatment equal to coagulation, sedimentation, filtration and disinfection, with additional treatment if necessary to reduce naturally present impurities, meet or will meet New York State Department of Health drinking water standards and are or will be considered safe and satisfactory for drinking water purposes.

Class B fresh surface waters. The best usages of Class B waters are primary and secondary contact recreation and fishing. These waters shall be suitable for fish propagation and survival.

Class C fresh surface waters. The best usage of Class C waters is fishing. These waters shall be suitable for fish propagation and survival. The water quality shall be suitable for primary and secondary contact recreation, although other factors may limit the use for these purposes.

Ref. 15, p. 10 of 11

Class D fresh surface waters. The best usage of Class D waters is fishing. Due to such natural conditions as intermittency of flow, water conditions not conducive to propagation of game fishery, or stream bed conditions, the waters will not support fish propagation. These waters shall be suitable for fish survival. The water quality shall be suitable for primary and secondary contact recreation, although other factors may limit the use for these purposes.

SALINE SURFACE WATERS

Class SA saline surface waters. The best usages of Class SA waters are shellfishing for market purposes, primary and secondary contact recreation and fishing. These waters shall be suitable for fish propagation and survival.

Class SB saline surface waters. The best usages of Class SB waters are primary and secondary contact recreation and fishing. These waters shall be suitable for fish propagation and survival.

Class SC saline surface waters. The best usage of Class SC waters is fishing. These waters shall be suitable for fish propagation and survival. The water quality shall be suitable for primary and secondary contact recreation, although other factors may limit the use for these purposes.

Class I saline surface waters. The best usages of Class I waters are secondary contact recreation and fishing. These waters shall be suitable for fish propagation and survival.

Class SD saline surface waters. The best usage of Class SD waters is fishing. These waters shall be suitable for fish survival. This classification may be given to those waters that, because of natural or man-made conditions, cannot meet the requirements for primary and secondary contact recreation and fish propagation.

GROUNDWATERS

Class GA fresh groundwaters. The best usage of Class GA waters is as a source of potable water supply. Class GA waters are fresh groundwaters.

Class GSA saline groundwaters. The best usages of Class GSA waters are as a source of potable mineral waters, for conversion to fresh potable waters, or as raw material for the manufacture of sodium chloride or its derivatives or similar products. Class GSA waters are saline groundwaters.

Class GSB saline groundwaters. The best usage of Class GSB waters is as a receiving water for disposal of wastes. Class GSB waters are saline groundwaters that have a chloride concentration in excess of 1,000 milligrams per liter or a total dissolved solids concentration in excess of 2,000 milligrams per liter.

Ref. 15, p. 11 of 11

Assignment of groundwater classifications

(a) The groundwater classifications defined above are assigned to all the groundwaters of New York State.

(b) The Class GSB shall not be assigned to any groundwaters of the state, unless the commissioner finds that adjacent and tributary groundwaters and the best usages thereof will not be impaired by such classification.

REFERENCE 16

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Wildlife Resources Center
700 Troy-Schenectady Road
Latham, NY 12110-2400 (518) 783-3932

Ref. 16, p. 1/12

January 18, 1996

Janis Hottinger
Foster Wheeler Environmental Corp.
One Oxford Valley, Suite 200
2300 Lincoln Highway East
Langhorne, PA 19047-1829

Dear Ms. Hottinger:

We have reviewed the New York Natural Heritage Program files with respect to your recent request for biological information concerning the Central Suffolk Paving USEPA Site Investigation, and the area within a four mile radius; including 15 miles downstream, site location as indicated on your enclosed map, located in the Town of Southampton, Suffolk County, New York State.

Enclosed is a computer printout covering the area you requested to be reviewed by our staff. The information contained in this report is considered sensitive and may not be released to the public without permission from the New York Natural Heritage Program.

Our files are continually growing as new habitats and occurrences of rare species and communities are discovered. In most cases, site-specific or comprehensive surveys for plant and animal occurrences have not been conducted. For these reasons, we can only provide data which have been assembled from our files. We cannot provide a definitive statement on the presence or absence of species, habitats or natural communities. This information should not be substituted for on-site surveys that may be required for environmental assessment.

This response applies only to known occurrences of rare animals, plants and natural communities and/or significant wildlife habitats. You should contact our regional office, Division of Regulatory Affairs, at the address enclosed for information regarding any regulated areas or permits that may be required (e.g., regulated wetlands) under State Law.

If this proposed project is still active one year from now we recommend that you contact us again so that we can update this response.

Sincerely,

Deborah L Albert

Deborah L. Albert
Information Services
New York Natural Heritage Program

Encs.
cc: Reg. 1, Wildlife Mgr.
Reg. 1, Fisheries Mgr.
Peter Nye, ESU, Delmar

Reg. 16 2/12

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

REGULATORY AFFAIRS REGIONAL OFFICES

REGION	COUNTIES	NAME	ADDRESS AND PHONE NO.
Region 1	Nassau Suffolk	Robert Greene Permit Administrator	Loop Road, Bldg. 40 SUNY Stony Brook, NY 11790-2356 (516) 751-1389
Region 2	New York City	John Ferguson Permit Administrator	Hunters Point Plaza 4740 21st Street Long Island City, NY 11101-5407 (718) 482-4997
Region 3	Dutchess Orange Putnam Rockland, Sullivan Ulster, Westchester	Margaret Duke Permit Administrator	21 South Putt Corners Road New Paltz, NY 12561-1696 (914) 256-3032
Region 4	Albany Columbia Delaware Greene, Montgomery, Otsego Rensselaer, Schenectady, Schoharie	William J. Clarke Permit Administrator	1159 Westcott Road Schenectady, NY 12306-2014 (518) 382-0680
Region 5	Clinton Essex Franklin Fulton, Hamilton Saratoga, Warren, Washington	Richard Wild Permit Administrator	Route 86 Ray Brook, NY 12977 (518) 891-1370
Region 6	Herkimer Jefferson Lewis Oneida, St. Lawrence	Randy Vaas Permit Administrator	State Office Building 317 Washington Street Watertown, NY 13601 (315) 785-2246
Region 7	Broome Cayuga Chenango Cortland, Madison, Onondaga Oswego, Tioga, Tompkins	Robert Torba Permit Administrator	615 Erie Blvd. West Syracuse, NY 13204-2400 (315) 426-7439
Region 8	Chemung Genesee Livingston Monroe, Ontario, Orleans Schuyler, Seneca, Steuben Wayne, Yates	Albert Butkas Permit Administrator	6274 East Avon-Lima Road Avon, NY 14414 (716) 226-2466
Region 9	Allegany Cattaraugus Chautauqua Erie, Niagara, Wyoming	Steven Doleski Permit Administrator	270 Michigan Avenue Buffalo, NY 14203-2999 (716) 851-7165

Ref. 16, p. 3/12

USERS GUIDE TO NATURAL HERITAGE DATA

DATA SENSITIVITY: The data provided in these reports is sensitive and should be treated in a sensitive manner. The data is for your in-house use and may not be released to the general public or incorporated in any public document without prior permission from the Natural Heritage Program.

BIOLOGICAL AND CONSERVATION DATA SYSTEM (BCD) ELEMENT OCCURRENCE REPORTS:

COUNTY NAME: County where the element occurrence is located.
TOWN NAME: Town where the element occurrence is located.
USGS 7 1/2' TOPOGRAPHIC MAP: Name of 7.5 minute US Geological Survey (USGS) quadrangle map (scale 1:24,000).
LAT: Centrum latitude coordinates of the location of the occurrence. Important: latitude and longitude must be used with PRECISION (see below). For example, the location of an occurrence with M (minute) precision is not precisely known at this time and is thought to occur somewhere within a 1.5 mile radius of the given latitude/longitude coordinates.
LONG: Centrum longitude coordinates of the location of the occurrence. See also LAT above.
PRECISION: S - seconds: Location known precisely. (within a 300' or 1-second radius of the latitude and longitude given.
M - minutes: Location known only to within a 1.5 mile (1 minute) radius of the latitude and longitude given.
SIZE (acres): Approximate acres occupied by the element at this location.
SCIENTIFIC NAME: Scientific name of the element occurrence.
COMMON NAME: Common name of the element occurrence.
ELEMENT TYPE: Type of element (i.e. plant, community, other, etc.)
LAST SEEN: Year element occurrence last observed extant at this location.
EO RANK: Comparative evaluation summarizing the quality, condition, viability and defensibility of this occurrence. Use in combination with LAST SEEN and PRECISION.
A-E = Extant: A=excellent, B=good, C=marginal, D=poor, E=extant but with insufficiently data to assign a rank of A - D.
F = Failed to find. Did not locate species, but habitat is still there and further field work is justified.
H = Historic. Historic occurrence without any recent field information.
X = Extirpated. Field/other data indicates element/habitat is destroyed and the element no longer exists at this location.

NYS STATUS - animals: Categories of Endangered and Threatened species are defined in New York State Environmental Conservation Law section 11-0535. Endangered, Threatened, and Special Concern species are listed in regulation 6NYCRR 182.5.
E = Endangered Species: any species which meet one of the following criteria:
1) Any native species in imminent danger of extirpation or extinction in New York.
2) Any species listed as endangered by the United States Department of the Interior, as enumerated in the Code of Federal Regulations 50 CFR 17.11.
T = Threatened Species: any species which meet one of the following criteria:
1) Any native species likely to become an endangered species within the foreseeable future in NY.
2) Any species listed as threatened by the U.S. Department of the Interior, as enumerated in the Code of the Federal Regulations 50 CFR 17.11.
SC = Special Concern Species: those species which are not yet recognized as endangered or threatened, but for which documented concern exists for their continued welfare in New York. Unlike the first two categories, species of special concern receive no additional legal protection under Environmental Conservation Law section 11-0535 (Endangered and Threatened Species).
P = Protected Wildlife (defined in Environmental Conservation Law section 11-0103): wild game, protected wild birds, and endangered species of wildlife.
U = Unprotected (defined in Environmental Conservation Law section 11-0103): the species may be taken at any time without limit; however a license to take may be required.
G = Game (defined in Environmental Conservation Law section 11-0103): any of a variety of big game or small game species as stated in the Environmental Conservation Law; many normally have an open season for at least part of the year, and are protected at other times.

NYS STATUS - plants: The following categories are defined in regulation 6NYCRR part 193.3 and apply to New York State Environmental Conservation Law section 9-1503.
(blank) = no state status
E = Endangered Species: listed species are those with:
1) 5 or fewer extant sites, or
2) fewer than 1,000 individuals, or
3) restricted to fewer than 4 U.S.G.S. 7 1/2 minute topographical maps, or
4) species listed as endangered by U.S. Department of Interior, as enumerated in Code of Federal Regulations 50 CFR 17.11.
T = Threatened: listed species are those with:
1) 6 to fewer than 20 extant sites, or
2) 1,000 to fewer than 3,000 individuals, or
3) restricted to not less than 4 or more than 7 U.S.G.S. 7 and 1/2 minute topographical maps, or
4) listed as threatened by U.S. Department of Interior, as enumerated in Code of Federal Regulations 50 CFR 17.11.
R = Rare: listed species have:
1) 20 to 35 extant sites, or
2) 3,000 to 5,000 individuals statewide.
U = Unprotected
V = Exploitably vulnerable: listed species are likely to become threatened in the near future throughout all or a significant portion of their range within the state if causal factors continue unchecked.

NYS STATUS - communities: At this time there are no categories defined for communities.

continued on next page

BIOLOGICAL AND CONSERVATION DATA SYSTEM - ELEMENT OCCURRENCE REPORT, 17 JAN 1996
Prepared by N.Y.S.D.E.C. Natural Heritage Program, Latham New York

(This report contains sensitive information which should be treated in a sensitive manner. Refer to the users guide for explanation of codes and ranks.)

* COUNTY & TOWN	USGS TOPO MAP/ LAT. & LONG.	PREC- ISION	LAST SEEN	EO RANK	SCIENTIFIC AND COMMON NAME	ELEMENT TYPE	NY STATUS	US STATUS	HERITAGE RANKS	OFFICE USE	OFFICE	USE
* SUFFOLK												
BROOKHAVEN	EASTPORT 404645 724431	S	1986	BC	RYNCHOPS NIGER BLACK SKIMMER	BIRD	P		G5 S2		4007276	11
BROOKHAVEN	EASTPORT outside 404645 724431	S	1986	D	STERNA DOUGALLII ROSEATE TERN	BIRD	E	LELTNL	G5 S1B	ESU	4007276	11
BROOKHAVEN	EASTPORT outside 404645 724431	S	1985	A	STERNA HIRUNDO COMMON TERN	BIRD	T	C2NL	G5 S3B	ESU	4007276	11
BROOKHAVEN SOUTHAMPTON	EASTPORT X 404945 724327	M	1894	H	CAREX COLLINSII COLLINS SEDGE	VASCULAR PLANT	R		G4 S1S2		4007276	17
BROOKHAVEN	MORICHES outside 404553 724858	S	1988	E	PANDION HALIAETUS OSPREY	BIRD	T		G5 S4	ESU	4007277	31
BROOKHAVEN	MORICHES outside 404734 724930	S	1987	X	PANDION HALIAETUS OSPREY	BIRD	T		G5 S4	ESU	4007277	32
BROOKHAVEN	MORICHES outside 404701 724619	S	1988	E	PANDION HALIAETUS OSPREY	BIRD	T		G5 S4	ESU	4007277	33
BROOKHAVEN	MORICHES outside 404551 724746	S	1986	A	STERNA HIRUNDO COMMON TERN	BIRD	T	C2NL	G5 S3B	ESU	4007277	4
BROOKHAVEN	MORICHES outside 404523 724821	S	1986	D	STERNA HIRUNDO COMMON TERN	BIRD	T	C2NL	G5 S3B	ESU	4007277	5
BROOKHAVEN	MORICHES outside 404542 724923	S	1985	E	CAREX VENUSTA VAR MINOR GRACEFUL SEDGE	VASCULAR PLANT	R		G4T4 S1		4007277	36
BROOKHAVEN	MORICHES outside 404742 724634	M	1975	H	GLYCERIA CANADENSIS VAR LAXA RATTLESNAKE GRASS	VASCULAR PLANT	U		G5TUQ SH		4007277	39

Reg. 16, p. 4/12

BIOLOGICAL AND CONSERVATION DATA SYSTEM - ELEMENT OCCURRENCE REPORT, 17 JAN 1996
Prepared by N.Y.S.D.E.C. Natural Heritage Program, Latham New York

(This report contains sensitive information which should be treated in a sensitive manner. Refer to the users guide for explanation of codes and ranks.)

* COUNTY & TOWN	USGS TOPO MAP/ LAT. & LONG.	PREC-ISION	LAST SEEN	EO RANK	SCIENTIFIC AND COMMON NAME	ELEMENT TYPE	NY STATUS	US STATUS	HERITAGE RANKS	OFFICE USE	OFFICE	USE
SHINNECOCK INDIAN RESERVATION	SHINNECOCK INLET 405203 722611 outside	S	1984	E	EGRETTA TRICOLOR TRICOLORED HERON	BIRD	P		G5 S2		4007274	1
SHINNECOCK INDIAN RESERVATION	SHINNECOCK INLET 405156 722601 outside	M	1931	H	ASTER CONCOLOR SILVERY ASTER	VASCULAR PLANT	E		G4? S1		4007274	13
SHINNECOCK INDIAN RESERVATION	SHINNECOCK INLET 405156 722601 outside	M	1931	H	EUTHAMIA GYMNOSPERMOIDES FLAT-TOP GOLDENROD	VASCULAR PLANT	U		G5 SH		4007274	13
SOUTHAMPTON	EASTPORT 405140 723859 outside	S	1994	A	DWARF PINE PLAINS DWARF PINE PLAINS	COMMUNITY	U		G1G2 S1		4007276	6
SOUTHAMPTON	EASTPORT 405007 723908	S	1994	AB	PITCH PINE-OAK-HEATH WOODLAND PITCH PINE-OAK-HEATH WOODLAND	COMMUNITY	U		G3G4 S2S3		4007276	19
SOUTHAMPTON	EASTPORT 405210 724016	S	1994	A	PITCH PINE-OAK-HEATH WOODLAND PITCH PINE-OAK-HEATH WOODLAND	COMMUNITY	U		G3G4 S2S3		4007276	21
SOUTHAMPTON	EASTPORT 405140 723859	S	1989	A	ATRYTONOPSIS HIANNA DUSTED SKIPPER	BUTTERFLY or SKIPPER	U		G4 S3		4007276	6
SOUTHAMPTON	EASTPORT 405140 723854	S	1987	A	CATOCALA HERODIAS GERHARDI HERODIAS UNDERWING	MOTH	U		G3T3 S2S3		4007276	6
SOUTHAMPTON	EASTPORT 405140 723859	S	1987	B	CATOCALA JAIR SSP 2 JAIR UNDERWING	MOTH	U		G4T4 S1S2		4007276	6
SOUTHAMPTON	EASTPORT 405140 723859	S	1986	AB	CHAETAGLAEA CERATA A NOCTUID MOTH	MOTH	U		G3G4 S1S2		4007276	6
SOUTHAMPTON BROOKHAVEN	EASTPORT outside 404618 724341	S	1993	B	CHARADRIUS MELODUS PIPING PLOVER	BIRD	E	LT	G3 S2B	ESU	4007276	7

Reg. 16, p. 5/12

BIOLOGICAL AND CONSERVATION DATA SYSTEM - ELEMENT OCCURRENCE REPORT, 17 JAN 1996
Prepared by N.Y.S.D.E.C. Natural Heritage Program, Latham New York

(This report contains sensitive information which should be treated in a sensitive manner. Refer to the users guide for explanation of codes and ranks.)

* COUNTY & TOWN	USGS TOPO MAP/ LAT. & LONG.	PREC- ISION	LAST SEEN	EO RANK	SCIENTIFIC AND COMMON NAME	ELEMENT TYPE	NY STATUS	US STATUS	HERITAGE RANKS	OFFICE USE	OFFICE	USE
SOUTHAMPTON	EASTPORT 404858 724215	M	1932	H	CISTOTHORUS PLATENSIS SEDGE WREN	BIRD	P	SC	G5 S2	ESU	4007276	5
SOUTHAMPTON	EASTPORT 405140 723859	S	1987	B	EUXOA VIOLARIS VIOLET DART	MOTH	U		G4 SU		4007276	6
SOUTHAMPTON	EASTPORT 405140 723855	S	1987	A	HEMILEUCA MAIA MAIA COASTAL BARRENS BUCKMOTH	MOTH	U	SC	G4T2T3 S2	ESU	4007276	6
SOUTHAMPTON	EASTPORT 405140 723855	S	1986	A	HETEROCAMPA VARIA A NOCTUID MOTH	MOTH	U		G3G4 S1S2		4007276	6
SOUTHAMPTON	EASTPORT 405140 723859	S	1987	B	PSECTRAGLAEA CARNOSA PINK SALLOW	MOTH	U		G3G4 S2		4007276	6
SOUTHAMPTON	EASTPORT 404702 724213	S	1994	E	RYNCHOPS NIGER BLACK SKIMMER	BIRD	P		G5 S2		4007276	29
SOUTHAMPTON BROOKHAVEN	EASTPORT outside 404618 724341	S	1993	A	STERNA ANTILLARUM LEAST TERN	BIRD	E	LENL	G4 S3B	ESU	4007276	7
SOUTHAMPTON	EASTPORT outside 404702 724213	S	1994	E	STERNA HIRUNDO COMMON TERN	BIRD	T	C2NL	G5 S3B	ESU	4007276	29
SOUTHAMPTON	EASTPORT 405140 723859	S	1989	A	ZALE SP 1 (NEAR Z. LUNIFERA)	MOTH	U		G3Q SU		4007276	6
SOUTHAMPTON	EASTPORT 405128 724238	S	1991	C	ALETRIS FARINOSA STARGRASS	VASCULAR PLANT	U		G5 S2		4007276	32
SOUTHAMPTON	EASTPORT 405154 724151	S	1992	B	ALETRIS FARINOSA STARGRASS	VASCULAR PLANT	U		G5 S2		4007276	15

Ref. 16, p. 6/12

BIOLOGICAL AND CONSERVATION DATA SYSTEM - ELEMENT OCCURRENCE REPORT, 17 JAN 1996
Prepared by N.Y.S.D.E.C. Natural Heritage Program, Latham New York

(This report contains sensitive information which should be treated in a sensitive manner. Refer to the users guide for explanation of codes and ranks.)

* COUNTY & TOWN	USGS TOPO MAP/ LAT. & LONG.	PRECISION	LAST SEEN	EO RANK	SCIENTIFIC AND COMMON NAME	ELEMENT TYPE	NY STATUS	US STATUS	HERITAGE RANKS	OFFICE USE	OFFICE	USE
SOUTHAMPTON	EASTPORT X 404737 723845	S	1993	C	AMARANTHUS PUMILUS SEABEACH AMARANTH	VASCULAR PLANT	U	LT	G2 S1		4007276	31
SOUTHAMPTON	EASTPORT 3.3 mi. SW 404902 724208	M	1945	H	ASCLEPIAS VARIEGATA WHITE MILKWEED	VASCULAR PLANT	T		G5 S1		4007276	3
SOUTHAMPTON	EASTPORT X 404919 723954	M	XXXX	H	ASTER SOLIDAGINEUS FLAX-LEAF WHITETOP	VASCULAR PLANT	U		G5 S2		4007276	4
SOUTHAMPTON	EASTPORT X 405000 723813	S	1991	E	ASTER SPECTABILIS SHOWY ASTER	VASCULAR PLANT	U		G5 S3?		4007276	34
SOUTHAMPTON	EASTPORT X 404856 724208	M	1927	H	CAREX COLLINSII COLLINS SEDGE	VASCULAR PLANT	R		G4 S1S2		4007276	16
SOUTHAMPTON	EASTPORT X 405027 723928	S	1990	A	CYPERUS HOUGHTONII HOUGHTON UMBRELLA-SEDGE	VASCULAR PLANT	R		G4? S3		4007276	28
SOUTHAMPTON	EASTPORT X 405122 723850	S	1991	D	CYPERUS HOUGHTONII HOUGHTON UMBRELLA-SEDGE	VASCULAR PLANT	R		G4? S3		4007276	25
SOUTHAMPTON	EASTPORT X 405158 723849	S	1990	D	CYPERUS HOUGHTONII HOUGHTON UMBRELLA-SEDGE	VASCULAR PLANT	R		G4? S3		4007276	33
SOUTHAMPTON	EASTPORT 1.1 mi. W 404948 723939	S	1990	D	DESMODIUM CILIARE LITTLE-LEAF TICK-TREFOIL	VASCULAR PLANT	T		G5 S2S3		4007276	26
SOUTHAMPTON	EASTPORT see above 405120 723905	M	1991	E	DESMODIUM CILIARE LITTLE-LEAF TICK-TREFOIL	VASCULAR PLANT	T		G5 S2S3		4007276	1
SOUTHAMPTON	EASTPORT outside 404857 724340	M	1894	H	HELIANTHUS ANGUSTIFOLIUS SWAMP SUNFLOWER	VASCULAR PLANT	T		G5 S2		4007276	12

Ref. 16 p 7/12

BIOLOGICAL AND CONSERVATION DATA SYSTEM - ELEMENT OCCURRENCE REPORT, 17 JAN 1996
Prepared by N.Y.S.D.E.C. Natural Heritage Program, Latham New York

(This report contains sensitive information which should be treated in a sensitive manner. Refer to the users guide for explanation of codes and ranks.)

* COUNTY & TOWN	USGS TOPO MAP/ LAT. & LONG.	PREC-ISION	LAST SEEN	EO RANK	SCIENTIFIC AND COMMON NAME	ELEMENT TYPE	NY STATUS	US STATUS	HERITAGE RANKS	OFFICE USE	OFFICE	USE
SOUTHAMPTON	EASTPORT 1.9 miles SW 404827 723944	M	1926	H	HELIANTHUS ANGUSTIFOLIUS SWAMP SUNFLOWER	VASCULAR PLANT	T		G5 S2		4007276	20
SOUTHAMPTON	EASTPORT X 404919 723954	M	1952	H	LESPEDEZA STUEVEI VELVETY LESPEDEZA	VASCULAR PLANT	R		G4? S2		4007276	4
SOUTHAMPTON	EASTPORT 3.8 miles NW 405154 724151	S	1992	A	LINUM INTERCURSUM SANDPLAIN WILD FLAX	VASCULAR PLANT	T		G4G5 S2		4007276	15
SOUTHAMPTON	EASTPORT X 404737 723845	S	1991	D	POLYGONUM GLAUCUM SEABEACH KNOTWEED	VASCULAR PLANT	U		G3 S3		4007276	31
SOUTHAMPTON	EASTPORT 3.8 miles NW 405157 724155	S	1992	BC	SCLERIA PAUCIFLORA VAR CAROLINIANA FEWFLOWER NUTRUSH	VASCULAR PLANT	T		G5T4T5 S1		4007276	30
SOUTHAMPTON	QUOGUE 2.9 miles SE 404829 723537	S	1993	D	CHARADRIUS MELODUS PIPING PLOVER	BIRD	E	LT	G3 S2B	ESU	4007275	11
SOUTHAMPTON	QUOGUE see above 404816 723626	S	1993	D	CHARADRIUS MELODUS PIPING PLOVER	BIRD	E	LT	G3 S2B	ESU	4007275	12
SOUTHAMPTON	QUOGUE X 405214 723524	S	1984	D	HEMILEUCA MAIA MAIA COASTAL BARRENS BUCKMOTH	MOTH	U SC		G4T2T3 S2	ESU	4007275	6
SOUTHAMPTON	QUOGUE X 404929 723404	S	1991	F	RYNCHOPS NIGER BLACK SKIMMER	BIRD	P		G5 S2		4007275	2
SOUTHAMPTON	QUOGUE X 404939 723237	S	1987	F	RYNCHOPS NIGER BLACK SKIMMER	BIRD	P		G5 S2		4007275	16
SOUTHAMPTON	QUOGUE X 405002 723127	S	1994	C	RYNCHOPS NIGER BLACK SKIMMER	BIRD	P		G5 S2		4007275	21

Ref. 16
p. 8/12

BIOLOGICAL AND CONSERVATION DATA SYSTEM - ELEMENT OCCURRENCE REPORT, 17 JAN 1996
Prepared by N.Y.S.D.E.C. Natural Heritage Program, Latham New York

(This report contains sensitive information which should be treated in a sensitive manner. Refer to the users guide for explanation of codes and ranks.)

* COUNTY & TOWN	USGS TOPO MAP/ LAT. & LONG.	PRECISION	LAST SEEN	EO RANK	SCIENTIFIC AND COMMON NAME	ELEMENT TYPE	NY STATUS	US STATUS	HERITAGE RANKS	OFFICE USE	OFFICE	USE
SOUTHAMPTON	QUOGUE 2.4 miles SE 404803 723710	S	1994	E	STERNA ANTILLARUM LEAST TERN	BIRD	E	LENL	G4 S3B	ESU	4007275	9
SOUTHAMPTON	QUOGUE 404816 723626	S	1993	D	STERNA ANTILLARUM LEAST TERN	BIRD	E	LENL	G4 S3B	ESU	4007275	12
SOUTHAMPTON	QUOGUE 405002 723127 outside	S	1993	C	STERNA DOUGALLII ROSEATE TERN	BIRD	E	LELTNL	G5 S1B	ESU	4007275	21
SOUTHAMPTON	QUOGUE 404929 723404 outside	S	1992	F	STERNA HIRUNDO COMMON TERN	BIRD	T	C2NL	G5 S3B	ESU	4007275	2
SOUTHAMPTON	QUOGUE 404939 723257 outside	S	1992	F	STERNA HIRUNDO COMMON TERN	BIRD	T	C2NL	G5 S3B	ESU	4007275	19
SOUTHAMPTON	QUOGUE 404940 723237 outside	S	1994	B	STERNA HIRUNDO COMMON TERN	BIRD	T	C2NL	G5 S3B	ESU	4007275	16
SOUTHAMPTON	QUOGUE 405002 723127 outside	S	1994	A	STERNA HIRUNDO COMMON TERN	BIRD	T	C2NL	G5 S3B	ESU	4007275	21
SOUTHAMPTON	QUOGUE 404925 723342 outside	S	1986	F	STERNA HIRUNDO COMMON TERN	BIRD	T	C2NL	G5 S3B	ESU	4007275	15
SOUTHAMPTON	QUOGUE [illegible] 404932 723307	S	1994	D	STERNA HIRUNDO COMMON TERN	BIRD	T	C2NL	G5 S3B	ESU	4007275	4
SOUTHAMPTON	QUOGUE 1.6 miles E 404958 723702	S	1985	B	CAREX BULLATA BUTTON SEDGE	VASCULAR PLANT	T		G5 S1		4007275	25
SOUTHAMPTON	QUOGUE — 404848 723653	M	1893	H	HELIANTHUS ANGUSTIFOLIUS SWAMP SUNFLOWER	VASCULAR PLANT	T		G5 S2		4007275	8

Ref. 16 p. 9/12

BIOLOGICAL AND CONSERVATION DATA SYSTEM - ELEMENT OCCURRENCE REPORT, 17 JAN 1996
Prepared by N.Y.S.D.E.C. Natural Heritage Program, Latham New York

(This report contains sensitive information which should be treated in a sensitive manner. Refer to the users guide for explanation of codes and ranks.)

* COUNTY & TOWN	USGS TOPO MAP/ LAT. & LONG.	PREC- ISION	LAST SEEN	EO RANK	SCIENTIFIC AND COMMON NAME	ELEMENT TYPE	NY STATUS	US STATUS	HERITAGE RANKS	OFFICE USE	OFFICE	USE
SOUTHAMPTON	QUOGUE 405030 723654	S	1991	B	HYPERICUM DISSIMULATUM ST. JOHN'S-WORT	VASCULAR PLANT	U		G5Q S3?		4007275	22
SOUTHAMPTON	QUOGUE 405030 723654	S	1991	A	LOBELIA NUTTALLII NUTTALL'S LOBELIA	VASCULAR PLANT	R		G4G5 S3		4007275	22
SOUTHAMPTON	QUOGUE 404911 723643	M	1977	H	OENOTHERA LACINIATA CUT-LEAVED EVENING-PRIMROSE	VASCULAR PLANT	U		G5 S1		4007275	28
SOUTHAMPTON	SHINNECOCK INLET 405043 722932	S	1992	D	CASMERODIUS ALBUS GREAT EGRET	BIRD	P		G5 S2		4007274	11
SOUTHAMPTON	SHINNECOCK INLET 405043 722932	S	1992	C	EGRETTA THULA SNOWY EGRET	BIRD	P		G5 S2S3		4007274	11
SOUTHAMPTON	SHINNECOCK INLET 405032 722943	S	1994	C	RYNCHOPS NIGER BLACK SKIMMER	BIRD	P		G5 S2		4007274	9
SOUTHAMPTON	SHINNECOCK INLET 405057 722843	S	1991	F	RYNCHOPS NIGER BLACK SKIMMER	BIRD	P		G5 S2		4007274	3
SOUTHAMPTON	SHINNECOCK INLET 405043 722932	S	1984	F	RYNCHOPS NIGER BLACK SKIMMER	BIRD	P		G5 S2		4007274	11
SOUTHAMPTON	SHINNECOCK INLET 405032 722943	S	1994	C	STERNA DOUGALLII ROSEATE TERN	BIRD	E	LELTNL	G5 S1B	ESU	4007274	9
SOUTHAMPTON	SHINNECOCK INLET 405057 722843	S	1991	F	STERNA DOUGALLII ROSEATE TERN	BIRD	E	LELTNL	G5 S1B	ESU	4007274	3
SOUTHAMPTON	SHINNECOCK INLET 405032 722943	S	1994	A	STERNA HIRUNDO COMMON TERN	BIRD	T	C2NL	G5 S3B	ESU	4007274	9

Fig. 16 p. 16/12

BIOLOGICAL AND CONSERVATION DATA SYSTEM - ELEMENT OCCURRENCE REPORT, 17 JAN 1996
Prepared by N.Y.S.D.E.C. Natural Heritage Program, Latham New York

(This report contains sensitive information which should be treated in a sensitive manner. Refer to the users guide for explanation of codes and ranks.)

* COUNTY & TOWN	USGS TOPO MAP/ LAT. & LONG.	PREC- ISION	LAST SEEN	EO RANK	SCIENTIFIC AND COMMON NAME	ELEMENT TYPE	NY STATUS	US STATUS	HERITAGE RANKS	OFFICE USE	OFFICE	USE
SOUTHAMPTON	SHINNECOCK INLET 405057 722843	S	1993	A	STERNA HIRUNDO COMMON TERN	BIRD	T	C2NL	G5 S3B	ESU	4007274	3
SOUTHAMPTON	SHINNECOCK INLET 405043 722932	S	1990	F	STERNA HIRUNDO COMMON TERN	BIRD	T	C2NL	G5 S3B	ESU	4007274	11
SOUTHAMPTON	SHINNECOCK INLET 405043 722932	S	1993	B	GULL NESTING COLONY GULL NESTING COLONY	OTHER	U		S?		4007274	11
SOUTHAMPTON	SHINNECOCK INLET 405032 722943	S	1993	D	GULL NESTING COLONY GULL NESTING COLONY	OTHER	U		S?		4007274	9
SOUTHAMPTON	SHINNECOCK INLET 405043 722932	S	1992	C	WESTERN HEMISPHERE ROOKERY WESTERN HEMISPHERE ROOKERY	OTHER	U		G5 S3		4007274	11

82 Records Processed

Ref. 16 p. 11A

SIGNIFICANT HABITATS

DATE : 01/17/96

REPORT ID#	NAME OF AREA	TYPE OF AREA	COUNTY	TOWN OR CITY	QUADRANGLE	LATITUDE (DEG MIN SEC)	LONGITUDE
SB 52-029	Long Island Dwarf Pine Plains	Rare/Unusual Plant Habitat	Suffolk	Southampton	Eastport	40 51 30	72 38 46
SB 52-030	Maple Swamp-Birch Creek	Wildlife Observation Area	Suffolk	Southampton	Mattituck	40 53 11	72 36 26
SW 52-502	Moriches Bay	Protected Coastal Bay	Suffolk	Brookhaven	Moriches	40 46 31	72 46 20
SW 52-504	Shinnecock Bay	Protected Coastal Bay	Suffolk	Southampton	Quogue	40 50 34	72 32 41
SW 52-512	Quontuck Creek Quogue Refuge	Tidal Creek	Suffolk	Southampton	Quogue	40 50 23	72 36 49

Ref. 16
p. 12/12

REFERENCE 17

Ref. 17 p 1 of 13

Facility Name : Former Central Suffolk Paving Site

Location : Westhampton Beach, Suffolk County, New York

EPA Region : Region II

Person(s) in charge of the facility : Gabriel Pennino

Name of Reviewer : GRB Environmental Services, Inc. Date : March 14, 1989

General description of the facility :
(For example : landfill, surface impoundment, pile, container; types of hazardous substances; location of the facility; contamination route of concern; types of information needed for rating; agency action, etc.)

The Former Central Suffolk Paving Site (NYSDEC site No. 152092) is located in Westhampton Beach, Suffolk county, New York, NYSDEC Region 1. Currently, an asphalt manufacturing plant is in operation at the site. The name of the corporation is Twin Fork Asphalt, Inc. which is operated under the direction of Mr. Gabriel Pennino. There are no records to demonstrate that hazardous waste was produced or disposed of on site.

The site came to the attention of the NYSDEC when an area resident reported that dumping had occured at the site (when the site was owned and operated under different ownership-Central Suffolk Paving) during evening hours. The waste was described as construction and demolition debris which was disposed of in an on-site pit (100 x 40 x 20 ft). When the site changed ownership, the material in the pit was excavated and removed. Clean fill was put in its place.

FIGURE 1

HRS COVER SHEET

Ref. 17 p. 2 of 3

SURFACE WATER ROUTE WORK SHEET

Rating Factor	Assigned Value (Circle One)	Multi-plier	Score	Max Score	Ref. (Section)
1 Observed Release	(0) 45	1	0	45	4.1
If observed release is given a score of 45, proceed to line 4 If observed release is given a score of 0, proceed to line 2					
2 Route Characteristics					
Facility Slope and Intervening Terrain	(0) 1 2 3	2	0	6	4.2
1yr. 24 Hr. Rainfall	0 1 (2) 3	1	2	3	
Distance to Nearest Surface Water	0 1 (2) 3	2	4	3	
Physical state	(0) 1 2 3	1	0	3	
	Total Route Characteristics Score		6	15	
3 Containment	(0) 1 2 3	1	0	3	4.3
4 Waste Characteristics					
Toxicity/Persistence	(0) 3 6 9 12 15 18	1	0	18	4.4
Hazardous Waste Quantity	(0) 3 6 9 12 15 18	1	0	8	
	Total Waste Characteristics Score		0	26	
5 Targets					4.5
Surface Water Use	0 1 (2) 3	3	6	9	
Distance to Sensitive Environment	0 1 (2) 3	2	4	6	
Population Served/Distance to Water Intake Downstream	(0) 4 6 8 10 12 16 18 20 24 30 32 35 40	1	0	40	
	Total Targets Score		10	55	
6 If line 1 is 45, multiply 1 X 4 X 5 If line 1 is 0, multiply 2 X 3 X 4 X 5			0	64,350	
7 Divide line 6 by 64,350 and multiply by 100		Ssw = 0			

FIGURE 7

SURFACE WATER ROUTE WORK SHEET

GPB

Ref. 17p. 3 of 3

	S	S^2
Groundwater Route Score (Sgw)	0	0
Surface Water Route Score (Ssw)	0	0
Air Route Socre (Sa)	0	0
$S_{gw}^2 + S_{sw}^2 + S_a^2$		0
$\sqrt{S_{gw}^2 + S_{sw}^2 + S_a^2}$		0
$\sqrt{S_{gw}^2 + S_{sw}^2 + S_a^2} \,/\, 1.73 = S_M$		0

FIGURE 10

WORKSHEET FOR COMPUTING S_M

Ref. 17, p. 4 of 3

DIRECT CONTACT ROUTE WORK SHEET

Rating Factor	Assigned Value (Circle One)	Multi-plier	Score	Max Score	Ref. (Section)
1 Observed Release	(0) 45	1	0	45	8.1
If line 1 is 45, proceed to line 4 If line 1 is 0, proceed to line 2					
2 Accessibility	0 1 (2) 3	1	2	3	8.2
3 Containment	(0) 1 2 3	1	0	3	8.3
4 Waste Characteristics Toxicity	(0) 1 2 3	5	0	15	8.4
5 Targets					8.5
Population Within a 1-mile Radius	0 1 2 (3) 4 5	4	12	20	
Distance to a Critical Habitat	(0) 1 2 3	4	0	12	
Total Targets Score			12	32	
6 If line 1 is 45, multiply 1 X 4 X 5 If line 1 is 0, multiply 2 X 3 X 4 X 5			0	21,600	
7 Divide line 6 by 21,600 and multiply by 100		$S_{DC} = 0$			

FIGURE 12

DIRECT CONTACT ROUTE WORK SHEET

GPB

Ref. 17 p. 5 of 13

GROUND WATER ROUTE

1. OBSERVED RELEASED

Contaminants detected (5 maximum):

NONE Score=0 [ref:14]

Rationale for attributing the contaminants to the facility:

N/A

2. ROUTE CHARACTERISTICS

Depth to Aquifer of Concern

Name/description of aquifer(s) of concern:

Upper Glacial Aquifer consisting of mixtures of sand and gravel, trace silt. [ref.16 and 3]

Depth(s) from the ground surface to the highest seasonal level of the saturated zone [water table(s)] of the aquifer of concern:

35.52 feet as measured on October 17, 1988 by GRB personnel during a groundwater sampling episode. [ref. 15]

Depth from the ground surface to the lowest point of waste disposal/ storage:

No hazardous waste was found on site. Depth to former buried solid waste was approximately 20 foot. Score= N/A [ref. 11]

Ref. 17, p. 6 of 13

4. WASTE CHARACTERISTICS

Toxicity and Persistence

Compound(s) evaluated

N/A

Compound with highest score:

N/A

Hazardous Waste Quantity

Total quantity of hazardous substances at the facility, excluding those with a containment score of 0 (Give reasonable estimate even if quantity is above maximum):

No hazardous wastes are known to have been disposed at the site.
Score = N/A

Basis of estimating and/or waste quantity:

No hazardous wastes are known to have been disposed on site.

5. TARGETS

Ground Water Use

Use(s) of aquifer(s) of concern within 3 mile radius of the facility:

Aquifer of concern is utilized as a potable drinking water source.
Score = 3 (no alternative source)

Distance to Nearest Well

Location of nearest well drawing from aquifer of concern or occupied building not served by a public water supply:

The nearest private well is located 0.75 miles south on 3 Mortimer Street, Westhampton Beach (App. B-4). The nearest public supply well is located on Meeting House Road, Well No. S-64716, owned by Suffolk County Water Authority. (Ref. 5).

Source: NYS Dept. of Health and Completion Reports - Long Island Wells, NYSDEC Region 1.

Distance to above well or building:

0.75 miles south to private well and 1.5 miles due east to public well
Score = 3

Ref. 17, p. 7 of 13

SURFACE WATER ROUTE

1. OBSERVED RELEASE

Contaminants detected in surface water at the facility or downhill from it (5 maximum):

No natural occuring surface water body is located within the site. The nearest naturally occuring surface water body is located 1,200 feet east, Aspatuck Creek. No chemical data on surface water quality is available.

Score = 0

Rational for attributing the contaminants to the facility:

N/A

***

2. ROUTE CHARACTERISTICS

Facility Slope and Intervening Terrain

Average slope of facility in percent:

The facility slope is less than 3%. (source: GRB site reconnaissance of Oct. 17, 1988) Score = 0

Name/description of nearest downslope surface water:

Nearest downslope surface water body is Aspatuck Creek located 1,200 feet east from the site (Source: Suffolk County Hagstrom Map, pg. 58, 1987 edition) [ref. 7 and 9].

Average slope of terrain between facility and above cited surface water body in percent:

Less than 3% (Source: USGS Topo Map, Eastport, N.Y., 1956 edition) [ref. 9]

Is the facility located either totally or partially in surface water?

No

Is the facility completely surrounded by areas of higher ground?

No

1-Year 24-hour Rainfall in inches

2.75 inches (Source: Rainfall Frequency Atlas of the US, US Dept. of Commerece, Technical Paper No. 40)[ref. 10] Score = 2

Basis of estimating and/or computing waste quantity:

NA

5. TARGETS

Surface Water Use

Use(s) of surface water within 3 miles downstream of the hazardous substance:

Recreation. Score = 2

Is there tidal influence?

Most likely. Aspatuck Creek drains into Quantuck Bay which is tidally influenced.

Distance to a Sensitive Environment

Distance to 5-acre coastal wetland, if 2 miles or less:

0.85 miles southeast (Ref. 9)

Distance to 5-Acre (minimum) fresh-water wetland, if 1 mile or less:

None

Distance to critical habitat of an endangered species or national wildlife refuge, if 1 mile or less:

None. The nearest rare plant and communities are Lespedeza and Pitchpine and are within 1.5 miles of the site (Source: NYSDEC, Region 1, Michael Scheibel, Senior Wildlife Biologist) (Ref. 12)

Population Served by Surface Water

Location(s) of water-supply intake(s) within 3 mile (free-flowing bodies) or 1 mile (static water bodies) downstream of the hazardous substance and population served by each intake:

None. All potable water is served from groundwater supplies. Score = 0

Computation of land area irrigated by above-cited intake(s) and convertion to population (1.5 people per acre):

None. Source of irrigated water is from groundwater only (Ref. 17)

Ref. 17 p. 9 of 13

AIR ROUTE

1. OBSERVED RELEASE

Contaminants detected:

No samples were taken. No documentation of an observed release were obtained. Field measurements were taken with a PID as part of Health and Safety. Monitoring indicated no readings above background levels. Score =0 [ref.13]

Date and location of detection of contaminants

Daily monitoring from October 6 to October 14, 1988.

Methods used to detect the contaminants to the site:

Photoionizer Detector; HNu model 101. Equipment was calibrated daily according to manufacture specifications.

Rationale for attributing the contaminants to the site:

NA. No air contaminants were detected at the site.

***

2. WASTE CHARACTERISTICS

Reactivity and Incompatibility

Most reactive compound

NA

Most incompatible pair of compounds:

NA

Toxicity

Most toxic compound:

NA

Hazardous waste Quantity

Total quantity of hazardous waste:

No hazardous wastes are known to have been disposed of at the site.

Basis of estimating and/or computing waste quantity:

NA

Ref. 17 p. 19 q 13

Distance to agricultural land in production within past 5 years, if 1 mile or less:

None. (ref. 17)

Distance to prime agricultural land in produciton within past 5 years, if 2 miles or less:

None within 2 miles (ref. 17)

Is a historical or landmark site (National Register of Historical Places and National Natural Landmarks) within the view of the site?

No

Ref. 17 p. 11 & 13

Basis of estimating and/or computing waste quantity:

No hazardous waste were found at the site or reported to have been disposed of at the site.

***

3 TARGETS

Distance to Nearest Population

A local resident rents a house on site. Distance from operations is approximately 500 feet.

Distance to nearest building:

The house on site is approximately 500 feet from site operations.

Distance to Sensitive Environments

Distance to wetlands:

The nearest wetland is approximately 0.85 miles south-southeast [ref 9].

Distance to critical habitat:

There are no critical habitats (ref. 12)

Land Use

Distance to commercial/industrial area, if 1 mile or less:

On site

Distance to national park, forest, or wildlife reserve, if 2 miles or less:

A wildlife preserve is located approximately 7,000 feet east-northeast (Quogue Bird Santuary) [ref. 7].

Distance to residential area, if 2 miles or less:

A residential area is adjacent to the southern boundary of the site, approximately 300 feet.

Distance to agriculture land in production within past 5 years, if 1 mile or less:

None (ref. 17)

Ref. 17 p. 12 of 13

DIRECT CONTACT

1. OBSERVED INCIDENT

Date, location, and pertinent details of incident:

There are no known incidents of anyone coming in direct contact with any hazardous wastes on site. No hazardous wastes have been reported to have been generated or disposed of at the site. A fence surrounds the site. Score=0

***

2 ACCESSIBILITY

Describe type of barrier(s):

An artificial barrier (fence) surrounds the site. Score= 2

***

3. CONTAINMENT

Type of containment, if applicable:

Solid waste reported disposed at the site has been excavated and removed. The pit has been filled with clean fill to a maximum depth of 20 feet. Score=0

***

4. WASTE CHARACTERISTICS

<u>Toxicity</u>

Compounds evaluated:

NA

Compound with highest score:

NA

Ref. 17 P. 13 of L

HRS DOCUMENTATION REFERENCES

Reference No.	Description	Location
1	Soil Survey of Suffolk County New York, April 1975, Soil Conservation Services, Pg. 96 Table 10	App. A-5
2	Evaporation Maps for the United States, US Dept. of Commerce, Plate No. 2	App. A-6
3	Site Boring Logs	App. B-2
4	Applied Hydrogeology, pg. 75 By C. W. Fetter	App. A-7
5.	Completion Reports-L.I. Wells NYSDEC Region 1	App. A-2
6	Population Census of Westhampton Beach and Quogue	App. A-3
7	Suffolk County Hagstrom Map, pg. 58	App. A-8
8	Location of Community Water Systems	App. A-9
9	USGS Topographical Map Eastport, N.Y.	App. A-10
10	Rainfall Frequency Atlas of the U.S., US Dept. of Commerce, Technical Paper No. 40	App. A-11

REFERENCE 18

146.18, p. 1 of 2

United States
Environmental Protection
Agency

Office of Solid Waste
and Emergency
Response

Publication 9345.1-07
PB92-963377
EPA 540-R-92-026
November 1992

Superfund

EPA

Hazard Ranking System Guidance Manual

Ref. 18, p. 2 of 2

ESTIMATING PRODUCTION USING SURROGATE DATA

If estimates of annual production data specific to the fishery are not available, estimate production by collecting information for similar surface water bodies containing comparable fisheries. Determine if the surrogate fishery (and the water body itself) is similar to the fishery being evaluated in terms of:

- Fish species or other human food chain organisms present (e.g., production data for a fishery consisting primarily of pike should not be used when evaluating a fishery consisting primarily of smallmouth bass);
- Flow rate (or depth for oceans);
- Characteristics (e.g., salinity, flow, depth, subsurface bottom, state classification, overall water quality);
- Distance from each water body to possible surrogate water body; and
- Fishing activities.

Consider these criteria before assuming that production data from a similar water body can be used for estimating production for the fishery (or portions of the fishery) within the TDL. State fish and game officials are a likely source for such information. Document the rationale for using surrogate data from another fishery for the fishery being evaluated.

For example, production data for a fishery consisting primarily of trout could be used for a fishery consisting of trout that is 30 miles away. The average annual flows of both water bodies should be similar even though the surface water dilution weight assigned to each water body may be different (e.g., a small to moderate stream may have a flow of 90 cfs (an assigned dilution weight of 0.1) while an acceptable surrogate fishery may be a moderate to large stream having a flow of 140 cfs (an assigned dilution weight of 0.01)). In addition, the characteristics of both the surrogate water body and the water body within the TDL should share similar attributes. Both should be either managed as a high quality cold-water fishery or be managed as a limited warm-water fishery. Likewise, both should be either annually stocked and aggressively managed for sport fishing or not stocked.

ESTIMATING PRODUCTION WITHOUT ACTUAL OR SURROGATE DATA

If surface water is documented to be a fishery and production data (actual and surrogate) are not available, assign the fishery a minimum human food chain production of greater than 0 pounds per year. Then, assign the fishery a human food chain population value of 0.03 based on HRS Table 4-18. Use this human food chain population value to assign factor values for Level I concentrations, Level II concentrations, and potential human food chain contamination. Show that the fishery supports human food chain organisms by documenting that at least one human food chain organism lives within fishery boundaries and that fishing occurs in the surface water body.

REFERENCE 19

U.S. DEPARTMENT OF COMMERCE
LUTHER H. HODGES, Secretary

WEATHER BUREAU
W. R[redacted]

TECHNICAL PAPER NO. 40

RAINFALL FREQUENCY ATLAS OF THE UNITED STATES

for Durations from 30 Minutes to 24 Hours and Return Periods from 1 to 100 Years

Prepared by
DAVID M. HERSHFIELD
Cooperative Studies Section, Hydrologic Services Division
for
Engineering Division, Soil Conservation Service
U.S. Department of Agriculture

1963

Rub 19, p 1 of 2

2-YEAR 24-HOUR RAINFALL (INCHES)

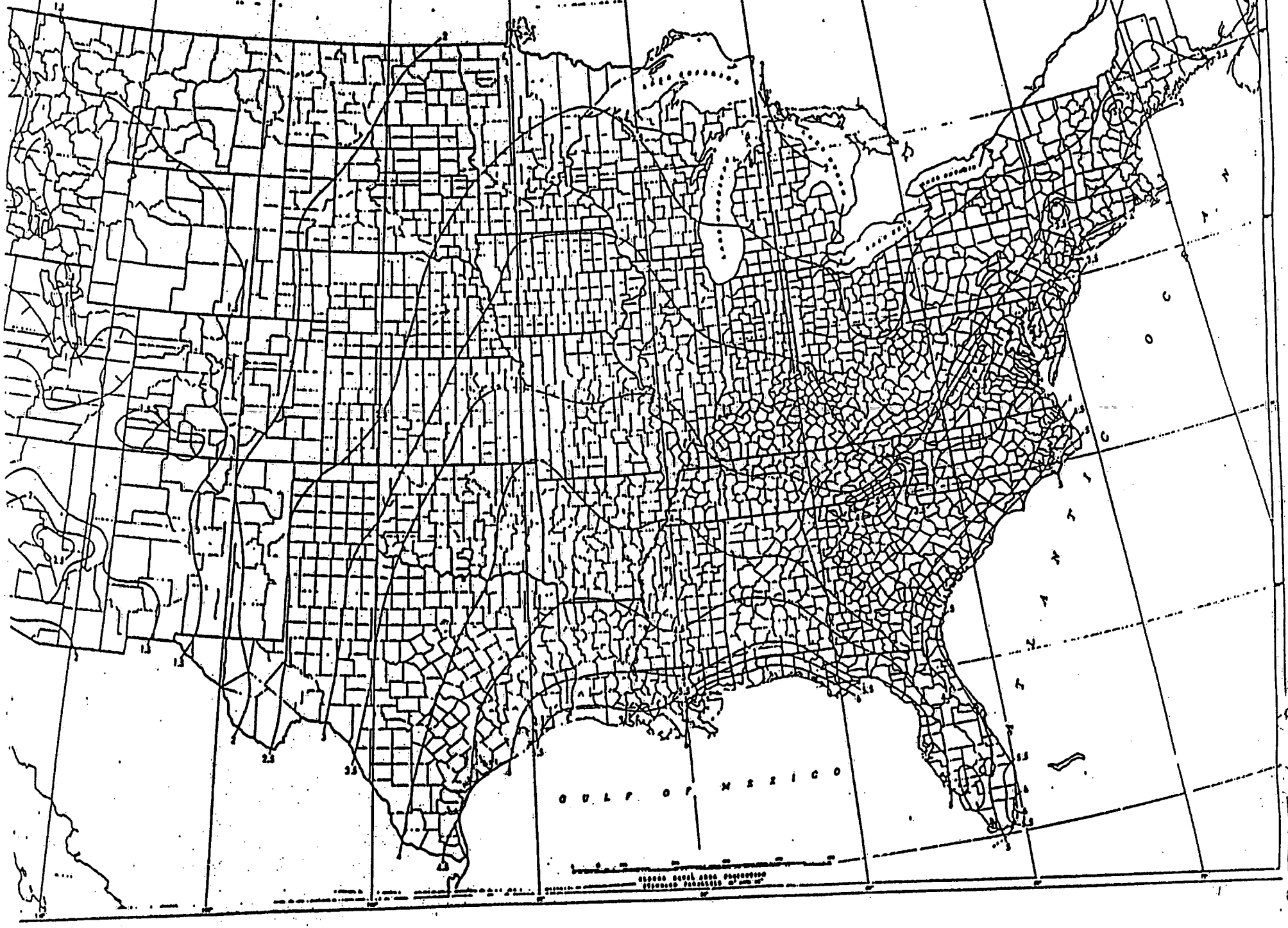


Fig. 19, p. 202

REFERENCE 20

Ref. 20, p. 1 of 1

11046/2-91

RECORD OF TELEPHONE CONVERSATION

DATE 2-13-96

TO File 40010
NAME/FILE NO.

FROM J. Hottinger

CLIENT/PROJECT Central Suffolk Paving Site

SUBJECT AKCS II : # of workers on-site.

CHARGE: DEPT. NO. _____ CLIENT SYMBOL _____ OFS NO. _____

DISCUSSION WITH JH → Pat, Bookkeeper/receptionist for Twin Fork Asphalting company, current site owner. 516-288-5322

- 4 ~~total as~~ JH steady workers on-site.
- Landscaper not on premises since 1984 No more rentals.
- House gone since '93. There are no homes located on-site.

BY Jan Hottinger 2-13-96
NAME TITLE DEPT. NO.

CC: