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EBASCO

Reviewer: A. Stoner
Completed: 9/30/95
Recommendation: High

ARCS II PROGRAM

Remedial Planning Activities at Selected Uncontrolled Hazardous Substance Disposal Sites Within EPA Region II (NY, NJ, PR, VI)

FINAL
SCREENING SITE INSPECTION (SSI)
CAPTAIN'S COVE CONDOMINIUM SITE
GLEN COVE, NASSAU COUNTY NEW YORK

SEPTEMBER 1995

VOLUME I OF V

EPA Contract 68-W8-0110

EBASCO

An ENSERCH® Engineering and Construction Company

102114

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

FINAL
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CAPTAIN'S COVE CONDOMINIUM SITE
GLEN COVE, NASSAU COUNTY NEW YORK

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tech/preasm/ccove2.wp5

EBASCO

September 8, 1995
ARCS II-95-076-1328

Ms Catherine E. Moyik
Work Assignment Manager
U.S. Environmental Protection Agency
18th Floor
290 Broadway
New York, New York 10007-1866

SUBJECT: ARCS II PROGRAM - EPA CONTRACT NO. 68-W8-0110
WORK ASSIGNMENT NO. 076-2JZZ
FINAL SCREENING SITE INSPECTION (SSI) REPORT
CAPTAIN'S COVE CONDOMINIUM SITE

Dear Ms. Moyik:

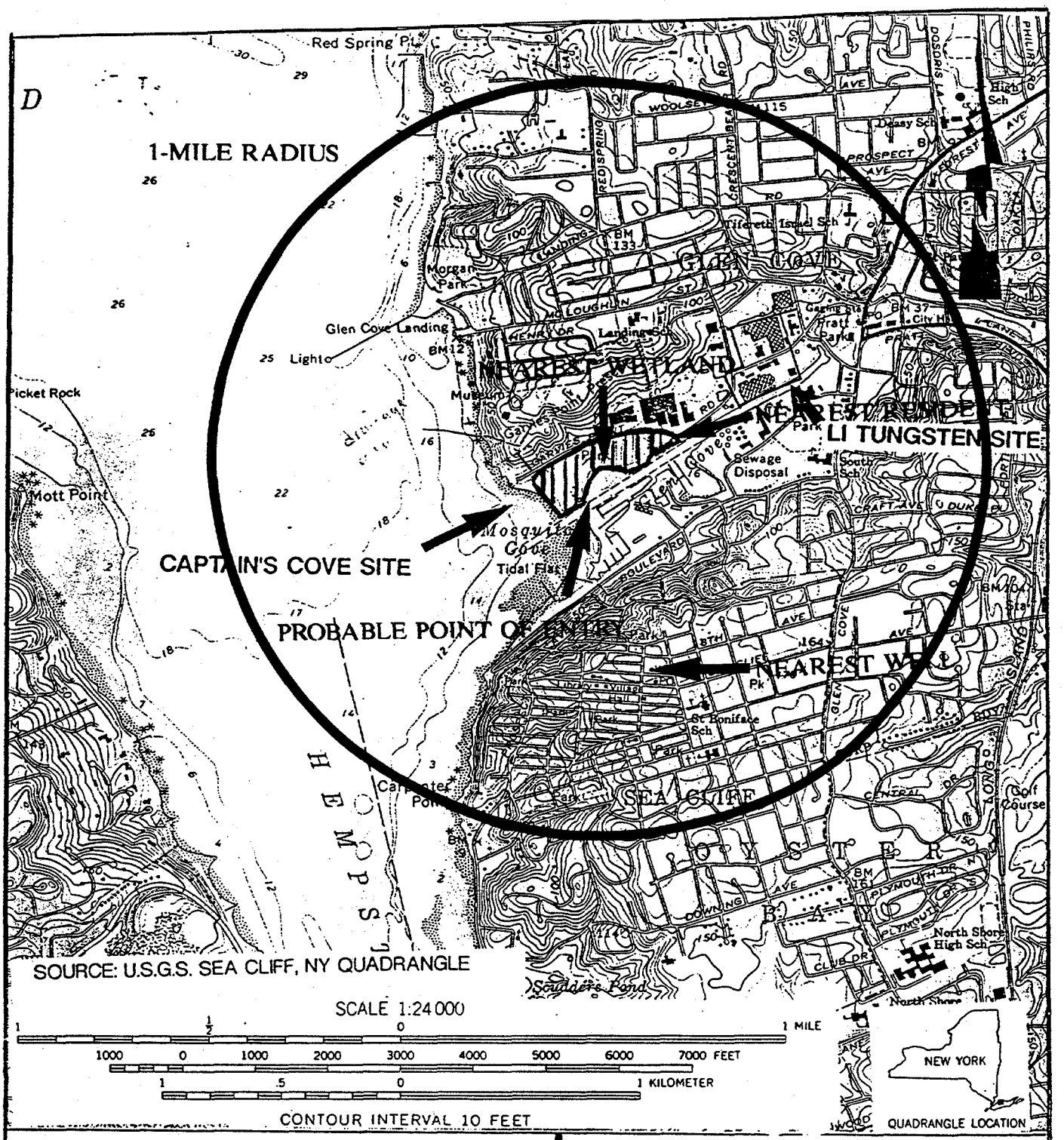
The following is a final summary of the Screening Site Inspection (SSI) evaluation of the Captain's Cove Condominium Site, CERCLIS No. NYD000009377, located on Garvies Point Road, Glen Cove, Nassau County, New York.

The Captains Condominium Site can be located at the intersection of 400 51' 24" latitude and 730 38' 40" longitude on the Seacliff, New York United States Geological Survey (USGS) topographic map (Ref. 31, p. 1 of 1).

General Description and Site History

The Captain's Cove Condominium Site (a.k.a. Garvies Point Condominium Site) is located at the end of Garvies Point Road in Glen Cove, Nassau County, New York (Ref. 3, p. 4 of 39). The site is bounded by Glen Cove Creek to the south, by the Hempstead Harbor and the Hempstead Harbor Yacht Club to the west, Borden Fabric and Leather and Garvies Point Preserve to the north, and the Glen Cove Anglers Marina to the east (Ref. 3, p. 4 of 39; Ref. 5, p. 1 of 23; Ref. 29, p. 1 of 1). Figure 1 and Figure 2 depict the site regional location and a detailed site sketch.

The site is a 19-acre parcel of land located along Glen Cove Creek and Hempstead Harbor that was previously used as a landfill (Ref. 3, p. 4 of 39). Dating back to 1963, the site was used for the disposal of incinerator ash, sewage sludge from the City of Glen Cove wastewater treatment plant, rubbish, household debris, and sediments dredged from the Glen Cove Creek, and there are also allegations of industrial waste disposal at the site (Ref. 3, pp. 28, 31 and 33 of 39). There are also allegations that radioactive waste slag was dumped at the site from the nearby Li Tungsten National Priority List (NPL) site (Ref. 4, pp. 1, 2 of 2 and Volume 5 of this report).



SITE LOCATION MAP

GARVIES POINT

GLEN COVE, NY

EBASCO SERVICES, INC.

FIGURE 1

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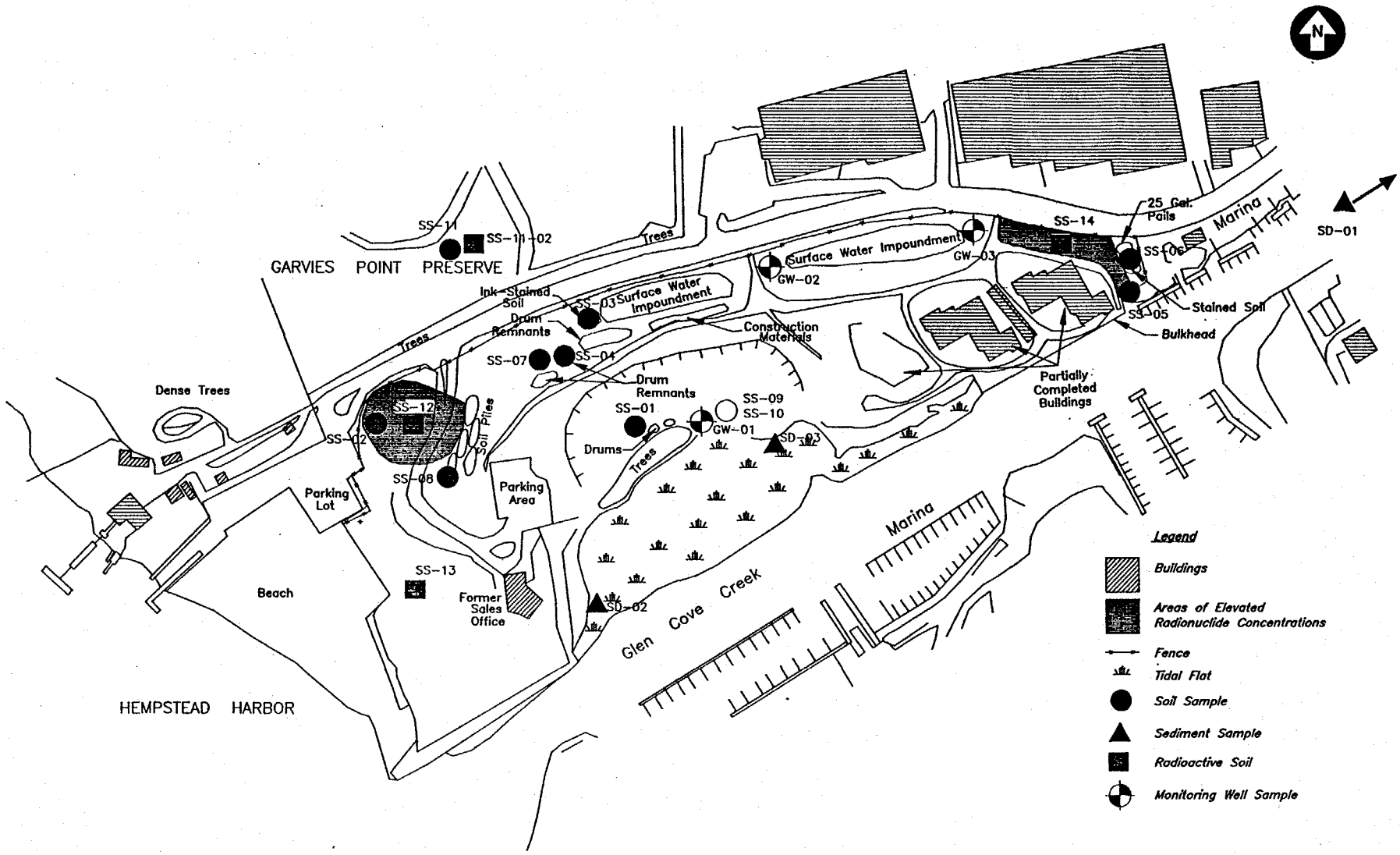

Source: Topo-Metrics, Inc.
Hauppauge, MI

0 300' 600'
Approximate scale

SAMPLE LOCATION MAP
Captains Cove Site
Garvies Point, Nassau County, New York

EBASCO SERVICES, INC.

FIGURE 2

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The site was the location of a planned condominium complex, which was started and then abandoned (Ref. 3, pp. 22 through 24 of 39). The site is presently an unoccupied property which contains remnants of an abandoned condominium complex (Ref. 3, p. 24 of 39). See Figure 2 for the site layout. Bulkheads are located two thirds of the length of the site along Glen Cove Creek and along the western portion of the site that borders Hempstead Harbor (Ref. 3, pp. 22 and 23 of 39). Thousands of yards of fill were deposited along the bulkheads to fill several low lying areas (Ref. 3, p. 22 of 39). Approximately one third of the area along Glen Cove Creek was not bulkheaded in order to preserve a wetland habitat (Ref. 3, p. 22 of 39). Two lined retention ponds, constructed for the condominium complex runoff control, are located the northern portion of the site near Garvies Point Road (Ref. 3, pp. 22 and 23 of 39; Ref. 8, p. 12 of 16). Both wooden and concrete piles, originally installed to provide structural integrity of the planned condominiums, are driven into the majority of the site (Ref. pp. 22, 24 of 39). The frames of two abandoned residential units are located on the eastern portion of the site (Ref. 3, p. 24 of 39). A demolished sales pavilion, with a paved access road leading to it, is located on the western third of the site (Ref. 5, p. 3 of 23). The only section of the site that is free of structures is the far western most portion of the site (Ref. 3, p. 24 of 39).

A six foot high stockade fence and chain link fence are located along the eastern and northern boundaries of the site (Ref. 3, p. 24 of 39; Ref. 5, p. 2 of 23). There are several breaks in the fence around the perimeter of the site, and the eastern-most gate to block vehicular access is completely removed (Ref. 5, pp. 3, 14 of 23; Ref. 6, p. 4 of 52). The site is routinely used as a place for people to walk their dogs, access to fish Glen Cove Creek and Hempstead Harbor, and is being used as a staging area for lobster traps by someone (Ref. 5, pp. 3, 4, 6, 14, 16, 18, 19 of 23; Ref. 6, p. 4 of 52).

The site was owned by a number of private individuals, municipalities, and reality groups. Table 1 provides a summary of the site ownership:

Table 1: Captain's Cove Condominium Site Ownership

Owner	Date	Owner	Date
Wm. H. Seaman	9/21/09	I.I. Miller	11/19/74
E.S. Appleby, et. al.	09/02/76		
Lee Langbaum			
City of Glen Cove	6/26/31	Glen Cove Urban Renewal	04/12/77
Realty Association	9/13/46	(Lots 551& 556)	
John White	10/14/47	CONMAR Builders	03/26/79
Ridgewood Platear	10/4/49	James O'Connell	12/28/79
Realty Association	10/5/49	Glen Cove Develop. Corp.	04/16/81
Glen Cove Realty Corp.	12/12/51	Village Green	08/15/83
		(Lots 424 and 546)	
J. Graham	1/10/56	Village Green	10/04/83
		(Lots 551 and 556)	
Creek Development Corp.	12/20/56		
I.I. Miller	12/22/56		
City of Glen Cove	02/13/58		
Nassau County	04/28/70		
City of Glen Cove	09/13/74	(Ref. 3, p. 29 of 39)	

In 1925, the United States Congress authorized the United States Army Corp of Engineers (USACE) to maintain Glen Cove Creek (Ref. 7, p. 1 of 9). Existing data indicates that Glen Cove Creek was dredged by the USACE in 1948, 1960, and 1965 (Ref. 3, p. 31 of 39). No records were available on the disposal location of the dredge spoils from 1948 (Ref. 3, p. 31 of 39). In 1960, 27,600 yds^3 were dredged from the lower portion of Glen Cove Creek and disposed of on the central section of the Captains Cove Site (Ref. 3, pp. 33, 35 of 39). In 1965, 6,300 yds^3 were dredged from the mouth of Glen Cove Creek and the spoils were disposed in the central portion of the subject site (Ref. 3, p. 33 of 39; Ref. 8, p. 10 of 16). Additional dredging and subsequent disposal at the Captains Cove Site was proposed in 1979, but was not implemented (Ref. 7, pp. 1 through 9 of 9; Ref. 8, p. 10 of 16). A sediment sample obtained by EPA prior to the dredging activities revealed cyanide concentrations above regulatory guidelines (Ref. 9, p. 1 of 3). EP Toxicity analysis of the sediment revealed cyanide at 120 ug/l, and PCBs at 0.32 ug/l (Ref. 9, p. 1 of 3). On November 13, 1979 the NYSDEC declared the proposed dredge spoils as hazardous waste, and the sediment was not dredged from the Glen Cove Creek (Ref. 10, p. 1 of 1).

The City of Glen Cove began using the Captains Cove Site as a landfill for the disposal of incinerator ash and sewage sludge from the City wastewater treatment facility dating back to 1963 (Ref. 3, p. 28 of 39). The site was used as a municipal landfill beginning in 1971 (Ref. 8, p. 10 of 16). The site was never officially operated as a landfill, therefore there was not someone at the site to check the contents of incoming loads (Ref. 5, p. 10 of 23). The typical waste disposed of in the landfill included household garbage, construction debris, and street sweepings (Ref. 8, p. 10 of 16). The wastes were apparently disposed of in trenches with minimal cover (Ref. 11, pp. 1 through 11 of 11).

While no records were available, the subject site was also apparently used for the disposal of industrial wastes (Ref. 5, p. 10 of 23). A 55-gallon drum of purple colored solids, and rolls of ribbon and 55-gallon chemical drums, were excavated during the construction of the surface water retention ponds on the site in 1985 (Ref. 12, p. 2 of 5). The drum was suspected to have been buried during the landfilling operations and the material was suspected to be waste carbon and ribbon from the Columbia Ribbon and Carbon Company, which was formerly located in Glen Cove (Ref. 12, p. 2 of 5). The retention pond excavation was filling with water during the excavation, and the purple ribbon and waste was discoloring the water (Ref. 12, pp. 2 and 3 of 5). The discolored water from the excavation was pumped out onto the street and into storm waters which emptied into the Harbor (Ref. 12, p. 2 of 5). The Nassau County Health Department collected a sample of the discolored water being pumped from the excavation, and the analysis revealed the presence of toluene (2,200 ug/l), chlorobenzene (27 ug/l), ethylbenzene (7 ug/l), xylene (50 ug/l), dichlorobenzene (30 ug/l), chloroform (73 ug/l), trichloroethylene (9 ug/l), and tetrachloroethylene (26 ug/l) (Ref. 12, pp. 3 through 5 of 5). The drums excavated from the site were apparently disposed of at the C & D Landfill in Melville, New York (Ref. 12, p. 3 of 5).

After Village Green Realty purchased the site in 1983, they began the preparation work for the construction of condominiums at the site (Ref. 3, p. 29 of 39). The preparatory work at the site included the construction of bulkheads along Glen Cove Creek, driving wooden and concrete piles into the ground to provide structural integrity, and the construction of on-site surface water retention ponds (Ref. 8, pp. 12, 13 of 16). A sales office was constructed on the western portion of the site, and two, four story concrete structures and one concrete frame were constructed on

the eastern portion of the site prior to the halt of the construction activities at the site (Ref. 3, p. 24 of 29; Ref. 6, p. 45 of 52).

The condominium construction was modified due to the presence of methane at the site (Ref. 8, p. 24 of 39). In March, 1985, RTP Associates conducted an evaluation of on-site pollutants potentially being emitted to the air from subsurface materials which could have potential health effects on the occupants of the proposed condominium complex (Ref. 13, p. 2 of 24). Ambient source monitoring was conducted to determine the quality and quantity of potential contaminants, in the form of pollutant emissions, at the site (Ref. 13, p. 2 of 24). Approximately 10 liters of air were sampled daily directly above 10 subsurface monitoring wells on the subject site (Ref. 13, pp. 3 and 5 of 24). Several of the sampling episodes were conducted at the site in March 1985 (Ref. 13, pp. 6 through 24 of 24). Air samples collected revealed 1,1,1-trichloroethane up to 1.9 ug/l, 1,1,2-trichloroethylene up to 3.1 ug/l, benzene up to 3.3 ug/l, toluene up to 2.2 ug/l, xylenes up to 4.8 ug/l, and up to 90% methane (Ref. 13, pp. 1 through 24 of 24).

In response to a request by the New York State Department of Environmental Conservation (NYSDEC), Camp Dresser & McKee (CDM) conducted an investigation at the site from November to December 1985 (Ref. 14, p. 4 of 56). The investigation included the installation and sampling of four monitoring wells, shallow soil sampling, and the collection of subsurface soil samples from boreholes (Ref. 14, p. 4 of 56).

As part of the investigation by CDM, four shallow monitoring wells were installed at the site at depths of approximately 20 feet below grade (Ref. 14, p. 5 of 56). Three of the monitoring wells were installed hydraulically upgradient of the site (Ref. 14, p. 50 of 56). CDM-3 was installed on the northern perimeter of the site between the two surface water retention ponds (Ref. 14, p. 50 of 56). CDM-2 was installed on the northern perimeter of the site, just east of the eastern retention pond (Ref. 14, p. 50 of 56). CDM-1 was installed on the northeastern perimeter of the site (Ref. 14, p. 50 of 56). Only one monitoring well (CDM-4) was installed hydraulically downgradient of the site on the south-central portion of the site (Ref. 14, p. 50 of 56). Groundwater at the site flows in a south to southeastern direction towards Glen Cove Creek (Ref. 14, p. 50 of 56).

Aqueous samples collected from the monitoring wells by CDM in 1985 were analyzed for Hazardous Substance List-Contract Laboratory Program (HSL-CLP) volatiles, base/neutral/acid extractables and inorganics (Ref. 14, p. 8 of 56). The upgradient monitoring wells, CDM-1, CDM-2 and CDM-3 exhibited detectable concentrations of contaminants, CDM-2 in particular, had elevated levels of organic compounds (Ref. 14, pp. 14 through 18, 26 through 28 of 56). CDM-3, which is located hydraulically upgradient of CDM-4, and CDM-4, the downgradient well, were evaluated to determine site related contaminants associated with the site (Ref. 14, p. 5 of 56). The following contaminants were detected in the downgradient monitoring well (CDM-4) acetone (20 ug/l), benzene (5 ug/l), phenol (14 ug/l), benzoic acid (40 ug/l), barium (1,500 ug/l), chromium (310 ug/l), cobalt (120 ug/l), lead (1,200 ug/l), mercury (3.8 ug/l), nickel (230 ug/l), vanadium (330 ug/l), and zinc (7,100 ug/l) (Ref. 14, pp. 14 through 18, 26 through 28 of 56).

Twenty shallow soil samples were obtained by CDM from November 18-22, November 25-26 and December 13, 1985 (Ref. 14, p. 4 of 56). The soil samples were collected from a depth of

0-2 feet below the surface, and were analyzed for HSL-CLP inorganics and pesticides/PCBs (Ref. 14, pp. 8 of 56). No background soil sample was obtained off-site during the investigation. The following contaminants were detected in on-site soils during the CDM investigation: antimony (340 mg/kg), arsenic (200 mg/kg), barium (401 mg/kg), beryllium (1.2 mg/kg), Cobalt (43 mg/kg), lead (940 mg/kg), mercury (2.1 mg/kg), and Nickel (56 mg/kg) (ref. 14, pp. 29 through 32 of 56).

Four soil borings were drilled to a depth of 15 to 16 feet below grade and composite soil samples were obtained from several depth intervals in each borehole (Ref. 14, pp. 5, 23, 48 of 56). There were no background soil borings advanced during the investigation (Ref. 14, p. 48 of 56). Soil samples from the borings were analyzed for inorganics, pesticides/ PCBs and cyanide (Ref. 14, p. 9 of 56). Aroclor 1248 was detected at a concentration of 1,600 mg/kg in B-12, chlordane was detected at 3,000 mg/kg (Ref. 14, p. 10 of 56). Various concentrations of inorganics were detected in the subsurface soils, cyanide (1.9 mg/kg) was detected in soil boring forty one (Ref. 14, p. 33 through 38 of 56).

The NYSDEC determined that additional site investigations were necessary to fully characterize the site (Ref. 15, p. 3 of 22). In February 1987, RTP Environmental Associates, Inc. and Fanning, Phillips, and Molnar prepared a Supplementary Phase II Investigation Work Plan for the site (Ref. 15, p. 1 of 22). The Phase II Investigation Work Plan called for the installation of additional monitoring wells, soil boring sampling, and characterization of Glen Cove Creek (Ref. 15, pp. 12, 16 of 22).

The Phase II Investigation at the site was never conducted because allegations of radioactive waste disposal at the site lead to a Radiological Survey which postponed the Phase II Investigation, and after the responsible party declared bankruptcy, the investigation was not completed (Ref. 16, p. 1 of 1).

In April 1989, Fred C. Hart Associates, Inc. (HART), who at the time was finalizing a Remedial Investigation (RI) Work Plan for the subject site, was notified of allegations that some radioactive ore from the nearby Li Tungsten Facility was disposed at the Captains Cove Site (Ref. 17 p. 5 of 70). In order to investigate the allegations, HART conducted a radiological survey at the site (Ref. 17 p. 5 of 70). The radiological survey consisted of the collection of real time radioactivity measurements over the entire site, and the collection of soil samples for laboratory analysis (Ref. 17 p. 5 of 70).

Two micro-r-meters were used to survey the site at the ground surface and 1 meter above the ground at 100 foot grid intervals across the site (Ref. 17 p. 6 of 70). Most of the site had radiation levels ranging from 3 to 15 uR/hr, which is within the normal background range of up to 20 uR/hr (Ref. 17, p. 6 of 70). Three areas of the site had micro-r-measurements that exceeded the background levels (Ref. 17, p. 6 of 70). Area 1 is near the paved driveway leading into the site, which had micro-r-readings ranging between 20 and 25 uR/hr (Ref. 17, pp. 6, 7 of 70). The highest measurements in Area 1 were concentrated in a 4 foot by 10 foot area of unvegetated soil, readings up to 50 uR/hr were recorded in this area at a depth of 6 to 18 inches (Ref. 17, p. 6 of 70). Areas 2 and 3 are located on the eastern corner of the site (Ref. 17, p. 7 of 70). Readings up to 60 uR/hr were recorded in Area 2, and Area 3 had readings up to 30 uR/hr (Ref. 17, p. 8 of 70).

On August 23, 1989, three samples were collected during the Phase I Radiological Survey for laboratory analysis in the areas which had elevated mico-r-meter readings (Ref. 17, p. 8 of 70). A background soil sample was also collected (Ref. 17, p. 8 of 70). Background concentrations from the site indicted gross alpha activity 4.8 PCi/g ±2.8 and gross beta activity 12 PCi/g ±4 (Ref. 17, p. 9 of 70). The soil sample from Area 1 revealed gross alpha activity up to 25 Picuries per gram (PCi/g) ±6 and gross beta up to 28 PCi/g ±5, Area 2 revealed gross alpha up to 580 PCi/g ±60 gross beta up to 520 PCi/g ±60, and Area 3 revealed gross alpha up to 200 PCi/g ±20 and gross beta up to 140 PCi/g ±20 (Ref. 17, p. 9 of 70).

Based upon the results of the Phase I Radiological Survey, a Phase II survey was conducted by HART in order to obtain more detailed information on the vertical and horizontal extent of radioactive materials at the Captains Cove Site (Ref. 17, p. 8 of 70). The Phase II Survey, conducted between January 23 and February 13, 1990, consisted of a review of aerial photographs, a large gamma ray survey on a 50 by 50 foot grid with an instrument capable of penetrating up to six feet of soil, and the excavation of trenches (Ref. 17, pp. 8, 10, 14, 24 of 70).

The gamma ray detector located 25 grid points of elevated gamma ray fluxes during the survey (Ref. 17, pp.14 through 21 of 70). Most of the elevated grid points were located in two areas: around the main entrance/paved driveway area (referred to as Area 1 during the phase I investigation), and in the far eastern corner of the property, which correlated with the Areas 2 and 3 delineated in the Phase I investigation (Ref. 17, p. 31 of 70). Fifteen trenches were excavated in the locations of the elevated gamma ray readings (Ref. 17, p. 24 of 70). The trenches were approximately 3 feet wide, by 5 to 15 feet in depth and up to 50 feet in length (Ref. 17, p. 24 of 70). Soil samples were collected at two foot depth intervals in each trench and sent out for laboratory analysis (Ref. 17, p. 27 of 70). A total of 66 soil samples were analyzed for radionuclide concentrations (Ref. 17, p. 28 of 70).

The sampling results from the trenches collected during the Phase II investigation confirmed that the material containing elevated levels of radionuclides was generally found in two areas: one on the far eastern portion of the property (18,750 ft^2), and one on the western portion of the site, near the western driveway/entrance (28,750 ft^2) (Ref. 17, pp. 31 through 34 of 70). Most elevated readings of thorium, radium, and uranium were found in fairly discrete zones in both locations approximately 4 to 8 feet below the ground surface (Ref. 17, p. 31 of 70). The elevated readings in both areas of the site were associated with a black powder or granular material (Ref. 17, p. 32 of 70). The black powder or granular material contained concentrations of uranium and thorium series in the 1 to 50 pCi/g range (Ref. 17, p. 32 of 70). The Phase II Radiological Survey Report states that the physical appearance and corresponding radionuclide concentration of the black powder or granular material closely matches the lower level tungsten ores found on Parcels A and B of the nearby Li Tungsten facility (Ref. 17, p. 32 of 70).

By 1989 Village Green Realty, the responsible party for the site, declared bankruptcy and its funding was withdrawn by the overseer of its receivership after the Radiological Surveys were conducted (Ref. 16, p. 1 of 1).

On July 12, 1994, NYSDEC officially requested EPA to take appropriate action at the site under CERCLA or SARA to eliminate any potential threats to health and the environment (Ref. 16, p.

1 of 1). In response to NYSDEC's request, EPA evaluated the Captain's Cove Site for a CERCLA Removal Action (Ref. 18, p. 1 of 10). Since the subject site was not inhabited and used only by occasional trespassers, it was concluded the site does not qualify for a Removal Action, and a Preliminary Assessment (PA) or Site Inspection (SI) was recommended for the site (Ref. 18, pp. 1 and 5 of 10).

Ebasco Services Incorporated, was assigned to perform a Screening Site Inspection (SSI) at the site in October of 1994 for the USEPA. As part of the SI, surface soil sediment and groundwater samples were collected from April 17, through April 20, 1995 (Ref. 6, pp. 1 through 52 of 52). In addition, Ebasco was directed to further investigate the source of the radioactive contamination at the site and to determine whether radioactive wastes from the nearby Li Tungsten NPL site were disposed of at the Captain's Cove site. The results of the radioactive contamination and its link to the Li Tungsten site are discussed in Volume V of this SSI report.

Ten surface soil samples were collected and analyzed for volatile, semi-volatile organics, PCBs, pesticides, and inorganics (Ref. 6, pp. 1 through 52 of 52 and Ref. 24, pp. 1 and 2 of 278).Volatile organic contamination was detected in two soil samples collected below piles of rusted 5 gallon cans, aerosol cans, paint and paint thinner cans located on the eastern portion of the site (Ref. 24, pp. 6 through 9 of 278). Trichloroethane (230 ug/kg), 4-Methyl 2-Pentanone (28 ug/kg), and Xylenes (58 ug/kg) were detected in the soil samples collected under the piles of rusted containers in concentrations three times the background concentration or were detected in concentrations above the sample quantitation limit when the background concentration was non-detect (Ref. 24, pp. 11 through 59, 77 through 105 of 278).

Semi-volatile organics were detected in surface soil samples collected throughout the site. The following semi-volatile organics, at their maximum concentrations, were detected throughout the site in concentrations three times the background concentration or were detected in concentrations above the sample quantitation limit when the background concentration was non-detect: phenol (640 ug/kg), 2-methyl naphthalene (1,800 ug/kg), acenaphthylene (480 ug/kg), fluorene (540 ug/kg), phenanthrene (1,400 ug/kg), anthracene (1,500 ug/kg), fluoranthene (1,900 ug/kg), pyrene (1,700 ug/kg), benzo(b)fluoranthene (2,400 ug/kg), benzo (k) fluoranthene (1,400 ug/kg), benzo(a)pyrene (1,000 ug/kg), benzo(g,h,i)perylene (350 ug/kg), chysene (1,800 ug/kg), benzo(a) anthracene (750 ug/kg) (Ref. 24, pp. 1 through 59, 77 through 105, and 127 through 166 of 278).

Pesticides and PCBs were also detected in surface soil samples, but not as widespread as the semi-volatile organics (Ref. 24, pp. 6 through 9 of 278). The following pesticides were detected in concentrations three times the background concentration or above the sample quantitation limit if they were not detected in the background: Endrin keytone (22 ug/kg), alpha-chlordane (21 ug/kg), and Endosulfan Sulfate (8.7 ug/kg) (Ref. 24, pp. 7, 224 through 247, and 255 through 267 of 278). PCBs were detected in four surface soil samples at concentrations three times the background concentration or above the sample quantitation limit if they were not detected in the background: Aroclor-1248 (up to 240 ug/kg), and Aroclor-1254 (up to 280 ug/kg) (Ref. 24, pp. 7, 224 through 247, and 255 through 267 of 278). Three of the four soil samples exhibiting concentrations of PCBs were associated with drum remnants/fragments at the site (Ref. 24, pp. 6 through 9 of 278).

Inorganics were detected in surface and subsurface soil samples collected throughout the site (Ref. 24, 6 through 10 of 278). The following inorganics from surface soil samples, and their maximum concentrations, were detected in concentrations three times the background concentration or were detected in concentrations above the sample quantitation limit when the background concentration was non-detect and therefore qualify as an area of observed contamination: antimony (1;630 mg/kg), arsenic (239 mg/kg), barium (3,950 mg/kg), cadmium (8.3 mg/kg), Copper (727 mg/kg), iron (73,100 mg/kg), lead (1,240 mg/kg), magnesium (11,400 mg/kg), mercury (2.7 mg/kg), Silver (22.4 mg/kg), and Zinc (1,380 mg/kg) (ref. 24, pp. 6 through 9, 169 through 199, and 208 through 221 of 278). Subsurface soil samples, collected from a depth of 4.5 to 5.5 feet below grade revealed: Antimony (994 mg/kg), arsenic (782 mg/kg), barium (430 mg/kg), cobalt (83.6 mg/kg), copper (1,980 mg/kg), iron (47,900 mg/kg), lead (5,690 mg/kg), magnesium (1,800 mg/kg), manganese (7,400 mg/kg), silver (195 mg/kg), and zinc (2,530 mg/kg) (Ref. 24, pp. 6 through 9, 169 through 199, 208 through 221 of 278).

Three soil samples, two subsurface and one surface, were collected at the Captain's Cove Condominium site during the SI in order to properly document the radiological contamination previously detected at the site, and to determine the tungsten concentration of the radiological waste material. A surface soil sample (CC-SS14-01) obtained from the radioactive disposal area on the eastern portion of the site revealed radioactivity levels three times the background (Ref. 24, p. 2 of 278; Ref. 25, pp. 1, 32 through 64 of 64). The surface soil sample revealed U-238 (18.6 PCi/g ±3.37), U-234 (23.9 PCi/g ±3.91), Th-230 (45.2 PCi/g ±7.47), U-235 (1.07 PCi/g ±0.743), Th-227 (4.87 PCi/g ±3.9), Th-232 (20.00 PCi/g ±5.71), and Th-228 (19.4 PCi/g ±5.66) (Ref. 25, pp. 1 and 32 through 64 of 64). The surface soil sample in the eastern disposal area also revealed tungsten at a concentration of 3,200 mg/kg (Ref. 27, pp. 1, 20 of 39). The following subsurface soil samples, collected from the western disposal area, revealed radioisotopes at levels three times the background CC-SS13-01: U-234 (1.1 PCi/g ±.615), Th-227 (1.43 PCi/g ±1.71), and CC-SS12-01: Th-232 (0.893 PCi/g ±0.188), and Th-228 (0.678 ±0.202) (Ref. 25, pp. 1 and 32 through 64 of 64). Tungsten was also detected in a subsurface soil sample at a concentration of 1,210 mg/kg at depth of 5.5 feet below grade (Ref. 24, p. 2 of 278; Ref. 27, p. 19 of 39).

Three groundwater samples were collected from the existing onsite monitoring wells (Ref. 6, pp. 18 through 21 of 52). Analysis of unfiltered groundwater samples collected from on-site monitoring wells during the SI revealed concentrations of contaminants greater than three times the background concentration or contaminants were detected in concentrations above the sample quantitation limit when the background concentration was non-detect (Ref. 24, pp. 3, 10, 204 through 207 of 278). The following contaminants were detected at three time the background levels: arsenic (30.4 ug/l), antimony (46.9 ug/l), barium (730 ug/l), lead (500 ug/l), and zinc (386 ug/l) (Ref. 24, pp. 3, 10, 200 through 204 of 278). Filtered groundwater samples revealed arsenic (3.4 ug/l), antimony (52.9 ug/l), and barium (386 ug/l) at three times the background levels (Ref. 24, pp. 3, 10, 204 through 207 of 278). Only the filtered groundwater samples were used to evaluate the site. There were no volatiles, semi-volatiles, or pesticides/PCBs detected in concentrations exceeding three times the background levels (Ref. 24, pp. 10, 66 through 68, 200 through 207 and 248 through 251 of 278).

Three sediment samples, two adjacent to the site of the wetlands in Glen Cove Creek, and one upgradient of the site and the tidal influence, were collected and analyzed for volatile and semi-

volatile organics, PCBs, pesticides, and inorganics (Ref. 24, p. 3, 10 of 278). Two sediment samples were obtained in Glen Cove Creek adjacent to the site to assess the potential for an observed release to surface water (Ref. 24, pp. 3, 10 of 278). The samples were obtained in a emergent wetland during low tide (Ref. 6, p. 4 of 52). Based on the water mark on the phragmites at the sample locations, it is estimated that the areas are covered with approximately 5 feet of water at high tide (Ref. 6, pp. 31 and 32 of 52). An upgradient sediment sample was obtained approximately ¾ mile upstream from the site (Ref. 6, p. 6 of 52). The upstream sample was obtained above a dam that prevents the tidal influence from going upstream (Ref. 6, p. 6 of 52; Ref. 31, p. 1 of 1; Ref. 34, p. 1 of 5). Based on the analytical results of the sediments, it was determined that there is an observed release of Silver (at 16.4 ug/kg) to the wetlands in Glen Cove Creek that can be attributed to the site (Ref. 24, pp. 10, 169 through 199, 222 through 247, and 252 through 254 of 278). PCBs were detected in both sediment samples at concentrations three times the upstream concentration; however, past sediment samples obtained from Glen Cove Creek prior to dredging activities revealed PCBs and since the contamination may be attributable to other sources, the PCBs in the sediments were not used to evaluate the surface water pathway for the subject site (Ref. 9, p. 1 of 3 and Ref. 24, pp. 3 and 252 through 254 of 278). There were no sediment samples exhibiting volatiles, semi-volatiles or pesticides in concentrations qualifying as an observed release to surface water (Ref. 24, pp. 10, 77 through 76, 118 through 126 and 222 through 224).

Evaluation of Existing Information

Several reports were used to obtain background information, however the analytical results of a Site Inspection conducted by Ebasco Services in April 1995 were used to evaluate the sources and releases at the site.

A Field Activities Report prepared by CDM in 1986 was used to determine site-specific geology and groundwater information. The CDM report discussed the installation of on-site monitoring wells, and groundwater and soil sample results. The sample analyses discussed in the CDM report did not contain the proper QA/QC for evaluation under the HRS; however, the information was used to determine sample locations during the SI.

A Phase I and Phase II Radiological Survey conducted by Fred C. Hart Associates, Inc. was used to review the radiological contamination at the site. The Phase I Investigation was conducted in August 1989, and the Phase II Investigation was conducted in February 1990. The Radiological Investigations provided details on the vertical and horizontal extent of radiological contamination at the site. The radiological analysis did not have the proper QA/QC documentation to use the data for HRS purposes; however, the investigations were used to determine sample locations during the SI.

The analytical data generated from the SI conducted by Ebasco Services in 1995 were used to evaluate the sources at the site, establish an observed release of inorganics to the groundwater, and establish an observed release to surface water.

Hazard Assessment

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

Source Description

Based on the available information, two sources were identified at the Captain's Cove Condominium Site. One source is a landfill with chemical contamination, and the second source are aggregated radioactive slag disposal areas (Ref. 3, p. 9 of 39; Ref. 7, pp. 1 through 9 of 9; Ref. 8, p. 10 of 16; Ref. 17, pp. 1 through 70 of 70 and Ref.24, pp. 1 through 10 of 278).

The entire 19 acres of the site is considered for the landfill source area based on chemical contamination (Ref. 3, pp. 4, 31, 33 and 35 of 39; Ref. 24, pp. 6 through 10 of 278). The site was used for the disposal of dredged spoils from Glen Cove Creek, and used as an unpermitted, unsecured landfill until the early 1980s (Ref. 3, pp. 31 and 33 of 39; Ref. 7, pp. 1 through 9 of 9; Ref. 8, p. 10 of 16; Ref. 10, p. 1 of 1). The site was never officially operated as a landfill; however, the site was used by local industry for waste disposal and by the City of Glen Cove for the disposal of sewage sludge, incinerator ash, and debris (Ref. 3, pp. 28, 31 and 33 of 39). Surface soil samples collected during the SI revealed semi-volatile and inorganics across the site at concentrations three times the background concentrations (Ref. 24, pp. 6 through 9 of 278). Volatile organics were detected in surface soil samples under piles of rusted 5 gallon cans, and various aerosol cans at concentrations greater than three times the background concentration (Ref. 24, pp. 6 through 9 of 278). PCBs and pesticides were also detected in surface soil samples at concentrations three times the background concentrations (Ref, 24, pp. 6 through 9 of 278).

The Radioactive Disposal Area is actually two areas (Ref. 17, pp. 6 through 9 of 70). The radioactive disposal areas were delineated during the Phase II Radiological Survey during which a gamma ray survey was conducted across the site with 50 by 50 foot grids (Ref. 17, 14 of 70). The two areas determined to have elevated gamma ray readings were then targeted for trench excavations to further delineate the radioactivity in those areas (Ref. 17, pp. 24, 31 of 70). Soil samples were collected from 2 feet deep in 15 trenches excavated in the areas that exhibited elevated levels of radiological investigation determined that the levels of radioactivity were in two areas in one the far eastern portion of the property (18,750 ft^2), and one in the western portion of the site, near the driveway/entrance (Ref. 17, pp. 31 through 34 of 70).

Soil samples collected from both radioactive disposal areas during the SI confirmed the radiological contamination previously detected at the site (Ref. 35, p. 1 of 64). Radioisotopes of the uranium, thorium, and actinium decay series were detected at concentrations above background (Ref. 25, pp. 32 through 64 of 64). The soil samples collected during the SI were to characterize the radioactive waste and not to determine the vertical and horizontal extent of radiological contamination. While the Phase II Radiological Survey determine the vertical and horizontal extent of the radiological contamination, the necessary QA/QC information was not documented to determine waste quantities under the HRS, therefore a volume of 1 cubic yard was used to evaluate the radioactive disposal areas.

Groundwater Pathway

The groundwater pathway score is evaluated based on an observed release to groundwater, and the potential contamination of drinking water wells in the study area.

Three groundwater samples, and a duplicate sample, were collected from the existing monitoring wells located at the Captain's Cove Condominium site as part of the SI (Ref. 6, pp. 18 through 21 of 52). Only one hydraulically downgradient well (CDM-4) is located at the site, and the rest of the wells are for monitoring upgradient groundwater conditions (Ref. 14, p. 48 of 56). The well logs generated during the installation of the on-site monitoring wells described sand and gravel with varying amounts of clay which is consistent with the Glacial Aquifer (Ref. 14, pp. 52 through 56 of 56). As determined from the monitoring well construction information and groundwater elevations, the screened portion of all the monitoring wells intercepts the top of the water table aquifer, in this case the Glacial Aquifer, therefore all the groundwater samples collected during the SI evaluated the same aquifer (Ref. 14, pp. 25, 51 through 56 of 56). Groundwater parameters (pH, temperature, and conductivity) collected during the purging and sampling also determined that the groundwater was from the same aquifer (Ref. 6, pp. 18 through 21 of 52).

Analysis of unfiltered groundwater samples collected from on-site monitoring wells during the SI revealed an observed release of arsenic, antimony, barium, lead, and zinc, however the observed release of the contaminants detected in the filtered groundwater samples (arsenic, antimony, and barium) were used to evaluate the observed release to the groundwater pathway (Ref. 24, pp. 3, 10 and 200 through 207 of 278). Actual contamination of drinking water wells has not been documented.

There are four aquifers in the study area, two unconfined water table aquifers, and two confined aquifers (Ref. 28, pp. 18, 19 of 119). Because site-specific geological information is not available, a well located approximately 1/2 mile south of the site was used to describe geological conditions beneath the site (Ref. 19, p. 18 of 119). The Upper Glacial Aquifer immediately underlies the site and is derived from Pleistocene glacial deposits consisting of glacial till and outwash deposits composed of fine to coarse grain quartzose sand and gravel (Ref. 28. pp. 18 and 19 of 119). The Upper Glacial Aquifer also contains thin interbeds of silt and clay lenses which can cause localized perching of water (Ref. 28, p. 19 of 119). The Glacial Aquifer occurs at a depth of 0 to 50 feet below grade at the site and has an average thickness of 150 to 300 feet in the study area (Ref. 28, pp. 18 and 22 of 119). There are four monitoring wells onsite screened in the Glacial Aquifer (Ref. 14, p. 5 of 56). According to the recent Ebasco groundwater sampling event the depth to water in the wells ranges from 4.5 to 12 feet, and the waste at the site was disposed to a depth of 6 to 8 feet below grade (Ref. 6, pp. 18 through 20 of 52; Ref. 14, pp. 23, 25, 34 of 56). The average hydraulic conductivity of the Upper Glacial Aquifer is $1.x\ 10^{-3}$ cm/sec (Ref. 1, Table 3-6; Ref. 28, p. 19 of 119).

The Upper Glacial Aquifer rests unconformably upon the Cretaceous age Raritan Clay within the study area (Ref. 28, p. 18 of 119; Ref. 29, pp. 5, 6 of 13). Immediately beneath the site, the Upper Glacial Aquifer is underlain by the Port Washington confining unit (Ref. 28, pp. 18, 19 of 119). The Port Washington confining unit occurs at a depth of 50 to 175 feet below grade at the site, and has an average thickness of 125 feet in the study area (Ref. 28, p. 18, 19 of 119).

The Port Washington confining unit is of Pleistocene or Late Cretaceous to Holocene age (Ref. 28, pp. 18, 19 of 119). The unit consists mainly of clay and silt, with scattered lenses of sand, or sand and gravel (Ref. 28, p. 19 of 119). The unit may include erosional remnants of the Raritan clay (Ref. 28, pp. 18, 19 of 119). Beneath the Port Washington unit is the Raritan Clay confining unit, which occurs at a depth of approximately 175 to 225 feet below grade at the site, and is approximately 175 to 200 feet thick in the study area (Ref. 28, pp. 18, 19, 22 of 119). The Port Washington confining unit is contiguous with the Raritan Clay in many places (Ref. 28, pp. 18, 19 of 119). The Raritan Clay consists of clay with variable amounts of silt and fine silty sand (Ref. 28, p. 16 of 119). The average permeability of the clay is 1×10^{-5} cm/sec (Ref. 1, Table 3-6; Ref. 28, p. 16 of 119).

The Lloyd Aquifer, of Cretaceous age, lies below the Raritan Clay at the site (Ref. 28, pp. 18, 19 of 119). The Lloyd Aquifer can be found at a depth of approximately 225 to 400 feet below grade at the site, and is approximately 100 to 200 feet thick in the study area (Ref. 28, pp. 18, 19 of 119). The Lloyd aquifer consists of discontinuous layers of silt, clay, sandy clay, sand and gravel (Ref. 19, p. 38 of 48; Ref. 28, p. 16 of 119).

Within the study area, portions of the Cretaceous age Lloyd Aquifer have been eroded and replaced by the Pleistocene or late Cretaceous age Port Washington Formation (Ref. 28, pp. 16, 18 of 119). The Port Washington Aquifer occurs at a depth of approximately 300 feet below grade and ranges from 50 to 200 feet in thickness in the study area, and consists of sand, and sand and gravel, and varying amounts of interbedded clay, silt and sandy clay (Ref. 28, pp. 18, 19 of 119). The Port Washington Aquifer is hydraulically interconnected with the Lloyd Aquifer (Ref. 28, pp. 18, 19 of 119).

The Magothy Aquifer is not present in the immediate area of the site since it was eroded and replaced by the Upper Glacial Aquifer; however, it does occur in the study area and there are supply wells that are screened within this formation (Ref. 28, p. 18 of 119). The Magothy Formation, of Cretaceous age, consists of discontinuous beds and lenses of fine to coarse sand and gravel with interstitial clay (Ref. 28, p. 16 of 119). The Magothy Aquifer is hydraulically interconnected with the Upper Glacial Aquifer within the study area, and has approximately the same hydraulic conductivity (Ref. 29, pp. 5 and 6 of 13). The Magothy Aquifer, where present in the study area, overlies the Raritan Clay and occurs a depth of 80 feet below grade, and is approximately 125 to 300 feet thick in the study area (Ref. 28, pp. 18, 19 of 119).

Groundwater in the vicinity of the site is the sole source of drinking water (Ref. 30, pp. 1 through 10 of 10 and Ref. 32, pp. 1 through 13 of 13). Both public supply companies and private residential wells supply drinking water to the study area (Ref. 32, pp. 1 through 13 of 13 and Ref. 30, pp. 1 through 10 of 10). There are six water supply companies which utilize municipal wells within 4 miles of the site to provide drinking water to customers (Ref. 30, pp. 1 through 10 of 10). Since the Glacial Aquifer and the Magothy Aquifer are interconnected, they were evaluated as a single hydraulic unit (Ref. 29, pp. 5, 6 of 13). The Port Washington Aquifer and the Lloyd Aquifer, which are confined aquifers, were also both evaluated as a single hydraulic unit because of their interconnection (Ref. 28, p. 19 of 119).

Since the Glacial Aquifer and Magothy Aquifer are both water table aquifers, there are residential wells as well as municipal wells that obtain water from these aquifers. The population serviced by private wells screened in the Upper Glacial and Magothy Formation, which are the aquifers of concern, is as follows: 0 within 0 to ¼ mile of the site, 20 within ¼ and ½ mile, 13 within ½ and 1 mile, 8 within 1 to 2 miles, 85 within 2 to 3 miles, and 107 people within 3 to 4 miles of the site (Ref. 30, pp. 1 through 10 of 10; Ref. 31, p. 1 of 1; Ref. 32, pp. 12 and 13 of 13). The population serviced by municipal wells screened in the Upper Glacial and Magothy Formation is as follows: 0 within 0 to ¼ mile of the site, 0 within ¼ and ½ mile, 0 within ½ and 1 mile, 27,306 within 1 to 2 miles, 15,576 within 2 to 3 miles, and 21,584 people within 3 to 4 miles of the site (Ref. 30, pp. 1 through 10 of 10; Ref. 31, p. 1 of 1; Ref. 32, pp. 12 and 13 of 13).

The population serviced by municipal supply wells screened in the Port Washington and Lloyd Aquifers is as follows: 0 within 0 to ¼ mile, 0 within ¼ and ½ mile, 5,953 within ½ to 1 mile, 0 within 1 to 2 miles, 6,038 within 2 to 3 miles, and 12,580 within 3 to 4 miles of the site (Ref. 30, pp. 1 through 10 of 10; Ref. 31, p. 1 of 1).

A population of 45,261 obtains water from the Glacial/Magothy Aquifers, the aquifers of concern, within 4 miles of the site, and a population of 24,571 obtains water from the Port Washington/Lloyd Aquifers, the confined aquifers, within 4 miles of the site, therefore a total population of 69,832 people rely on groundwater wells located within a 4-mile radius of the site (Ref. 30, pp. 1 through 10 of 10; Ref. 31, p. 1 of 1; Ref. 32, pp. 12 and 13 of 13).

Surface Water Pathway

The score for the surface water pathway is evaluated based on an observed release to the adjacent Glen Cove Creek and wetlands which border the site along Glen Cove Creek.

Approximately 0.2 miles of estuarine, emergent wetland frontage are located adjacent to the site along Glen Cove Creek (Ref. 33, p. 1 of 3 and Ref. 44, p. 1 of 1). Two sediment samples obtained from Glen Cove Creek, in the upstream edge and downstream edge of the wetlands, revealed an observed release of silver to the wetlands and to Glen Cove Creek (Ref. 6, p. 28 of 52, Ref. 24, pp. 3 and 10 of 278, and Ref. 33, p. 1 of 3).

The site is located along Glen Cove Creek, near its mouth into Hempstead Harbor (Ref. 31, p. 1 of 1). Glen Cove Creek forms the southern boundary of the site, and empties into Hempstead Harbor at the southwestern periphery of the site (Ref. 29, p. 1 of 3). There is an estuarine, emergent wetland located adjacent to the site along Glen Cove Creek (Ref. 31, p. 1 of 3). The wetland, as measured from a National Wetlands Inventory Map, has approximately 0.2 miles of frontage on Glen Cove Creek (Ref. 33, p. 1 of 3 and Ref. 44, p. 1 of 1). There was a soil berm along the southern border of the site along the creek during the landfilling activities (Ref. 3, p. 21 of 39). After the property was purchased for the development of condominiums in 1980, bulkheads were built along approximately two thirds of the frontage on Glen Cove Creek, and the landfilled area was regraded (Ref. 3, p. 22 of 39). The wetlands located along the bank of Glen Cove Creek adjacent to the site were not bulkheaded in order to preserve the habitat (Ref. 3, p. 22 of 39). The site is located within the 100-year floodplain of Glen Cove Creek (Ref. 34, p. 5 of 5; Ref. 35, p. 2 of 2). Surface water runoff from the site discharges into the creek through

the section of the site with no bulkheads, and this discharge point is considered the probable point of entry (PPE) (Ref. 5, p. 4 of 23).

Glen Cove Creek is tidally influenced to approximately 0.75 miles upstream from the site at a gauging station operated by the United States Geological Survey (U.S.G.S.) (Ref. 36, p. 1 of 1). A dam is located at the gauging station which prevents the tidal flow of the creek from going upstream (Ref. 36 p. 1 of 1). The average stream flow of Glen Cove Creek at the gauging station is 7.35 ft^3/sec. (Ref. 36, p. 1 of 1). Professional judgement was used to determine that the stream flow near the site would be classified as a small to moderate stream (10 to 100 ft^3/sec.) based on the HRS, and the size of the stream at the gauging station and at the site.

The surface water from the site would flow in Glen Cove Creek southwest approximately 0.2 miles to discharge into the Hempstead Harbor (Ref. 33, p. 1 of 3). Water in the Hempstead Harbor flows approximately 2 miles northwest to empty into the Long Island Sound (Ref. 33, p. 1 of 3). The Hempstead Harbor is tidally influenced, and the tidal influence could go as far up as 3.5 miles south into the backbay of Hempstead Harbor (Ref. 33, p. 1 of 3). As per the HRS Final Rule, the flow rate of Hempstead Harbor is not evaluated since it is a coastal tidal water, and it receives a dilution weight of 0.0001.

The final in-line segment evaluated for the surface water pathway is the Long Island Sound where Hempstead Harbor enters into the Long Island Sound, to 12.6 miles northeast into the sound (Ref. 31, pp. 1 through 3 of 3). Since the Long Island Sound is tidal, the surface water segment also goes 12.6 miles southwest towards New York City, where the East River empties into the Long Island Sound (Ref. 33, pp. 1 through 3 of 3).

Glen Cove Creek is classified by the New York State Department of Environmental Conservation as Class I: saline surface waters suitable for fishing, fish propagation and survival (Ref. 37, pp. 1 through 3 of 3). People were observed fishing in Glen Cove Creek at the time of the site reconnaissance (Ref. 5, pp. 4 and 16 of 23). The fish production values of Glen Cove Creek are not documented. There are approximately 0.5 miles of wetlands frontage along Glen Cove Creek as measured from National Wetland Inventory Maps (Ref. 33, p. 1 of 3 and Ref. 44, p. 1 of 1).

The Hempstead Harbor is classified by New York State as a significant coastal fish and wildlife habitat (Ref. 37, pp. 1 through 3 of 3). Hempstead Harbor is a waterfowl nesting area (Ref. 38, p. 8 of 10). The Least Tern, a state listed endangered species, is known to be in the Hempstead Harbor area (Ref. 38, pp. 3 and 10 of 10). There are also approximately 5.5 miles of discontinuous wetlands frontage along Hempstead Harbor as measured from National Wetlands Inventory Maps (Ref. 33, p. 1 of 3 and Ref. 44, p.1 of 1).

The Long Island Sound is an important source for commercial and recreational fishing and shell fishing (Ref. 40, pp. 1 through 11 of 45).There are several state parks, national wildlife refuges, and migratory bird nesting areas within the surface water target distance limit (Ref. 33, pp. 1 through 3 of 3 and Ref. 41, pp. 4, 5, 9, 10 and 11 of 11). As measured from the National Wetland Inventory Maps, there are over 30 discontinuous miles of wetlands frontage in the Long Island Sound within the study area (Ref. 33, pp. 1 through 3 of 3 and Ref. 44, p. 1 of 1).

Soil Exposure Pathway

The score for the soil exposure pathway is evaluated based on the determination that the entire landfill is an area of observed contamination and a conservative estimate of a volume of 1 cubic yard contaminated with radiological wastes. However, there are no workers, schools or residents, or terrestrial sensitive environments on-site or within 200 feet of the observed contamination (Ref. 33, p. 1 of 3; Ref. 38, pp. 1 through 10 of 10). 1990 Census information indicates a population of 528 for 0 to 0.25 miles, 1968 for 0.25 to 0.5 mile, and 9,102 for 0.5 to 1 mile (Ref. 32, pp. 12, 13 of 13).

Surface soil samples collected during the SI revealed semi-volatile and inorganics across the site at concentrations three times the background concentrations (Ref. 24, pp. 6 through 9 of 278). Volatile organics were detected in surface soil samples under piles of rusted 5 gallon cans, and various aerosol cans at concentrations greater than three times the background concentration (Ref. 24, pp. 6 through 9 of 278). PCB's and pesticides were also detected in surface soil samples at concentrations three times the background concentrations (Ref, 24, pp. 6 through 9 of 278).

Two areas previously determined to have elevated gamma ray readings, one on the far eastern portion of the property (18,750 ft^2), and one in the western portion of the site, near the driveway/entrance were sampled during the SI to confirm radiological contamination (Ref. 17, pp. 32 of 70). Soil samples collected from both radioactive disposal areas during the SI confirmed the radiological contamination previously detected at the site (Ref. 35, p. 1 of 64). Radioisotopes of the uranium, thorium, and actinium decay series were detected at concentrations documenting areas of observed radioactive contamination as defined by the HRS (Ref. 25, pp. 32 through 64 of 64). The soil samples collected during the SI were to characterize the radioactive waste and not to determine the vertical and horizontal extent of radiological contamination. While the Phase II Radiological Survey determine the vertical and horizontal extent of the radiological contamination, the necessary QA/QC information was not documented to determine waste quantities under the HRS, therefore a volume of 1 cubic yard was used to evaluate the radioactive disposal areas.

While the site is fenced, the fence is breached in several areas and the site is used as an access to fish the Glen Cove Creek and people use the site to walk their dogs (Ref. 5, pp. 3, 4, 6, 14, 18, and 19 of 23 and Ref. 6, p. 4 of 52). The site is an abandoned lot in an industrial area and there is evidence that the site is used as a play area for children (Ref. 5, pp. 5, 18 of 23).

Air Pathway

The preliminary score for the air pathway is evaluated based on a potential to release. No air releases have been documented. Census information indicates a total population of 80,475 within the four mile radius, with a population of 528 for 0 to 0.25 mile, 1968 for 0.25 to 0.5 mile, 9,102 for 0.5 to 1 mile, 18,633 for 1 to 2 mile, 22,444 for 2 to 3 mile, and 27,798 for 3 to 4 mile radius (Ref. 32, pp. 12, 13 of 13). The nearest resident is approximately 200 feet from the site (Ref. 5, pp. 7, 21 of 23). The wetland acreage from is 3 acres from 0 to ½, 3 acres from ½ to 1, 56 acres from 1 to 2, 106 from 2 to 3, and 196 acres from 3 to 4 mile radius (Ref. 33, p. 1 of 3; Ref. 44, p. 1 of 1). The Least Tern, a state listed endangered species, could be found in

Hempstead Harbor, which is located between 1 and 2 miles of the site (Ref. 33, p. 1 of 3; Ref. 38, pp. 3, 10 of 10).

Available air sampling data collected from former monitoring wells and other locations on-site indicate there may have been former releases of organic contaminants into the air (Ref. 13, pp. 1 through 24 of 24). The air monitoring reports do not provide sufficient information on sample collection methodology, and support documentation is unavailable (Ref. 13, pp. 1 through 24 of 24).

Summary

The existing information and newly collected data are sufficient to evaluate the site. Samples collected during the SI determined that the surface soils were contaminated with organics, inorganics, and radioactive wastes at concentrations qualifying for areas of observed contamination. The radiologically contaminated soils at the Captain's Cove Condominium site should be remediated in accordance with current efforts underway at the Li Tungsten site, a National Priority List (NPL) site. Based on data collected during the SI, an observed release of inorganics to the groundwater pathway has been documented. There is no actual contamination of groundwater targets, however, groundwater is the sole source of drinking water in the study area and a population of 69,832 rely on groundwater wells located within a 4 mile radius of the site. An observed release of silver to Glen Cove Creek, and the wetland adjacent to the site, has been documented. No surface water intakes are used for drinking water, however, there are fisheries and wetlands located along the surface water target distance limit. There are no areas of observed contamination within the property boundaries of residences, schools, daycare facilities, or terrestrial sensitive environments. The site does not restrict vehicular or pedestrian traffic, and the site is used for walking dogs, and accessing Glen Cove Creek for fishing.

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REFERENCE NO.1

Reference 1

federal register

Friday
December 14, 1990

Part II

Environmental Protection Agency

40 CFR Part 300
Hazard Ranking System; Final Rule

Recycled Paper

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REFERENCE NO. 2

Reference 2

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

APR 27 1993

FEB 14 1994

OFFICE OF
SOLID WASTE AND EMERGENCY
RESPONSE

MEMORANDUM

SUBJECT: Superfund Chemical Data Matrix (SCDM)
March 1993 Version - Revised Tables

FROM: Janet Grubbs, Chief
Site Assessment Branch

TO: Site Assessment Section Chiefs
Regions I-X

Attached are revised tables for the March 1993 version of SCDM which was sent to you earlier this month. The revised tables contain two significant changes. First, cesium and strontium have been added to the tables. These elements were missing from the earlier submittal. Second, the tables now properly show only one entry for the following radionuclides: radium 226, radon 222, uranium 233, uranium 234, and uranium 235. The previously submitted version had two distinct entries for these radionuclides. In addition to reporting the correct values for these radionuclides, SCDM had been incorrectly listing a second entry with the values for the parent element.

Following the correction of these tables, we have encountered some additional errors in SCDM. The discussion below is intended to serve as a correction for these errors.

1. SCDM on pages 13 and 27 lists the reference for MCLs and MCLGs with a date of 1990. The correct date is 1992.

2. Page B-22 does not provide a cancer screening concentration for chromium in the air pathway. However, page B-23 does provide a value of 8.3E-08 mg/m3 for chromium (VI). According to the text on page 2 of SCDM, if the oxidation state of chromium is not known, it is assumed that the most toxic member of the class is present. Therefore, the cancer screening concentration for chromium (VI) should be included in the table under the entry for chromium on page B-22.

3. In the page reports (Appendix A), SCDM incorrectly transfers the numerical value for the drinking water MCL in mg/l to the value for MCL in pCi/l under the radionuclide

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*** D R A F T ***

REMEDIAL INVESTIGATION
WORK PLAN
GARVIES POINT CONDOMINIUMS
GARVIES POINT ROAD
GLEN COVE, NASSAU COUNTY

MARCH 1988

Prepared By
RTP Environmental Associates, Inc.
and
Fanning, Phillips, and Molnar

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*** D R A F T ***

REMEDIAL INVESTIGATION WORK PLAN

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1.0 INTRODUCTION

The Garvies Point Condominium Site is located in Glen Cove, New York at the end of Garvies Point Road. The site is bounded by Glen Cove Creek to the south, Hempstead Harbor to the west, the Garvies Point Preserve to the north and the Glen Cove Anglers Club Marina to the east. The site is shown on Figures 1.1 and 1.2 As outlined in Figure 1.2, the site consists of approximately 19 acres, which includes a section wetlands along Glen Cove Creek.

The current site owner, Village Green Realty at Garvies Point Inc. has entered into a Order On Consent on the Garvies Point Condominium Site with the New York State Department of Environmental Conservation (NYSDEC) under Article 27, Title 13 of the Environmental Conservation Law (ECL) of the State of New York. Formerly the site was owned by the City of Glen Cove and a portion of the site was used as a landfill by the City of Glen Cove.

In 1985, the site owner by request of the NYSDEC performed a preliminary site investigation to determine if hazardous wastes were located on site (CDM, 1986). The site investigation determined that hazardous materials were present and the NYSDEC then reclassified the site as an inactive hazardous waste disposal site as that term is defined in Section 27-1301 (2) of the ECL. The site number designation under the ECL is No: 130032. Furthermore, the NYSDEC stated in the Order On Consent that the hazardous and industrial substances, hazardous waste constituents and toxic degradation products thereof, at and in the vicinity of the site constitute a significant threat to the environment. Pursuant to ECL 27-1313 (3)(a) the Commissioner of Environmental Conservation may order the owner of such a site and/or any person responsible for the disposal of hazardous wastes at such site (1) to develop an inactive hazardous waste disposal site remedial program and (2) to complete such a program within reasonable time limits.

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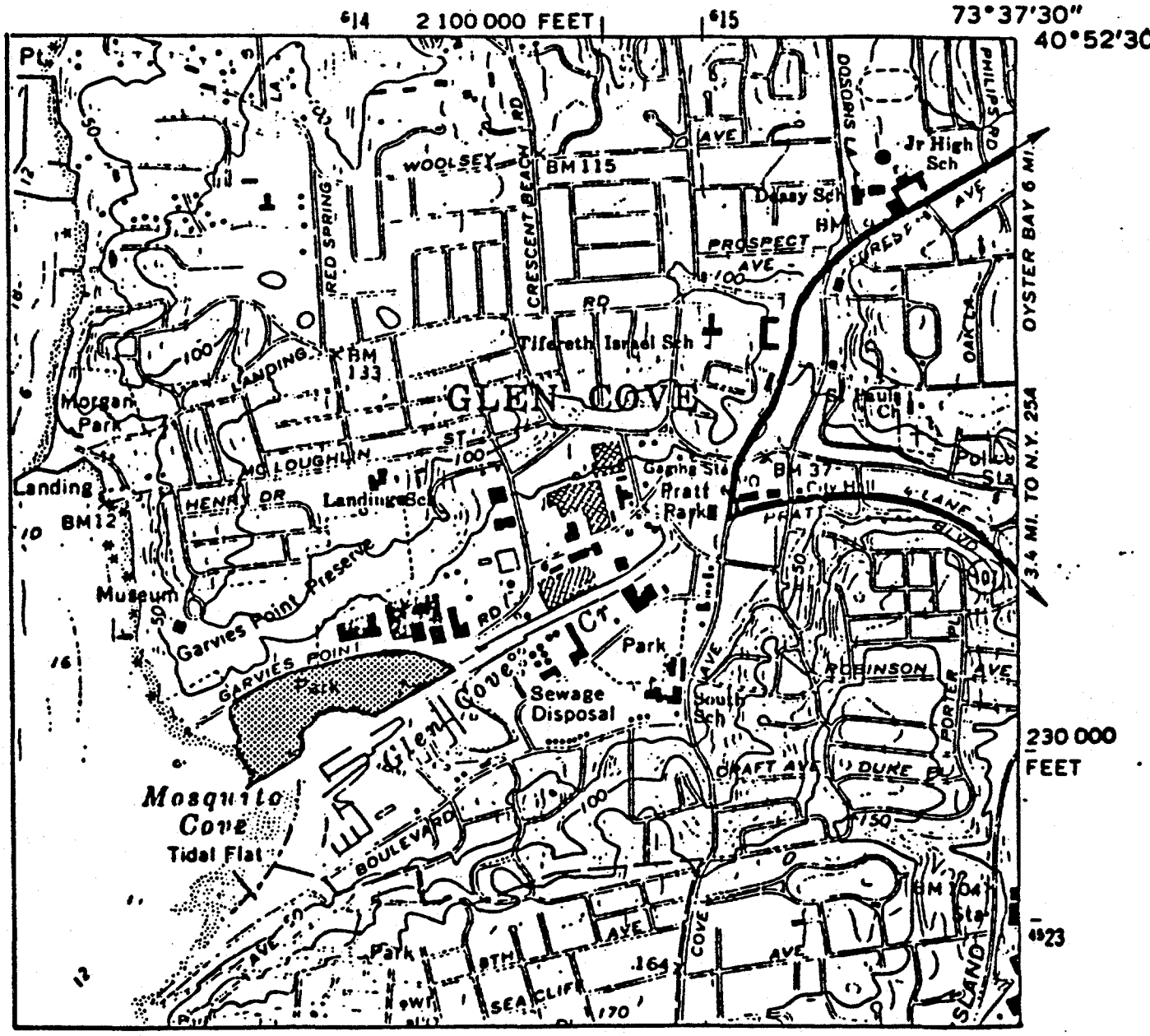

GARVIES POINT SITE

FIGURE 1.1: PROJECT SITE AND SURROUNDINGS

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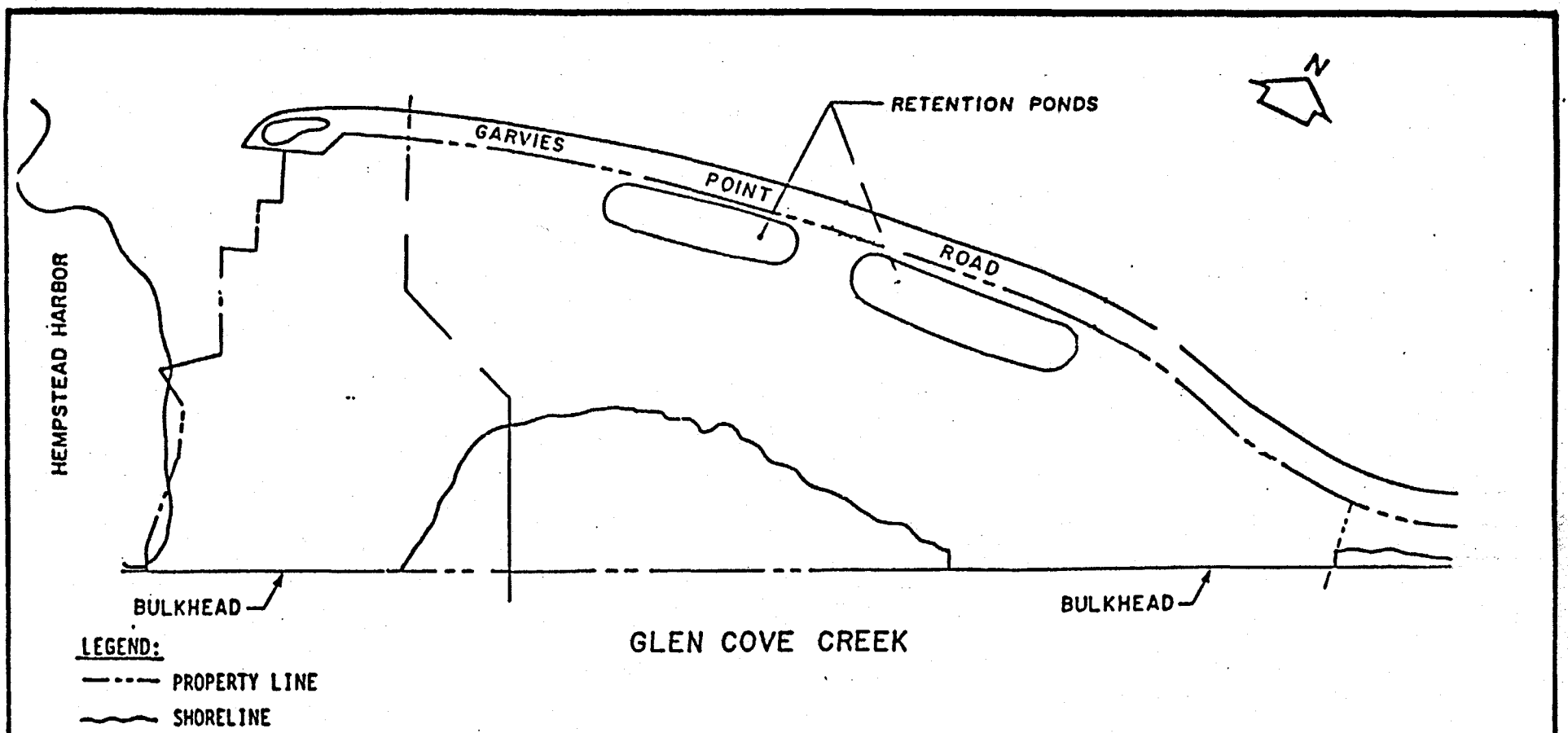

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FIGURE 1.2 - GARVIES POINT SITE MAP

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The Commissioner has so ordered Village Green via the Order On Consent effective _____.

The goals set forth in the Order On Consent are: (1) determine the health and environmental hazards and potential hazards in connection with the site and (2) identify all areas of soil and water contamination at the site.

In response to the Commissioner's Order, Village Green Realty has developed this work plan to accomplish the goals stated above.

This work plan is comprised of several sections. In summary the plan consists of a site reconnaissance, sampling and analysis plan, investigation protocols, quality assurance and control, health and safety procedures and reporting protocol. In preparing and completing this work plan, Village Green Realty, its consultants and assigns do not admit liability for the disposal of industrial or hazardous substances at the site. Such liability must be the acknowledged responsibility of the former owners of the site and any claims for damages or otherwise, therefore, are their responsibility.

2.0 OBJECTIVE

The objective of the remedial investigation is to provide additional data on site characteristics including the characteristic, location, quantity and quality of any hazardous materials on-site and the potential for on-site materials to enter air, soil and water media pathways. These data will be used in the feasibility study for the site to determine the measures necessary to fully and safely remediate any potential hazards found.

The ultimate objective of the proposed remedial investigation (RI) is to provide information on the nature and extent of materials on-site so that an effective remediation program can be implemented. The completion of the remediation will allow the issuance of a clean bill of health for the site. Subsequent to the issuance of the clean bill of health, the applicant fully intends to develop the site as a residential condominium development.

3.0 HISTORICAL INFORMATION SUMMARY

3.1 Site Reconnaissance

Site reconnaissance has been conducted by several groups including the NYSDEC. The previous site investigations have also been conducted as noted in Appendix A. Because of the nature of area, its former use as a municipal landfill and dredge spoil disposal area, and the significant amount of alteration that has occurred subsequently, the approach taken in this work plan will be to cover the area with additional observation wells, soil borings and air samples to fully characterize the site and to some extent the adjoining area of Glen Cove Creek.

Aerial photographs showing the local land use, adjoining sites, the City of Glen Cove Codisposal Plant and other industrial sites are included in Appendix A. A detailed site reconnaissance map will be developed and discussed for inclusion into the RI document.

3.2 Previous Site Studies

Lockwood, Kessler and Bartlett (LKB) (LKB, 1985) have prepared an engineering report on the site. The report contains data on soil profiles across the site as well as other information on-site geophysics. Relevant sections of the LKB report are included as Appendix B. Data are also presented on the test borings done on-site.

A Camp Dresser & McKee (CDM) (CDM, 1986) report provides data on several groundwater wells, soil profiles, metal concentrations and other site characterization data. These data have been used in developing the proposed supplementary sampling and analysis plan presented in the following section. Relevant sections of the CDM report are included in Appendix B.

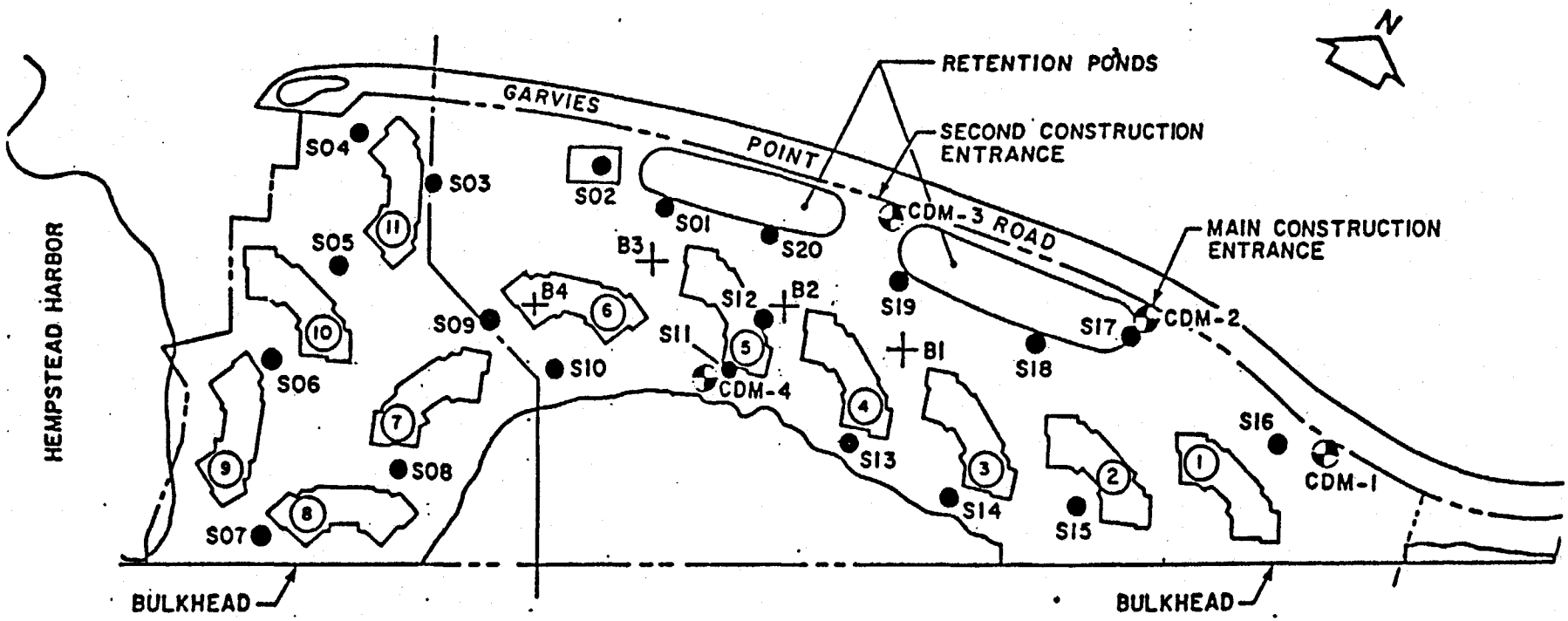
The Camp, Dresser and McKee report (CDM, 1986) discussed the results of samples from twenty shallow soil borings (2 foot deep), four deep borings (15 foot deep) and four groundwater monitoring wells. Figure 3.1 from the CDM report (attached for reference) shows the locations of the twenty shallow soil samples, the four 15 foot boreholes and the four observation wells.

The CDM shallow soil samples were analyzed for HSL-CLP metals. The composite soil samples from the 15 foot deep borings were analyzed for HSL - inorganics, pesticides, PCB's and cyanide. The four soil observation well samples were analyzed for HSL-CLP volatiles, base neutral and acid extractables and inorganics.

The results of each CDM shallow soil sample were averaged together to develop an average concentration for each metal to provide a basis for identifying the highest values. Six sampling locations contained metals whose values were elevated. These six locations, are in two clusters, one cluster contains CDM samples SO4 and SO5 and the other cluster contains CDM sample SO2, S10, S11 and S12.

The results of the four 15 foot deep borings show many metal concentrations at or below the detection limits. Two of these borings showed elevated metal concentrations in the top soil layer, in the zero to six foot composite (CDM#B3 and CDM#B4). These have the most number of metals exceeding the shallow soil average. Borings 3 and 4 are in the cluster area of CDM shallow soil samples SO2, S10, S11 and S12 where higher than average metals were detected. Cyanide was not detected in the deep borehole samples at any depth.

Aroclor 1248 was present but below detection limits in all but two CDM deep borehole samples. The highest Aroclor level was detected at borehole CDM#B1 at 7.5 - 9 feet. Some pesticide compounds were present below detection



LEGEND:

- PROPERTY LINE
- SHORELINE
- WELL LOCATION
- 15' BOREHOLE LOCATION
- SHALLOW SOIL SAMPLE LOCATION
- BUILDING NUMBER AND PLANNED LOCATION

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FIGURE 3.1 - CDM SAMPLE LOCATION MAP

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limits including 4-4' DDD and chlordane. Although relatively low, the highest pesticide concentration was for chlordane at borehole CDM#B1 at the 7.5 -9 foot depth. These low levels should be further delineated.

The results of the CDM aqueous analysis show volatile organic compounds present at CDM Well #2. The other three CDM wells contained concentrations of volatile organics below the detection limits or below values which were found in blank samples. CDM Well #4 contains detectable concentrations of benzene, phenol and bis (2-ethylhexyl) phthalate. An analysis of the groundwater samples also showed unidentified compounds in detectable unquantifiable concentrations (predominantly at CDM Well #4). The CDM report stated that the high levels of organics at CDM Well #2 may be due to off site sources based upon the well's location and measured water gradients.

The highest aqueous metal concentrations were found in CDM Well #4. However, all CDM water samples were unfiltered and were preserved in the field prior to transport to the laboratory for analysis. This procedure dissolves all metals in particulate form and represents unrealistically high values for true dissolved metals in the groundwater. No cyanide was detected in the CDM aqueous samples.

In summary, the CDM shallow soil analysis identified two areas of high metal concentrations. The deep boring samples identified PCB and pesticide compounds at low levels at CDM Well #2. Metal compounds were identified in all aqueous samples with the highest levels at CDM Well #4. Unidentified base neutral extractable compounds were detected in the aqueous samples. Phenol and bis (2-ethylhexyl) phthalate were detected at CDM Well #4. Cyanide was not detected in the soil or the groundwater on site.

The proposed sampling plan, as discussed in the following Section 4.0, will address and expand upon the CDM report. Compounds identified by CDM's soil sampling analysis will be included in the proposed soil sampling analysis. These compounds include HSL-metals, pesticides, base neutral and acid extractables; PCB's, phenols and cyanide. Selected samples will be analyzed for HSL volatiles. Aqueous parameters identified in the CDM report and included in the proposed sampling plan include HSL-metals, base neutral and acid extractable volatile fraction, phenols and cyanide. Even though cyanide was not detected on site, it is included in the proposed sampling plan because of the history of the dredge spoil disposal on site as discussed in Section 3.7.

3.3 Aerial Photography

As described in Appendix A, aerial photographs for the site are available from 1950 through 1986. Photo reprints of the available photography will be provided in the RI document. A review of the aerial photographs is provided in Section 3.7. The aerials indicate areas of filling that had occurred on-site during the various periods noted up to 1966, the period covering the last known deposition of dredge spoils from Glen Cove Creek on the site. A complete analysis of existing photographs will also be provided in the RI.

3.4 Site Map

A site map and plot plan of the Garvies Point Condominium Site will be developed through ground survey methods and will include significant surface, topographic and structural features and the establishment of an on-site benchmark.

3.5 Regional Hydrology, Hydrogeology and Climatology

The regional hydrogeology and geology will be presented referencing the appropriate USGS and other relevant data. Area drainage basins and patterns including surface water hydrology will be addressed. Tidal effects and water table fluctuations at the site will be referenced. Local climatic conditions and meteorological factors including precipitation and their effects upon the site will be compiled. Data from local National Weather Service stations will be used in the RI analysis.

3.6 Public and Local Water Supply Wells

All potable and water supply wells within a one mile radius of the site will be mapped on a scaled base map and presented in tabular form.

3.7 Previous Dredging Activity

Historic records of the dredging and spoil disposal activities at Glen Cove Creek were reviewed at the Army Corps of Engineers, Navigation Section, New York District Office in New York City. Mr. S. Lew of the Navigation Section provided the files. The primary concern was the disposal of dredge spoils on the site property, the origin of the dredge spoil and their characteristics.

Based upon the existing records, dredging of Glen Cove Creek occurred in 1948, 1960 and 1965. An April 1933 map of Glen Cove Creek (Figure 3.2) obtained from the U.S. Engineers Office, First District New York City shows dredge spoil disposal areas which implies pre-1948 dredging activity. Although unconfirmed, there is a strong likelihood that such dredging did occur since the Army Corps significantly modified the original course of Glen Cove Creek from the trajectory shown in Figure 3.2 to the current straight line trajectory.

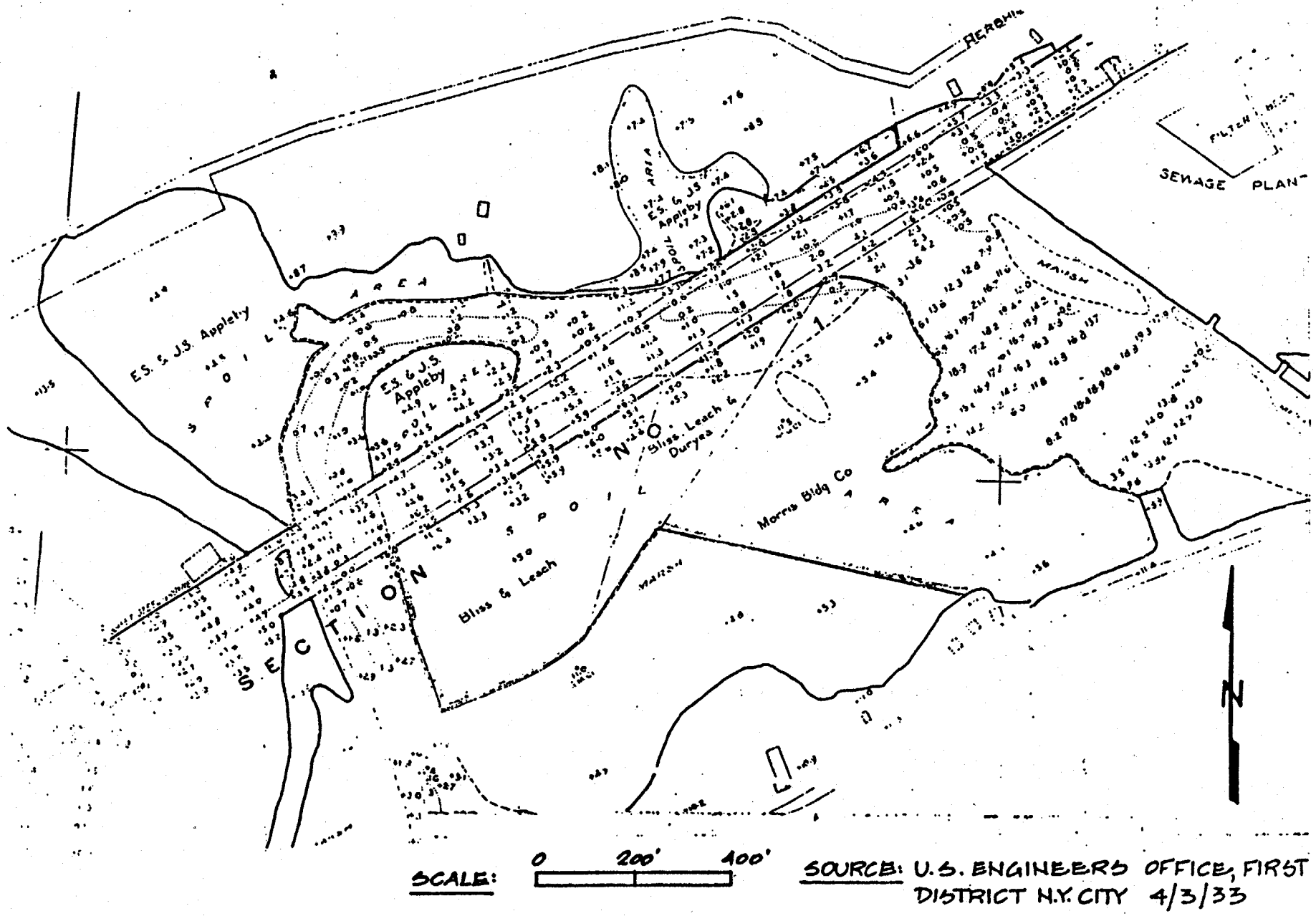

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FIGURE 3.2 - GLEN COVE CREEK DREDGING ACTIVITY 1933

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In the 1948 records of dredging activity, it was proposed that the volume of dredge material to be removed was 29,500 cubic yards. No maps of the actual dredging or spoil disposal areas were in the file. Estimates of the disposal areas were approximated from the 1950 aerial photographs.

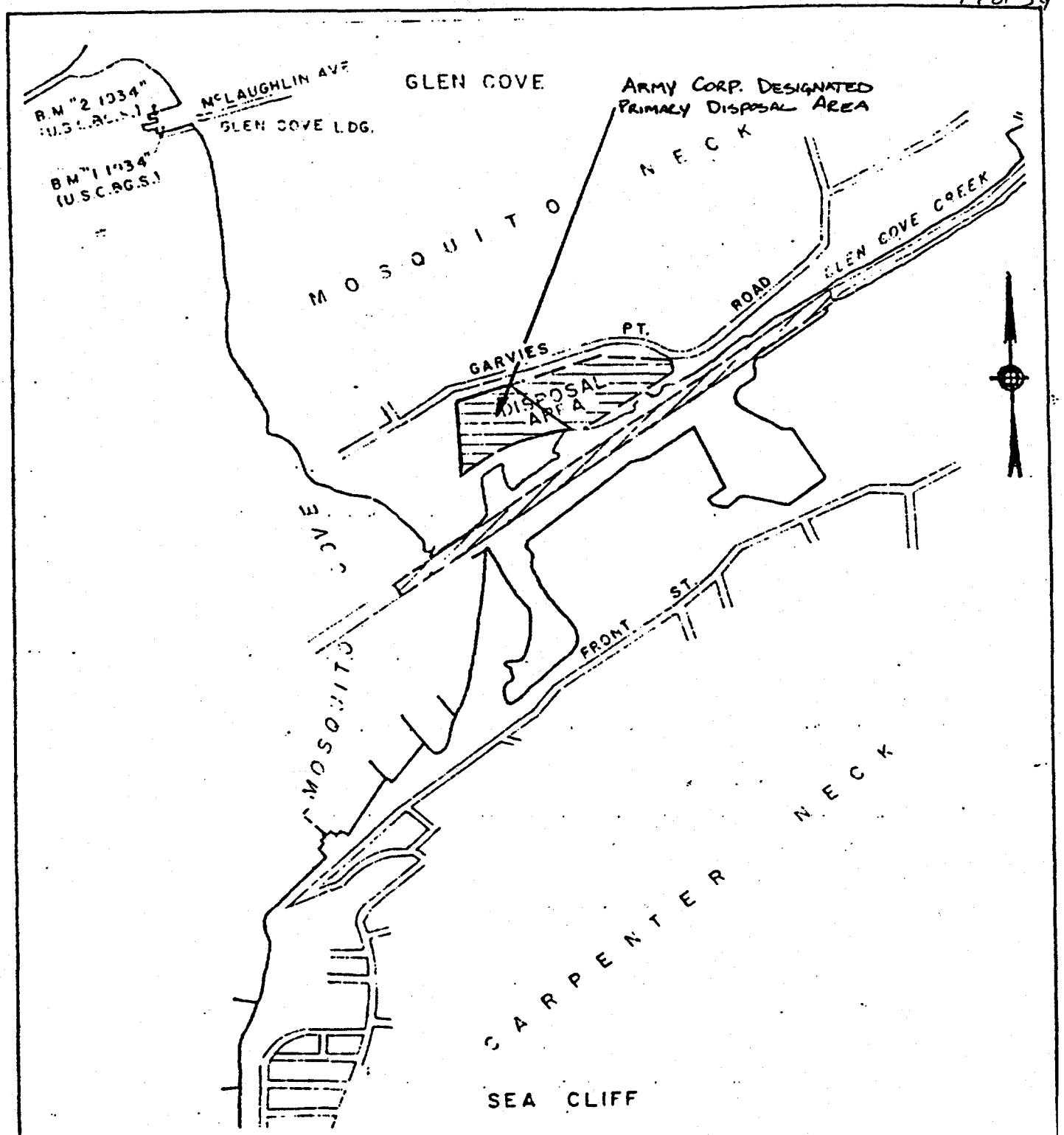
A review of the 1960 records revealed that the proposed volume of dredge material to be removed was 27,600 cubic yards.

The area to be dredged and the dredge spoil disposal area from the U.S. Army Corps of Engineers dated 4/1/60 are shown in Figures 3.3. The central and eastern sections of the property are designated as the disposal areas.

A review of the 1965 Army Corps records shows that dredging took place and the proposed dredge spoil disposal area was in the center of the site, Figure 3.4. The area to be dredged was approximately where Glen Cove Creek discharges into the Harbor.

The proposed 1979 dredging activity shown in Figure 3.5 did not occur. The reasons given were that the upstream area of the creek was not properly bulkheaded for dredging activity. Additionally, a sediment sample of the creek obtained by the EPA showed levels of cyanide above regulatory guidelines. It must be assumed the sample showing the contamination was taken from the area to be dredged, although no specific location or number of samples was provided. The NYSDEC subsequently declared the proposed dredge spoils as a hazardous waste and prohibited disposal of the material in the landfill at the Garvies Point Site. Alternative disposal sites were investigated, however, dredging did not occur because other disposal areas were cost prohibitive (Appendix C). - 7.55.26

A composite sketch of the dredging activity and placement on the site has been provided in Figure 3.6.



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SOURCE: U.S. ARMY CORPS OF ENGINEERS

FIGURE 3.3 - GLEN COVE CREEK N.Y. APRIL 1, 1960 DREDGING ACTIVITY

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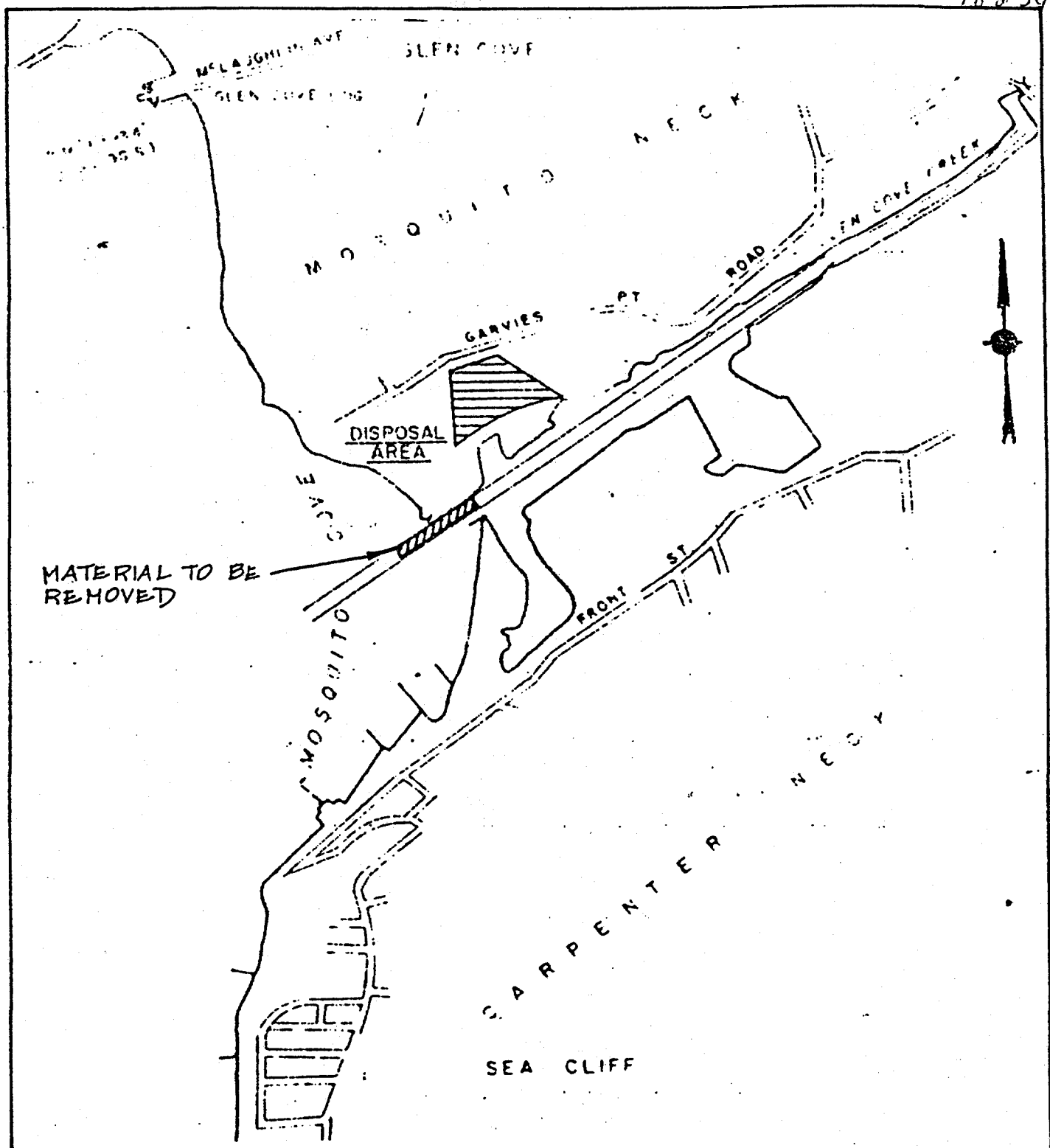

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SOURCE: U.S. ARMY CORPS OF ENGINEERS

FIGURE 3.4 – GLEN COVE CREEK N.Y.– APRIL 1965 DREDGING ACTIVITY

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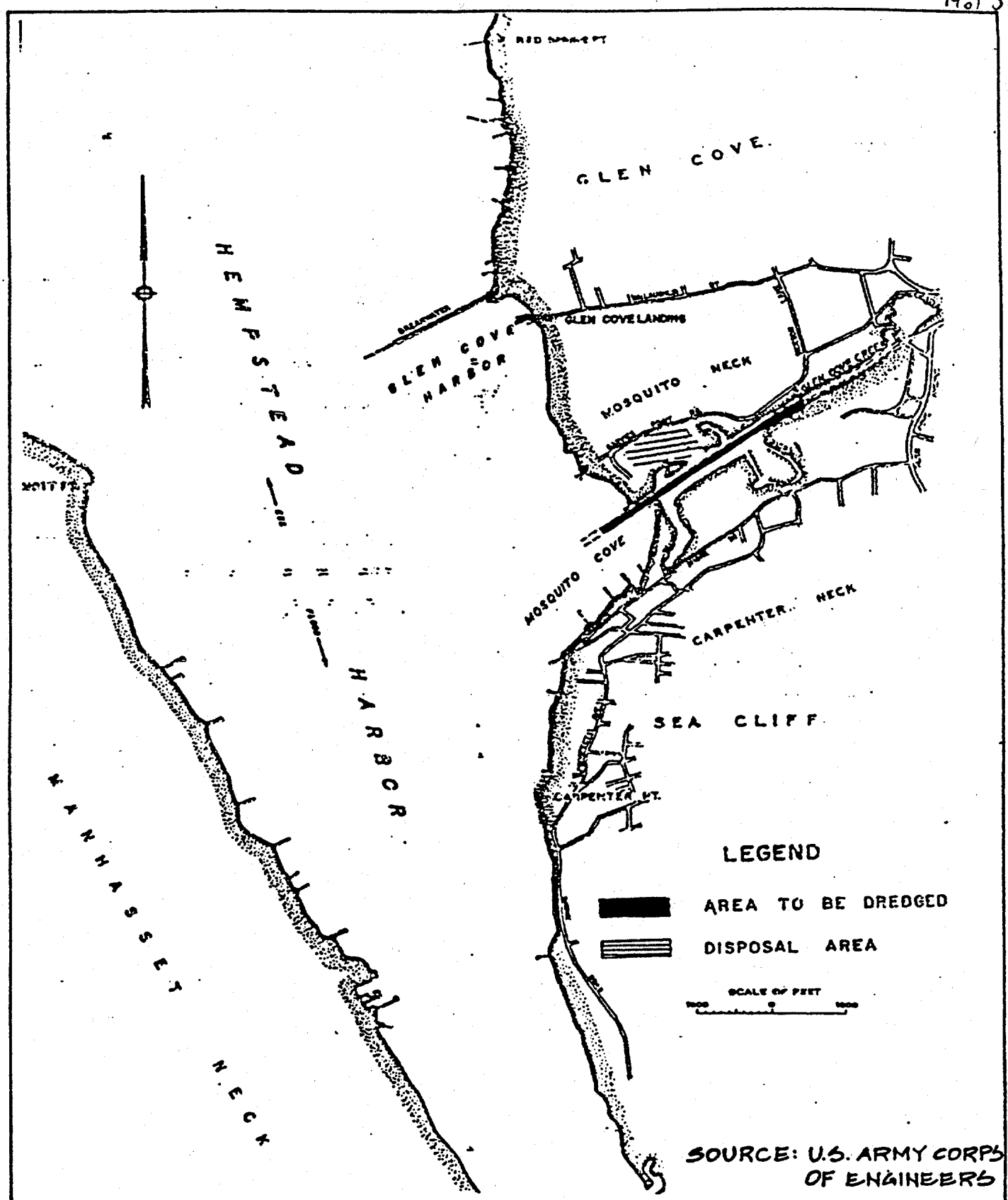

SOURCE: U.S. ARMY CORPS OF ENGINEERS

FIGURE 3.5 – GLEN COVE CREEK N.Y.– PROPOSED 1979 DREDGING ACTIVITY NEVER ENACTED

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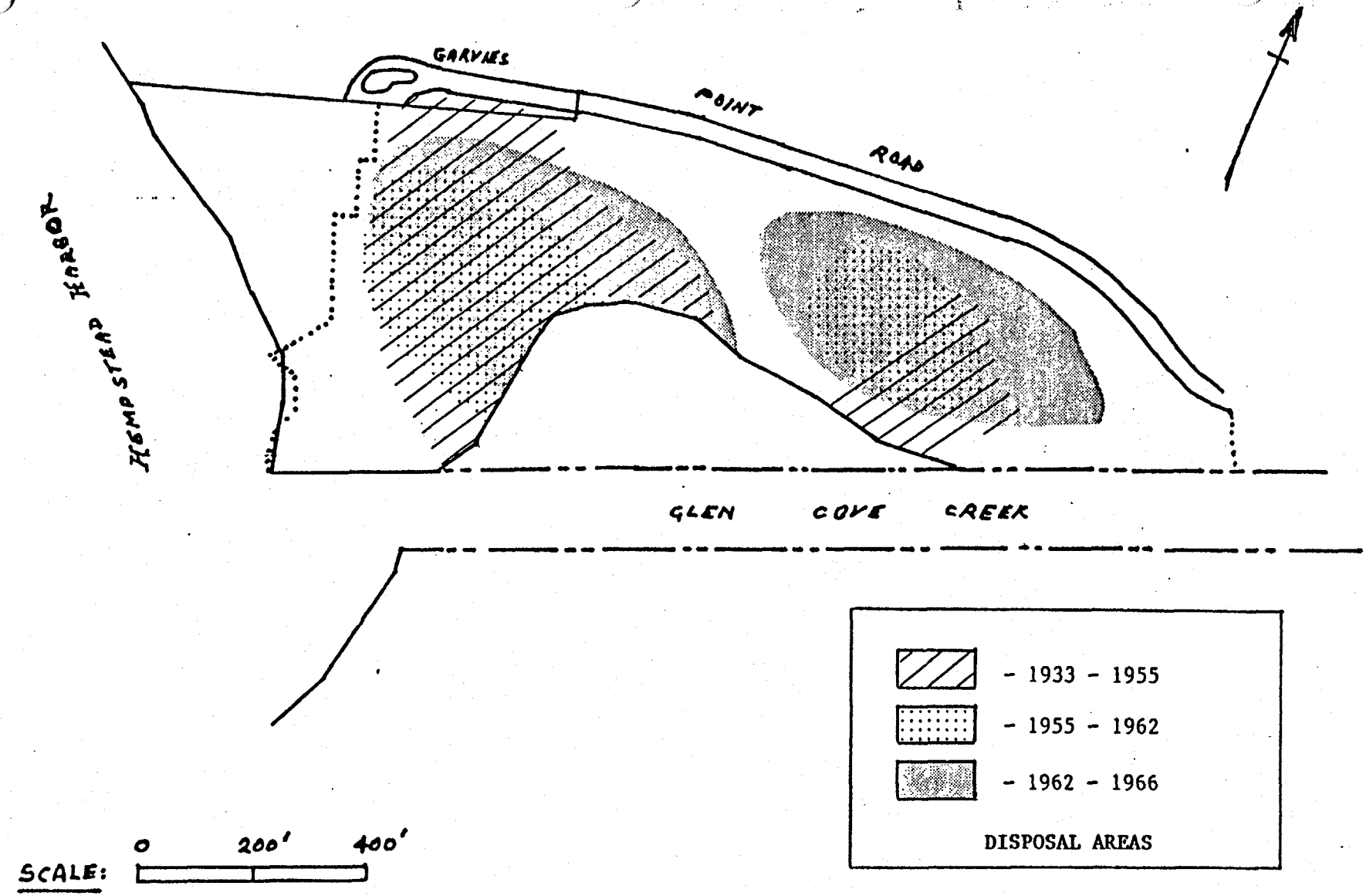

FIGURE 3.6: ON-SITE LANDFILLING ACTIVITY (1933-1966)

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3.8 Landfilling Operations

The City of Glen Cove during its ownership of the site, had used it as a landfill. Nassau County Department of Health (NCDOH) indicates that both incinerator residues and wastewater treatment plant sludges were deposited at the site dating back to 1971. The records also indicate that street debris were disposed of at the site.

These findings were also corroborated by Mr. Donald Aitken, a former NCDOH sanitarian who was responsible for periodically inspecting the landfilling activities at the site. Mr. Aitken explained that to his knowledge, household debris was disposed in the western section of the landfill. The primary area of landfilling occurred in the central section of the property involving trenching with a backhoe, filling the trench with garbage and moving to an adjacent area to repeat the process. To his knowledge, the garbage consisted of typical household garbage, construction debris, catch basin clean out material and occasionally sludge from the City sewage treatment plant. The material was not sorted.

Mr. Aitken was unsure of the exact demarcation of the eastern border of the landfill. He did acknowledge that a 20' high sand berm existed along the northern border of the site. This berm was subsequently leveled and graded after 1983. A soil berm also existed along the southern border of the site.

Mr. Aitken did not recall any disposal incidents of industrial or potentially hazardous waste or ash. He also stated, to his knowledge, that the landfill was still active into the early 1980's just prior to the purchase by Village Green Realty. In NCDOH records dating back to 1973, references are made to the disposal of incinerator ash, sewage sludge, household debris and other fill on various portions of the site. Prior to about 1975, the discarded debris in the landfill was burned apparently to reduce the volume and for rodent control. No good records were available where these disposal

operations took place, however, based on topography and the aerial photographs, it appears that the center of the current site was the primary disposal area.

3.9 Site Activities After 1983

The various parcels comprising the site were officially purchased by Village Green Realty in the fall of 1983. The ownership of the site prior to 1983 has been outlined in Appendix A.

After the site was purchased by Village Green Realty, Inc., a master plan for development was prepared and approved by various City and County agencies, the NYSDEC, and the Army Corps of Engineers (with respect to the preservation of on site wetlands). The site development plan called for extensive bulkheading along Glen Cove Creek and along the western portions of the site. Many thousands of yards of clean fill were brought onto the site to fill in behind the bulkheading and well as several lower lying areas. As part of the development plan, two retention ponds were developed along the northern border of the property as shown in Figure 3.7. The intended purpose of the retention ponds was to collect surface runoff from the various portions of the site to prevent infiltration of precipitation into the old landfilled areas.

Bulkheading was initially proposed along the entire southern portion of the site. However, because of wetland concerns, approximately a third of the bulkheading was not installed to provide for the protection of the estuarian habitat along Glen Cove Creek.

The initial development plan called for multi-story structures with apartments on the ground floor. Wooden piles were driven into the areas beneath the proposed structures. Because of concerns over methane gas

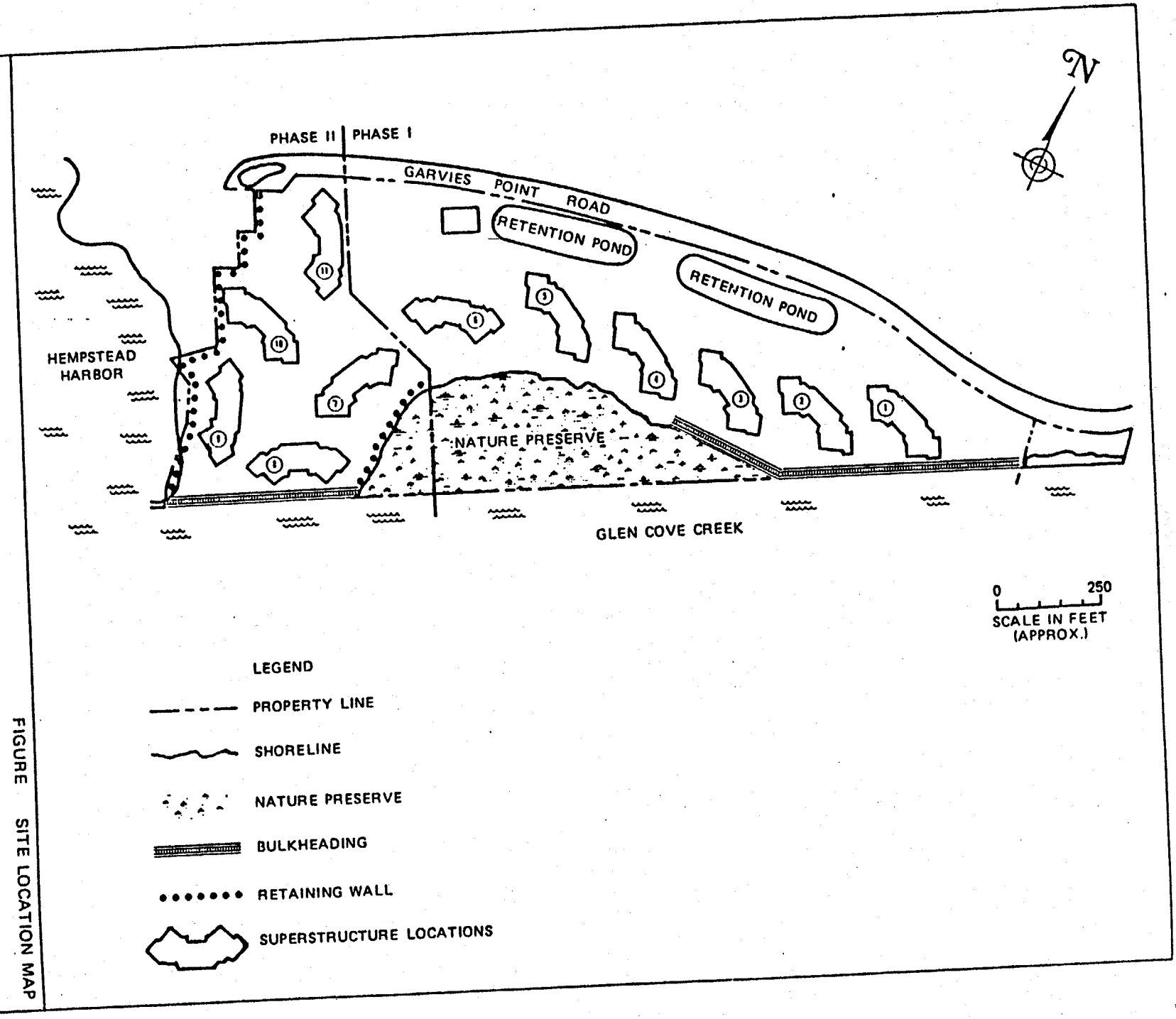

FIGURE SITE LOCATION MAP

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Prepared By RTP Environmental Associates Inc.

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released from the underlying marsh areas, dredge spoils, and the other decomposing landfill materials, a modified plan for condominium development included several special features to prevent the migration of methane into enclosed spaces or into the living units. Additional piles were driven to support the redesigned units bringing the total number of piles driven into the site to approximately 4,000. The site development plan was approved by all regulatory agencies and construction of the superstructures was initiated. Due to financial difficulties and an injunction against the construction, only two superstructures were constructed.

The two super structures were never completed and continue to stand on the eastern portion of the site. Wooden and concrete piles have been placed and continue to remain in over two-thirds of the site. The only section of the site that is free from structures is the western most portion. A sales pavilion was constructed on the western third of the site and a blacktop roadway was constructed to allow access to the sales pavilion. Landscaping was provided along the access roadway as well as surrounding the sales pavilion. To limit access to the site, a six foot high stockade fence and chain link fence was placed along the northern and eastern boundaries of the site.

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APPENDIX A

DATA SUMMARY REPORT

Ref. 3
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RTP ENVIRONMENTAL ASSOCIATES INC.

AIR • WATER • SOLID WASTE CONSULTANTS

400 Post Avenue, Westbury, New York 11590

(516)333-4526

March 1, 1988

Mr. Robert Becherer
Regional Engineer
Division of Solid & Hazardous Waste
New York State Department of Environmental Conservation
Building 40
State University of New York
Stony Brook, New York 11794

RE: Submittal of Data on Garvies Point Condominiums

Dear Mr. Becherer:

On behalf of Village Green Realty at Garvies Point, Inc., the following data report has been compiled to satisfy the requirements stipulated in the NYSDEC Order On Consent for the referenced site.

The Order requires a brief site history, a description of previous investigations, a historical inventory of aerial photography and other data not previously provided to the NYSDEC. The following report summarizes our findings.

Please review the information and contact me if you have any questions or comments or know of additional information that may be helpful for this site investigation.

Sincerely yours,

RTP ENVIRONMENTAL ASSOCIATES, INC.

Kenneth J. Skipka
Principal

KJS/erl
cc: N. Nyman
D. Rothberg, Esq.
R. Piaggione, Esq. (w/o attach)
K. Phillips, PhD
D. Elias
ID#OCSLSUMMARY3

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DATA SUMMARY REPORT
GARVIES POINT CONDOMINIUM SITE, GLEN COVE, N.Y.

1.0 INTRODUCTION

An Order On Consent exists between Village Green Realty at Garvies Point, Inc. and the State of New York: Department of Environmental Conservation regarding the Garvies Point Condominium Site in Glen Cove, New York (hereinafter known as the site). Village Green Realty is to provide the State with "all data within its possession or control regarding environmental conditions on-site and off-site, to the extent that such data has not heretofore been provided to the Department".

At a minimum, these data shall include:

a. A brief site history,

b. A description of the results of all previous investigations, and

c. A historical inventory and best available copies of all aerial photography available for the site.

This document provides the above data directly, summarizes the studies that have been conducted, and gives the appropriate references for securing the data/information identified above.

2.0 SITE OWNERSHIP HISTORY AND USES

In order to determine former site ownership, a search of the Nassau County property records was performed. The search, in general, determined that the recorded deeds to the property originally dated back to 1899 at which time the site and much of the area surrounding Glen Cove Creek was assigned to Nassau County. In 1909, Wm. H. Seaman acquired ownership. In 1931, the

City of Glen Cove was deeded the property from the Appleby's. (There is a gap in the records regarding how the Appleby's acquired the property.)

After 1931, many changes in ownership of the property occur. Table 1 lists the owners and when the deed to the property was conveyed. A map of the site is provided as Figure 1.

As shown in Table 1, there has never been an industrial owner of the property except for the CONMAR, Inc. Group. The CONMAR Group purchased the property with an intent of constructing a residuals transfer station on approximately the eastern third of the site. The residuals were to be accepted from surface carriers and transferred to barge transports docked in Glen Cove Creek. Although preliminary plans were developed in 1980, no such facility was ever constructed.

Village Green Realty acquired the several lots that comprise the property during the period 8/15/83 to 10/4/83.

The Nassau County Department of Health (NCDOH) was contacted and their files were reviewed to determine the general uses of the property. Available Nassau County records begin in 1963 at which time the site was being considered by the City of Glen Cove for the landfilling of City incinerator ash and residuals and sewage sludge from the City wastewater treatment plant. Records show that the site was actively used as a disposal site for incineration residuals and for sewage sludge. Nassau County records also indicate that the site was also used by unauthorized individuals for disposal of rubbish. In this case, the majority of the rubbish disposal was apparently confined to household debris. The City of Glen Cove was also accused of illegally using the area to dispose of City street debris. During the early years of City ownership, the records show that complaints had been received by the County. These complaints related to the burning of

TABLE 1

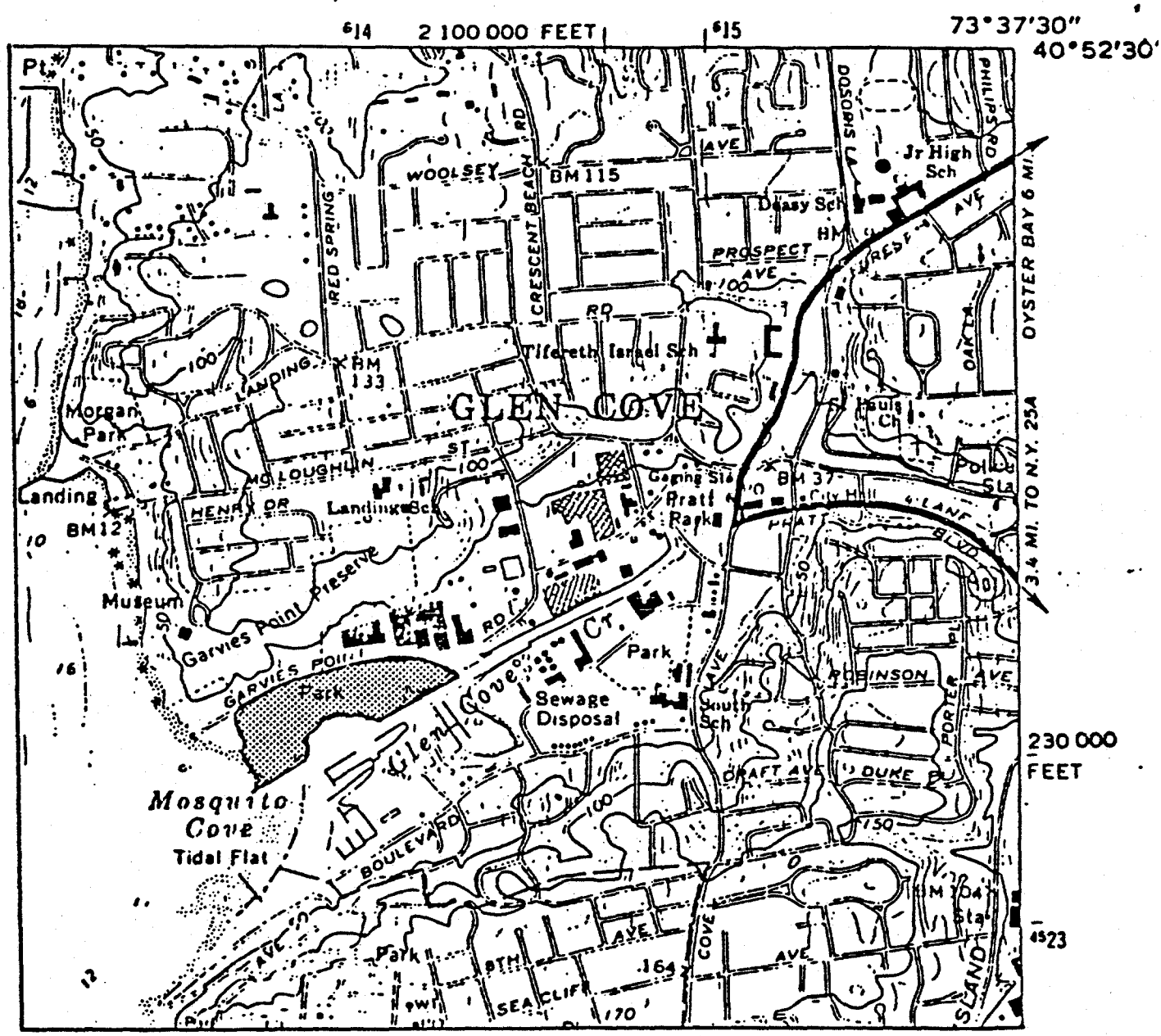
GARVIES POINT SITE OWNERSHIP HISTORY

The site previously consisted of several parcels on Nassau County Tax Maps in Section 21 Block A, Lots 551, 514, 546, 555 and 556. The ownership according to the deeds filed with Nassau County:

Lot #	Owner	Deed Date
26 & 27	Wm. H. Seaman	9/21/09
(later redesignated)		
424 & 546	E.S. Appleby, et. al.	
	City of Glen Cove	6/26/31
	Realty Assoc.	9/13/46
	John White	10/14/47
	Ridgewood Platear	10/4/49
	Realty Assoc.	10/5/49
	Glen Cove Realty Corp.	12/12/51
	J. Graham	01/10/56
	Creek Develop. Corp.	12/20/56
	I.I. Miller	12/22/56
	City of Glen Cove	02/13/58
	Nassau County	04/28/70
	City of Glen Cove	09/13/74
	I.I. Miller	11/19/74
	Lee Langbaum	09/02/76
	CONMAR Blders.	03/26/79
	James O'Connell	12/28/79
	Glen Cove Develop. Corp.	04/16/81
	Village Green	08/15/83
551 & 556	(Similar Listings to above prior to 1977)	
	Glen Cove Urban Renewal	04/12/77
	Glen Cove Community Develop.	04/16/81
	Village Green	10/04/83

SEA CLIFF QUADRANGLE
NEW YORK
7.5 MINUTE SERIES (TOPOGRAPHIC)

6265 I NE (BAYVILL



GARVIES POINT SITE

FIGURE 1: PROJECT SITE AND SURROUNDINGS

102171

rubbish at the site and to odors allegedly coming from the uncovered sewage sludge. The City of Glen Cove was responsible for the site at this point and the City did clean and remove debris from the site on occasion.

In interviews with NCDOH staff and former staff, attempts were made to secure additional information about the site. Only hearsay information was available about possible illegal industrial dumping on the site. Although such dumping is alleged to have taken place, the types of materials, identification of what was in "drums" observed on site, and physical evidence were not carefully documented (i.e., no labels identifying the contents of drums, no surface staining was recorded and file photographs do not reveal the presence of hazardous waste). Further research into the areas of alleged waste disposal will be performed during the remedial investigation.

The Army Corps of Engineers was contacted to determine if and when dredge spoils were placed on the site. Historic records of the dredging and spoil disposal activities at Glen Cove Creek were reviewed at the Army Corps of Engineers, Navigation Section, New York District Office in New York City. Mr. S. Lew of the Navigation Section provided the files.

An April 1933 map, Figure 2, of Glen Cove Creek from the U.S. Engineers Office, First District New York City shows spoil disposal areas which implies pre-1948 dredging activity. It is obvious that the creek had a major course change prior to 1948, however, where the dredge spoils were placed cannot be determined from the Army Corps files.

Based upon the existing records, dredging of Glen Cove Creek occurred in 1948, 1960 and 1965. A review of the 1948 records determined that the volume of dredge material to be removed as 29,500 cubic yards (estimated). No maps of the actual dredging activity or spoil disposal areas were in the file.

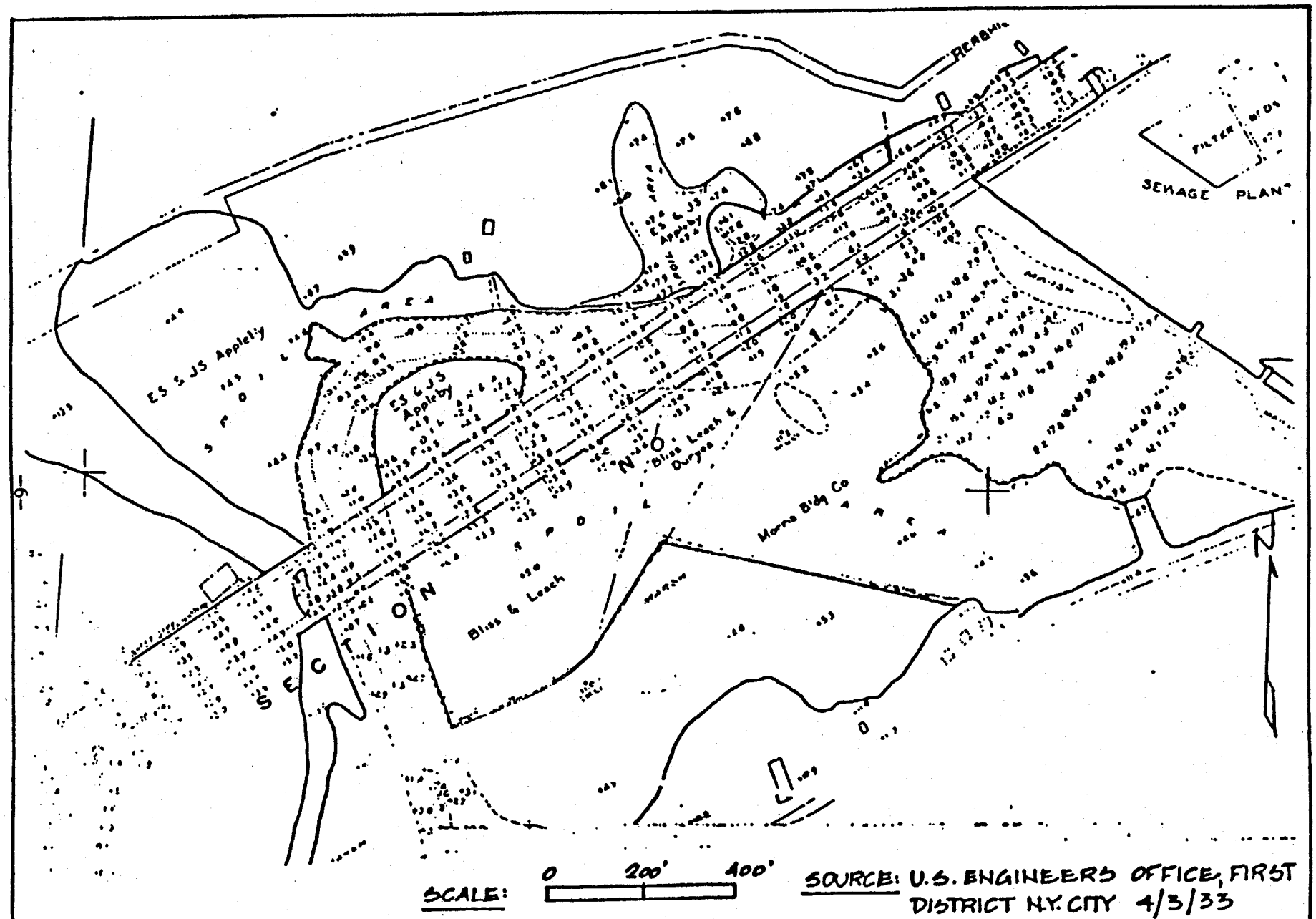


FIGURE 2 GLEN COVE CREEK N.Y.

RIP ENVIRONMENTAL ASSOCIATES INC.
Ref 3
320 P39
102173

A review of the 1960 records estimated the volume of dredge material to be removed as 27,600 cubic yards. The map of the property dated 1957, Figure 3, designates the area of spoil disposal to be in the central section of the property and calculates the area to be 7.8 acres. This designated area is within Section 21, Block A, Lot Number 471 of the City of Glen Cove. Maps of both the area to be dredged and the dredge disposal area from the U.S. Army Corps of Engineers dated 4/1/60 are shown in Figures 4 and 5.

A review of the 1965 records delineates the spoil disposal in the same area and shows the area of material to be removed to be approximately where the Glen Cove Creek discharges into Hempstead harbor.

The proposed 1979 dredging activity did not occur. The upstream area of the creek was not properly bulkheaded for dredging activity. Additionally a sediment sample of the creek obtained by the EPA showed levels of cyanide above regulatory levels. The NYSDEC subsequently declared the proposed dredge spoil as a hazardous waste and prohibited disposal of this material in the landfill. Dredging did not occur because the movement of these materials to other disposal areas was cost prohibitive.

The City of Glen Cove Building Department was contacted to determine if they possessed or had knowledge of data on disposal activities at the site. While being aware of the general nature of disposal activities on the site, the Building Department knew of no data documenting such activities.

3.0 SURROUNDING PROPERTIES

The properties surrounding the site were identified during a site visit. The site is bounded by Garvies Point Road to the north, Hempstead Harbor to the west, the City Anglers Club Marina to the east and Glen Cove Creek to the south (Figure 1). To the north of Garvies Point Road is the Garvies

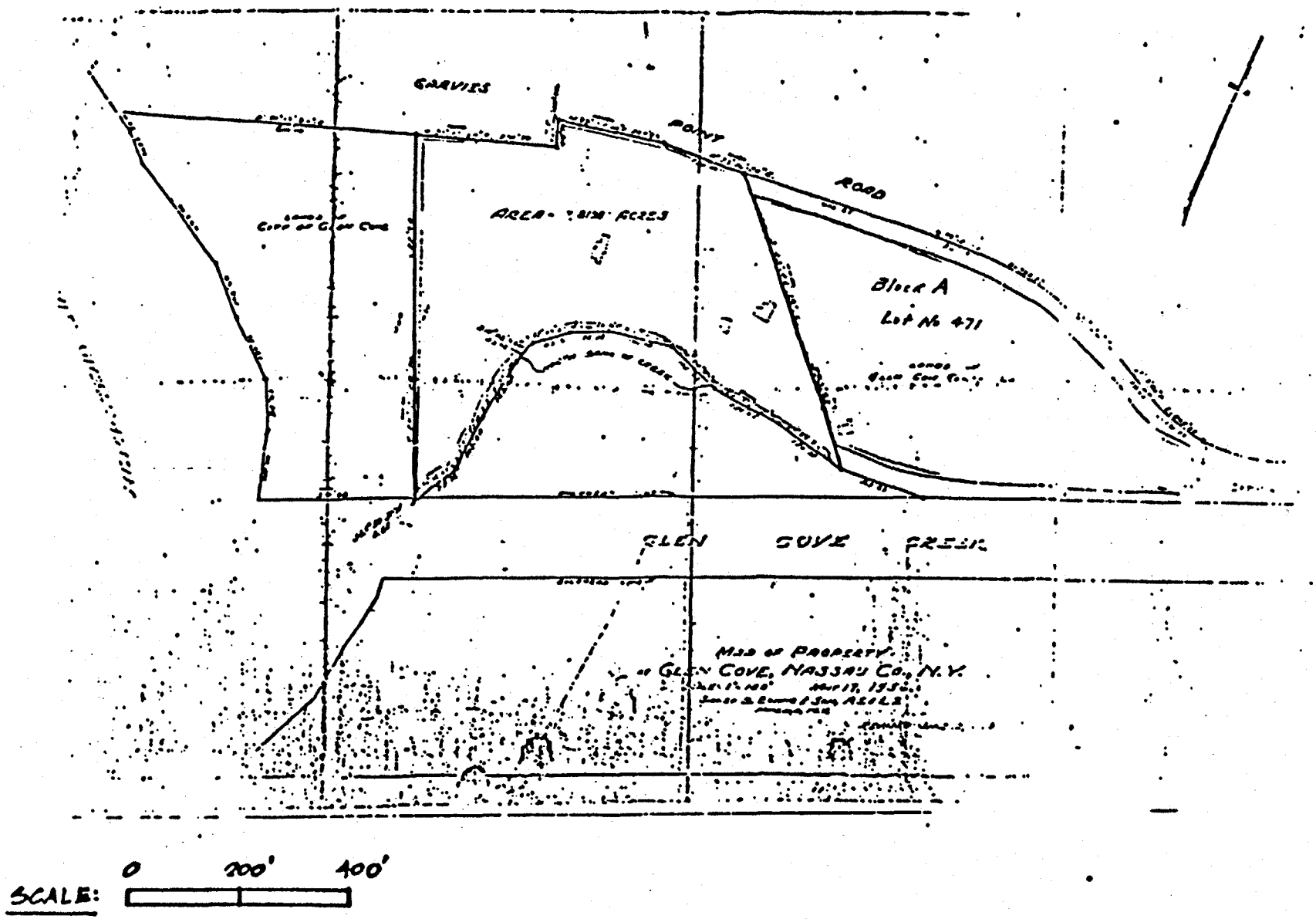
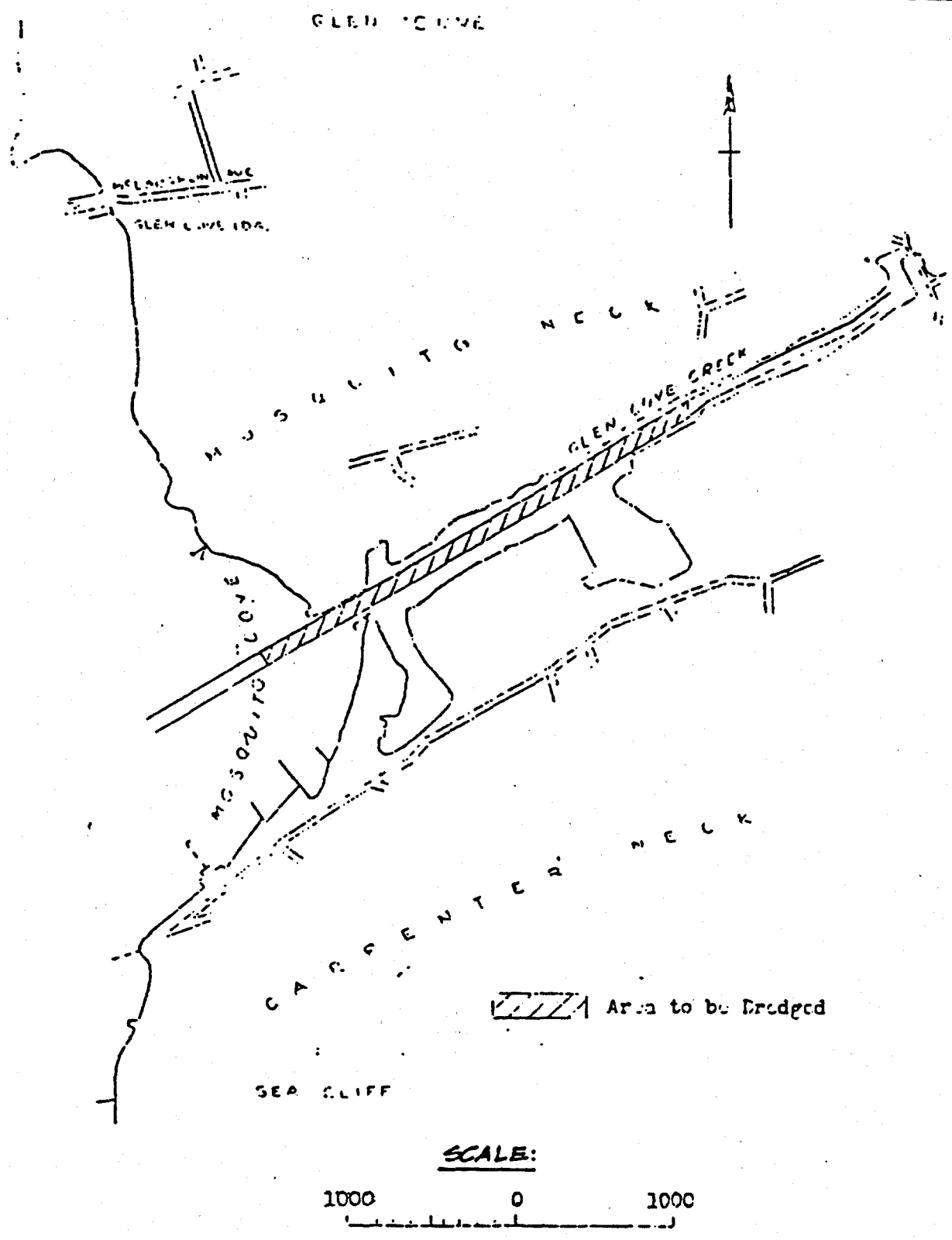


FIGURE 3 SURVEY MAP OF PROPERTY 5/17/57

Ref. 3

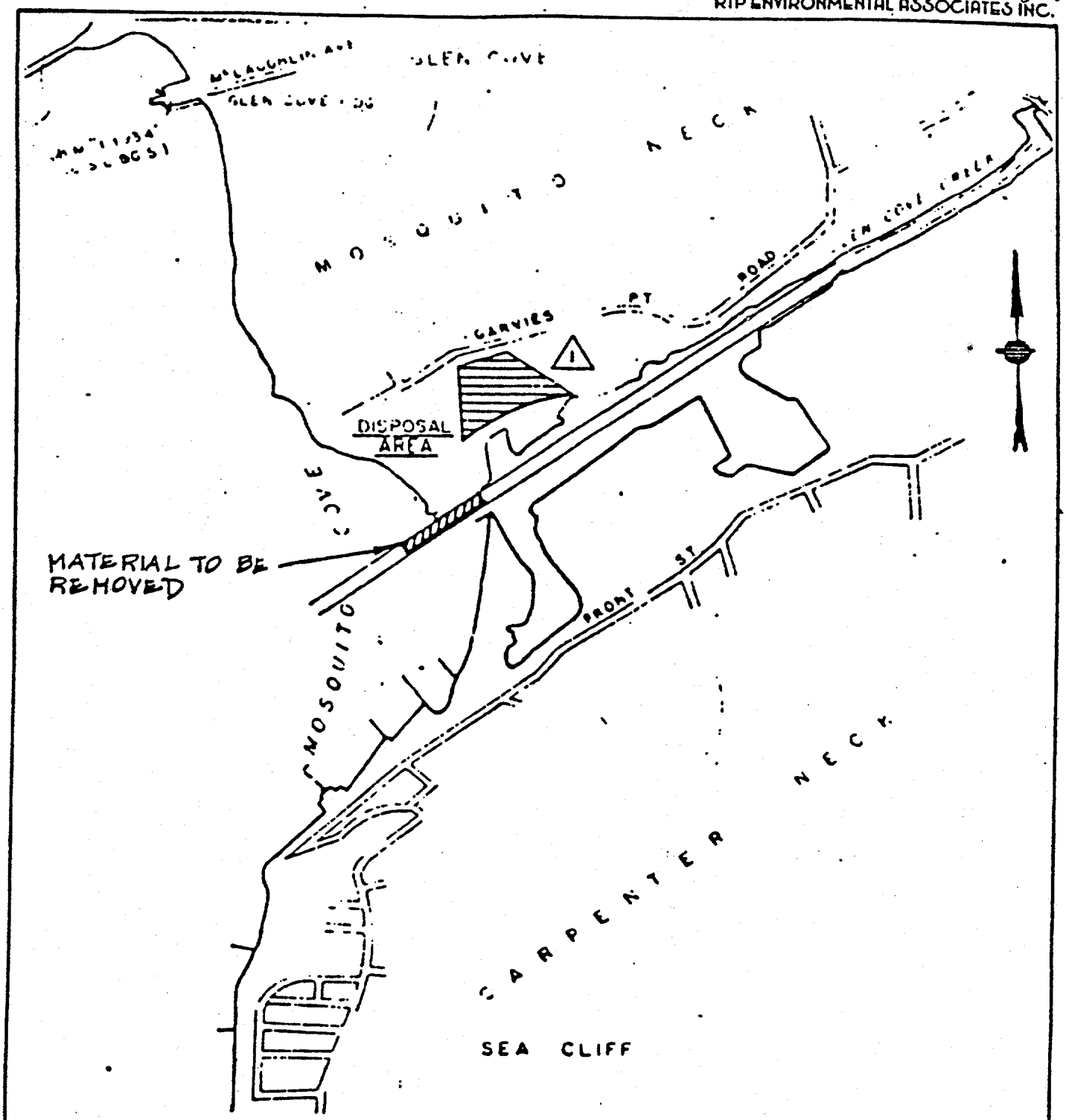
34 of 39



SOURCE: U.S. ARMY CORPS OF ENGINEERS

FIGURE 4 GLEN COVE CREEK N.Y. — 1960 AREA TO BE DREDGED

102176



SCALE: 1:10,000

SOURCE: U.S. ARMY CORPS OF ENGINEERS

FIGURE 5 GLEN COVE CREEK N.Y.-APRIL 1965
PROPOSED DREDGING ACTIVITY

102177

Point Reserve, the Fabric Leather Corporation and the Edmos Corporation. To the west of Hempstead Harbor is the Port Washington Peninsula. To the south of Glen Cove Creek are several marinas and the City codisposal plant. To the east of the City marina is Cove Oil Company.

A search of the registered water well records at NYSDEC Region I was conducted. Wells within a one mile radius have been identified and are summarized in Table 2. The nearest water supply well on record is located at the Fabric Leather Corporation and is rated to draw 380 gallons per minute.

4.0 PREVIOUS ENVIRONMENTAL AND OTHER SITE INVESTIGATIONS

The previous site investigations are listed below in reverse chronological order. This constitutes the information available to Village Green.

Date	Description
March 1986	RTP Environmental Associates and H_2M conduct a water test of CDM Well #2.
Nov-1985/Feb 1986	CDM conducts a preliminary site investigation to determine if hazardous materials are present in the air, water or soils (CDM, 1986)
1985	LKB conducts a soil boring and monitoring well program to determine subsurface soil stratigraphy, hydrogeology and soil classification. Gas monitoring wells were installed to determine subsurface methane levels.

5.0 AERIAL PHOTOGRAPHIC INFORMATION

Three sources of aerial photographs were investigated. These included Lockwood Kessler and Bartlett (LKB), Syosset, New York; Aeroservice, Inc., Houston, Texas; and Aerographics, Inc., Bohemia, New York. Of the three

TABLE 2

PUBLIC AND PRIVATE SUPPLY WELLS
WITHIN A ONE MILE RADIUS OF THE
GARVIES POINT SITE

NYS DEC #	OWNER OR WELL FIELD	CAPACITY G.P.M.	DEPTH (ft)	WATER USE
1917	Wah Chang Trading Corp.	250	307	Processing
2847	Skouras Thearte Corp.	425	116	Cooling
3466	New York Water Service Corp.	208	177	Public Supply
3993	Henry's	20	70	General
4432	Dykman Laundry	90	352	Laundry
4440	Limco Manf. Corp.	200	316	General
5686	City of Glen Cove	45	92.5	Process Water
6416	Zara Asphalt Co.	37	106.5	-
6549-D	Columbia Carbon & Ribbon	225	425	Diffuser
6587	Zara Asphalt Co.	103	56	-
6594	City of Glen Cove	65	51	Air Conditioning
7588	Hempstead Harbor Yacht Club	-	26	No Water
7614	Powers Chemco Corp.	-	393	Diffuser
7857	Sea Cliff Water Co.	1300	614	Municipal Supply
8048-D	Powers Chemco, Inc.	-	370	Diffuser
8326	City of Glen Cove - City Hall	1400	168	Municipal
8327	City of Glen Cove - City Hall	1753	168	Municipal
8453	Powers Chemco	-	125	Test Well
8690	Fabric Leather Corp.	-	347	Cooling
8709	Fabric Leather Corp.	380	312	-
8887	Slater Electric, Inc.	240	130	Cooling
9612	Slater Electric, Inc.	-	109	Cooling
9841	Slater Electric, Inc.	240	121	Process Cooling

groups, LKB had the most complete set of aerial coverage of the site dating from April 5, 1950 thru March 21, 1986. Stereographic pairs are available for the following dates: 4/50, 1/55, 3/62, 566, 4/69, 4/72, 4/78, 3/84 and 3/86. The 1950 and 1955 photos are at 1"=1000' scale while the remaining years to 1984 are at 1"=1600'. The 1986 photos are at a 1"=800' scale.

Original copies of the photographs are available at Lockwood, Kessler & Bartlett, One Aerial Way, Syosset, New York 11791.

Xerox copies of the site photos for each year are attached for convenient reference.

The other sources of aerial photographs only have very limited coverages of the site. These were not investigated further because the LKB footage was considered more than sufficient to cover the period and area of interest.

6.0 OTHER SITE INFORMATION

The NYSDEC files already contain the other data that the applicant has been able to gather on the site with respect to the information request in the Order On Consent. The applicant will continue to search for additional pertinent information on the site relating to the referenced Order. These materials will also be provided to the NYSDEC according to the requirements established in the Order.

REFERENCE NO. 4

11046/2-91

RECORD OF TELEPHONE CONVERSATION

DATE 5/3/95
10:45

TO Captain's Cove Condominium Site
NAME/FILE NO.

FROM Mike Heffron

CLIENT/PROJECT EPA ARCS II

SUBJECT Wastes from Li Tungsten disposed at Captain's Cove

CHARGE: DEPT. NO. _____ CLIENT SYMBOL _____ OFS NO. _____

DISCUSSION WITH Frank Pena - Former Li Tungsten Employee (516) 759-9896

- Mr. Pena worked for Li Tungsten from 1974 until the operations closed in 1985.
- He worked in the screening department and carbide building.
- He personally never saw waste being disposed at the Captain's Cove condo site, or Garvies Point as he referred to it.
- During his employment at Li Tungsten he spoke with many of the "old timers" who worked at the site for many years. Many of the employees that worked at the site in the 1950s and 1960s stated they routinely dumped wastes, slag etc. at the Garvies Point site.
- He stated that employees used to take boxes or crates of material (slag etc), using a fork lift, drive down the road and dump the material into the landfill.

BY _____ NAME 5/3/95 TITLE _____ DEPT. NO.

CC:

102182

11046/2-91

P. 2 of 2

RECORD OF TELEPHONE CONVERSATION

DATE 5/3/95
10:45

TO Captain's Cove Condominium Site
NAME/FILE NO.

Page 2 of Telecon

FROM Mike Heffron

CLIENT/PROJECT

SUBJECT

CHARGE: DEPT. NO. CLIENT SYMBOL OFS NO.

DISCUSSION WITH

- Wastes used to be dumped in the parking lot near the main building, across the street by the woods, back by the reduction building and hydrogen tank.
- He stated that while he worked at Li Tungsten, material was dumped on the ground or into Glen Cove Creek.
  - Large crocks or open vats used for degreasing parts was filled with chloroethene or acetone, used to degrease parts, and then dumped right onto the ground.
  - Wastes were dumped into pipes and trenches leading into Glen Cove Creek.
- Mr. Pena stated that the owners/operators of Li Tungsten were always in dispute with the workers/unions. He witnessed employees dumping up to 50,000 gallons of caustic soda into Glen Cove Creek just to spite the owners since it cost several thousand dollars for the soda hydroxide flakes.
- Mr. Pena stated that we was meeting Mr. Connolly of EPA to walk over the Li Tungsten site and discuss the former disposal practices.
  Mr. Connolly (212) 637-4291

BY NAME TITLE DEPT. NO.

CC:

102183

REFERENCE NO. 5

CONTENTS

PAGE NO.	REFERENCE	DATE
	Captain's Cove Site	
	Glen Cove, Nassau Co.	
	New York.	

9/28/94

8:50 Arrived at the site
Obtained instrument background readings

Weather: Sunny - warm temperatures are to go up to 75°F
- Heavy rains here yesterday up to 2" in some places of Long Island, NY
- Hempstead Harbor Yacht Club to the west

The Boston Fabric & Leather was located directly across the street (Garvies Point Rd) of the site.
- It appeared vacant and for sale (D'Angelo & Forest Realators. (516) 921-2900

Garvies Point Preserve to the north, and Glen Cove Anglers Marina to the east

MH

Ref 5
1 of 23

102185

4/28/94

There were two well stickups in Border
- One on the front lawn
- one on the east side of the lawn

"The Pickle Factory" is located to the East of Border

- Fire Hydrants are located along Gurnies Point Road. Any runoff from upgradient of the site would flow along Gurnies Point Rd. toward Hempstead Harbor
- The two retention ponds were filled with cattails and standing water
- The site was completely fenced along Gurnies Point Rd. The gates were also locked

Michael Heffron
Anne Roche
Les Skoski
> Ebasco personnel on-site

mt

9/20/94

The pond appeared to be approx 3'-4' deep. The center Mallard Ducks in Pond

R.P. Picture of western retention pond facing east.

Large creosote soaked telephone poles located west of the retention pond 15x45'

R.P. 2 Picture of creosote soaked pilings facing east.

Old water heater - empty above ground home heating oil tank located along side old parking lot area.

mt

102186

9/28/94

R, P3 Picture of large breech in the fence
- There is a well worn path from the parking lot to the site,

There is an obvious drainage area eroded on the southwestern portion of the site. Water is seeping out into the drainage ditch. HNU 1.8 ppm right next to seep

- There is also a breech in the fence at this location.

- The drainage would go south west across the beach to Hempstead Harbor - eroded channel across beach

R, P4 Picture of drainage area and breached fence facing NE

9:45

MH

9/28/94

R, P6 There was also an active drainage pipe discharging water from a black corrugated plastic drain pipe in bulkhead wall

8' S of drainage swale HNU 1.4 ppm no discoloration or odor

R, P5 Picture of the western portion of the site bordering the beach

The former Sales Pavilion, located on the southwestern portion of the site, was burned and demolished. An access road leads from Garvies Point Rd to the former Sales Pavilion

MH

3 Pages

102187

9/28/94

The southwestern point of the site is apparently used for recreational fishing. There is a bench next to the bulkhead. There are well worn paths from the broken fence area to here. There is fishing string and old fishing hook packs bait containers etc.

R1P7 facing southwest
10:00 picture of apparent fishing area.

R1P8 picture of someone fishing directly across from
R1P9 the site on Glen Cove
10:05 Creek.

- There was also someone fishing along the beach area on the opposite side of Glen Cove Creek

MS

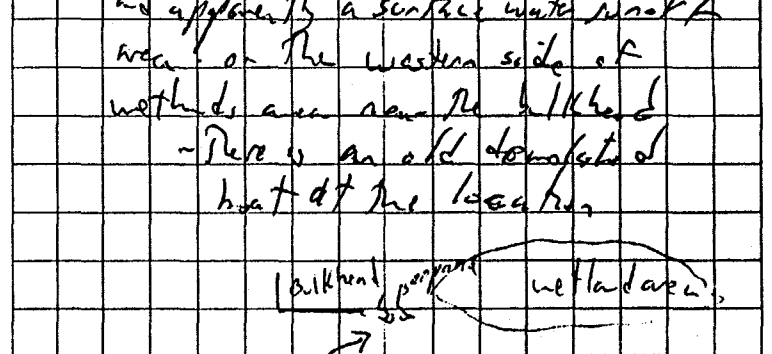
9/28/94

The southwestern area west of the wetland area is also apparently used for fishing along bulkhead.

- hook wrappers
  string etc.

There is an area of groundwater seepage and apparently a surface water runoff area on the western side of wetlands area near the bulkhead.

- There is an old dock at the location



R1P10 R1P11 Glen Cove Cr.

R1P9 Picture of groundwater seeping into the Glen Cove area.

- No HNU readings above background

MS

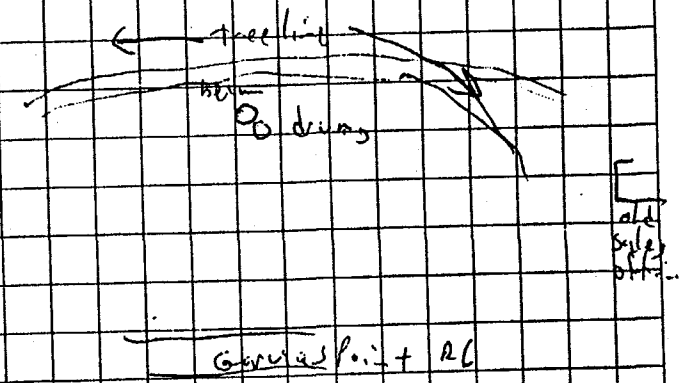
Page 5 of 23

9/23/94
P10 P11 P12
Panoramic of wetlands & marshes facing east.
The marsh area was filled @ egrets and blue herons and other avians.

R1 P13
Picture of fort apparently built by children coming
10:35 onto site. facing NE

"two old abandoned 55 gallon drums standing upright were located in the central portion of the site.
They were rusted w/ no markings. One was approx 1/2 full, the other appeared to have approx 1/8 of a drum of material in the bottom.
MH

9/28/94
The one 1/2 full had a small hole in the top - HAZU went up to Coppers, then back to Apple



R1 P14 Picture of drums facing southeast

MH

102189

9/29/99

There were piles of lobster/crab traps near the old building

- There were numerous empty plastic 55 gallon drums under the old building

- western building

- marked DAS Canal marine
309 683 0096

P. Boehm
N168R-N4R
crab traps - marked.

R, P15 facing SE
picture of entry drums & crab traps in background.

R, P16 Picture of crab trap in the water.

MH

Pg. 5 of 23

102190

9/28/94

The northeastern corner of the site there were piles of rebuilt boards

Area of stressed vegetation HNU 25 ppm on surface soil

mH

Rusted ~~25~~ 5 gallon containers opened one - 100 ppm on HNU

Approx. 7 pails some full (5) 2 empty rusted open

20 ppm in coils

R,P,17 Picture of 25 gallon containers facing NE

R,P,18 Picture of area of stressed vegetation 5x8 foot

mH

9/28/94

Old building materials etc. piled against cyclone fence

R,P,19 picture of house located just east of the site ≈200 feet

It is also a marina area.

- There is a path from the property to the subject site.

Apparently used for dumping by the adjacent property

There was a gas can - stained soil, an old outboard motor 5 gallon cans

R,P,20 Picture of oil stained ground and old gas can on the northeastern corner of the site facing north.

8 ppm on HNU

mH

Ref. 3 2 of 23

102191

9/28/94

8x10' area devoid of vegetation
4 times background
radiation

P1, P2 Picture of elevated radiation
reading on the northwestern
corner of the site
facing NE.

Piles on the southwestern
portion of the site + the
HNU readings were up
to 150 ppm when the soil was
disturbed. The soil was not
stained and no odor was
emitted. 200 ppm

The majority of the piles are
heavily vegetated, there are several
piles with unvegetated soil
(sandy fine dust and small pebbles)
Area approx 100 x 200'
pm

A

102192

9/28/94
Purplish ink
HNU - 50ppm
located between
the Garvies Point
Road and pilings
P22

Partial drum fragments
@ ribbon ; purple dye
mixed @ soil
R, P23

9/28/94

- Monitoring well CDM#4 was located in the woods that border the western portion of the site adjacent to the marsh area. The MW appeared to be in good condition. The well was locked.
- CDM#3 and CDM#2 were also located and appeared in good condition and were locked.

Large bundles of thick-grade black plastic were noted just NE of the eastern retention pond. This is apparently what was used to line the surface water retention ponds.

The surface water runoff that would runoff from the Garvies Point preserve is likely to go onto Garvies Rd. & run west towards Hempstead Harbor. The street is bermed on both sides of the roadway.

10/20/94

- Met with a City of Glen Cove employee and EPA to discuss the Litwinsky and Captains Cove sites. The employee was apparently suggested for the interview by the Mayor of Glen Cove to EPA.

9:00 ~~met~~ Michael Heffron - Ebasco, met with Arthur Stroich and Michael Clemetson of EPA to discuss the interview @ the Glen Cove representative

10:00 Met with Dan Russel, the Harbor Master and Environmental Conservation Officer for the city of Glen Cove.

- Mr. Russel stated that the Captains Cove Condo site was never officially run by the City of Glen Cove as a municipal landfill. There was no one at the site checking incoming loads or trenching and covering wastes. The site was open to whoever wanted to dump material.

10/20/94

The City of Glen Cove used the site to dispose of street sweepings, sediment dug out from storm drains around the city, sewage sludge, and incinerator ash from the sewage plant.

- As a boy who grew up in the area, Mr. Russel used to play around the old landfill area. Mr. Russel recalled he saw acres of 55 gallon drums on the site. He stated that he believed many of the drums were from Columbia Carbon and Ribbing Company. Mr. Russel stated that based on his experience with chemicals, he believes some of the drums he observed while on the site were PCB. Mr. Russel believed that many of the drums may have been grapeseed cake. The grape seed cake is the purple material that was observed on-site seeping to the surface in several places.

Ref. 5
1 of 23

102194

10/20/94

Mr. Russel stated that approx. 12,000 tons of material from the Li Tungsten site was disposed at the Captains Cove Condominium site. He stated that the number is based estimates from the ARPs consultants.

Mr. Russel stated that some of the material from Li Tungsten disposed at Captains Cove was removed and used for a soccer field at the Webb Institute of Naval Architecture. Approx 6-8" of clean soil was placed atop the material and a subsequent radiological survey did not reveal any radioactive readings above background.

- Bob Thesville from the Nassau Co. Dept of Health Office of Radiological Health might have additional info.

I asked Mr. Russel if there was actual documentation on waste disposal at the Captains Cove site from Li Tungsten. He stated that there are apparently documents recording interviews with

10/20/94

Frank Pena, a former Li Tungsten ~~office~~ employee. Mr. Russel stated that the District Attorney's office has the interview files.

10/20/94

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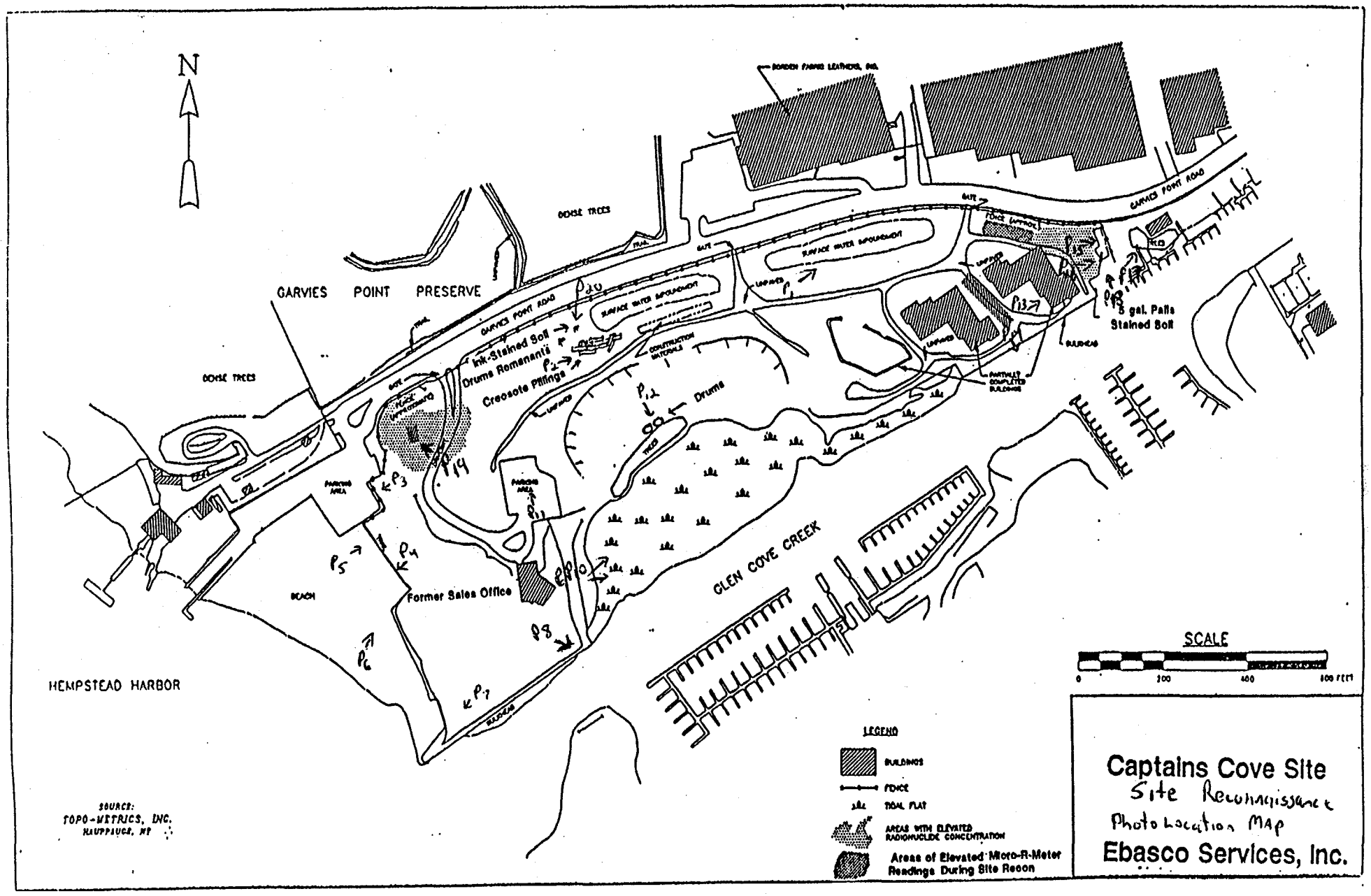


Captains Cove Site
Site Reconnaissance
Photo Location Map
Ebasco Services, Inc.

102196

Ref. 5
12 of 23

P-1: Photo of Retention Pond facing east

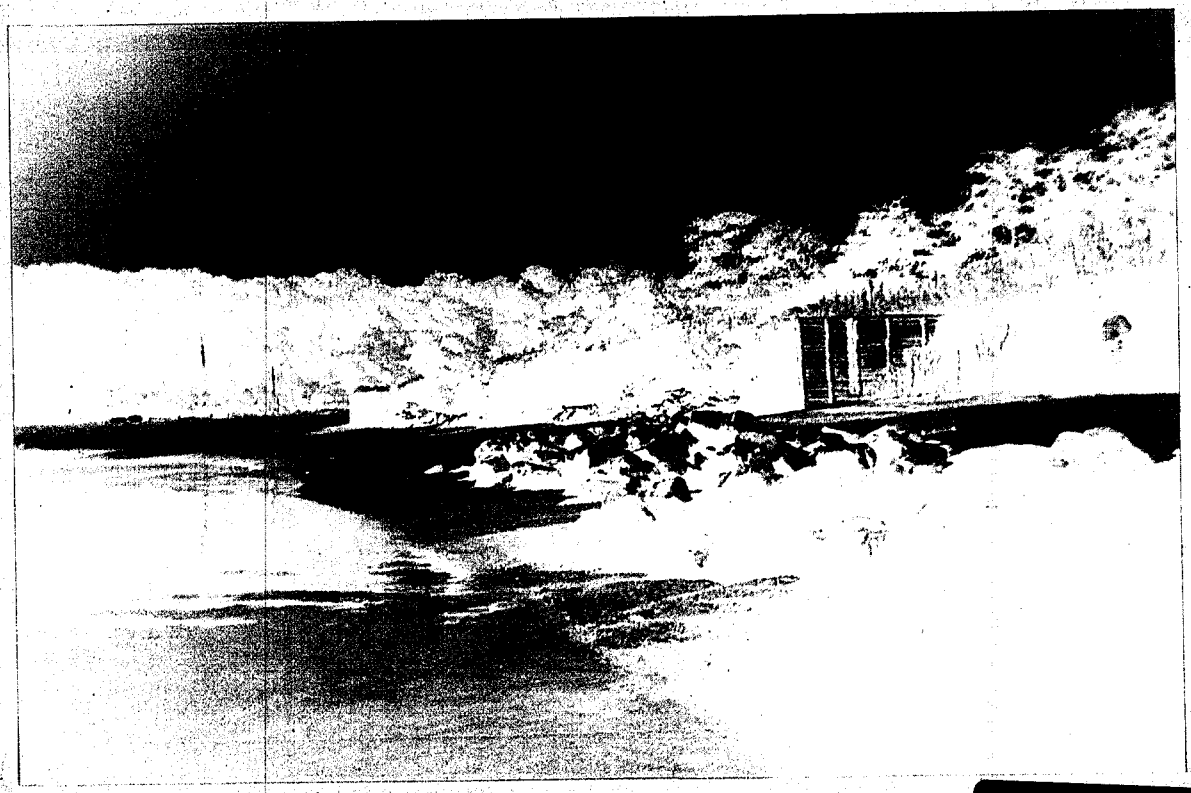
P-2: Photo of creosote pilings facing east

P-3: Photo of breech in fence on the western portion of the site, and a path leading from the parking lot onto the site.

P-4: Breeched fence along the western side of the site adjacent to the beach.

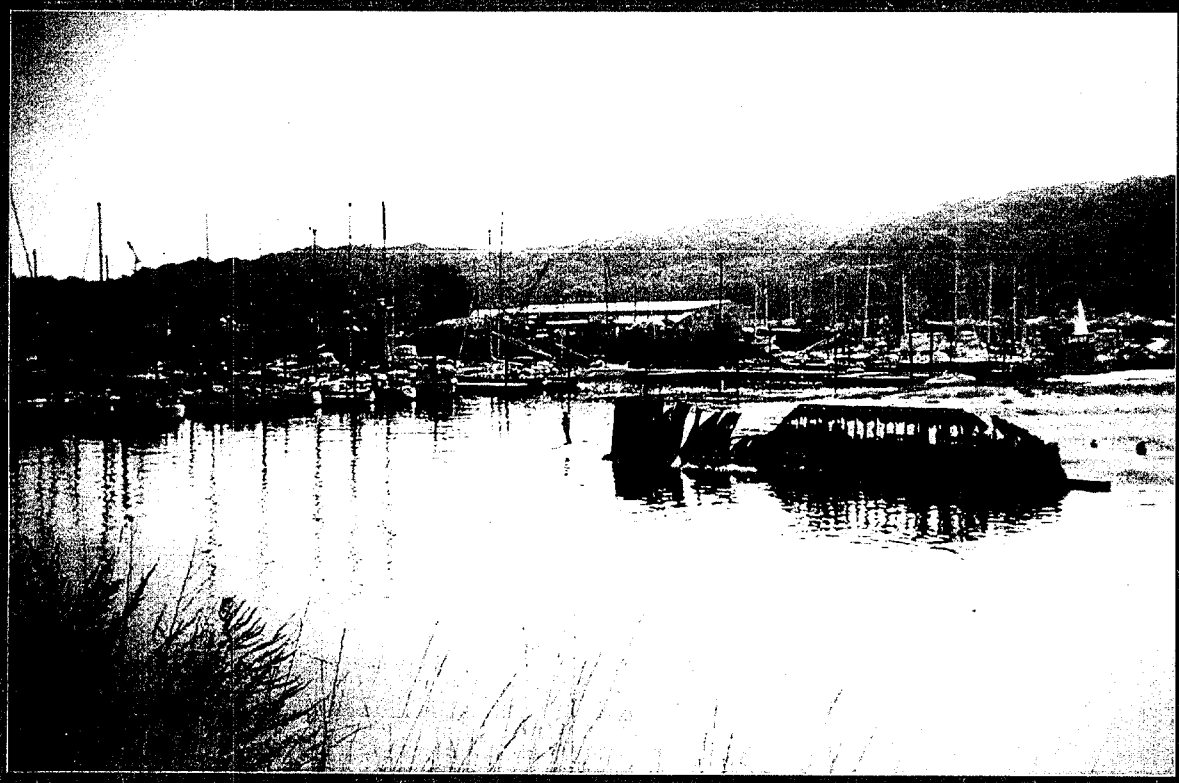
P-5: Drainage pipe discharging on the southwestern portion of the site.

P-6: Western portion of the site bordering the beach.

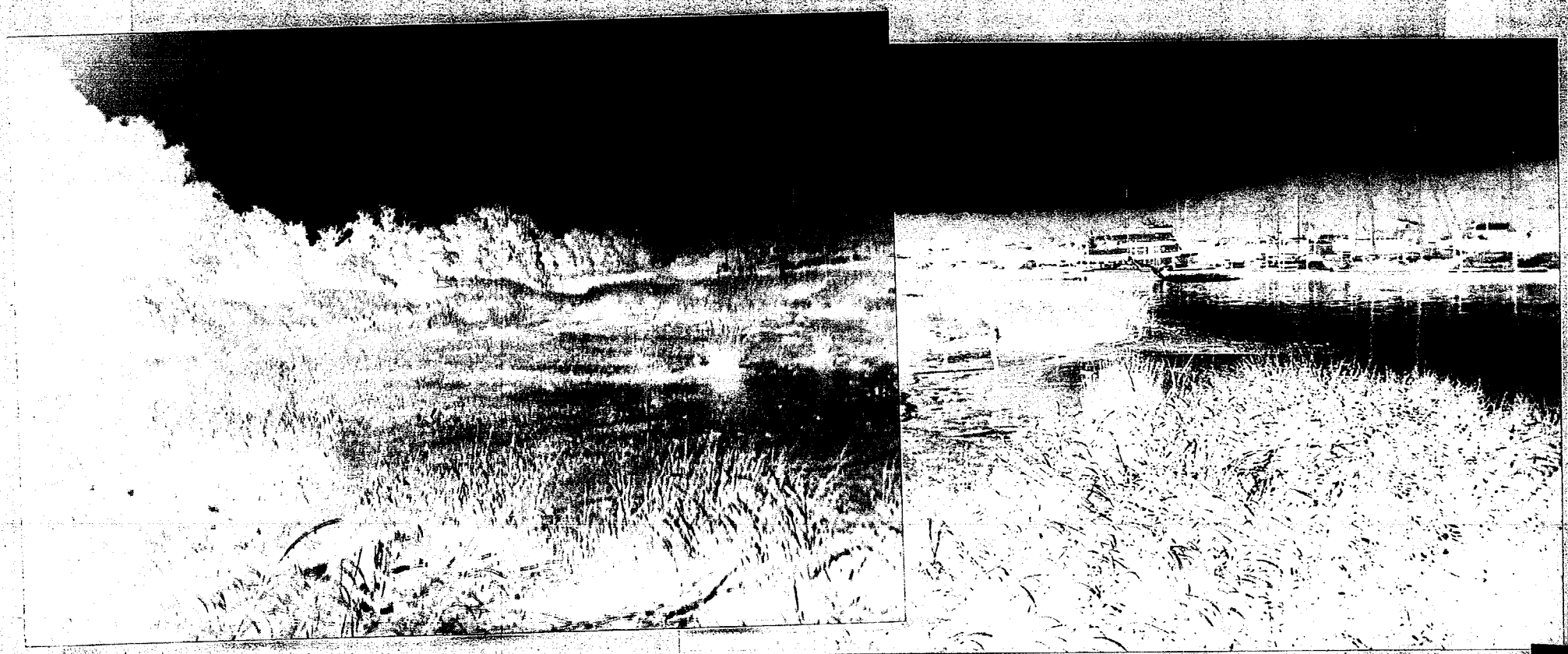


P-7: Apparent fishing area at the confluence of Geln Cove Creek with Hempsterad Harbour on site.

P-8: Photo of someone fishing directly across from the site on Glen Cove Creek.



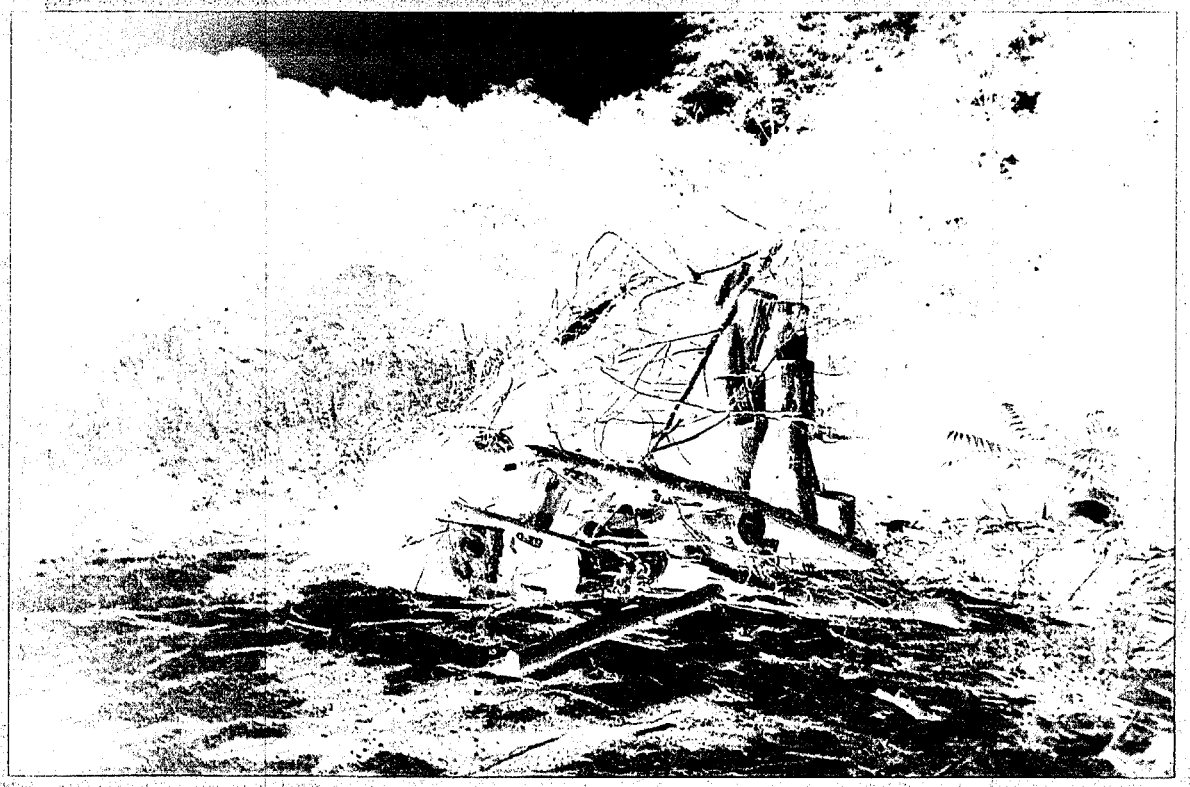
P-9 & 10: Panoramic of wetlands adjacent to the site at low tide.



102201

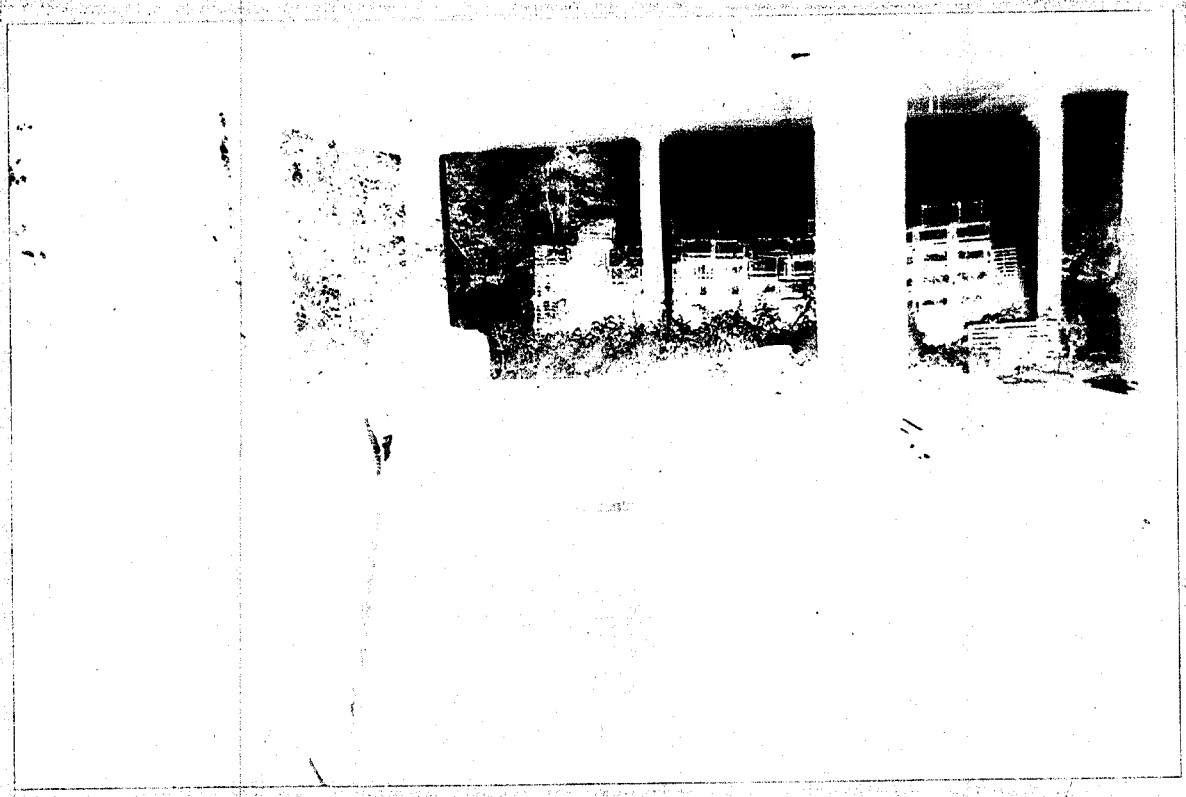
No. 17 of 23

P-11: Some type of fort, possibly built by children accessing the site.

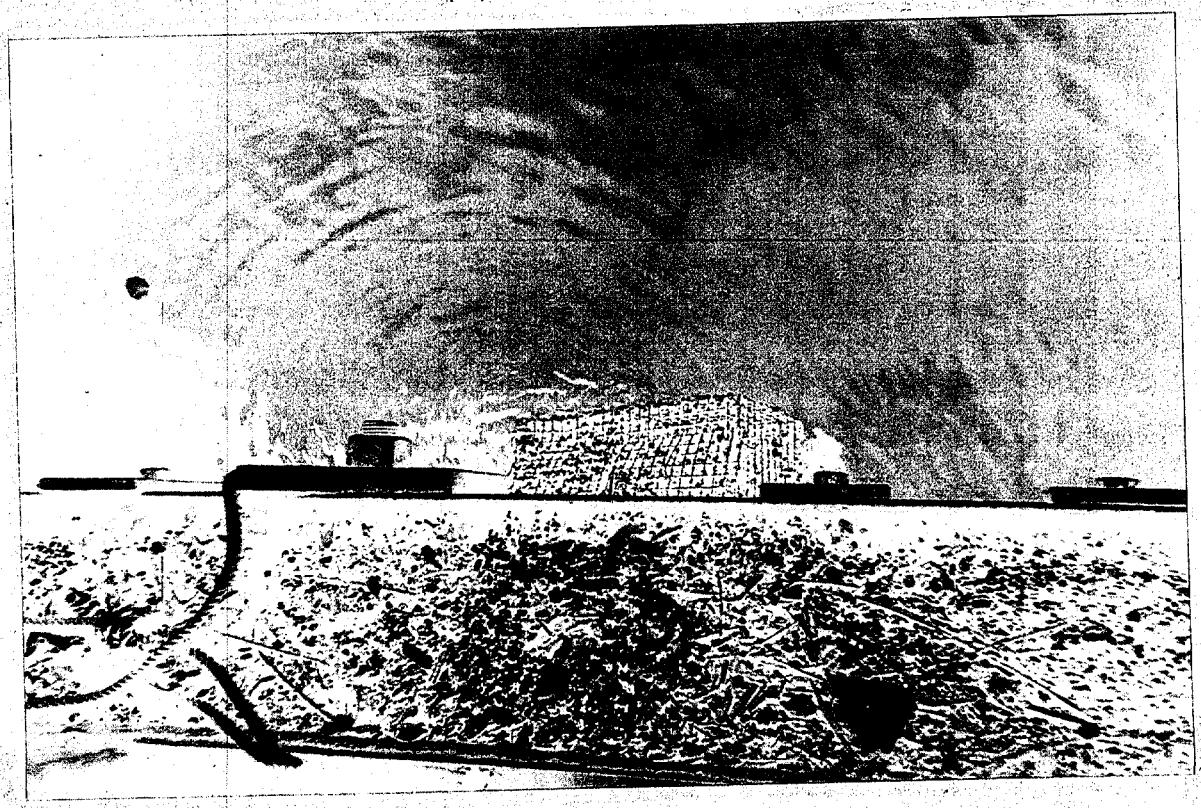


P-12: Photo of drums on the central portion of the site.

P-13: Lobster traps and plastic drums (floats) stored on-site.



P-14: Photo of crab trap pulled out of the water adjacent to the site.



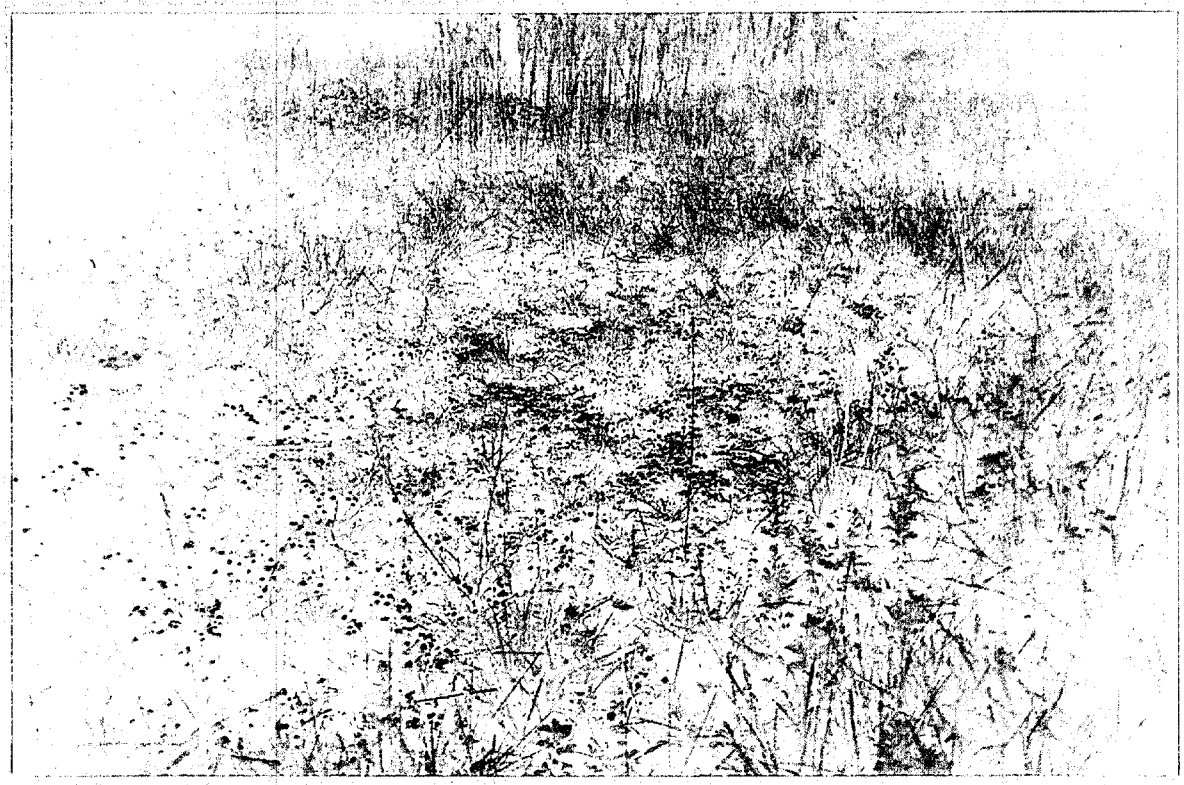
P-15: Rusted 5 gallon containers on the eastern portion of the site.

P-16: Stressed vegetation on the eastern portion of the site.

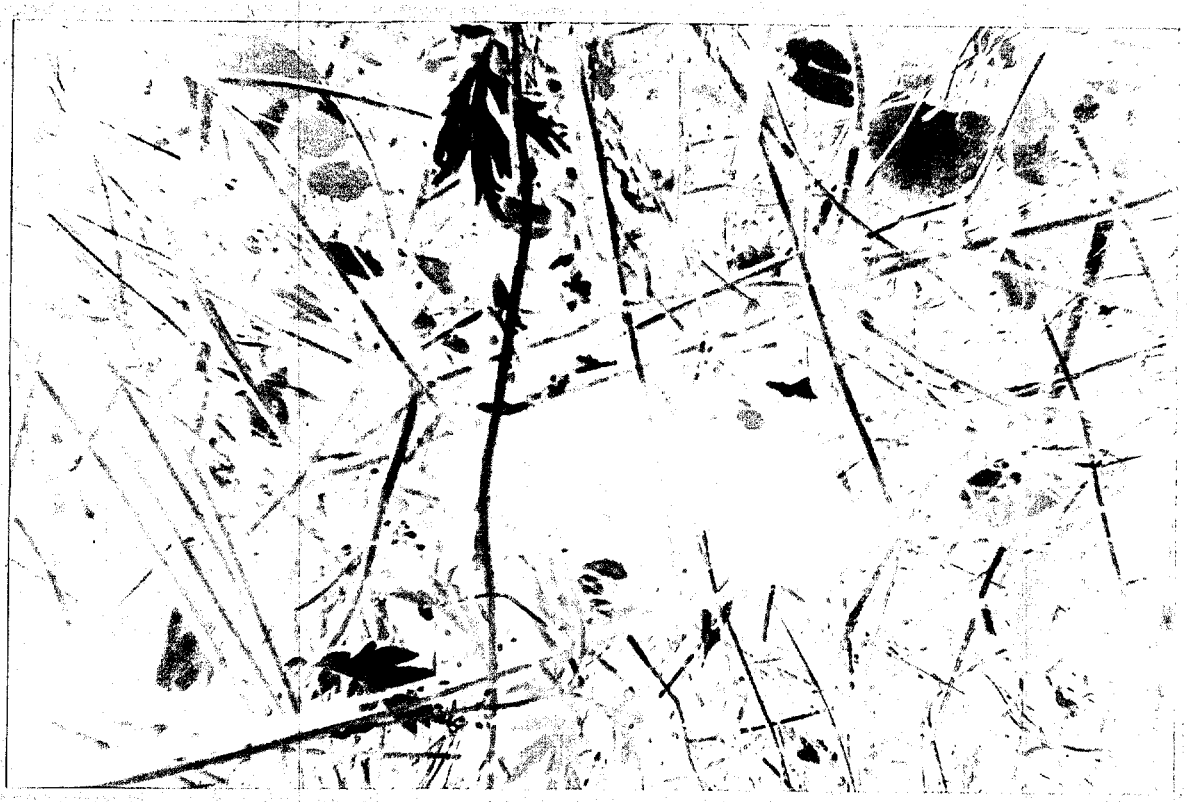
P-17: Photo of house located to the east of the site.

P-18: Photo of oil stained ground and gas can along a path leading from the house to the east of the s

P-19: Area of stressed vegetation and elevated radioactive readings on the northwestern corner of the site



P-20: Purple, ink-stained soil on the north central portion of the site.



REFERENCE NO. 6

Captain's Cove Site
Site Inspection Logbook #1

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4-17-95

Janis Hettinger
Gerry Zanzalari
Les Skosk
Mike Heffron
} Ebasco Personnel

Site Access to the Captain's Cove Condominium site was obtained by EPA through Sara Flanagan

Site Access to Li Tungsten was obtained via Dennis McGrath of Malcolm Pirnie and Ed Ali of EPA.

- Dennis McGrath is the Project Manager of the RI being conducted for the EPA, at the Li Tungsten Site.
- Dennis McGrath called Pinkerton Security on Friday April 14th to let them know we will be on site.
- Dave Edwards is the day guard for Malcolm Pirnie.

Weather is sunny with temperatures in the low to mid 60's.

MA

4/17/95

Both the Li Tungsten and Captain's Cove Site ~~will~~ will be reconnaissanced today. Waiting on EPA to set up Radiological lab.

- We will walk both sites and mark sample locations.

Met with Stanley & Pat Kim at the Lighthouse office.

We held a tailgate Health & Safety meeting and began walking the Capt. Cove Site.

We walked to all the sample locations and flagged them for sampling. We used an HNU and two micro-R-meter for monitoring organics and radioactivity.

We located the areas designated for radiochemical sampling and flagged the areas with the highest surficial micro-R-meter readings.

MA

102209

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4/17/95

Finished 12:30 at Lap Cave Site.

12:30 Went to Lunch.
13:30 Returned to L. Tungsten.
- met with Dave Edwards of Pinkerton Security to gain access to L. Tungsten.

- We walked the L. Tungsten site and flagged the sample locations identified in the sampling plan.

16:30 off site

4/17/95

102210

RS.61
3 of 52

4-18-95
weather: sunny 60's
Continued with site inspection

0730 P. Lee calibrates
Rad meters.
Iodium ~~UR~~ model 12
Background - 1000 cpm
CS137 source - 7500 cpm
Iodium ~~UR~~ model 3
Background - 1000 cpm
~~B~~ PL 4-18-95
CS137 source - 7500 cpm

0:7:40 mike Heffron calibrated the
HNU with isobutylene.

Background 0.6 ppm on HNU.

Ebasco sampling personnel on-site:
mike Heffron
Janis Hettinger
Gerry Zanzalari
Pat Lee.

MH

102211

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4/13/95

As we were setting up to sample several people walked across the site walking their dogs. We told the people that they should not be on the site since it was an old landfill. The people stated that they, and alot other people, walk their dogs on the site regularly.

We split up into 2 Groups: Nick, Heffron, Pat Lee } soils/seds.
Wells { Gerry Zanetti, Janis Hollinger

- One of the gates to the site has been completly removed. The site is accessible via vehicles or on foot

DK

11

4/13/95

CC- SD-02-01 taken at 8:10 by Pat Lee

- R1P1 location of CC-SD-02-01 facing south

- R1P2 picture of Pat Lee taking sample

R1P3 Picture of wetland area at low tide.

- Sample description: Black silty sediment mixed with organic material.

- taken along the wetland area adjacent to Glen Cove Creek, on the eastern end of the wetland

~~R1P4~~

mt

102212

Sub 52

4/18/95

CC-SD03-01 taken at 8:30 by Pat Lee.

R,P4 - Picture of CC-SD03-01 location up close.

R,P5 Picture of CC-SD03-01 location from 25'.

Sample description: sediment taken in pooled area from runoff area of site where Glen Cove Creek on the western end of wetland. The sediment surface was rust colored. The sediment was black silt with organic matter.

0850 - Place screws sediment samplers with Ludlum ~~UR~~ model 12 meter

sample #		Readings
CC-SS-02-01	VOA	1000 UR/TTR
CC-SS-02-01	VOA	~~1000~~ UR/TTR
CC-SS-02-01	CN	1000 UR/TTR

4/18/95

Sample #		Readings
CC-SS-02-01	Extractables	1000 UR/TTR
CC-SS-02-01	Inorg	1000 UR/TTR
CC-SS-03-01	VOA	1000 UR/TTR
CC-SS-03-01	VOA	1000 UR/TTR
CC-SS-03-01	Extractables	1000 UR/TTR
CC-SS-03-01	Inorg	1000 UR/TTR
CC-SS-03-01	CN	2000 UR/TTR

102213

7/.3/95

CC-SD-01, taken at 10:30 by Pat Lee

CC-SD-01 is the upstream sediment sample on Glen Cove Creek above the tidal influence

The sample was taken approx 150 feet upstream of the dam overflow

- Sediment was brown silt with some organic matter.

R1P6 picture of CC-SD-01 sample location

R1P7 Picture of dam limiting tidal influence of Glen Cove Creek

mA

4/19/97

CC-SS06-01 taken at 10:45 by Pat Lee

- Soil sample taken from stained soil around the rusted 55 gallon drum on the eastern end of the site.
- silt and medium grained sand, Brown, but stained black in areas.

R1P8 Picture of CC-SS06-01 facing

mA

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102215

4/13/95

CC-SS-05-01
MS/MSD
taken by Mike Heffron
at 10:55
Sample taken from soil
under aerosol cans,
paint cans, thinner cans
buried / disposed in this (eastern side of site)
area. Soil was fine sand
and silt, organic smelling.

R, Pg Picture of CC-SS-05-01

MH

4/13/95

CC-SS03-01
taken at 11:15
by Pat Lee.

R, P10 picture of ink
stained soil CC-SS-03-1
location

silty, fine to medium grained
sand. Stained purple in
areas.

The ink stained soil was located
in the middle of the site, approx.
30 feet northwest of the
pile of old creosote coated pilings
on site.

MH

Ref. 6
8 of 8

102216

4/13/95

CC-SS04-01

Sample taken at 11:20
by Pat Lee
fine sand and silt, in and around
rusted drum fragments.

R1 P11 picture of CC-SS04-01
facing

CC-SS07-01
A field call was made based
on finding an area of fragmented
drums.

CC-SS07-01 taken at
11:30 by Pat Lee
sample was collected from
soil indicating broken drum. fine sand, silt

R1 P12 Picture of CC-SS07-01
Sample in rusted drum area.

MV

4/13/95

CC-SS08-01
taken by PAT LEE
at 11:35
soil sample take from one of the
many piles on the northwestern
portion of Parcel
poorly sorted fine to coarse
grained sand with rounded
cobbles
taken in an area devoid of
vegetation

R1 P13 Picture of CC-SS08-01

CC-SS02-01 taken at
11:45 by Pat Lee
- taken in a area devoid of
vegetation. Looks like one
of the old test pit areas
fine sand and silt light
brown.

R1 P14 picture of CC-SS02-01
wide area devoid of vegetation
with

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4/15/95

CC-SS09-01
CC-SS10-01 Duplicate
taken at 11:55 by Matthew

- Soil sample taken under standing, rusted and empty drums (2).
Brown silty fine sand
RiPS picture of CC-SS09-01/
CC-SS10-01
location of drums

CC-SS01-01 taken by Mike Heffron at 12:05

- Sample obtained from soil under some type of cylindrical rusted metal piece
≈ 1' dia. for 3' long buried.
Soil was fine silt mixed with crushed pieces of metal and melted glass
orange color
RiPS CSS-01-01

MIT

4/15/95

CC-GW-02-01
MS/MSD
Triple volume
taken by Mike Heffron
14:30

Temp. 55°F
pH 6.6
Cond. 743

Water slightly turbid.
(Well purge info in Logbook #2 of SI)

MIT

102217

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pg 5 of 10

102218

4/18/95

- Sample bottles were scanned w micro-R-meter (background)
- bottles placed in plastic ziplock bags, taped and placed in vermiculite in a plastic bag inside a cooler. Each sample was sealed with a custody seal and the coolers were taped and sealed with a custody seal.

Prepared paperwork, labelled and tagged samples

- All samples were scanned with the micro-R-meter by Pat Lee.
- All of the samples were less than 1,000 counts per minute (cpm). This was written on each tag and on the chain-of-custody.

- The outside of the coolers were scanned with the micro-R-meter and all were below background, which is less than 1,000 counts per minute

4/18/95

- A tag was placed on each bottle, a custody seal (signed) was placed on the cap of each sample. The bottle was placed in a plastic ziplock bag.
- The samples were placed in vermiculite packed with ice, covered with more vermiculite and the cooler sealed.
- Strapping tape was used to seal the coolers, and a ~~chain~~ custody seal was placed on the cooler.

- Placed the Chain-of-Custody Records inside one of the coolers. (Marked top label in cooler: Paperwork Enclosed).

- Shipped the samples to:
Industrial Environmental Analysts
628 Route 10
Whippany, NJ 07981
via Federal Express Airbill #
4090410251

Def. 6
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102219

4/18/95

Left Fed Ex at 19:30
Back at Hotel 20:15.

4/19/95

- I spoke with Edgar Aguado-Elias, Project Manager, last night. He stated that we should hold off obtaining the radioactive and associated inorganic samples until he verifies the EPA lab.

- Pat Lee pulled a tick off of him last night. The tick had embedded into his skin. We have encountered many ticks on site, but this was the 1st bite one to embed into someone.

- We obtained the background soil sample CC-SSV1-01 from the top of the Furnies Point Preserve (See Logbook #2).
- Poured Blanks
- Put together all the bottleware/paperwork for tomorrows sampling.

Shipped samples out to IEA 628 Route 10 Whippany, NJ

Fed Ex Airbill # 4852534326

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4/20/95

CC-2513-01

On site 1300. Weather partly cloudy. M Heffron & J. Hottinger. Checked surface B/Z MicroR meters. Both readers ~4500 cpm @ surface. Started power auger operation @ 1320.

Ground moist/damp from early rainfall. No dust apparent.

B1 P16
Augured to 24".
Fine sand/silt/some clay
Med. brown color.
Rounded cobbles.
MicroR meter reading near base
~4500-5000 cpm.

4/20/95

Continued augering to ~28"
MicroR reading ~10000 cpm
(in hole)

102220

4/14/95

MH Took CC-FB03-01
at 15:30

CC-FB03-01 was run over a predecontaminated stainless steel spoon washed into a bowl to check the soil sampling equipment.

CC-FB03-01 was taken by Mike Hoffman at 16:00. Water was put into a bailer and the bailer poured into a bottle

4/20/95

CC-SS13-01 was collected at a depth of 5.5' below grade
- Black granular material intermixed with clay
readings of ~~80,000~~ 14,000 mR counts per minute or ≈ ~~2 mR/hr~~ 51.85 mR/hr

CC-SS-13-01 collected at 9:30 by Pat Lee.

R1P17 Picture of CC-SS13-01 close up

4/20/95

R1P18 - Picture of CC-SS-12-01 location

CC-SS-13 2500 cpm at surface
- ~~[illegible]~~
- The readings never went above 2500 cpm during the auger advancement.
- Augered 3 different holes down to a depth of 4.5' and one down to approx 7' and hit water.

CC-SS-12-01 taken at 12:55 by Pat Lee
- No slag like material was encountered in this area, however a soil sample exhibiting 2500 counts per minute, which is above the 1000 counts per minute background, was obtained here.
- The soil was fine to medium grained sand with some small rounded cobbles.

102222

Ref-6
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102223

4/20/95

CC-SS-14-01
reading 10,000 counts per minute at surface.

We augered down approx 3', however the soil became clay like and the readings were not as high as on surface.

TOOK the sample at a depth of 1.5-2' below grade at surface 10,000 cpm

-Sample was 4,000 cpm

CC-SS-14-01
and CC-SS15-01, The duplicate taken at 13:40 by Pathee
Soil was black silty with clay small pieces of black wall sometimes rust colored slag
R. Pathee Sample location
CC-SS-14-01
CC-SS-15-01

4/20/95

WT-FB01-01 taken at 14:20
The field blank was poured at L'Trash

CC-FB02-01 taken at 15:00
DI Water Blank

All samples, in the jars, were scanned with the micro-R meter and the radioactivity was written on the sample tag and the chain-of-custody.

All sample jars were scanned and it was determined that the jars did not exhibit radioactivity above background levels.

A custody seal and tag was placed on each jar. The jar was placed in a plastic zip-lock bag, and the sample was placed in a cooler filled with vermiculite and ice.

Stapping tape was used to seal the coolers. The outside of the coolers were wiped down and then scanned with the micro-R meter. No radioactivity levels above background were detected on the outside of the coolers.

Custody seals were placed on the coolers.

The samples to be analyzed for inorganics, cyanide and tungsten were shipped to:

IEA
628 Route 10
Whippany NJ 07981

via Federal Express Airbill #
~~4852534363~~
4852534330

The samples to be analyzed for Uranium, Thorium, Actinum daughters was sent to

U.S. EPA Narrel
540 South ~~Morris~~ Morris Ave
Montgomery, Alabama 36115

shipped via Fed Airbill # 4852534363

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9.pdf

102225

CONTENTS

PAGE NO.	REFERENCE	DATE

Cut or Fill

Logbook #2 of Captains Cove
SF transferred from R. Hoffman
to Janis Hollinger

Only one logbook (#1) kept on
4/17/95. The 2nd logbook was
started on 4/18/95

4/18/95

4-18-95

102226

Janis Hottinger — Ebasco
Gerry Zanzalari — Personnel

Purging
MW-2 — 4-18-95
0951 Start — CCGW-02-01

Depth to H_2O 7' 1.5 10th — 10th/ft
Total Depth 15' 1.5
Standing H_2O 8'
Well Diameter

Volume (gal) =
~~0.163 x 15.15 - 7.15 10th~~
$0.163 \times 8(2^2) = 5.22$ gal

$\times 3 = 15.66$ or 16 gallons

H_2O Description: black, ~~the~~ w/ lots of sediments. No odor, or sheen. - 1st bucket

No HNU readings above background of 0.2.

2nd Bucket is Light brown still w/ sediment, but much less.

JH

JH

Pg. 6 of 50

3rd Bucket - Lighter than 2nd, ~~plus~~ sediment.

4th Bucket - Light brown
5th " SLIGHT TURBIDITY
6th " " "
7th " " "
8th " CLEARING - LESS TURBID
9-10-11 buckets clearing less turbid.

12th bucket - clearing, w/ some turbidity still.

Using pH/cond. meter

T° 57.5
pH 6.54
C 745 us/cm

T° 55
pH 6.56
C 743

w/in 10%

JH

10:57 am completed bailing well 2.
moving to MW-1

Purging CCGW01-01 JH
MW-1 11:18 am ~~topog. ~~ JH 4-18-95
Depth to H_2O 14'
Total Depth 19.5
Standing H_2O 4 gallons

X 3 = 12 or 12 buckets
with volumes

1st few buckets were black full of sediment and floating plant particles.

odorless, no sheen

2nd Bucket
3, 4, 5, 6 are all the same black & turbid.

JH

102227

7th Bucket sample 1 MW-1

T° 58.5
pH 6.57
C 173.7

Sample 2

T° 57.6
pH 6.02
C 165

Done bailing at 12 noon

12-1 lunch

Purging MW-3

1:65 set up for well 3
CC-GW03-01

~~T°~~
Depth to H_2O – 6' 5/10
Total Depth – 24 5/10
Standing H_2O – 18'

JH

.163 x 18 (2^2) = 11.74

or 12 x 3 = 3.6 gallons

÷ 2 gal/bucket = 18 bucket loads.

1ST BUCKET BROWN - SLIGHT PETROLEUM ODOR
NO SHEEN

3RD " " " "
NO SHEEN

5TH " LT BROWN - NO SHEEN
INCREASED PETROLEUM ODOR

7th " LT BROWN - NO SHEEN
PETROLEUM ODOR

9th " " " " "

10, 11, same as above

12, 13, 14 same as above.
color has not changed

15, 16, 17, 18, 19

JH

102228

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102229

Bail 19

Test 1
T° 66.2
pH 6.68
C. 166.2

Test 2
T° 62.6
pH 6.60
C 169.5

Bucket 19
Same Turbidity
+ color
but diminished Petroleum
odor.

JH

Sampling

MW-1 CCGW-01-01
3:45-4pm

(4) 1 Liter amber
(2) 40 ml VOAs
1 unfiltered Poly
1 filtered poly
1 cyanide poly

T° ~~55~~ 57.6
pH 6.02
Con. ~~7.42~~ 165
when sampled

odorless
Black, turbid

MW-3 + 4 (4 is dup of 3)
4:30 - 5pm
CCGW-03-01
CCGW04-01

Med-dark brown, very turbid

8 1 liter
4 VOAs
2 unfiltered
2 cyanide
2 filtered

T° 62.6
pH 6.60
Con. 169.5

JH

Ref. 6
22.FS2

102230

Soil Sample

Background CC-SS-11-01
4-19-95 3:53 pm
JH

Description - odorless, Black loamy soil, w/ roots + leaves. Covered by detritus + cobbles

No HNU readings recorded

JH

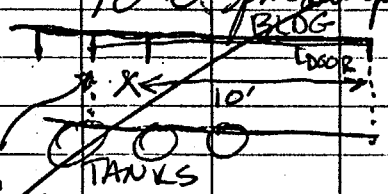
4/20/95 Li Jungsten
Sample location
LT-SS01-01 0815
Micro R meter reading ~~1000 cpm~~ 1600 Kcpm
R2 P21, R2 P20
V Dark brown soil
Odorless
Sandy / V fine texture
High moisture content
8.6' from wooden tank to sample loc.
17.2' " sample location to cyclone fence
14.1' " " " " Concrete wall
R2 P19 Leaking tank

Sample location
LT-SS02-01 0835
Micro R meter reading ~~1000~~ 2000 Kcpm
R2 P18, R2 P17
Very dark brown, reddish material
Odorless, chunks of slag
Fine, sandy soil, some silt
Low moisture
5.0' from green tanker (West)
43.6' " telephone pole (SE)

JH

LT-SS05-01
& LT-SS05-01D

Sample location
Micro R meter ~ 10,000 cpm
0907 hrs.
Very dark brown
Odorless, fine, sandy
some silt
R2 P16, P15
Smaller pieces of tailings
Low moisture
10.0' fm sample loc. to door edge

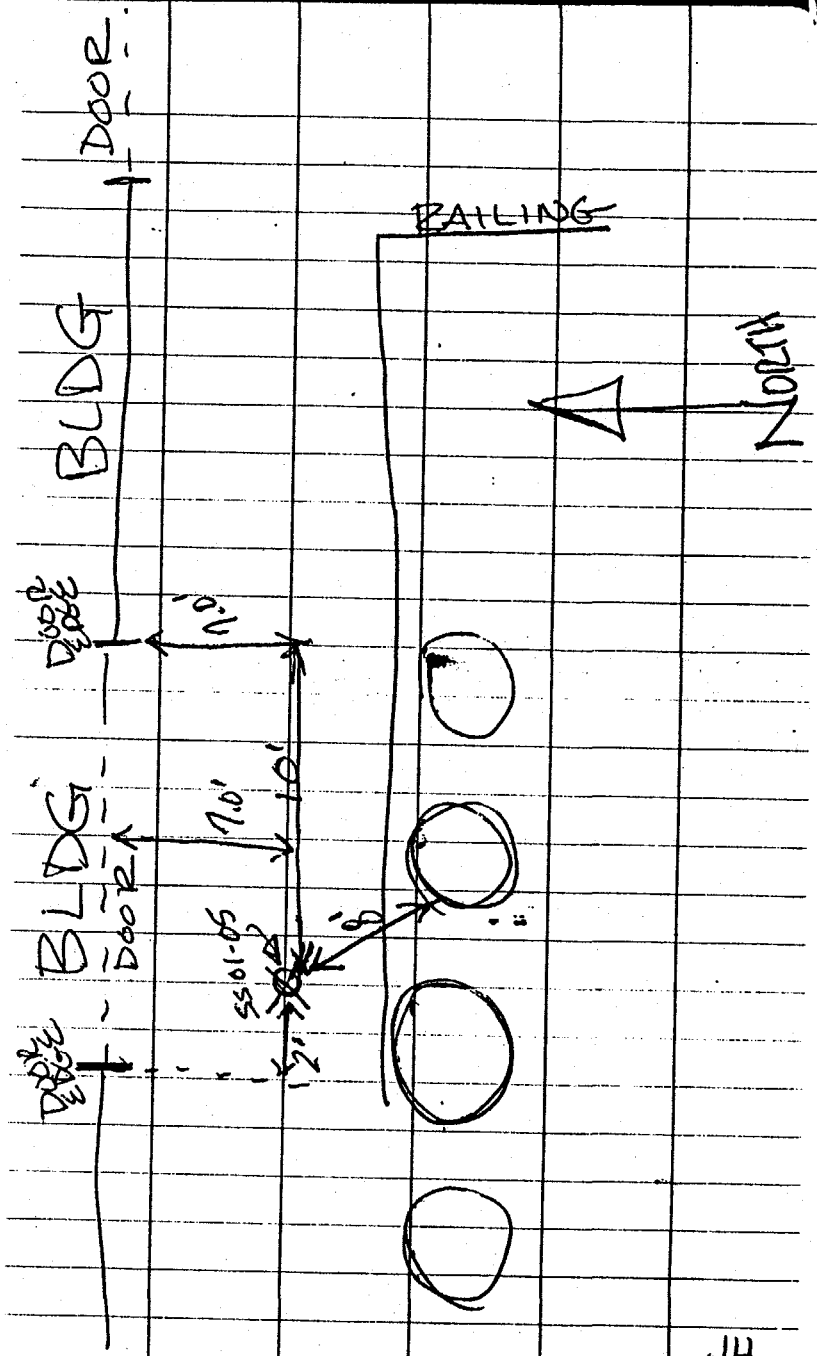


See Fig next page →

2.0' from samp. loc. to opposite door edge
7.0' fm door

JH 4/20/95

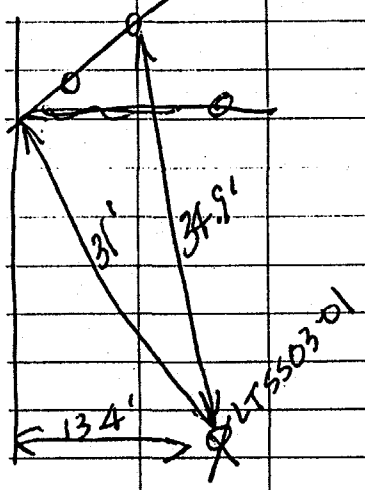
JH 4/20/95 ~~05-01~~
~~LT-SS01-05~~
~~LT-SS05-01D~~
LT-SS05-01
LT-SS05-01D
LT-SS05-01=1,600
LT-SS-05-01D=1,500



JH

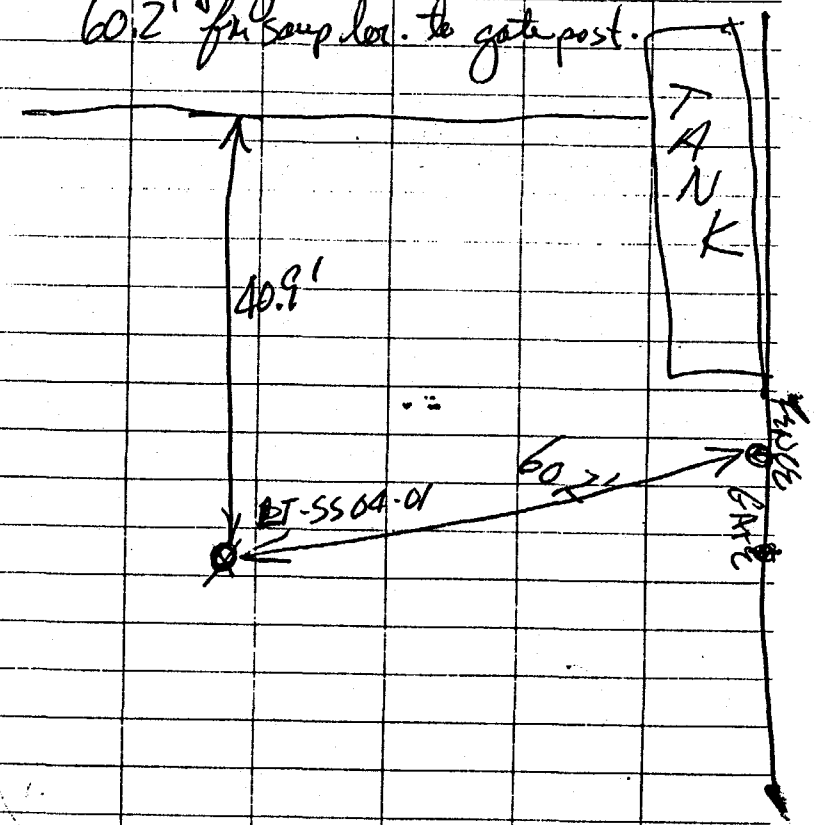
102231

Sample location LT-SS03-01
0837
Micro R meter ~~15,000~~ 16000 KCPM
V fine, silty, sandy, clay.
Very wet!
Med brown
Topmost V fine sand, then clayey beneath
R_2, P_{14}, P_{13}



JH

Sample loc. LT-SS04-01
0934 hrs.
Micro R meter ~ ~~30,000~~ 1400 KCPM
Med brown, sandy, organic material, moist
R_2, P_{12}, P_{10}
40.9' fm samp loc to product line upright
60.2' fm samp loc. to gate post.



JH

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LT-SS-

Sample location	Kcpm	microR/hr.
01-01	1,600	5.93
02-01	2,000	7.41
03-01	1,600	5.93
04-01	1,400	5.19
05-01	1,600	5.93
05-01D	1,500	5.56

conversion factor:

$$\frac{\text{Kcpm}}{270} = ____ \text{microR/hr.}$$

DH

DH

14,000 ÷270

CC-SS-13-01 @ ~~80,000~~ Kcpm = ~~21,639~~ 51.85 microR/hr.
0930 hrs. Pat Lee

CC-SS-12-01 @ 2,500 Kcpm = 9.26 microR/hr.
1255 hrs.
Pat Lee

JH

Background soil samples

Surface samples - CC-SS-02-02
- black, loamy soil w/ lots of organic material
- NO odor
- 1530 hrs.

Auger sample CC-SS-11-03
- taken at 4' dup
- no odor
- orange + black sandy loam w/ little organic matter.
1530 hrs.

JH

Photo Location Map

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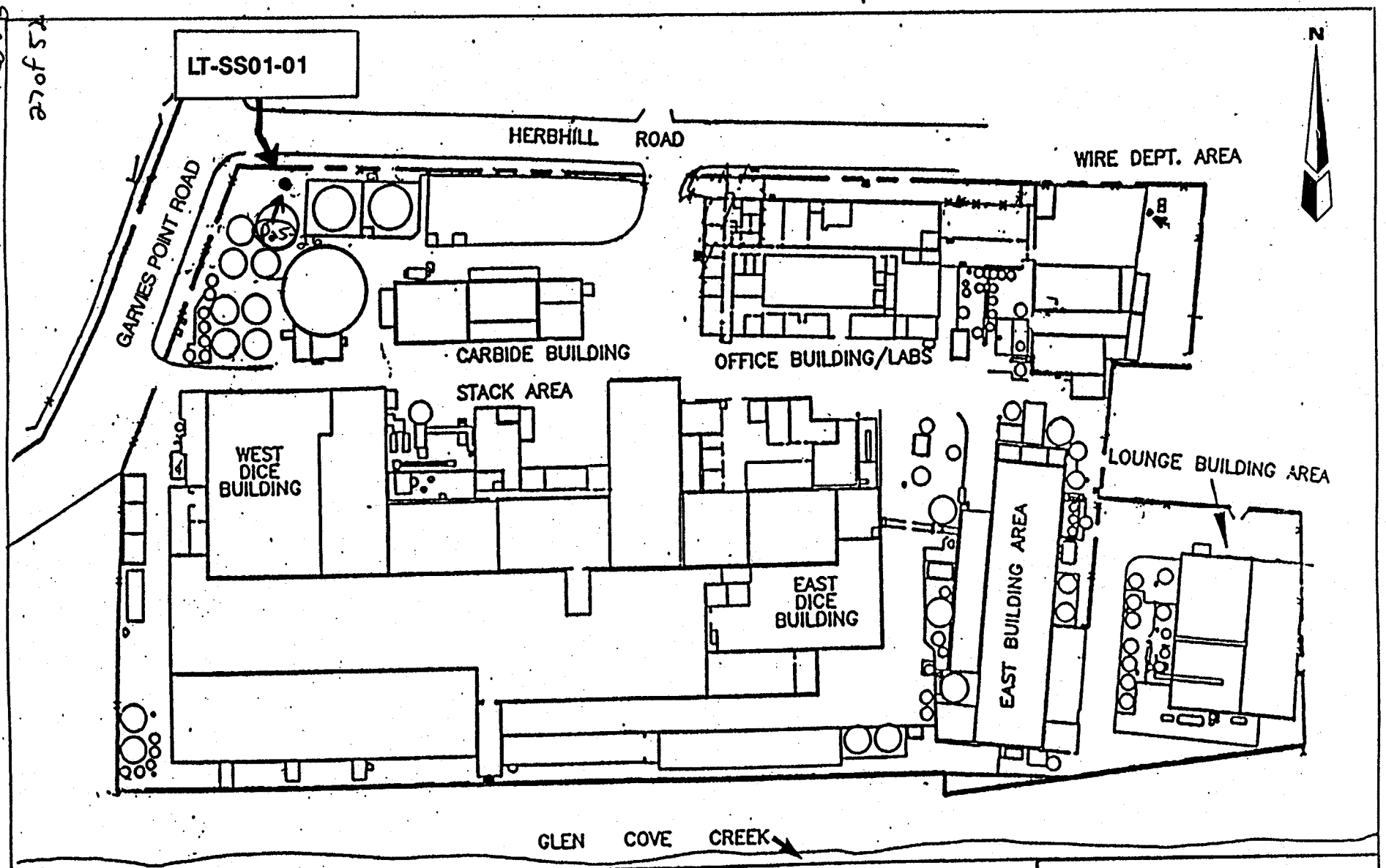
102235



EBASCO SERVICES, INC.	LI TUNGSTEN SITE SAMPLE LOCATION MAP PARCEL A	FIGURE 5 FIGURE SOURCE: NDL, PRELIMINARY RADIOLOGICAL ASSESSMENT 1989

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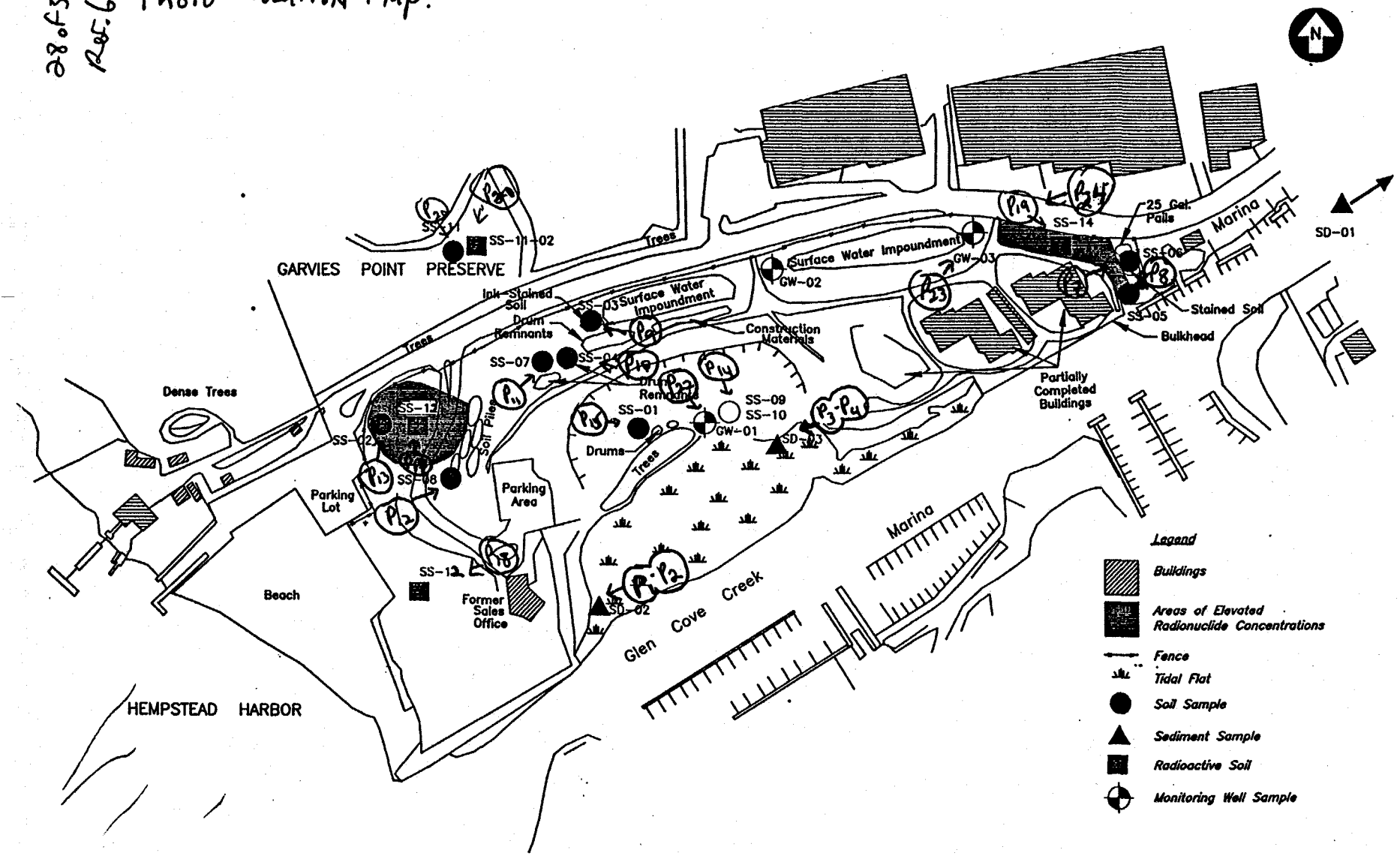
Photo Location Map.

102236



Source: Topo-Metrics, Inc.
Hauppauge, NY

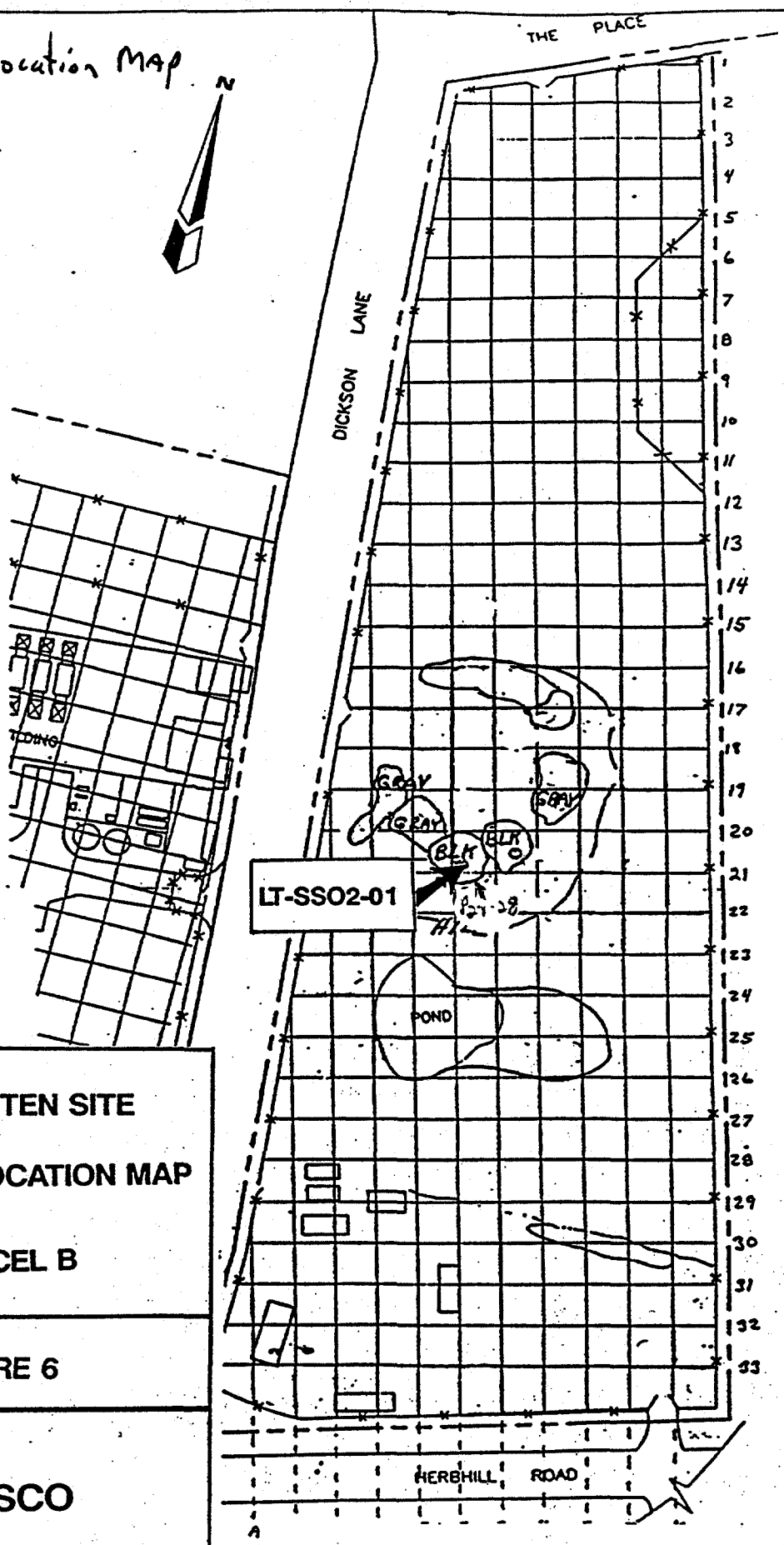
0 300' 600'
Approximate scale

SAMPLE LOCATION MAP
Captains Cove Site
Garvies Point, Nassau County, New York

EBASCO SERVICES, INC.

FIGURE 2

Photo Location Map



LI TUNGSTEN SITE

SAMPLE LOCATION MAP

PARCEL B

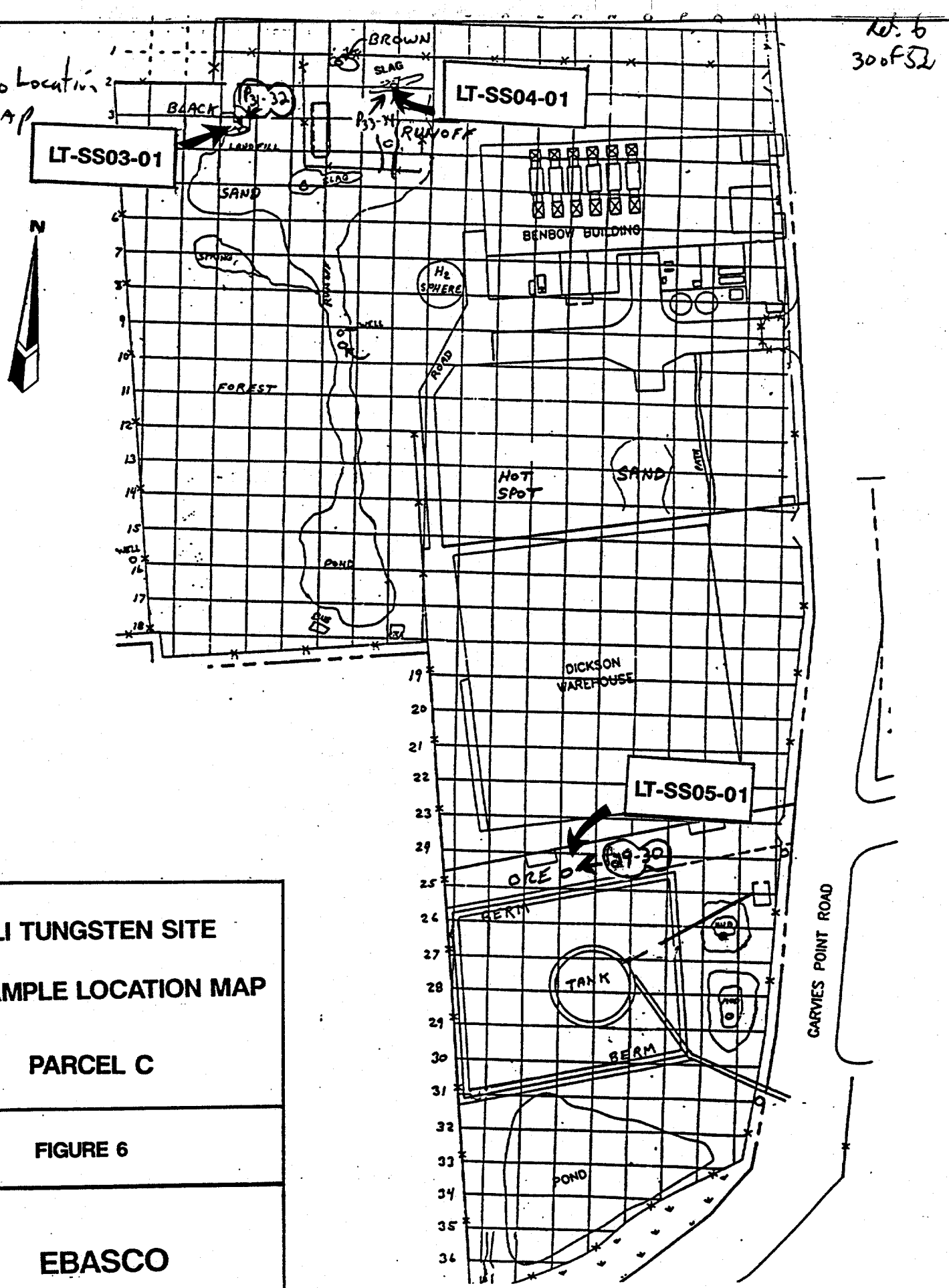
FIGURE 6

EBASCO SERVICES, INC.

FIGURE SOURCE: NDL, PRELIMINARY RADIOLOGICAL ASSESSMENT, 1989

Lot. 6
30 of 52

Photo Location MAP



LI TUNGSTEN SITE

SAMPLE LOCATION MAP

PARCEL C

FIGURE 6

EBASCO SERVICES, INC.

FIGURE SOURCE: NDL PRELIMINARY RADIOLOGICAL ASSESSMENT, 1989

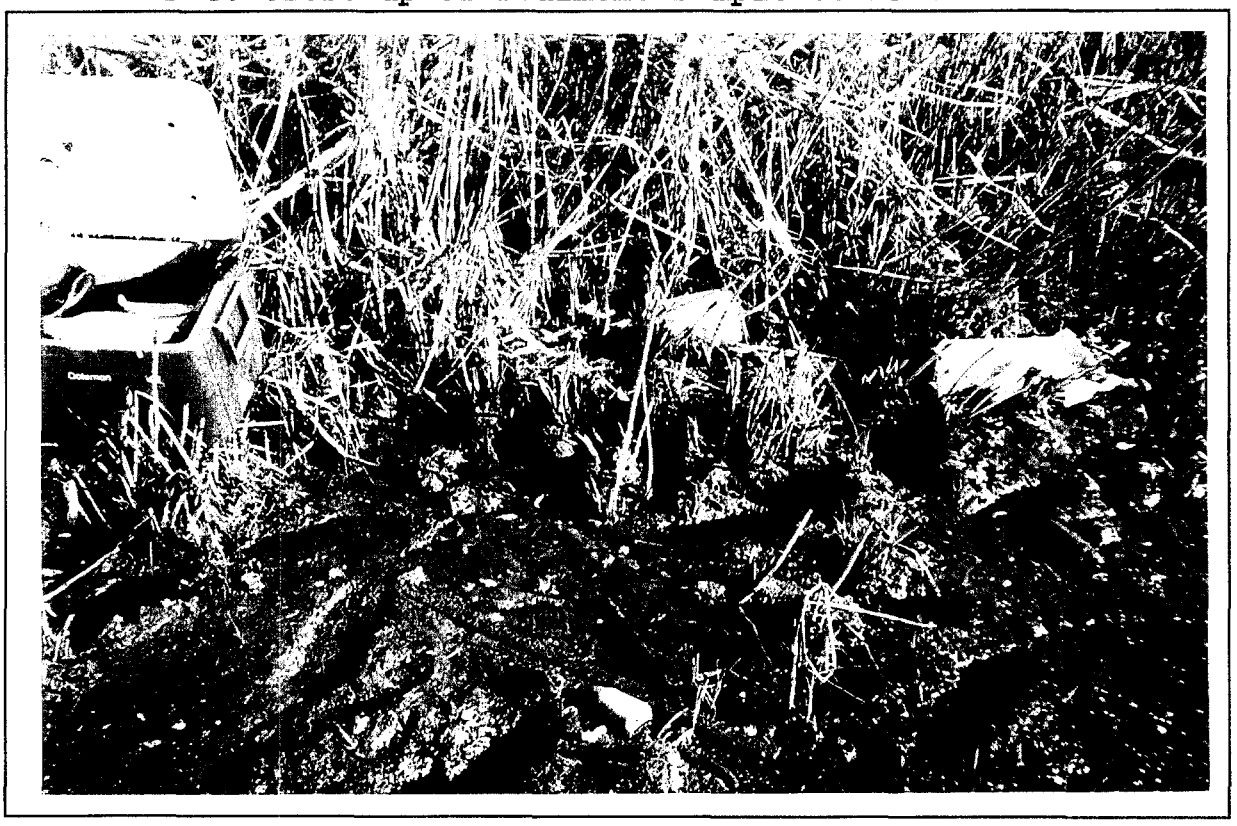
102238

P-1: Sediment Sample location CC-SD02-01

P-2: Close-up of sediment sample CC-SD02-01

P-3: Sediment Sample location CC-SD03-01

P-4: Close-up of sediment sample CC-SD03-01

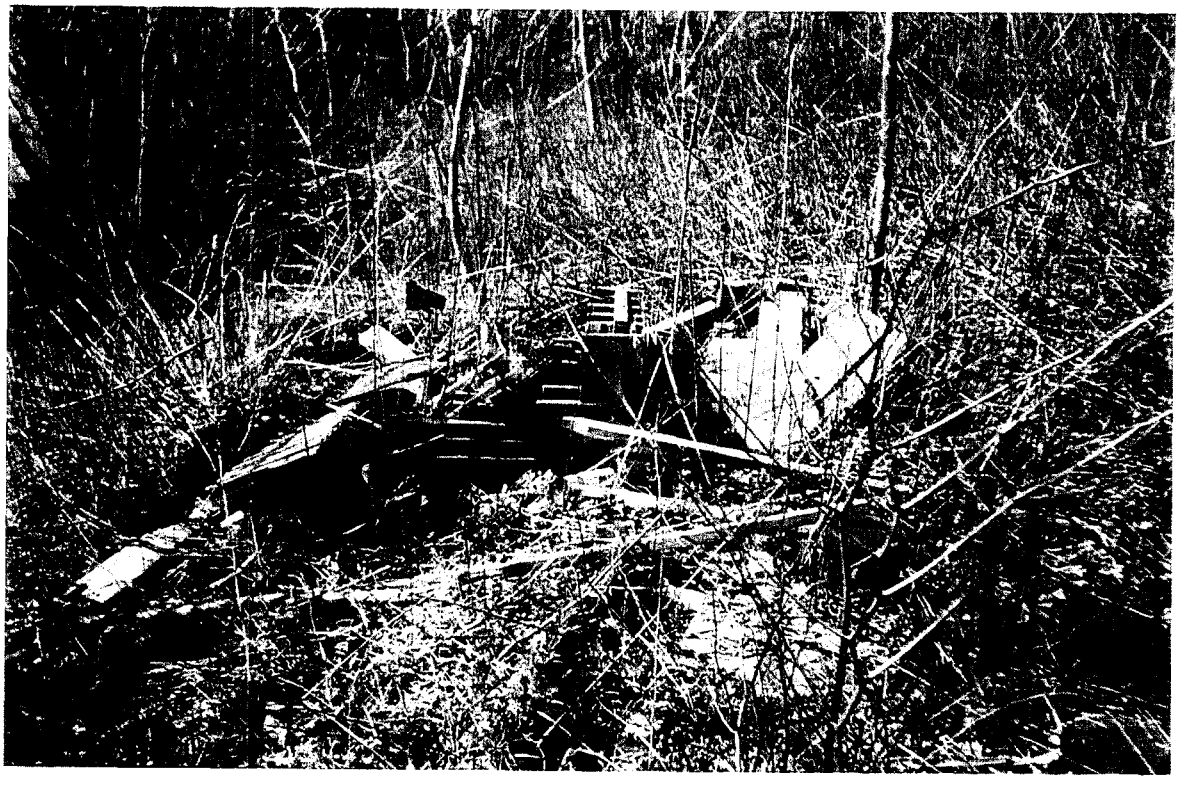


P-5: Sediment Sample location CC-SD01-01(Upstream sample)

P-6: Photo of dam preventing the tidal influence from going upstream

P-7: Soil sample CC-SS06-01 taken under rusted 5 gallon cans.

P-8: Soil sample CC-SS05-01 taken under a pile of rusted aerosol, paint, and paint thinner cans.



P-9: Purple, ink-stained soils at soil sample CC-SS03-01

P-10: Soil sample CC-SS04-01 taken near rusted drum fragments.

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P-11: Soil sample CC-SS07-01 taken under rusted drum fragments.

P-12: Soil sample CC-SS08-01 taken from one of the soil piles on the western portion of the site.

P-13: Soil sample CC-SS02-01 taken from an area devoid of vegetation on the northwestern corner of the site.

P-14: Soil sample CC-SS09-01 and duplicate CC-SS10-01 taken from under two upright empty/partially empty drums.

P-16: Soil sample CC-SS01-01 taken from soil underlying a cylindrical piece of rusted metal.

P-17: Augering down at sample location CC-SS13-01.

P-18: Location of soil sample CC-SS12-01.

P-19: Location of soil sample CC-SS14-01

P-20: Location of background soil sample CC-SS11-01

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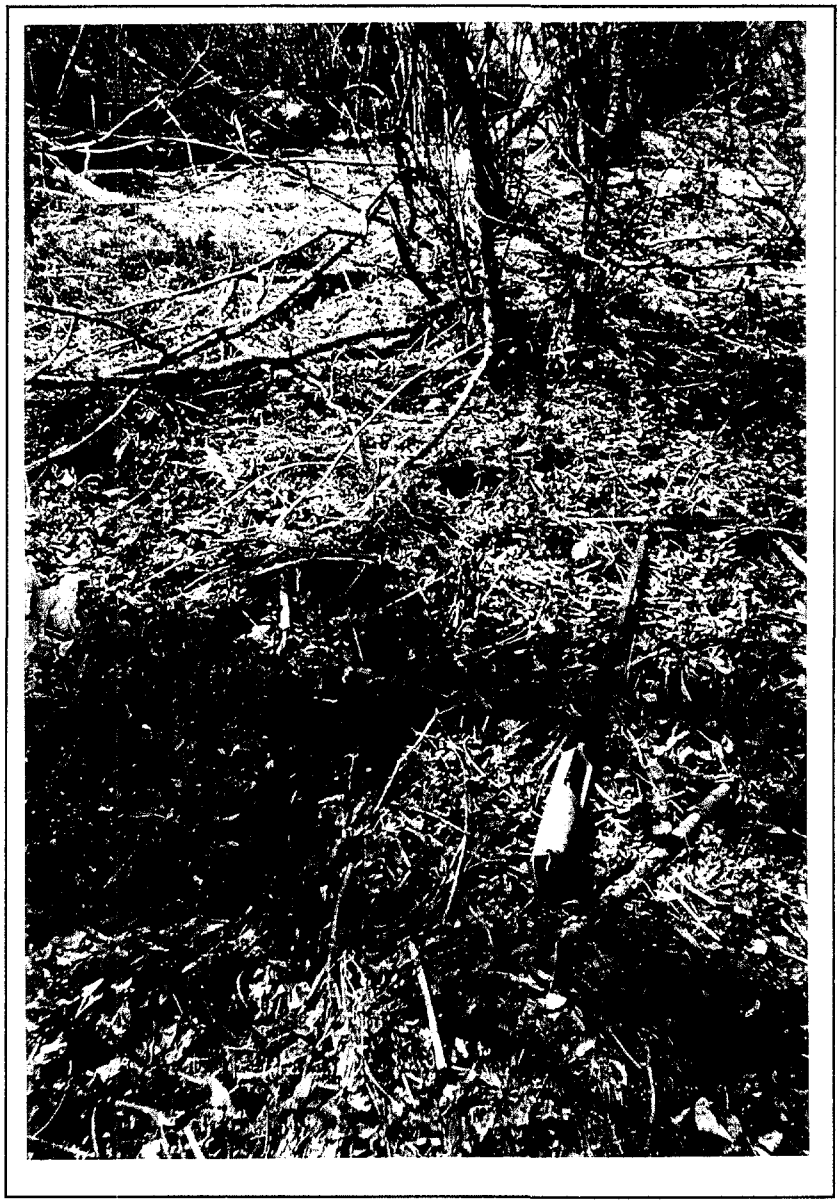
P-21: Location of background soil samples CC-SS11-02 and CC-SS11-03



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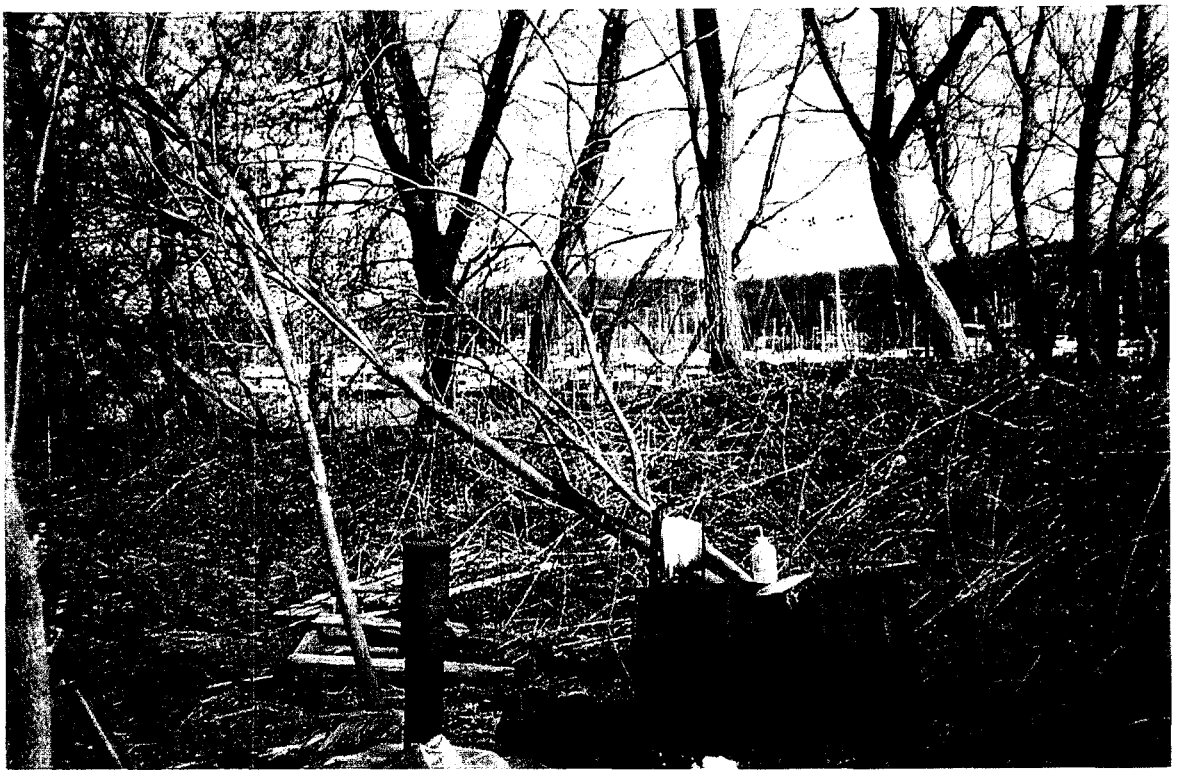
P-22: Groundwater sample location CC-GW01-01, downgradient monitoring well (CDM-4).



P-23: Groundwater sample location CC-GW03-01 taken at the upgradient monitoring well (CDM-2).

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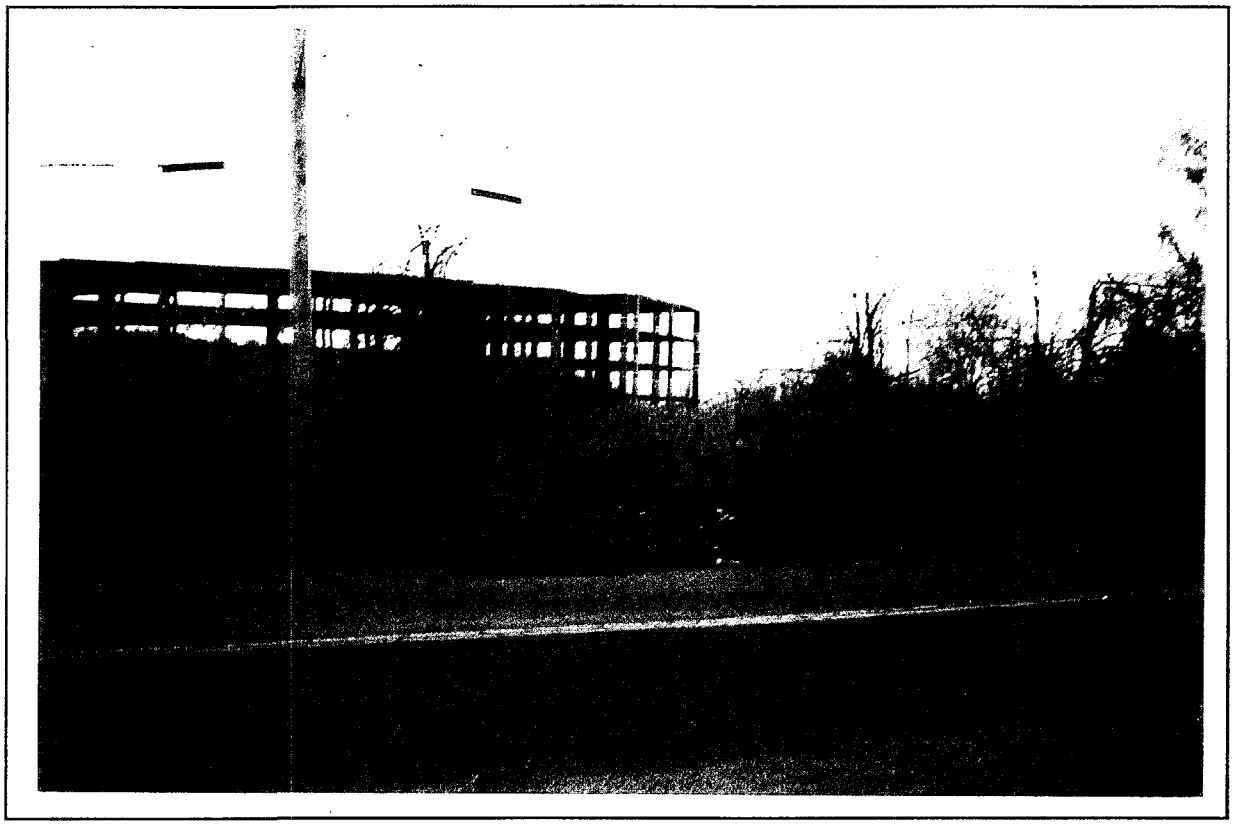
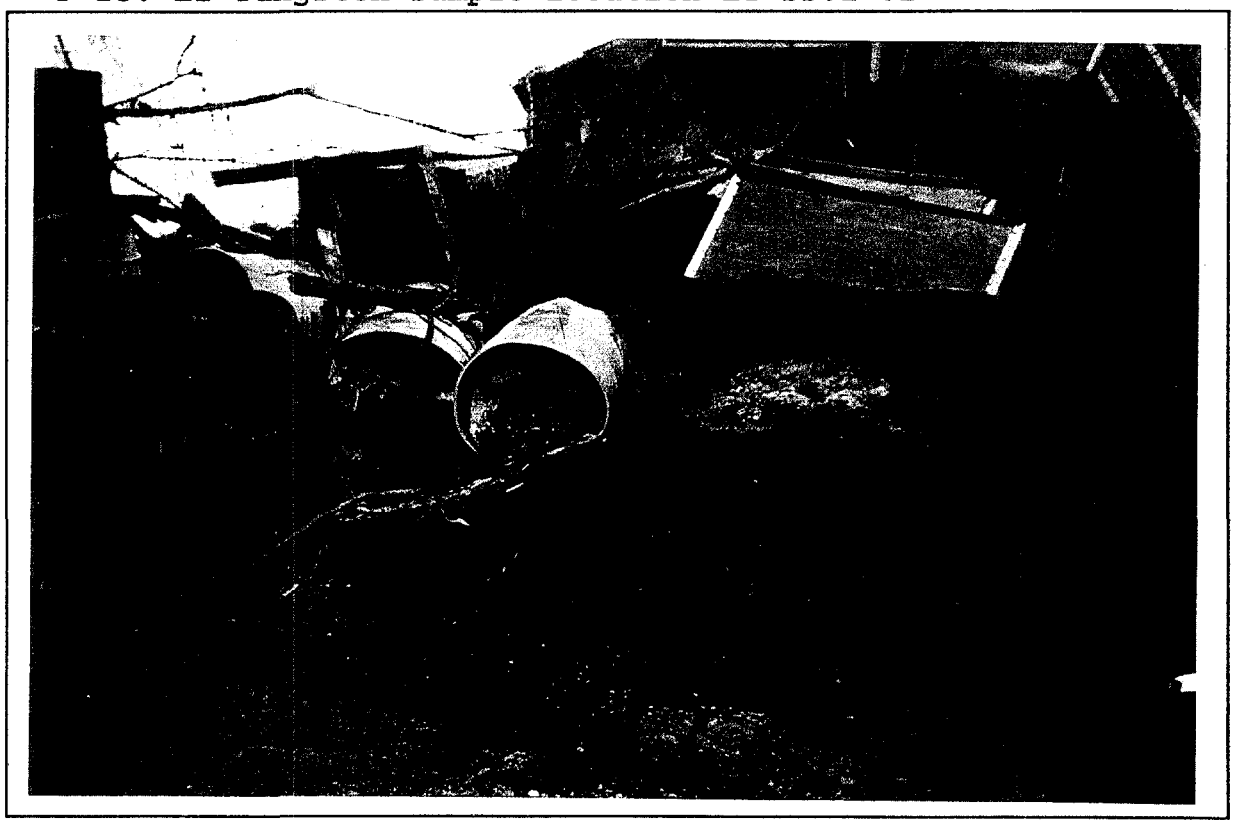
45 of 52

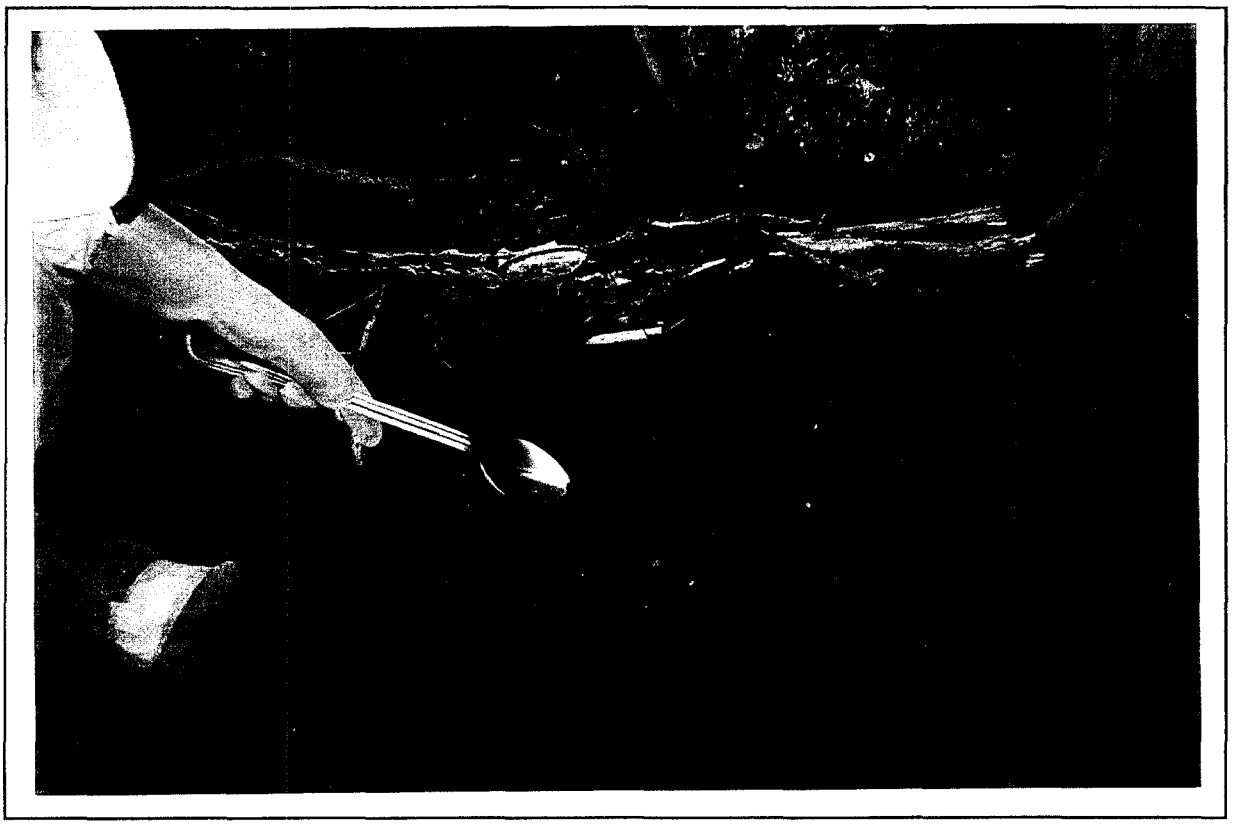
P-24: Photo depicting access to the site. The gate on this entrance was removed and the site was open to vehicular and foot traffic.



P-25: Li Tungsten sample location LT-SS01-01



P-26: Close-up of soil sampled at sample location LT-SS01-01.



P-27: Li Tungsten sample location LT-SS02-01

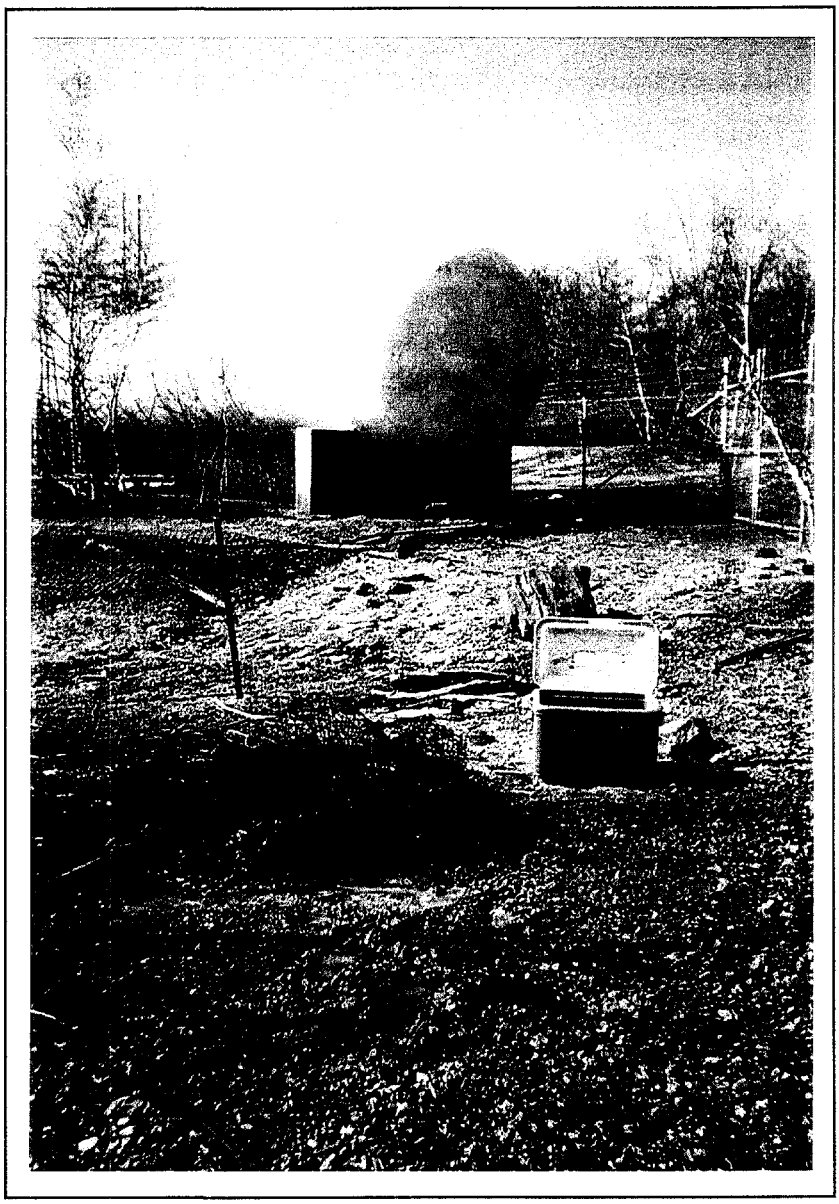
P-28: Close-up of soil sampled at sample location LT-SS02-01.

P-29: Li Tungsten sample locations LT-SS05-01 and LT-SS05-01D

Ref. 6

P-30: Close-up of soil sampled at sample location LT-SS05-01. 48 of 52

P-31: Li Tungsten sample location LT-SS03-01



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P-32: Close-up of sample location LT-SS03-01.

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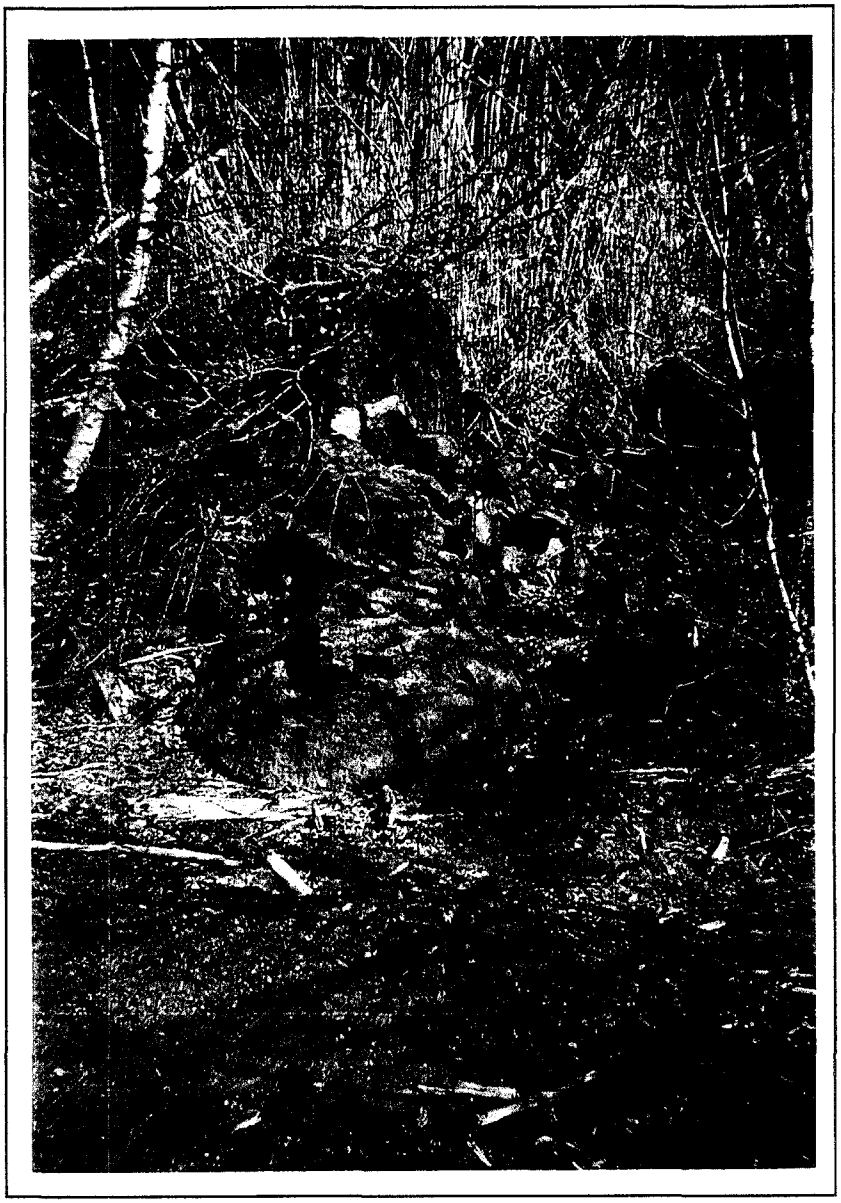
P-33: Li Tungsten sample location LT-SS04-01



P-34: Close-up of soil sampled at sample location LT-SS04-01.

REFERENCE NO. 7

26 FEDERAL PLAZA
NEW YORK, N. Y. 10007

NANOP-E

14 June 1979

Glen Cove Creek
Hempstead Harbor

--- PUBLIC NOTICE NO. 9884 ---

TO WHOM IT MAY CONCERN:

Pursuant to Section 313 (33 U.S.C. 1323) and 404 (33 U.S.C. 1344) of the Federal Water Pollution Control Act (86 Stat. 816, P.L. 92-500), notice is hereby given that the U.S. Army Engineer District, New York, proposes to perform maintenance dredging in Glen Cove Creek at Glen Cove, Nassau County, New York and subsequently dispose of the dredged material at a nearby upland disposal site.

Project Description:

EXISTING PROJECT (adopted 1925) provides for:

A channel, 8 feet deep, 100 feet wide, from deep water in Hempstead Harbor to the head of navigation at the City of Glen Cove, Length - about 1.0 mile.

DESCRIPTION OF WORK:

The U. S. Army Engineer District, New York, proposes to perform maintenance dredging in Glen Cove Creek, New York, in the area indicated on the inclosed map (Figure 1). The channel is to be dredged on the project depth of 8 feet plus 2 feet allowable overdepth. The work is scheduled to be done during the Fall of 1979. The frequency of this work is about once every ten years.

The material to be disposed of is a silty sand containing approximately 53% sand, 21% silt, 21% clay, and 5% coarse material.

The dredged material, approximately 20,000 cubic yards, is to be disposed of at the upland site, shown on the inclosed map (Figure 1). When this is used, a hydraulic dredge will do the work and pump the dredged material to the site through a pipeline.

Similar non-Federal dredging and associated disposal projects in these areas are anticipated with quantities reaching approximately 1,000 cubic yards per year.

102262

The nature of the disposal area precludes any impact on terrestrial plant and animal species.

ENVIRONMENTAL ASSESSMENT

The District Engineer has prepared an environmental assessment dated June 1977, which is available for public review at the New York District Office between the hours of 8:30 A.M. and 5:00 P.M. Monday through Friday.

The environmental assessment has been coordinated with the following agencies; the U.S. Fish and Wildlife Service, the National Marine Fisheries Service, the U.S. Environmental Protection Agency, and the New York State Department of Environmental Conservation.

PRELIMINARY SECTION 404 (b) (1) EVALUATION

Conclusions and Determinations - After a review of the information developed as part of the preliminary 404 (b) evaluation, the following preliminary conclusions and determinations were made.

1. The material can generally be classified as silty sand.

2. Disposal will be on a barren upland site.

3. Elutriate test samples point to a return of iron, PCB's and cyanide in concentrations greater than the receiving water. Cyanide, however, is the only substance to exceed New York State guidelines in its effluent and receiving water concentrations. (5 ug/l, 65 ug/l respectively).

4. A small wetland separates the disposal site from the channel to be dredged.

5. Benthic life in the creek is of marginal value.

6. A New York State Water Quality certificate has been issued for this project.

The most serious threat to the environment would be as a result of high concentrations of cyanide returning to the creek. It has been determined that a mixing zone extending 8.7 acres into Mosquito Cove is required to dilute the cyanide concentrations to meet State guidelines. It should be noted that the ambient concentration of cyanide in the creek exceed state guidelines for dredging projects. The impact beyond the creek should be minimal. The work will be done in the fall thus there would be no affect on swimming at the city beach in Mosquito Cove. The proximity of a wetland to the project will not result in any impacts on the wetlands. Pumping and effluent disposal operation will be such to circumvent the wetland.

102263

The nature of the disposal area precludes any impact on terrestrial plant and animal species.

Based on the information developed and based on the fact that a State Water Quality Certificate has been received for the project, I find that the work will not have any serious and/or long term impacts regarding items addressed under the Preliminary 404(b) evaluation.

Ref. 7
3 of 9

The evaluation of the impact of the activity will include application of the guidelines promulgated by the Administrator, U.S. Environmental Protection Agency, under authority of Section 404(b) of the Federal Water Pollution Control Act.

Any person may request, in writing, within the comment period specified in this notice, that a public hearing be held to consider this application. Requests for public hearing shall state, with particularity, the reasons for holding a public hearing.

Any criticisms or protests regarding the proposed work should be PREPARED IN WRITING AND MAILED TO REACH THIS OFFICE prior to 16 July 1979 otherwise it will be presumed that there are no objections.

The proposed work is being coordinated with the following Federal, State, and local agencies.

1. U.S. Department of Commerce - National Oceanic and Atmospheric Administration, National Marine Fisheries Service;

2. Environmental Protection Agency (Region II);

3. U.S. Department of the Interior - Fish and Wildlife Service;

4. U.S. Coast Guard - Third Coast Guard District;

5. New York State Department of Environmental Conservation;

6. City of Glen Cove, Glen Cove, New York.

It is requested that you communicate the foregoing information concerning the proposed work to any persons known by you to be interested and who did not receive a copy of this notice.

If you have any questions concerning this application, you may contact Mr. Frank Andreassen of this office, Telephone No. (212) 264-0183.

Incls.
as

CLARK H. BENN
Colonel, Corps of Engineers
District Engineer

102264

6 Federal Plaza
ew York; New York 10007

Dear Colonel Hunter:

he National Marine Fisheries Service has reviewed the environmental assess-ent for maintenance dredging of Glen Cove Creek and Hempstead Harbor, New ork, that accompanied Mr. Weiss's letter of June 1, 1977. The document ppears to indicate that the Hempstead Harbor project, with the exception of he first 1/2 or 3/4 of a mile, is not utilized by more than a small fraction of the total shipping in the area. If this is true, we recommend that roject deauthorization be considered.

In the case of Glen Cove Creek, we recommend that the sediment analysis be pdated. The continued discharge of untreated sewage and industrial wastes, s well as the concentration of recreation vessels in the creek, may have significantly altered the character of the benthic substrate since the reported data were collected. While we realize that the ocean dumping bioassay anual has not been put in final form, it would appear appropriate to perform hose procedures on this material at this time. The National Marine Fisheries Service is not opposed to the proposed on-site activity; however, we are concerned that continued dumping of polluted materials in the New York Bight will further degrade marine resources in the area. We are opposed, in principle, to continued ocean dumping of polluted materials. We are aware that adverse impacts are subtle and tend to be chronic in nature, and that documentation of their widespread existence eludes the scientific community. We conclude, however, that alternative disposal sites and techniques, such as upland sites, marsh creation attempts, spoil islands, or utilization of spoil in conjunction with ongoing or future fill projects, should be afforded an extensive review as a realistic option to the open-water disposal technique presently receiving primary consideration.

We therefore recommend that ocean disposal of polluted materials not be permitted unless alternatives clearly are not available. We concur with the opinion that the proposed action does not require an environmental impact statement, but further investigation of alternatives and an updating of the sediment analysis should precede implementation.

Sincerely, Marvin F. Bowen

for
William G. Gordon
Regional Director

Plan
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Ref. 7
5 of 9

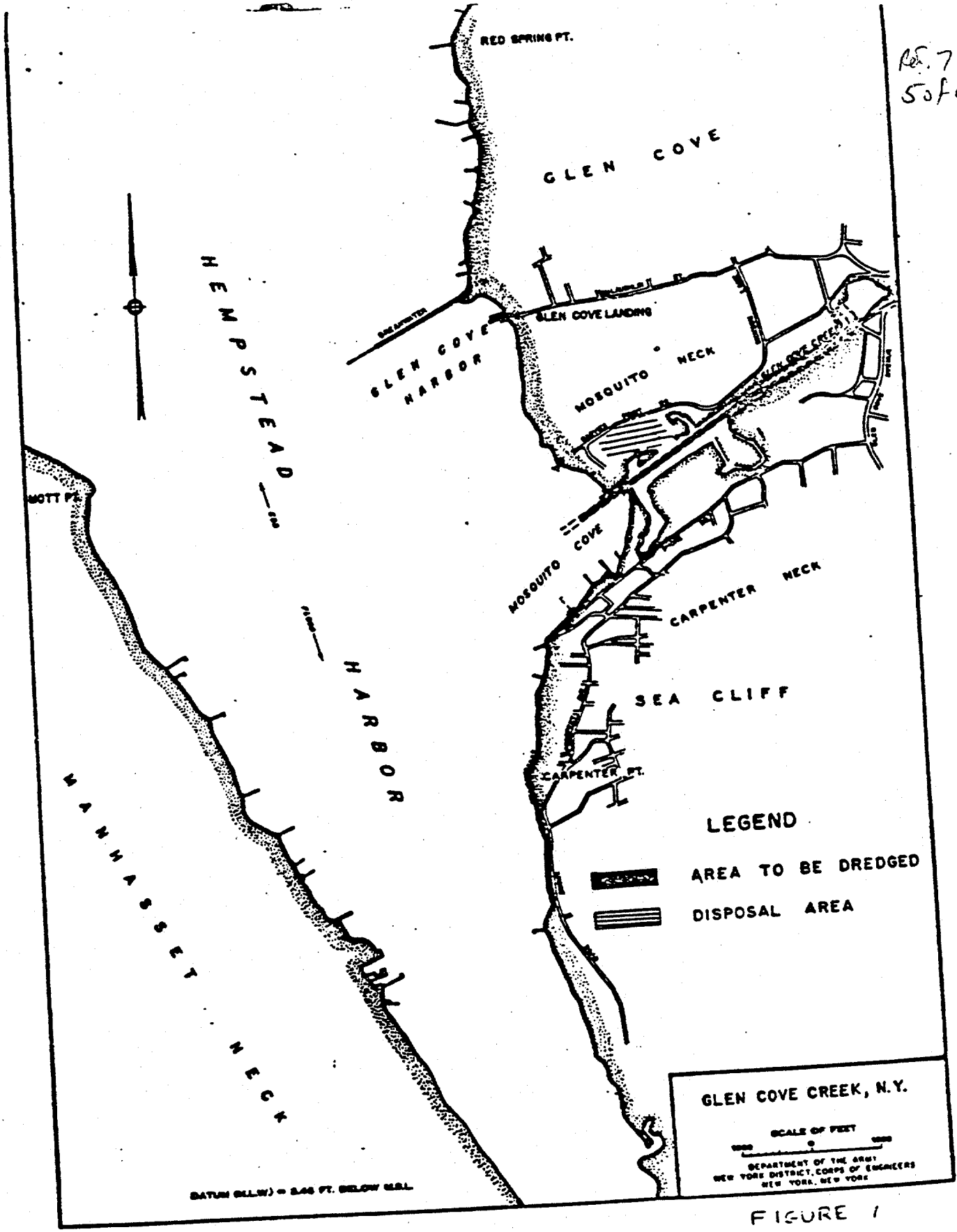

FIGURE 1

102266

NANOP-E

PROJECT NO. 5 GLEN COVE CREEK, NEW YORK

Part of P.N. #7840

Ref. 7
6 of 9

Project Description:

EXISTING PROJECT (adopted 1925) provides for:

A channel, 8 ft. deep, 100 ft. wide, from deep water in Hempstead Harbor to the head of navigation at the City of Glen Cove.
Length - about 1.0 mile.

Description of Work:

The U.S Army Engineer District, New York, proposes to dredge in Glen Cove Creek, Hempstead Harbor, New York, in the area indicated on figure 9. The channels are to be dredged to the project depths as indicated above and on figure 9. The dredged material, approximately 20,000 cubic yards, is to be disposed of in the Dredge Spoil Disposal Site, the location of which is shown on figure 1. The material to be disposed of is a silty sand containing approximately 55% sand, 6% silt, 2% clay, and 37% coarse material. The following analysis is given for the material to be disposed of:

CONSTITUENT	CONCENTRATION (mg/l) 1 DREDGE SPOIL	CONCENTRATION (mg/l) 2 WATER AT DISPOSAL SITE	CONCENTRATION (mg/l) 3 STANDARDS FOR DRINKING WATER
CADMIUM	0.021	0.024	0.01
ARSENIC	0.002	0.002	0.05
LEAD	0.143	0.214	0.05
COPPER	0.083	0.083	1.0
ZINC	0.052	0.042	5.0
CHROMIUM	0.050	0.050	0.05
MERCURY	0.003	0.002	----
NICKEL	0.114	0.104	----

1. As found from the Shaker Test ("Standard Methods for the Analysis of Water, Sewage and Industrial Waste", A.P.W.A., 13th Edition 1971).

2. In accordance with above test, dredge spoil is considered polluted if the test produces an elutriate in which the concentration of any constituent is more than 1.5 times the concentration of the same constituent in the water at the disposal site.

3. From Public Health Service Drinking Water Standards, 1962.

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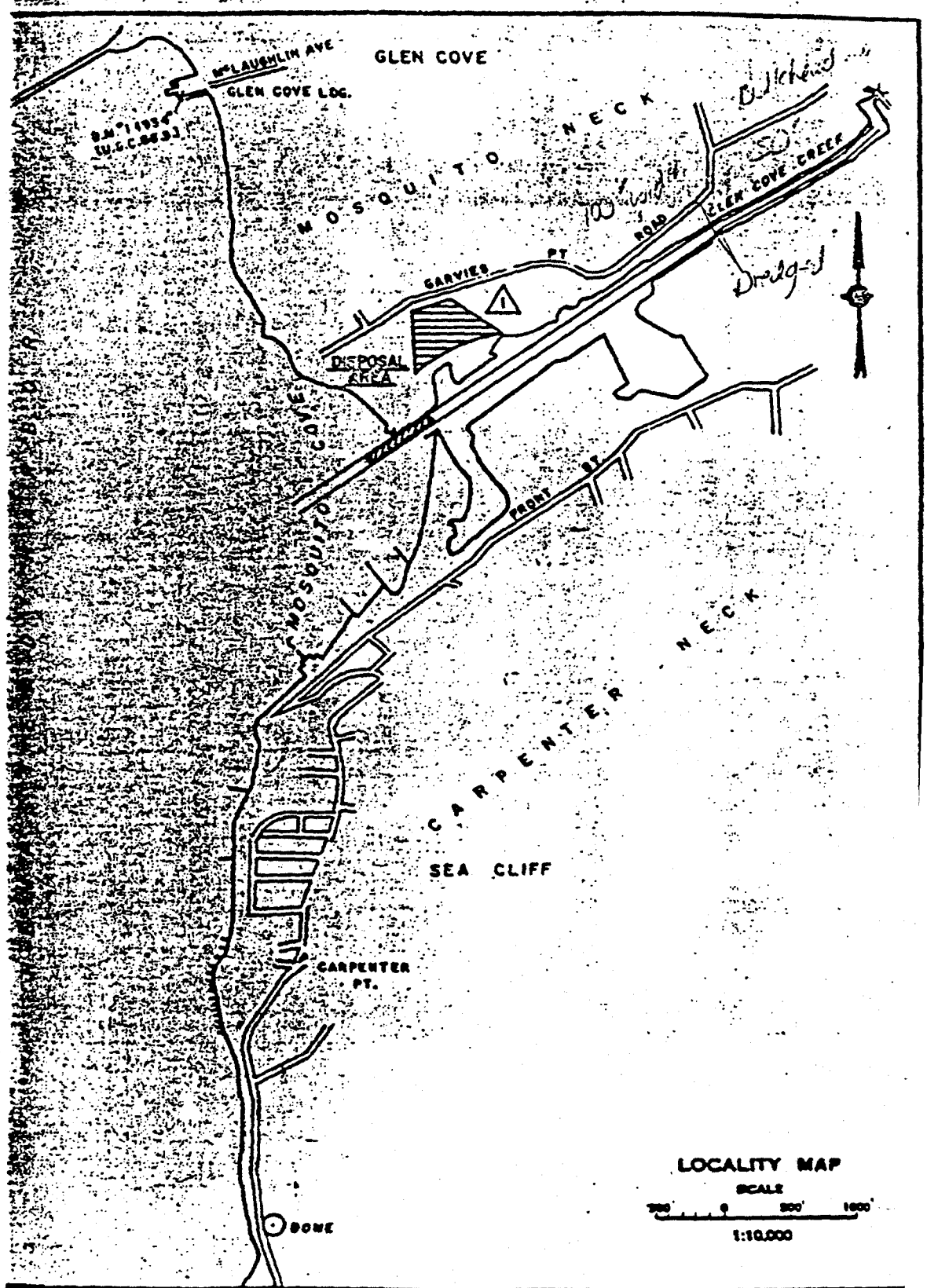

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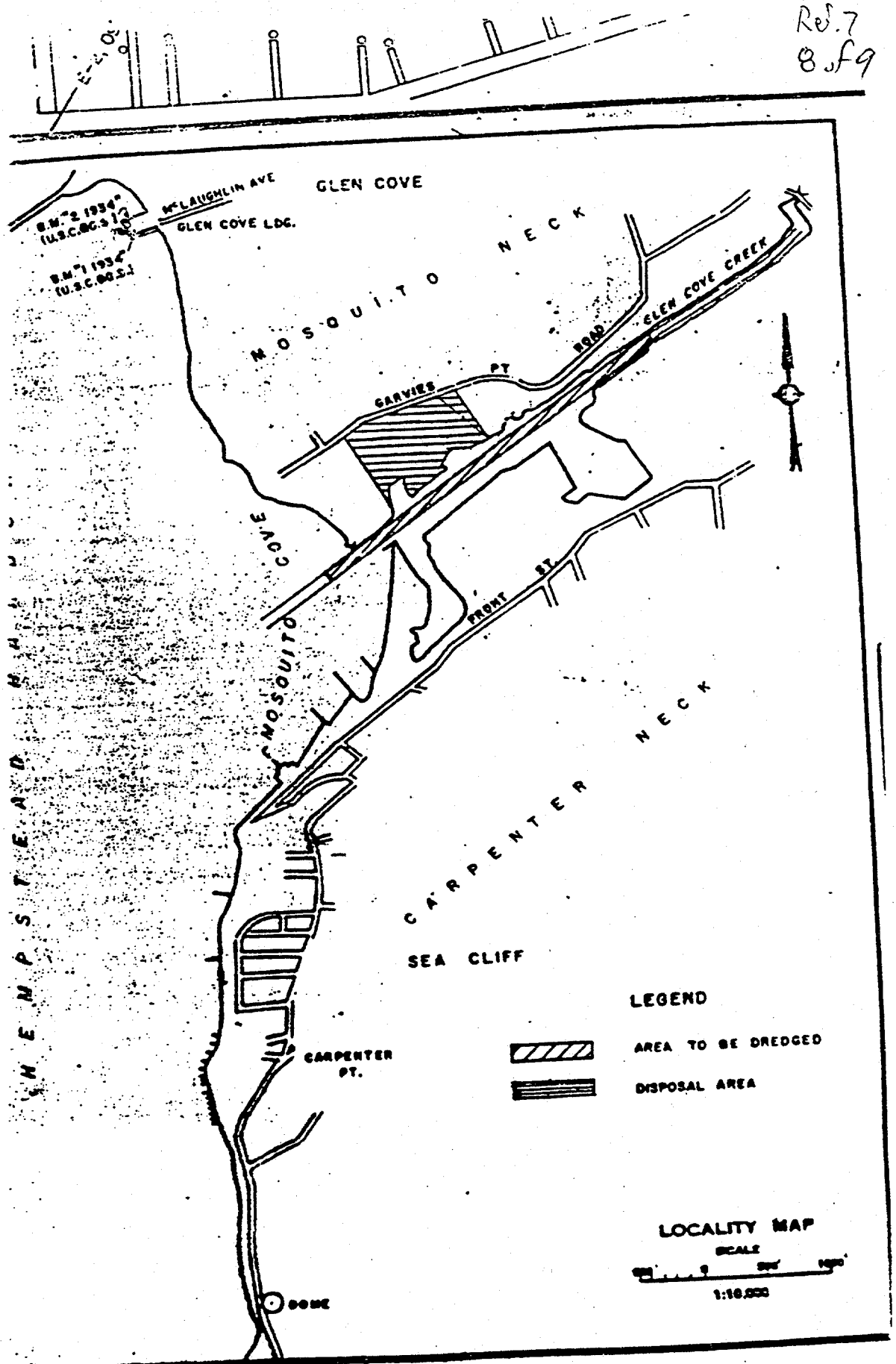

August 1979

102269

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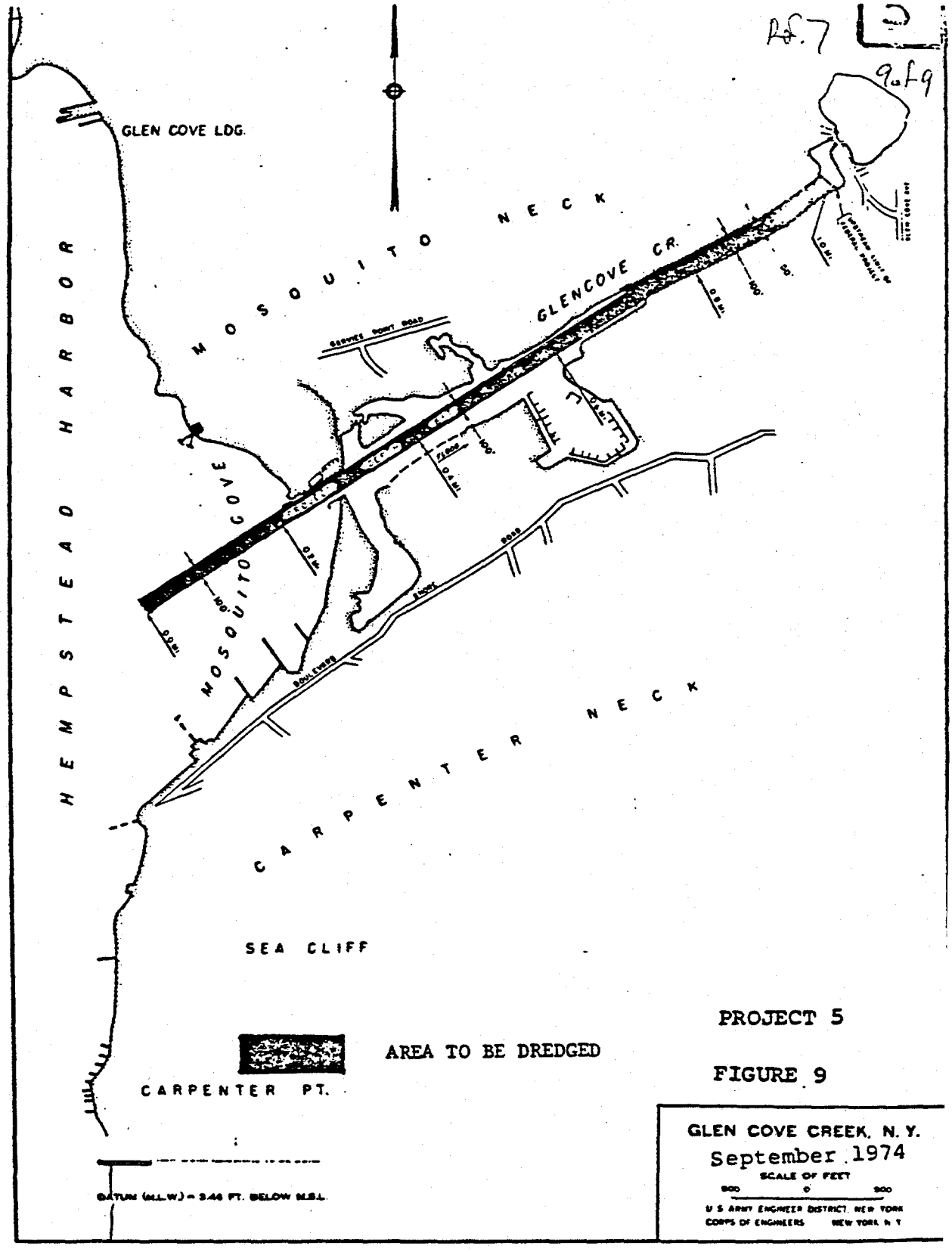

PROJECT 5

FIGURE 9

GLEN COVE CREEK, N.Y.

September 1974

102270

REFERENCE NO. 8

Ref. 8
NoF16

CITIZEN PARTICIPATION PLAN

Garvies Point
Glen Cove, New York
Site No. 130032

7/17/89

Prepared By:

Fred C. Hart Associates, Inc.
530 Fifth Avenue
New York, New York 10036

July 17, 1989

(1823n-27)

102272

RE.8
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(1823n-29)

Ref. 8
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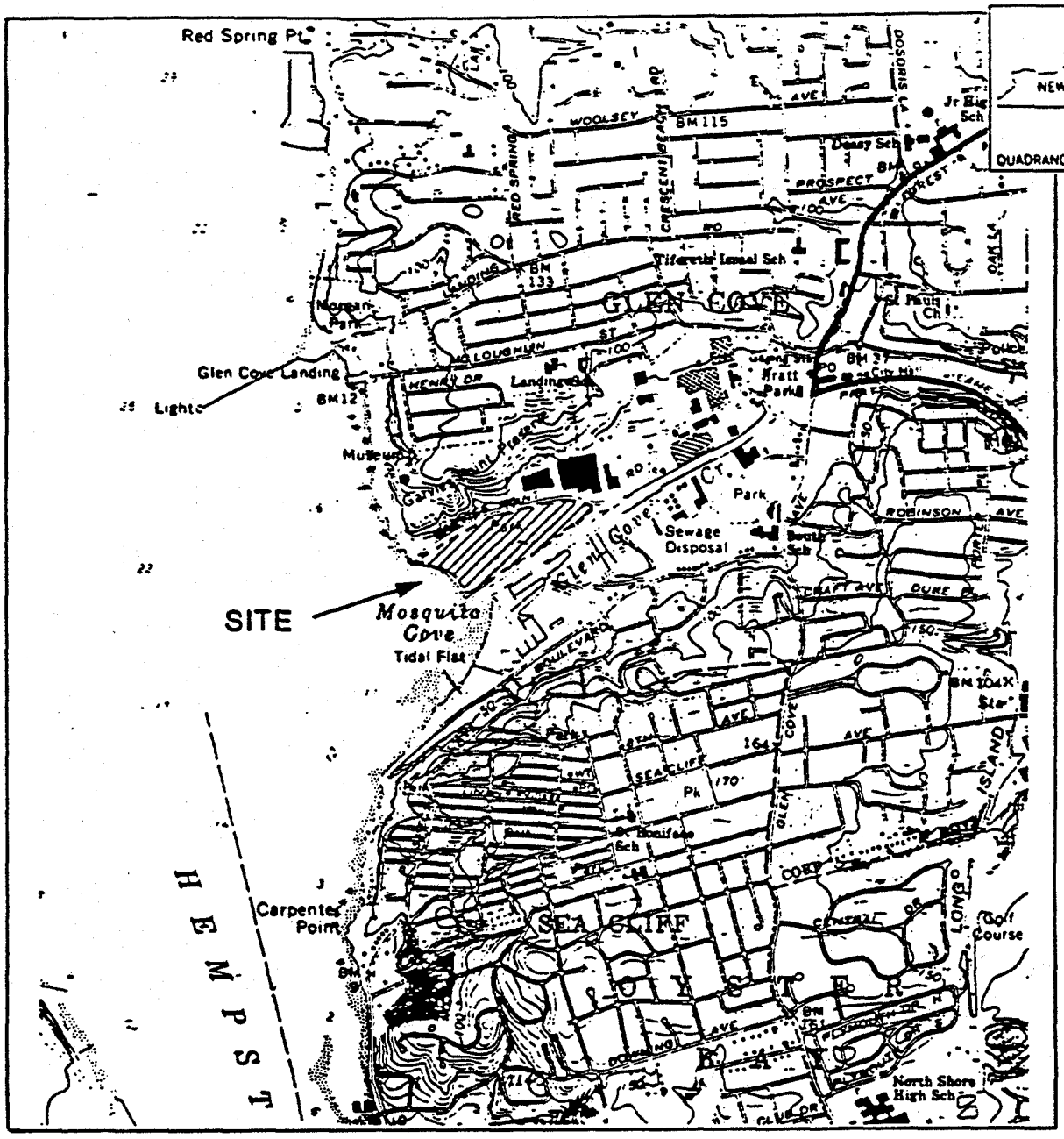
1.0 INTRODUCTION

The Garvies Point Condominium Site (hereinafter referred to as the site) is located in Glen Cove, New York at the end of Garvies Point Road. A location map of the site is presented in Figure 1-1. The site is bounded by Glen Cove Creek to the south, Hempstead Harbor to the west, the Garvies Point Preserve to the north and the Glen Cove Anglers Club to the east. A site map is presented in Figure 1-2. The total area of the site encompasses approximately 19 acres, including a section of wetlands along Glen Cove Creek.

The New York State Department of Environmental Conservation (NYSDEC) placed this site on the state's list of inactive hazardous waste disposal sites on January 7, 1986. At that time, the site (No. 130032) was assigned a rank of 2a which is a temporary classification given to sites that have inadequate and/or insufficient data for inclusion in any of the other classifications. The current owner of the site, Village Green Realty at Garvies Point, Inc. was requested by the NYSDEC in 1985 to conduct field investigations to determine if inorganic and/or organic constituents were present in different environmental media at the site. The initial test results of that investigation prompted the NYSDEC to change the classification of the site to a 2, which requires immediate action.

As a result of placement on the state's inactive hazardous waste disposal site list, Village Green Realty at Garvies Point, Inc. (Respondent) has entered into an Order on Consent with New York State Department of Environmental Conservation (NYSDEC). This Order on Consent calls for the development of a Remedial Investigation (RI) Work Plan, implementation of that Work Plan, preparation of an RI report and a subsequent scope of work for an engineering study of feasible remedial alternatives. The goals of the RI, as set forth in the order, are to determine health and environmental hazards, if any, in connection with the site; and to identify all areas of soil and water contamination at the site.



0 1000 2000 3000 4000 5000 6000

SCALE FEET

SOURCE : U.S.G.S. MAP, SEA CLIFF QUAD

FIGURE 1

SITE LOCATION MAP

GARVIES POINT
GLEN COVE, NY

EBASCO SERVICES, INC.

102276

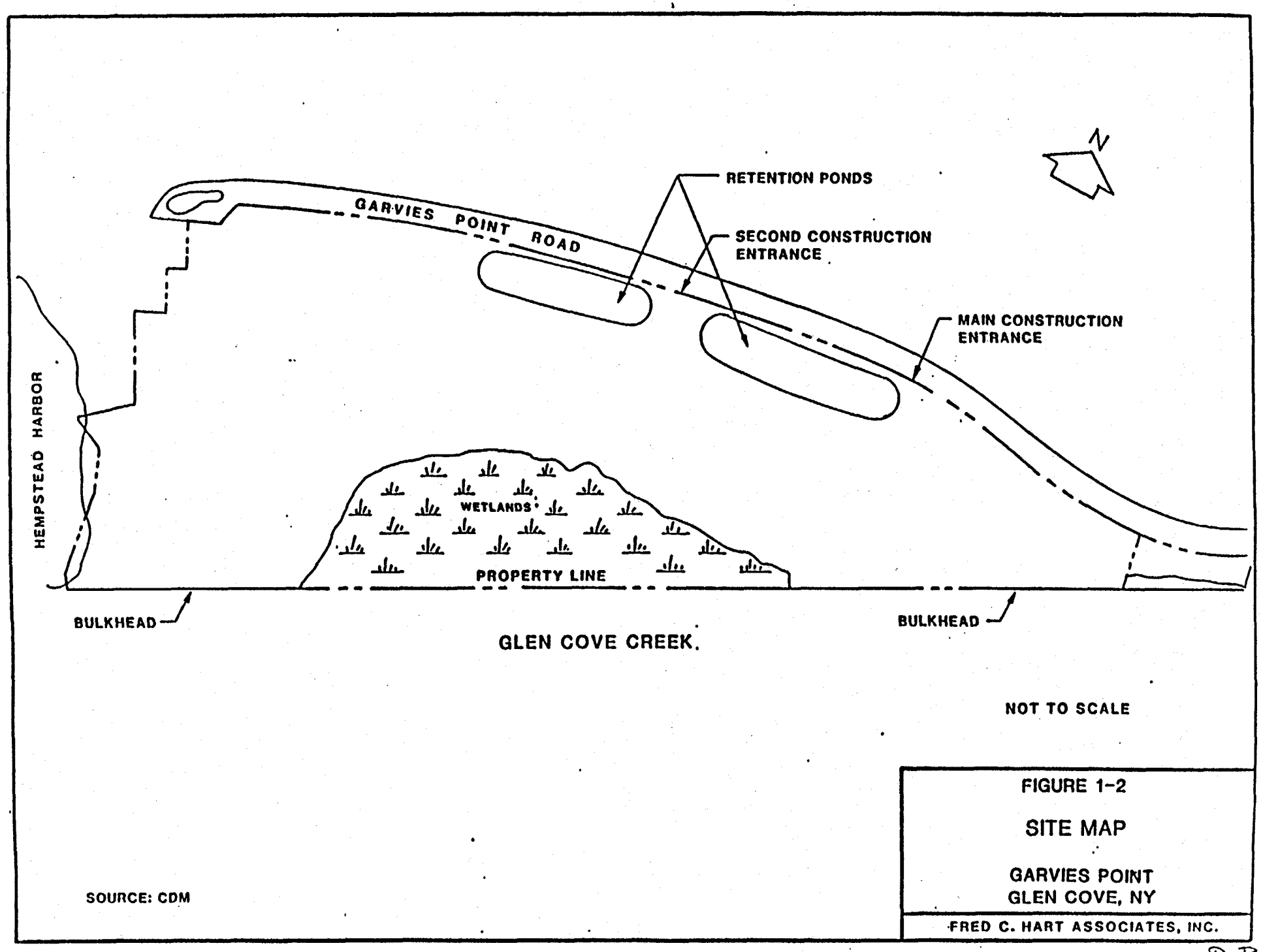


FIGURE 1-2

SITE MAP

GARVIES POINT
GLEN COVE, NY

FRED C. HART ASSOCIATES, INC.

102277

As part of the Remedial Investigation, Village Green Realty at Garvies Point, Inc. will also conduct a citizen participation program. This program will promote an understanding of the remedial activities at the site and will provide an opportunity for the collection of public information that will enable Village Green Realty at Garvies Point, Inc. to develop a comprehensive remedial program which is protective of both public health and the environment.

2.0 SITE HISTORY

2.1 Ownership

The history of site ownership was determined by searching Nassau County property records. The record search conducted by RTP Environmental Associates, Inc. (RTP) determined that recorded deeds to the property date back to 1899 when much of the site and surrounding Glen Cove Creek was assigned to Nassau County. A chronology of the owners is presented in Table 2-1. As indicated in Table 2-1, there has never been an industrial owner of the property except for The CONMAR, Inc. Group. This group purchased the property in 1979 with the intent of constructing a residuals transfer station on a portion of the eastern third of the site. The residuals were to be accepted from surface transports and transferred to barge transports docked in Glen Cove Creek. Although preliminary plans were developed, no such facility was ever constructed.

2.2 Dredging Activities

The United States Congress authorized the United States Army Corps of Engineers (USACE) to maintain Glen Cove Creek in 1925. Local government was to pay half of the costs and provide an acceptable disposal site for the dredge materials. The initial dredging took place from August 1933 to May 1934. The creek was dredged from Mosquito Cove in Hempstead Harbor for a length of approximately 0.7 miles upstream to a width of 100 feet and depth of 8 feet. The remaining 0.3 mile upstream portion to the head of navigation was dredged to a width of 50 feet and depth of 8 feet. A total of 195,000 cubic yards of material were removed. There are no available records regarding the disposal site for this material.

The channel has been dredged an additional three times since the initial work in 1933 and 1934 was done. In 1948, 26,500 cubic yards were removed but there are no available records to indicate where this material was disposed. In 1960, 27,100 cubic yards were dredged from the lower portion of Glen Cove Creek. According to information available from the USACE, this material was disposed of on the Garvies Point site. Finally,

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TABLE 2-1

GARVIES POINT SITE OWNERSHIP HISTORY

Lot #	Owner	Deed Date
26 & 27	Wm. H. Seaman	9/21/09
(later redesignated)		
424 & 546	E.S. Appleby, et al.	*
	City of Glen Cove	6/26/31
	Realty Assoc.	9/13/46
	John White	10/14/47
	Ridgewood Platear	10/4/49
	Realty Assoc.	10/5/49
	Glen Cove Realty Corp.	12/12/51
	J. Graham	01/10/56
	Creek Develop. Corp.	12/20/56
	I.I. Miller	12/22/56
	City of Glen Cove	02/13/58
	Nassau County	04/28/70
	City of Glen Cove	09/13/74
	I.I. Miller	11/19/74
	Lee Langbaum	09/02/76
	CONMAR Blders.	03/26/79
	James O'Connell	12/28/79
	Glen Cove Development Corp.	04/16/81
	Village Green	08/15/83
551 & 556	(same as 424 and 546 prior to 1977)	
	Glen Cove Urban Renewal	04/12/77
	Glen Cove Community Development	04/16/81
	Village Green	10/04/83

* Deed date not in records

(1823n-6)

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6,300 cubic yards were dredged in 1965 and reportedly also disposed of on the site. The approximate disposal area for material removed in 1960 and 1965 is shown in Figure 2-1.

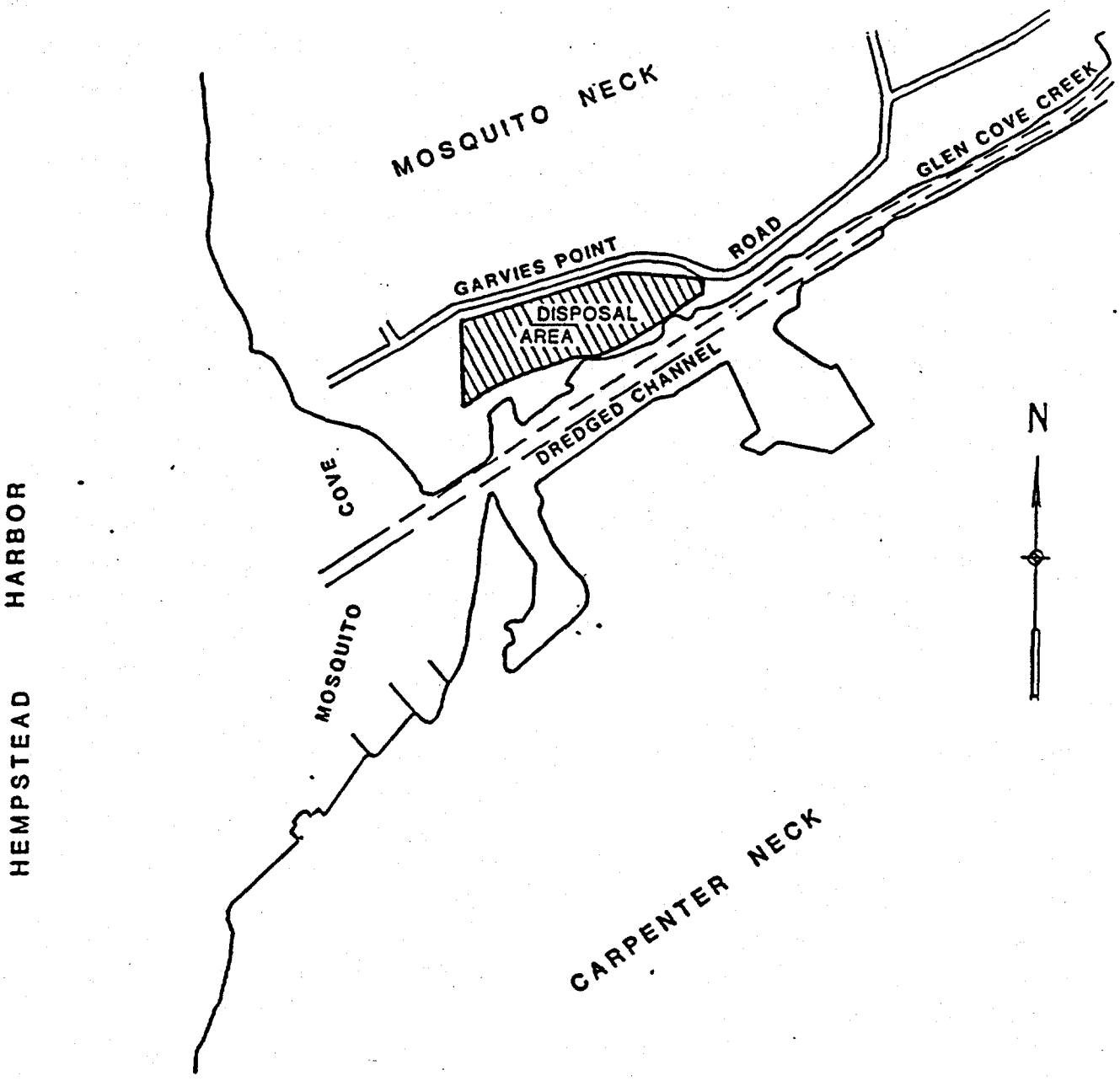
An USACE proposal to dredge Glen Cove Creek in 1979 was not implemented. Certain analytical tests conducted in sediment samples from the creek indicated a potential for the creek sediments to release PCBs, iron, and cyanide in concentrations greater than was currently present in the receiving water body (Glen Cove Creek). The 1979 proposal by the USACE included disposal of the dredge materials on the site. However, the NYSDEC prohibited this land disposal option after the dredge material was deemed to be hazardous.

2.3 Landfilling Operations

According to Nassau County Department of Health (NCDOH) records, the City of Glen Cove used the site as a municipal sanitary landfill beginning in 1971. Incinerator residues, wastewater treatment plant sludges and street debris were disposed of at the site. However, use of the site as a disposal area may have begun earlier. During the early years of city ownership, the records show that complaints had been received by the county. These complaints were related to the burning of rubbish at the site and to odors allegedly coming from uncovered sewage sludge. The City of Glen Cove was responsible for the site and occasionally cleaned and removed debris from the site.

RTP reports that the landfilling activities at the site were corroborated by Mr. Donald Aitken, a former NCDOH sanitarian who was responsible for periodically inspecting this and other landfills. Mr. Aitken explained that to his knowledge, household debris was disposed of in the western section of the landfill. The primary area of landfilling occurred in the central section of the property. The garbage consisted of typical household garbage, construction debris, catch basin sediments and sludge from the City sewage treatment plant. Mr. Aitken was unsure of the exact boundary of the eastern border of the landfill. He did acknowledge that at one time a 20 foot high sand berm existed along

Ref. 8
11.F16



NOT TO SCALE

SOURCE: U.S. ARMY CORPS OF ENGINEERS

FIGURE 2-1

DISPOSAL AREA FOR MATERIAL DREDGED FROM GLEN COVE CREEK IN 1960 AND 1965

GARVIES POINT
GLEN COVE, NY

FRED C. HART ASSOCIATES, INC.

Ref. 8
12 of 16

the northern border of the site. This berm was subsequently leveled and graded after 1983. A soil berm also existed along the southern border of the site. Mr. Aitken did not recall any incidents of industrial or potentially hazardous waste or ash disposal at the site. He also stated that the landfill was still active into the early 1980s just prior to the purchase by Village Green Realty at Garvies Point, Inc.

In NCDOH records dating back to 1973, references are made to the disposal of incinerator ash, sewage sludge, household debris and other sanitary fill on various portions of the site. Prior to about 1975, the discarded debris in the landfill was burned, apparently to reduce the volume of the discarded materials and for rodent control. There are no available records describing where these disposal operations took place. However, based on topography and the aerial photographs, it appears that the center of the current site was the primary disposal area.

2.4 Site Activities After 1983

The property was purchased by Village Green Realty at Garvies Point, Inc. in the fall of 1980. Since that time, bulkheads have been built along Glen Cove Creek and the western end of the site bordering Hempstead Harbor. The bulkheads were backfilled with clean fill. Approximately one third of the distance along Glen Cove Creek was not bulkheaded in order to preserve an estuarian habitat. Two lined retention ponds were constructed near Garvies Point Road. The purpose of the ponds is to collect surface runoff and allow solids to settle out of the water before the water is released to Glen Cove Creek. The intent of the liners in these two ponds is to prevent infiltration of stormwater into the subsurface which may be comprised of landfill materials.

Both wooden and concrete piles have been driven into the subsurface over much of the site. The purpose of these piles is to provide structural integrity to residential units planned for the site. There are currently two residential units whose frames have been constructed in the eastern portion of the site. The construction of these units was suspended by the developer. These framed residential units include

Ref. 8
13 of 16

elements of a gas collection system which had been had specified prior to construction. Finally, a stockade and chain link fence exists along the northern and eastern site boundaries.

Ref. 8
14 of 16

3.0 PROJECT DESCRIPTION

3.1 Objectives of Remedial Investigation

The property was purchased by Village Green Realty at Garvies Point, Inc. in 1980 with the intention of developing a residential complex on the site. Village Green Realty at Garvies Point, Inc, in the spirit of cooperation and without admitting liability for the disposal of industrial or hazardous waste at the site, has consented to enter into and carry out the elements of the Order on Consent with New York State Department of Environmental Conservation (NYSDEC). The goals of the RI, as set forth in the order, are to determine health and environmental hazards, if any, in connection with the site; and to identify all areas of soil and water contamination at the site.

In addition to the RI, a radiological survey of the site will be conducted. This survey is described in a separate work plan and will be conducted prior to the start of the RI field activities. The goals of the survey are to assess the potential hazard from radioactive materials, if any, deposited at the site by local industries. The amount of radiation above the ground surface will be measured with hand held radiation detecting instruments. If above background readings are measured on the instruments, up to ten samples will be collected for laboratory analysis.

3.2 Description of RI Activities

3.2.1 Aerial Photograph Review. HART will review aerial photographs taken of the site from 1950 through 1986 to define the locations of potential dredge and/or landfill materials and to observe any topographical changes at the site.

3.2.2 Preparation of Site Topographic Map. Since there is no topographic or scaled base map available for the site, a survey company will be subcontracted to prepare such a map. The map will be constructed on a scale of one inch equal to 100 feet at an appropriate contour interval.

Ref.8
15 of 16

3.2.3 Surface Water and Sediment Sampling. In order to characterize the surface water and sediment at Garvies Point, samples will be collected from the two retention ponds and the pipe that discharges from these ponds to the creek. The ponds collect surface water and sediment drainage from the entire site and are therefore representative of the site as a whole. In addition to these three sample locations, two surface water and two sediment samples will be collected from seeps noted on the southeastern slope of the site, adjacent to the wetlands area. These samples will be analyzed for Target Compound List (TCL) and Target Analyte List (TAL) constituents. These samples will provide the most accurate indication of the concentration of any compounds leaving the site and entering the creek.

3.2.4 Wetlands Sampling. In order to evaluate any potential impact of the site on the adjacent wetlands, five sediment samples will be collected from the wetlands. The samples will be collected during low tide when the maximum amount of wetlands area is exposed. These samples will be analyzed for TCL organics and the inorganics.

3.2.5 Air Sampling Program. Two different air sampling techniques will be used to determine the presence of any subsurface soil gas at the site. The first method will entail the collection of vapor samples from shallow holes in the ground approximately 3 feet deep and 3/8 inch in diameter. These vapor samples will be screened in the field to determine locations where vapor samples will be collected for laboratory analysis. Collection of the second set of soil vapor samples will require inserting a hollow probe approximately two feet into the ground and then pumping soil vapor through the probe and into sample tubes. Approximately eight (8) samples will be collected for laboratory analysis. Ambient air (upwind and on-site) will also be analyzed during this program. The laboratory results will permit calculation of surface emission rates for any volatile organic compounds detected.

3.2.6 Shallow Test Boring Program. A total of 13 shallow borings will be drilled at the site to gather additional data regarding the nature of potential organic and inorganic compounds in the soil fill area. These

Ref. 8
16.F16

borings will also provide lithological information to delineate the lateral continuity of the clay layer at the site. Up to ten samples will be collected from each boring and these samples will be tested in the field for pH, conductivity and volatile organics to determine which should be submitted for laboratory analysis. Up to nineteen samples will be selected from the borings for analysis.

3.2.7 Shallow Monitoring Well Installation. Up to six shallow monitoring wells will be installed at the site, which in combination with the existing four wells at the site will provide the necessary data to define the vertical extent of potential groundwater contamination at the site. The monitoring program will also focus on characterizing upgradient or off-site organic and/or inorganic contamination. Groundwater samples will be collected from all ten shallow wells and submitted for laboratory analysis.

3.2.8 Deep Test Boring Program. The objective of the deep boring program is to evaluate more fully the connection between the fill material above the clay layer and the fill material found along the bulkhead on the southeastern, and possibly the southwestern, side of the site. In addition, an attempt will be made to determine the thickness of the clay layer along the northwestern side of the site. Soil samples of the fill material will also be collected from two of the three borings for TCL and TAL analysis. Depending upon the results of the boring program, up to three of these borings may be finished as monitoring wells.

3.2.9 Deep Monitoring Well Installation. Depending upon the results of the deep test boring program, one of several objectives may be accomplished by installing deep monitoring wells at the site. If all three wells are installed, both horizontal and vertical hydraulic gradients at the site may be assessed as well as the quality of deeper water bearing zones. If no water bearing zone is found at the upgradient well location within fifty feet of the surface and only two wells are installed, only vertical hydraulic gradients at the site may be assessed. The two deep wells will be sampled to assess groundwater quality at depth in the fill material near the bulkhead. However, the data will have to be interpreted carefully since no upgradient data will be available.

(1823n-13)

REFERENCE NO. 9

wetland. A small wetland area does exist in a cove between the site and creek. Disposal operations will work around that area. Runoff from the diked sites will be returned to the creek seaward of the wetland area. No impacts are foreseen.

2) Impact on water column - Not applicable

3) Covering of benthic communities - Not applicable

c. Chemical - Biological Interactive Effects

1) Exclusion criteria met - No

2) Water Column Effect - Elutriate tests were performed to assess the effect of the runoff water as compared to the receiving waters. Samples analysis yielded the following results in ug/l.

Parameter	Elutriate	Receiving Water	State Guidelines
Aluminum	<20	<20	N/A
Arsenic	< 2	<2	50
Cadmium	<.15	<15	10
Chromium	22	22	50
Copper	33	43	50
Iron	43	19	300
Lead	<10	<10	30
Manganese	44	44	N/A
Mercury	<.2	<2	.4
Silver	< 2	<2	20
Zinc	2	2	N/A
Cyanide	120	85	5
PCB's	.32	<10	.5
Nickel	<25	<25	2500

N/A - None Available

Iron, Cyanide & PCB exceed the amounts available in the receiving waters. Of the three, Cyanide and PCB would have the more serious impact on the water body. Iron and PCB's while exceeding receiving water concentrations are below New York State standards thus they are deemed to be acceptable.

3) Effects of Chemical Constituents on Benthos - Increasing water concentrations may increase the uptake potential of benthos in the local area. However, many variables exist and defined pattern of uptake and accumulation is uncertain. Benthic life increases towards Hempstead Harbor and also the dilution potential. Thus the impact with the exception of cyanide is expected to be minimal.

d. Site Comparison: Not Applicable - upland site

e. Review of Water Quality Standards

1) Comparison of constituents - Runoff and the receiving waters both exceeded state guidelines for cyanide for an aquatic environment. The receiving water being 17 times greater and the effluent 24 times greater than the guideline of 5 ug/l. All the other parameters were within established guidelines.

2) Mixing Zone - A mixing zone was developed in order to determine the area required to sufficiently dilute the cyanide concentrations to fall within state guidelines. A surface area of 8.7 acres would be required. Since concentrations are already high in the creek the zone would extend into Mosquito Cove of Hempstead Harbor. The mixing zone would include the town beach which is at Mosquito Cove. The work, however, is planned for the fall after the swiming season.

3) Conforms with standards. A New York State Water Quality Certificate has been issued for this project.

f. Disposal Site Selection - Not Applicable - site selected is a non aquatic upland site.

g. Fill Material Contamination - Not Applicable, dredged material.

h. Mixing Zone Determination - calculations of acreage tidal flow was based on the tidal prism. The calculated zone is 379, 925 square feet or 8.7 acres.

i. Conclusions and Determinations - After a review of the information developed as part of the 404(b) evaluation, I have arrived at the following preliminary conclusions and determinations.

1) The material can generally be classified as sandy mud.

2) Disposal will be an a barren upland site.

3) Elutriate test samples point to a return of iron, PCB's and cyanide in concentrations greater than the receiving water. Cynaide, however, is the only substance to exceed New York State guidelines in its effluent and receiving water concentrations. (5 ug/l, 120 ug/l, 85 ug/l respectively)

4) A small wetland separates the diposal site from the channel to be dredged.

5) Benthic life in the creek is of marginal value.

6) A New York State Water Quality certificate has been issued for this project.

The most serious threat to the environment would be as a result of high concentrations of cyanide returning to the creek. It has been determined that a mixing zone extending 8.7 acres into Mosquito Cove is required to dilute the cyanide concentrations to meet State guidelines. It should be noted that the ambient concentration of cyanide in the creek exceed state guidelines for dredging projects. The impact beyond the creek should be minimal. The work will be done in the fall thus there would be no affect on swimming at the city beach in Mosquito Cove. The proximity of a wetland to the project will not result in any impacts on the wetlands. Pumping and effluent disposal operation will be such to circumvent the wetland.

The nature of the disposal area precludes any impact on terrestrial plant and animal species.

Based on the information developed and based on the fact that a State Water Quality Certificate has been received for the project, I find that the work will not have any serious and/or long term impacts regarding items addressed under a 404(b) evaluation. My final decision will be made after a review of information received as a result of the required public notice.

j. Findings

Seven pieces of correspondence were received on the proposed action. A comment/response section outlines the concerns expressed.

U.S. DEPARTMENT OF COMMERCE

No Objection

U.S. DEPARTMENT OF THE INTERIOR

No Objection

U.S. ENVIRONMENTAL PROTECTION AGENCY

No Objection

N.Y. STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Comment: No Objection if two conditions met. Material should not be deposited on the nearby wetlands and all work should be scheduled between 1 Nov and 30 April.

REFERENCE NO. 10

102292

New York State Department of Environmental Conservation
BLDG.#40, SUNY
STONY BROOK, NEW YORK 11794
(516) 751-7900

Ref. 10
1 of 1

Peter A. A. Berle,
Commissioner

November 13, 1979

Mr. Ernest J. Pascucci
Commissioner of Public Works
City Hall
Glen Cove, New York 11542

Dear Mr. Pascucci:

In reply to your letter of November 2, 1979, I wish to explain the situation further in regard to the proposed deposition of dredge spoil at Garvies Point.

The material in question cannot qualify as clean spoil. If further investigation shows it to be hazardous material, (as preliminary reports suggest, for at least a portion of the material), it could not be allowed at Garvies Point under any circumstances.

Nonhazardous waste material can be deposited only either, at a permitted landfill, or at an ongoing landfill where timely application has been made and where all necessary requirements to obtain a permit are being pursued.

In the case of a discontinued landfill such as Garvies Point, waste material can be allowed only after a permit to operate the landfill has been granted.

Very truly yours,

Morris Bruckman

Morris Bruckman, P.E.
Regional Solid Waste Engr.

MB/ef
cc: A. Machlin
S. Juczak
D. Larkin
R. Haje

e-Chairman

102293

REFERENCE NO. 11

File LDP

1 of 11

..NDFILL INSPECTION REPORT ..nd Resources Management ..ssau County ..epartment of Health	Facility: Jones Point Location: Glen Cove Site No.: 224
..rson ..terviewed:	Overall Rating: ☐ Satisfactory ☒ Marginal ☐ Unsatisfactory
..ame of ..spector: Donald Aitken, Jr.	Inspection Time: 15 min Date Inspected: 4/15/

S-Satisfactory M-Marginal U-Unsatisfactory

Item	S	M	U	Item	S	M
..1. Spreading and Compaction		✓		14. Blowing Litter Control	✓	
2. Daily and Intermediate Cover		✓		15. Odor Control	✓	
..3. Final Cover	✓			16. Dust Control	✓	
4. Depth of Cells	✓			17. Vector Control	✓	
..5. Size of Working Face		✓		18. Control of Open Burning NA		
..6. Side Slopes	✓			19. Fire Protection	✓	
7. Dumping into Water Controlled		✓		20. Control of Salvaging NA		
..8. Sufficient Equipment, Good Repair	✓			21. Bulky Waste Handling	✓	
9. Access Road Maintenance	✓			22. Supervision of Unloading		
..10. Surface Drainage	✓			23. Maintenance, Homeowner Area NA		
..11. Maintenance of Completed Areas	✓			24. Access Limited		
..12. Leachate Control N/A				25. Other		
..13. Monitoring Wells NA						

INSPECTION REPORT

1, 2, 5 & 7 - Have called Mr. Grazioso (Deputy DP... in regard to above. No action to date. They have until 4/23/76 for corrective action.

22 & 24 - no fence surrounding area and very little surveillance by police

DA 4/19/...

102295

File Ref. 4
2 of 11

ANDFILL INSPECTION REPORT nd Resources Management ssau County Department of Health	Facility: Jarvis Point Location: Glen Cove Site No.: 224
rson Interviewed:	Overall Rating: ☒ Satisfactory ☐ Marginal ☐ Unsatisfactory
Name of Inspector: Donald Dirkin, Jr.	Inspection Time: 15 min Date Inspected: 4/27

S-Satisfactory M-Marginal U-Unsatisfactory

Item	S	M	U	Item	S	M
. Spreading and Compaction	✓			14. Blowing Litter Control	✓	
2. Daily and Intermediate Cover	✓			15. Odor Control	✓	
. Final Cover	✓			16. Dust Control	✓	
4. Depth of Cells	✓			17. Vector Control	✓	
. Size of Working Face	✓			18. Control of Open Burning NA		
6. Side Slopes	✓			19. Fire Protection	✓	
7. Dumping into Water Controlled	✓			20. Control of Salvaging	✓	
. Sufficient Equipment, Good Repair	✓			21. Bulky Waste Handling	✓	
9. Access Road Maintenance	✓			22. Supervision of Unloading	✓	
. Surface Drainage	✓			23. Maintenance, Homeowner Area NA		
11. Maintenance of Completed Areas	✓			24. Access Limited	✓	
. Leachate Control N/O				25. Other		
13. Monitoring Wells NA						

INSPECTION REPORT

Mr. Al Grayson called 4/23/76 asking permission to level stockpile of "snow sand" and face off area towards creek. Site looks excellent NOW, but local dumping will resume. Numerous efforts in past to get Jarvis Point fenced in have been rejected by City Council.

DA 4/28

102296

DFILL INSPECTION REPORT
nd Resources Management

sau County
artment of Health

Facility	GARVIES POINT
Location	
Site No.	224
Overall Rating	☐ Satisfactory ☒ Marginal ☐ Unsatisfactory
Inspection Time	1600
Date Inspected	4/18/77
son erviewed	—
ame of spector	ACTKEN / SCHAEFER

S-Satisfactory M-Marginal U-Unsatisfactory

Item	S	M	U	Item	S	M	U
1 Spreading and Compaction		✓		14. Blowing Litter Control N/A			
2. Daily and Intermediate Cover		✓		15. Odor Control	✓		
3 Final Cover	✓			16. Dust Control	✓		
4 Depth of Cells	✓			17. Vector Control N/O			
5. Size of Working Face	✓			18. Control of Open Burning	✓		
6 Side Slopes N/A				19. Fire Protection N/A			
7. Dumping into Water Controlled	✓			20. Control of Salvaging N/A			
8 Sufficient Equipment, Good Repair UNK	A			21. Bulky Waste Handling	✓		
9. Access Road Maintenance	✓			22. Supervision of Unloading	✓		
10 Surface Drainage	✓			23. Maintenance, Homeowner Area N/A			
11. Maintenance of Completed Areas	✓			24. Access Limited N/A			
12 Leachate Control	✓			25. Other			
13 Monitoring Wells N/A							

INSPECTION REPORT

Since the previous inspection on 4/5/77 some of the material noted had been covered however some uncovered material was still evident. The open trench still was being used

102297

See Reverse Side for Sketch

#024

RT OF FIELD TRIP d Resources Management au County Department of Health		Facility Garvin Point Preserv	
		Location Garvin Pt Rd	
te of ip May 12, 1977		Village Oak Bluff	Town TOB
vity 27	Class Code 221	Travel Time 15 min	Time at Site 15 min

mmary Open trenches persist - several plastic bags widening previous areas leaking

Rating - marginal

102298

eported by Donald Arthur Jr

Date 5/13/77

File
Ex. 11
5 of 11

...NDFILL INSPECTION REPORT ...nd Resources Management ...ssau County ...Department of Health	Facility: Garvies Point Location: Glen Cove Site No.: 224
...rson Interviewed: Commissioner Bruce Gray Garvies	Overall Rating: ☐ Satisfactory ☒ Marginal ☐ Unsatisfactory
Name of Inspector: Daniel Kittrem, Jr.	Inspection Time: 30 min; Date Inspected: 4/2

S-Satisfactory M-Marginal U-Unsatisfactory

Item	S	M	U	Item	S	M	U
1. Spreading and Compaction		✓		14. Blowing Litter Control	✓		
2. Daily and Intermediate Cover		✓		15. Odor Control	✓		
3. Final Cover		✓		16. Dust Control	✓		
4. Depth of Cells	✓			17. Vector Control	✓		
5. Size of Working Face	✓			18. Control of Open Burning NA			
6. Side Slopes	✓			19. Fire Protection	✓		
7. Dumping into Water Controlled		✓		20. Control of Salvaging NA			
8. Sufficient Equipment, Good Repair		✓		21. Bulky Waste Handling	✓	✓	
9. Access Road Maintenance	✓			22. Supervision of Unloading			
10. Surface Drainage	✓			23. Maintenance, Homeowner Area NA		✓	
11. Maintenance of Completed Areas	✓			24. Access Limited			
12. Leachate Control N/O				25. Other			
13. Monitoring Wells NA							

INSPECTION REPORT

#s 1-3 As noted in previous inspection (3/26)
Trenches still open, uncovered and one 1/2 full of water. (#7)
#8 One bulldozer, serving the entire City of Glen Cove is not enough.
#s 22 & 24 are related in that the area is not well patrolled by police and anyone is free to drop garbage at this "dump."
— Mr Garvies promised to use street sand (also stored at Garvies Pt) to fill in trenches and block access by 4/2

102299

Fac # 224
Glen Cove Insp. Ref. 11
6 of 1

›ORT OF FIELD TRIP nd Resources Management ssau County Department of Health		Facility Garvies Point Preserve Location end of Garvies Pt. Road	
ate of rip March 26, 1976		Village Glen Cove	Town (City of G.C
tivity de 21	Class Code 221	Travel Time 30 min.	Time at Site 15 min.

Summary Follow-up inspection on this site due to varying use this site is said to be put to by Glen Cove officials and its appearance in past inspections.

At 4:30 p.m. (Friday, 3/26) three trenches open, approximately 3'x 20' filled with all sorts of agricultural debris. No grit or screenings from Glen Cove STP observed however. One pit was 1/3 full of ponded water (two feet deep). Minimal attempt to cover or fill used trenches, despite numerous piles of road sand adjacent to trenches.

Rating: Unsatisfactory - follow-up end of week (4/2/76).

Reported By Donald Whitten Jr. Date 3/29/76

EH 616 10/75 *See Reverse Side for Sketch*

102300

FDP Ref. 11
7 of 11

RT OF FIELD TRIP Resources Management au County Department of Health	Facility GARVIES POINT LANDFILL Location
of ip 10/27/76	Village GLEN COVE Town
vity 13 / Class Code 221	Travel Time / Time at Site

ummary Active landfilling was noticed. One trench 15' x 3 ft. contained broken asphalt shingles and small pieces of wood. A front end loader was covering a similar area adjacent to the trench. The smell of sewage sludge was prevalent in the area

orted Howard Schaffer Date 11/1/76

H 616 10/75 See Reverse Side for Sketch

102301

Ref. 11
8 of 11

DFILL INSPECTION REPORT d Resources Management sau County epartment of Health	Facility: Garvies Point Location: Glen Cove Site No. 224
son erviewed: Lynn, Quinn ame of pector: Robert Kirkham Jr.	Overall Rating: ☒ Satisfactory ☐ Marginal ☐ Unsatisfactory Inspection Time: 30 min Date Inspected: 6/28

S-Satisfactory M-Marginal U-Unsatisfactory

Item	S	M	U	Item	S	M	U
1. Spreading and Compaction	✓			14. Blowing Litter Control	✓		
2. Daily and Intermediate Cover	✓			15. Odor Control	✓		
3. Final Cover	✓			16. Dust Control	✓		
4. Depth of Cells	✓			17. Vector Control	✓		
5. Size of Working Face	✓			18. Control of Open Burning NA			
6. Side Slopes	✓			19. Fire Protection	✓		
7. Dumping into Water Controlled	✓			20. Control of Salvaging NA			
8. Sufficient Equipment, Good Repair (2)	✓			21. Bulky Waste Handling	✓		
9. Access Road Maintenance	✓			22. Supervision of Unloading	✓		
10. Surface Drainage	✓			23. Maintenance, Homeowner Area NA			
11. Maintenance of Completed Areas	✓			24. Access Limited	✓		
12. Leachate Control NO				25. Other			
13. Monitoring Wells NA							

INSPECTION REPORT

Both Messrs Lynn and Quinn were spreading a mixture of dredge spoils and street sand along the east perimeter of the point. The area was clear of all debris except for the usual two or three plastic trash bags and other small amts of assorted debris dropped off by home owner (according to Mr. Lynn). This will be pursued.
DA 6/29

ZW 492 6/75 See Reverse Side for Sketch

102302

NASSAU COUNTY DEPARTMENT OF HEALTH

REFUSE DISPOSAL AND INSPECTION REPORT

Pg. 11
9 of 11

Name of Site: SARVIES PT.	Location (Town, Vlge, City): GLEN COVE	Site No. Col 1-3: 2 2 4	Report No Col 4-6: 0 0 4
Operator: ERNEST PASCUCCI	Address		
Owner: GLEN COVE	Address		

Person Interviewed: MR QUIENT CITY ATTY	Date Col 7-12: 0 3 1 7 7 4	Time Col 13-16: 1 4 3 0	
Inspected By (Signature): Jonathan Rittenhouse		Employee No Col 17-19: 6 0 9	

WEATHER CONDITIONS (Yes=1, No=2)	20	2	Rainy	22	2	Windy	24	1	Cold
	21	1	Fair	23	1	Calm	25	2	Mild
CONTROL OF SITE (Yes =1, No=2)	26	1	Signs	28	2	Supervision			
	27	2	Fence & Gate	29	1	None			
EQUIPMENT AT SITE (Write in Quantity Being Used)	30	0	Bulldozers	34	0	Drag Lines			
	31	0	Payloaders	35	0	Graders			
	32	0	Scrapers	36	0	Other Types			
	33	0	Compactors	37	0	Fill Trucks			
TYPE OF REFUSE DISPOSED (Yes=1,No=2)	38	2	Residential	41	1	Demolition			
	39	2	Commercial	42	1	Agricultural			
	40	2	Industrial	43	2	Scavenger			

EXPLAIN YES ANSWERS ON REVERSE SIDE (Yes=1, No=2,N/A=3)	45	2 1. Burning at Time of Inspection
	46	2 2. Evidence of On-site Burning
	47	2 3. Dumping into Water
	48	2 4. Leachate Observed at the Site
	49	2 5. Leaching into a Water Course
	50	2 6. Refuse not Confined to a Manageable Area
	51	2 7. Unsatisfactory Daily Soil Cover
	52	1 8. Refuse Protruding through Completed Areas
	53	2 9. Improper Spreading and Compaction of the Refuse
	54	2 10. Pooling of Water,Cover Soil Cracking,Soil Erosion,or Improper Slope
	55	2 11. Evidence of Rodents and Insects
	56	2 12. Blowing Paper Problem
	57	2 13. Salvaging of Refuse Creating a Nuisance
	58	2 14. Approach Road Impassable to Vehicular Traffic During Part of the Y

Violations Found	59-60	0 1	Violations Corrected	61-62	0 0
(Yes=1,No=2) Incinerator	64	2	Violation Notice Issued (Yes=1,No=2)	63	2
Furnaces Available	65		Stack Effluent (Ringlemen No)	67	
Furnaces on Line	66		Wind Direction	68-70	N E

492 11/72

102303

)FILL INSPECTION REPORT l Resources Management ſau County ırtment of Health	Facility: Garvies Point Landfill Location: Garvies Pt. Rd, Glen Cove Site No. 224
rson ɛrviewed: —	Overall Rating: ☐ Satisfactory ☒ Marginal ☐ Unsatisfactory
ɛ of spector: F. Pedersen & H. Schafer	Inspection Time: 2PM Date Inspected: 5/18/77

S-Satisfactory M-Marginal U-Unsatisfactory

Item	S	M	U	Item	S	M	U
. Spreading and Compaction N/A				14. Blowing Litter Control N/A			
. Daily and Intermediate Cover		X		15. Odor Control		X	
. Final Cover		X		16. Dust Control N/A			
Depth of Cells N/A				17. Vector Control			
. Size of Working Face				18. Control of Open Burning			
Side Slopes				19. Fire Protection			
. Dumping into Water Controlled				20. Control of Salvaging			
Sufficient Equipment, Good Repair				21. Bulky Waste Handling			
. Access Road Maintenance				22. Supervision of Unloading			
. Surface Drainage				23. Maintenance, Homeowner Area			
Maintenance of Completed Areas		X		24. Access Limited		X	
. Leachate Control N/A				25. Other			
Monitoring Wells N/A							

INSPECTION REPORT .

GARVIES POINT LANDFILL
5/18/77
PDP

GARVIES POINT LANDFILL
5/18/77
PDP

Side for S

102304

Ref: 11.4

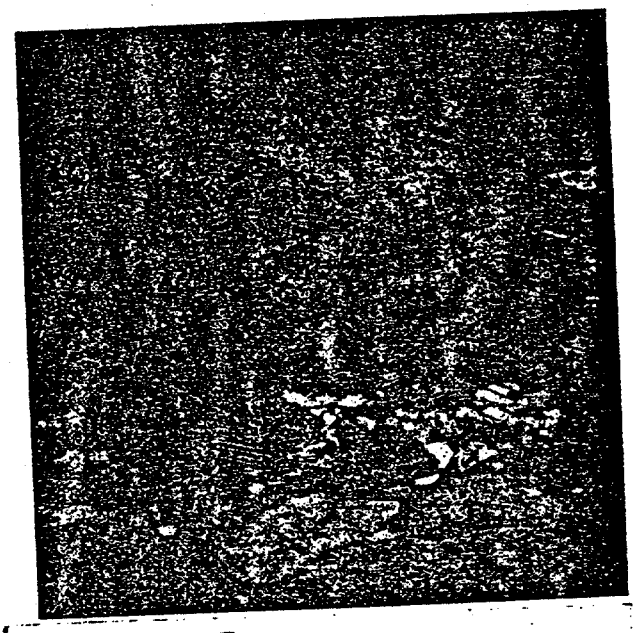
·NDFILL INSPECTION REPORT ıd Resources Management ssau County partment of Health	Facility GARVIES POINT Location Site No. 224
erson terviewed ———	Overall Rating ☐ Satisfactory ☒ Marginal ☐ Unsatisfactory
ne of nspector Howard Schaefer	Inspection Time 1530 — Date Inspected 4/5/77

S-Satisfactory M-Marginal U-Unsatisfactory

Item	S	M	U	Item	S	M	U
1. Spreading and Compaction		✓		14. Blowing Litter Control N/A			
Daily and Intermediate Cover		✓		15. Odor Control	✓		
3. Final Cover	✓			16. Dust Control	✓		
Depth of Cells	✓			17. Vector Control N/A			
.. Size of Working Face	✓			18. Control of Open Burning	✓		
: Side Slopes N/A				19. Fire Protection N/A			
Dumping into Water Controlled	✓			20. Control of Salvaging N/A			
3. Sufficient Equipment, Good Repair Unknown		✓		21. Bulky Waste Handling	✓		
Access Road Maintenance	✓	✓		22. Supervision of Unloading	✓		
). Surface Drainage	✓	✓		23. Maintenance, Homeowner Area N/A			
Maintenance of Completed Areas	✓			24. Access Limited N/A			
.. Leachate Control	✓			25. Other			
Monitoring Wells N/A							

INSPECTION REPORT

Refuse is being placed at this site by digging a trench and dumping into it. At the time ... visible. Since the area is a ... exposes previously landfilled ... See attached photo.



GARVIES POINT
4/7/77

.. 492 6/75 See Reverse Side for S

102305

REFERENCE NO. 12

...STIGATION ...ARY ...reau of Water ...ution Control ...au County ... of Health	Date Opened 4/4/85 Received by ☒ Phone ☐ Mail ☐ Walk-In ☐ Survey	Reason for Investigation ☑ Complaint ☐ Survey ☐ Permit ☐ Other	Dates 1. 2. 3.	Location of Complaint Address LS HS City or Town 1 of 5 Census Tract

...ified of ...identiality ☐ Yes ☐ No	Investigation ☐ Prev.Closed ☐ New ☐ In Proc.	Date Closed	

COMPLAINANT		Name (owner)	
JUNGE cB channel 19 Code Name "Wrong Way"		CAPTAINS COVE CONDO.	
...ess 205 FROST POND RD	Apt.#	Address GARVIES PT RD	Apt.#
...y or GLEN COVE	Tel. 759-2861	City or Town GLEN COVE	Tel.

NATURE OF COMPLAINT

		Specify (Where Necessary)
☐ Oil Spill	☐ Dead Fish, Birds, Ducks	REMOVING MATERIAL FROM BUILDING
☐ Discoloration	☐ Garbage	SITE: APPEARANCE CARBON PAPER +
☐ Odor	☐ Sewage	CHEMICAL DRUMS. STRONG ODOR.
☐ Jelly Fish	☐ Scum	
☐ Industrial Waste	☒ Other (specify)	

INSPECTION REPORT

...stion ...es ☐ No	Violation Notice Issued? ☐ Yes ☐ No Date	Violation ☐ N.C.Pub.Health Law ☐ N.Y.S.Sanitary Code ☐ N.Y.S.DEC.Law	Dye Test Performed? ☐ Yes ☐ No	Results ☐ Pos. ☐ Neg
...ple Taken ...es ☐ No ...al ... #	Date Viol.Corrected: Total Complaints Resolved:	Case Solution: ☐ Oper.Discont. ☐ New System ☐ System Repaired ☐ No Action	Referred to: Date	

...e	COMMENTS AND ACTION TAKEN	Sig...
...'85	RECEIVED CALL FROM JUNGE AT 6:10PM.	
...o	CALLED JUNGE - HE IS A TRUCK DRIVER AT BUILDING SITE, REMOVING MATERIAL EXCAVATE - MATERIAL APPEARS TO BE CARBON PAPER AND CHEMICAL 55 GALLON DRUMS - TRUCK LOAD COVERED BY CLEAN FILL.	
...T.	CALLED STAN JUGZAK - GAVE INFORMATION P.E.S.	
	(see attached)	
	102307	

...plainant ☐ ... ☐ ... ☐ ... | Approved | Date

ENVIRONMENTAL HEALTH
Continuation Sheet
Nassau County Health Department

Owner or Agent : Captains Cove
Address: Gawies Point Road Glen Cove

Inspector Ref. 12 2 of 5

DATE	COMMENTS
4-5-85	AT 4-5-85 at 10:00 AM, H. Schaefer and J. Schechter met with the site manager, Mike of Stratta Land Developers and inspected the site. The builder was in the process of removing a section of this old landfill just ~~North~~ South of Gawies Point Road, opposite Fabric Leather. The fill was approximately 6' deep at this point and contained assorted debris - tires, metal + wood scrap. Visible in one section was a broken pallet, a crushed 55 gallon drum contained solids of a purple color + several ~1' diameter rolls of purple colored ribbon. Perched + groundwater in this location was taking on the color of the ribbon that was immersed in it. This material was probably disposed in this area ~20 years ago + may be waste carbon paper and ribbon from Columbia Ribbon + Carbon that until a few years ago was located in Glen Cove on Herb Hill Road.
	This area is being excavated and filled with clean sand in preparation to installing a lined pond for stormwater retention as part of the general ~~rehabilit~~ development of this property for the Captain's Cove Condominium Complex. This is the ~~southernmost~~ easternmost of two ponds.
	Groundwater from this area was being pumped onto Gawies Point Road entering a storm drain + discharging ~~to the~~ into the Harbor. Dewatering was necessary to allow heavy equipment to operate in this area.

EH 109a 1/68
DH-1198. 9/71

102308

ENVIRONMENTAL HEALTH
Continuation Sheet
Nassau County Health Department

Owner or Agent :
Address:

Inspector
Ref. 12
3 of 5

DATE	COMMENTS
	Water contaminated with coloring was mixing with the groundwater & being discharged onto the street. We requested that the waste ribbons & paper be removed to prevent any further contamination.
	The foreman of the work, "John" supervised the removal of the offending material which resolved the problem. A sample of the discharge water was obtained by V. Nigro prior to resolution of the matter.
	All wastes removed from the landfill, according to Mike, were being disposed of C&D Landfill on Route 110 in Melville.
	Jack Quinn, the architect of the project appeared at the site during our inspection. He requested that if any other complaints are referred to our Department that he be contacted. We agreed to do so and requested that if any industrial or hazardous wastes are unearthed that NCDH be contacted. He agreed to do so as did the representatives from State.

EH 109a 1/68
DH-1198, 9/71

102309

LABORATORY WORKSHEET

CHEMICAL EXAMINATION FOR TRACE ORGANIC CONSTITUENTS IN WATER, HAZARDOUS WASTES AND SOLID WASTES

Division of Laboratories and Research

Nassau County Department of Health

J

1 ☐ Routine
2 ☐ Resample
3 ☑ Special
4 ☑ Complaint
5 ☐ Other

Lab. No. 500910 Ref. 12a 4 of 5

Field No. VN-27

N No. (Public Water Supply Only)

Source Information (Please Print)

Premises Captain's Cove Dulpont

Address Galveston Pt Rd

Town Glen Cove

Collection Point effluent hose from site

Well No.

Sampler's Comments: - sample on ice

	Month	Day	Year
Date Collected	4	4	84
Date Received	4	5	8
Date Reported			8
Collection Time	11 : (illegible)		
Collected By:	V. Nilsen		

Bureau

1 ☑ Land Resources Management
2 ☐ Public Water Supply
3 ☐ Water Pollution Control
4 ☐ Environmental Sanitation
9 ☐ Other (specify)

SAMPLE TYPE

AQUEOUS				NON-AQUEOUS	
	Community Well	6	Surface Water	1	Soil
2	Non-Community Well	7	Waste Water	2	Sludge
3	Private Well	8	Industrial Effluent	3	Waste Solvent
4	Monitoring Well	9	Raw Supply Water	4	Oil
5	Drinking Water	10	Distribution Water	5	Other (specify)

ANALYSIS TYPE

A	Purgeable halogenated hydrocarbons	I	Phthalates
B	Purgeable halogenated hydrocarbons - gases	J	Herbicides
C	Purgeable nonhalogenated hydrocarbons	K	Nitrosamines
D	Halogenated pesticides	L	Benzidines
E	Polychlorinated biphenyls	M	Nitroaromatic hydrocarbons
F	Polycyclic aromatic hydrocarbons	N	Haloethers
G	Aldehydes + ketones	O	Chlorinated hydrocarbons
H	Phenols	P	Other (specify)

Examiner's Comments:

102310

Ref. 12
5 of 5

NASSAU COUNTY DEPARTMENT OF HEALTH
DIVISION OF LABORATORIES AND RESEARCH
ENVIRONMENTAL HEALTH LABORATORIES

TRACE ORGANICS

Access Number: 500910.
Source: GARVIES PT. RD., GLEN COVE VN-27
Matrix: WATER
Date Sampled: 04/04/85
Date of Report: 4 /17/85

VOLATILE HALOGENATED	MRC (ug/l)		RESULT (ug/l)
TRICHLOROFLUOROMETHANE	1	-------	< 1
METHYLENE CHLORIDE			
1,1,2-TRICHLOROTRIFLUOROETHANE	4	-------	< 4
1,1-DICHLOROETHYLENE			
c & t-1,2-DICHLOROETHYLENE	20	-------	< 20
1,1-DICHLOROETHANE	10	-------	NA
CHLOROFORM	1	-------	73
1,1,1-TRICHLOROETHANE	1	-------	< 1
CARBON TETRACHLORIDE	1	-------	< 1
TRICHLOROETHYLENE	1	-------	9
BROMODICHLOROMETHANE	1	-------	< 1
c-1,3-DICHLOROPROPENE			
DIBROMOCHLOROMETHANE	1	-------	< 1
1,1,2-TRICHLOROETHANE	3	-------	< 2
1,2-DIBROMOETHANE	2	-------	< 2
TETRACHLOROETHYLENE	1	-------	26
BROMOFORM	1	-------	< 1

VOLATILE AROMATICS	MRC (ug/l)		RESULT (ug/l)
BENZENE	3	------	< 3
TOLUENE	4	------	2200
CHLOROBENZENE	3	------	27
ETHYLBENZENE	3	------	7
XYLENE (o,m,p)	3	------	50
DICHLOROBENZENE (o,m,p)	4	------	30

MRC - MINIMUM REPORTABLE CONCENTRATION NA - NOT ANALYZED
NR - NO RESULT DUE TO TECHNICAL REASONS - REASONS SUGGESTED
RPB: AIR - ml/l WATER - ug/l SOIL - ug/g

DETECTED BY GC/MS
$CHCl_3$
TOLUENE

APR 17 1985

102311

REFERENCE NO. 13

102312

Ref. 13
1 of 24

RTP Environmental Associates
AIR, WATER, MEASUREMENT AND CONTROL
68 Rose Avenue
Westbury, New York 11590

May 17, 1985

Mr. Jack Quinn
GDO company
50 Glen Street
Glen Cove, New York 11542

Dear Mr. Quinn:

Please find enclosed our report on the ambient air analysis and sampling at the Gatsby's landing site. I trust it will meet your requirements for an assessment of the potential health risks associated with the current ambient air concentrations as monitored by Pedneault Associates, Inc. I would like to receive a copy of the Pedneault reports for my files. Please call if you have any questions on the report. I trust we can be of service to you in the further development of the project.

Sincerely,

Kenneth J. Skipka
Certified Consulting Meteorologist

Enclosure

fhc/KJS

Ref. 13
2 of 24

RTP Environmental Associates
AIR, WATER:-MEASUREMENT AND CONTROL

AN EVALUATION OF ONSITE POLLUTANT CONCENTRATIONS AT GATSBY'S LANDING, GLEN COVE, N.Y.

The proposed construction of the Gatsby's Landing residential complex in Glen Cove, New York has raised some concern over the potential health effects of emissions from the subsurface materials. The complex is being constructed above an old landfill area and an adjoining stream bed. There is concern that pollutant emissions from the subsurface materials may have an adverse health impact on future residents.

The purpose of this report is to evaluate the onsite pollutants potentially being emitted from the subsurface materials. The ambient air data that have been collected at the proposed sites are analyzed herein. The primary purpose is to determine if the existing onsite levels are a potential health risk. The ambient concentrations are compared to values by the New York State Department of Environmental Conservation (DEC), Guidelines for the Control of Toxic Ambient Air Concentrations, Air Guide No.1. This comparison is considered a conservative approach to assessing health risk since the acceptable ambient levels (AAL) listed within the guideline are for annual average long term exposure limits in the ambient or outdoor environment. The maximum short-term concentrations from the available data are applied in the following comparison. The annual averages are expected to be substantially lower than the short-term values.

Ambient source monitoring was conducted for the purpose of determining the quality and quantity of potential contaminants at the surface where the residential complexes are to be situated. The tests were conducted by Pedneault Associates, Inc., a New York State approved testing laboratory. Standard quality assurance and control procedures were followed during the collection

handling and analysis of air samples. The ambient air samples were collected directly above subsurface observation wells. The locations of the observation wells are illustrated in Figure 1. Ambient air samples were collected and analyzed during an intensive onsite monitoring study conducted between March 1, 1985 and March 15, 1985. Site specific sampling, handling and analysis methods were applied during the monitoring program.

The sampling involved the use of Draeger tube samplers. Approximately 10 liters of air was sampled daily at each of the sites listed in Figure 1. A trip blank was utilized during each sampling day. The samples were collected on the schedule presented in Table 1.

For the purpose of this analysis, only those compounds with reported concentrations above the 1.0 parts per billion (ppb) detection limit established for the study are reported below. The analytical methods used included a Perkin-Elmer gas chromatograph/mass spectrometer equipped with a FID and DCD detectors. The detection limit of 1.0 ppb was established as a reasonable limit for monitoring onsite ambient concentrations. A full gc/ms scan for all chlorinated and saturated hydrocarbons was performed on each sample.

A summary of the observed onsite ambient concentrations is provide in Table 1. The maximum concentration values for all components are in the low ppb range or below the detection limit of the gc/ms.

The comparison of the observed concentration with the acceptable ambient level as defined by the State DEC suggests that onsite concentrations can provide an assessment of potential health risk. In all cases, the observed concentrations do not exceed established State AAL Guidelines. The AAL Guidelines were developed by the State DEC in conjunction with the State Department of Health for the purpose of evaluating outdoor ambient exposure limits. Relating the observed onsite concentrations directly to the AAL values provides a conservative assessment of potential health risk. Based on this direct comparison it can be concluded that the subsurface gaseous emissions do not appear to

be causing an unhealthful ambient air environment onsite at the present time.

As the subsurface materials continue to decompose, as stated in the LKB engineering report, pollutant concentrations are likely to continue to decline. In addition, the venting system being designed and installed will serve to intercept subsurface gaseous emissions and with proper ventillation thereby prevent unhealthful concentrations from accumulating within a structure. The monitoring of the venting system should conclusively prove that subsurface emissions are not and will not pose a condition adverse to a healthful environment.

Ref. 13
5 of 24

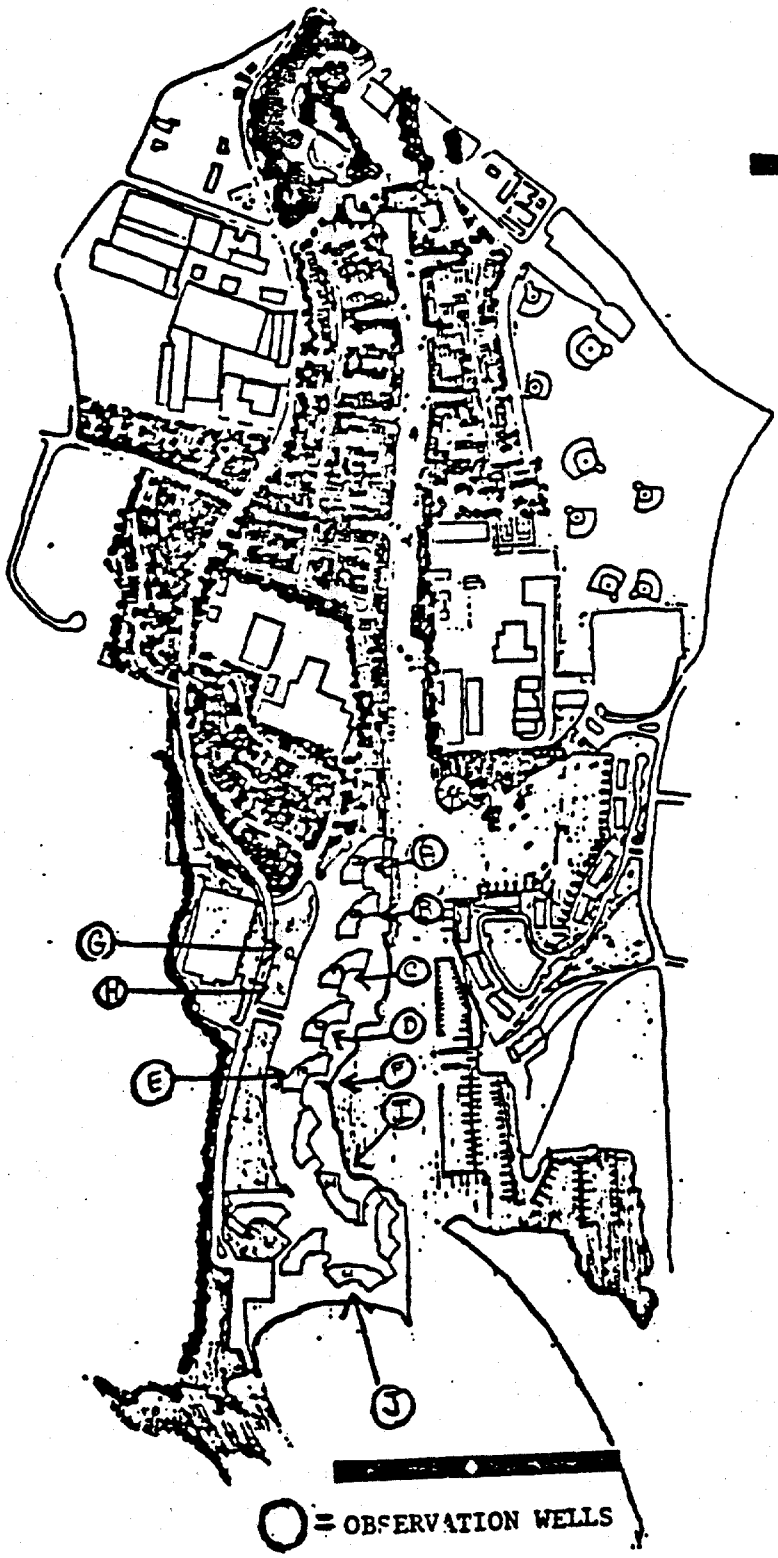


FIGURE 1

102317

RTP Environmental Associates
AIR, WATER,-MEASUREMENT AND CONTROL

TABLE 1

MAXIMUM AIR QUALITY MONITORING DATA COMPARED WITH NYS AAL VALUES
(parts per billion)

Contaminant	NYSDEC AAL	SAMPLING DATES MARCH 1985									
		1	2	4	5	6	7	8	9	11	15
111 Trichloroethane	1200	1.8	1.8					1.9			
Tetrachloroethylene	170										
112 Trichloroethylene	170		3.1				2.1	3.0			
Methylene Chloride	330							1.9			
Benzene	33	1.2					3.3				
Toluene	330						2.2				
Xylene	330		4.1				4.8			3.4	

( ) - A blank value indicates that the observed concentration was below the 1.0 ppb detection limit.

PEDNEAULT ASSOCIATES, INC.

Ref. 13
7 of 24

WEDNESDAY - MARCH 20, 1985

3:00 P. M.

WEATHER:	Temperature	44° F
	Windy, Cold, Raw	
	Light Rain Falling	

Methane Points:

Point A	< 0.1% methane
Point B	< 0.1% methane
Point C	< 0.1% methane
Point D	< 0.1% methane
Point E	57% methane
Point F	< 0.1% methane
Point G	< 0.1% methane
Point H (buried)	
Point I	2.5% methane
Point J	< 0.1% methane

Lab. # 30901

John Pedneault
Laboratory Director

PEDNEAULT ASSOCIATES, INC. TESTING LABORATORIES
1615 NINTH AVENUE · P.O. BOX 205 · BOHEMIA, N.Y. 11716 · (516) 467-8477
AFTER 5 P.M. (516) 567-5576

Ref. 13
8 of 24

TO: *Gatsby's Landing - Data Base*

Date: Collected 3/20/85 **Analyzed** ..... **Report** .....

Sampling Point

1. Methane Test Point A
2. Methane Test Point B
3. Methane Test Point C
4. Methane Test Point D
5. Methane Test Point E

Parameters		1	2	3	4	5
1,1,1 Trichloroethane	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethylene	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2 Trichloroethylene	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1 Dichloroethane	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2 Dichloropropane	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroform	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methylene Chloride	ug/l	< 1.0	2.4	< 1.0	< 1.0	1.8
Vinyl Chloride	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Xylene	ug/l	< 1.0	1.1	< 1.0	< 1.0	3.1
Dichlorobenzene	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

JOHN PEDNEAULT
Lab Director

Lab Number 30901

102320

PEDNEAULT ASSOCIATES, INC. TESTING LABORATORIES
1615 NINTH AVENUE · P.O. BOX 205 · BOHEMIA, N.Y. 11716 · (516) 467-8477
AFTER 5 P.M. (516) 567-5579

Ref. 13
9 of 24

TO: Gatsby's Landing - Data Base

Date: Collected 3/20/85 Analyzed ..... Report .....

Sampling Point

1. Methane Test Point F
2. Methane Test Point G
3. *Methane Test Point H - Missing *
4. Methane Test Point I
5. Methane Test Point J

Parameters		1	2	3	4	5
1,1,1 Trichloroethane	ug/l	< 1.0	< 1.0	*	< 1.0	< 1.0
Tetrachloroethylene	ug/l	< 1.0	< 1.0	*	< 1.0	< 1.0
1,1,2 Trichloroethylene	ug/l	< 1.0	< 1.0	*	< 1.0	< 1.0
1,1 Dichloroethane	ug/l	< 1.0	< 1.0	*	< 1.0	< 1.0
1,2 Dichloropropane	ug/l	< 1.0	< 1.0	*	< 1.0	< 1.0
Chloroform	ug/l	< 1.0	< 1.0	*	< 1.0	< 1.0
Methylene Chloride	ug/l	< 1.0	1.4	*	< 1.0	< 1.0
Vinyl Chloride	ug/l	< 1.0	< 1.0	*	< 1.0	< 1.0
Benzene	ug/l	< 1.0	< 1.0	*	< 1.0	< 1.0
Toluene	ug/l	< 1.0	< 1.0	*	< 1.0	< 1.0
Xylene	ug/l	< 1.0	7.3	*	< 1.0	< 1.0
Dichlorobenzene	ug/l	< 1.0	< 1.0	*	< 1.0	< 1.0

Lab Number 30901

JOHN PEDNEAULT
Lab Director

102321

PEDNEAULT ASSOCIATES, INC.

Ref. 13
10 of 24

THURSDAY - APRIL 11, 1985

2:00 P. M.

WEATHER :	Temperature	45° F
	Cloudy	
	Light Rain	

Well # 1 - North side of property, 10 feet from fence next to second driveway.

Well # 2 - Western end of property, 25 feet west of last driveway.

Methane Test Points:	Well # 1	< 0.1% methane
	Well # 2	< 0.1% methane

John Pedneault

Laboratory Director

102322

PEDNEAULT ASSOCIATES, INC. TESTING LABORATORIES
1615 NINTH AVENUE · P.O. BOX 205 · BOHEMIA, N.Y. 11716 · (516) 467-6477
AFTER 5 P.M. (516) 567-5579

Ref. 13
11 of 24

TO: Gatsby's Landing - Data Base

Date: Collected ....4/11/85..... **Analyzed** ..... **Report** .....

Sampling Point

1. Methane Test Point Well # 1
2. Methane Test Point Well # 2
3. .....
4. .....
5. .....

Parameters		1	2	3	4	5
1,1,1 Trichloroethane	ug/l	< 1.0	< 1.0			
Tetrachloroethylene	ug/l	< 1.0	< 1.0			
1,1,2 Trichloroethylene	ug/l	< 1.0	< 1.0			
1,1 Dichloroethane	ug/l	< 1.0	< 1.0			
1,2 Dichloropropane	ug/l	< 1.0	< 1.0			
Chloroform	ug/l	< 1.0	< 1.0			
Methylene Chloride	ug/l	< 1.0	< 1.0			
Vinyl Chloride	ug/l	< 1.0	< 1.0			
Benzene	ug/l	< 1.0	< 1.0			
Toluene	ug/l	< 1.0	< 1.0			
Xylene	ug/l	< 1.0	< 1.0			
Dichlorobenzene	ug/l	< 1.0	< 1.0			

JOHN PEDNEAULT
Lab Director

Lab Number 30901

102323

PEDNEAULT ASSOCIATES, INC.

Ref. 13
12 of 24

FRIDAY - MARCH 15, 1985

3:30 P. M.

WEATHER:	Temperature	45°-48° F
	Wind	Windy
	Sunny	

Methane Test Points:	Point A	0.8% methane
	Point B	0.1% methane
	Point C	1.5% methane
	Point D	0.2% methane
	Point E	74% methane
	Point F	3.5% methane
	Point G	<0.1% methane
	Point H	<0.1% methane
	Point I	3.1% methane
	Point J	< 0.1% methane

Lab. # 30901

John Pedneault

Laboratory Director

Ref. 13
13, F24

PEDNEAULT ASSOCIATES, INC. TESTING LABORATORIES
1615 NINTH AVENUE · P.O. BOX 205 · BOHEMIA, N.Y. 11716 · (516) 467-8477
AFTER 5 P.M. (516) 567-5579

TO: Gatsby's Landing - Data Base

Date: Collected 3/15/85 Analyzed ..... Report .....

Sampling Point

1. Methane Test Point A
2. Methane Test Point B
3. Methane Test Point C
4. Methane Test Point D
5. Methane Test Point E

Parameters		1	2	3	4	5
1,1,1 Trichloroethane	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethylene	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2 Trichloroethylene	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1 Dichloroethane	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2 Dichloropropane	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroform	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methylene Chloride	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Xylene	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichlorobenzene	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

JOHN PEDNEAULT
Lab Director

Lab Number 30901

102325

Ref. 13
14 of 24

PEDNEAULT ASSOCIATES, INC. TESTING LABORATORIES
1615 NINTH AVENUE · P.O. BOX 205 · BOHEMIA, N.Y. 11716 · (516) 467-8477
AFTER 5 P.M. (516) 567-5579

TO: Gatsby's Landing - Data Base

Date: Collected 3/15/85 Analyzed ..... Report .....

Sampling Point

1. Methane Test Point F
2. Methane Test Point G
3. Methane Test Point H
4. Methane Test Point I
5. Methane Test Point J

Parameters		1	2	3	4	5
1,1,1 Trichloroethane	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethylene	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2 Trichloroethylene	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1 Dichloroethane	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2 Dichloropropane	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroform	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methylene Chloride	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Xylene	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichlorobenzene	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

JOHN PEDNEAULT
Lab Director

Lab Number 30901

102326

PEDNEAULT ASSOCIATES, INC.

Ref. 13
15 of 24

MONDAY - MARCH 11, 1985

11:00 A. M.

WEATHER:

Temperature	48° F
No Wind	
Sunny, Mild	

Methane Test Points:

Point A	0.25% methane
Point B	< 0.1% methane
Point C	< 0.1% methane
Point D	< 0.1% methane
Point E	90% methane
Point F	2.3% methane
Point G	< 0.1% methane
Point H	5.0% methane
Point I	0.25% methane
Point J	< 0.1% methane

Lab. # 30901

John Pedneault
Laboratory Director

Ref. 13
16 of 24

PEDNEAULT ASSOCIATES, INC. TESTING LABORATORIES
1615 NINTH AVENUE · P.O. BOX 205 · BOHEMIA, N.Y. 11716 · (516) 467-8477
AFTER 5 P.M. (516) 567-5579

TO: Gatsby's Landing - Data Base

Date: Collected 3/11/85 Analyzed ..... Report .....

Sampling Point

1. Methane Test Point A
2. Methane Test Point B
3. Methane Test Point C
4. Methane Test Point D
5. Methane Test Point E

Parameters		1	2	3	4	5
1,1,1 Trichloroethane	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethylene	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2 Trichloroethylene	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1 Dichloroethane	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2 Dichloropropane	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroform	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methylene Chloride	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Xylene	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	2.7
Dichlorobenzene	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

JOHN PEDNEAULT
Lab Director

Lab Number 30901

102328

Ref. B
17 of 24

PEDNEAULT ASSOCIATES, INC. TESTING LABORATORIES
1615 NINTH AVENUE · P.O. BOX 205 · BOHEMIA, N.Y. 11716 · (516) 467-8477
AFTER 5 P.M. (516) 567-5579

TO: Gatsby's Landing - Data Base

Date: Collected 3/11/85 **Analyzed** ..... **Report** .....

Sampling Point

1. Methane Test Point F
2. Methane Test Point G
3. Methane Test Point H
4. Methane Test Point I
5. Methane Test Point J

Parameters		1	2	3	4	5
1,1,1 Trichloroethane	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethylene	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2 Trichloroethylene	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1 Dichloroethane	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2 Dichloropropane	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroform	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methylene Chloride	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Xylene	ug/l	< 1.0	3.4	< 1.0	< 1.0	< 1.0
Dichlorobenzene	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

JOHN PEDNEAULT
Lab Director

Lab Number 30901

102329

PEDNEAULT ASSOCIATES, INC.

Ref. 13
18 of 24

SATURDAY - MARCH 9, 1985

12:00 NOON

WEATHER :

Temperature 61° F
No Wind
Sunny and Seasonal

Methane Test Points :

Point A	< 0.1% methane
Point B	< 0.1% methane
Point C	< 0.1% methane
Point D	< 0.1% methane
Point E	68% methane
Point F	< 0.1% methane
Point G (Vicinity of gate)	< 0.1% methane
Point H	6.0% methane
Point I	< 0.1% methane
Point J	< 0.1% methane

Lab. # 30901

John Pedneault
Laboratory Director

102330

Ref. 13
19 of 24

PEDNEAULT ASSOCIATES, INC. TESTING LABORATORIES
1615 NINTH AVENUE · P.O. BOX 205 · BOHEMIA, N.Y. 11716 · (516) 467-8477
AFTER 5 P.M. (516) 567-5579

TO: Gatsby's Landing - Data Base

Date: Collected 3/9/85 **Analyzed** ..... **Report** .....

Sampling Point

1. Methane Test Point A
2. Methane Test Point B
3. Methane Test Point C
4. Methane Test Point D
5. Methane Test Point E

Parameters		1	2	3	4	5
1,1,1 Trichloroethane	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethylene	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2 Trichloroethylene	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1 Dichloroethane	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2 Dichloropropane	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroform	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methylene Chloride	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Xylene	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichlorobenzene	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

JOHN PEDNEAULT
Lab Director

Lab Number 30901

102331

Ref. 13
20 of 24

PEDNEAULT ASSOCIATES, INC. TESTING LABORATORIES
1615 NINTH AVENUE · P.O. BOX 205 · BOHEMIA, N.Y. 11716 · (516) 467-8477
AFTER 5 P.M. (516) 567-5579

TO: Gatsby's Landing - Data Base

Date: Collected 3/9/85 Analyzed ..... Report .....

Sampling Point

1. Methane Test Point F
2. Methane Test Point G
3. Methane Test Point H
4. Methane Test Point I
5. Methane Test Point J

Parameters		1	2	3	4	5
1,1,1 Trichloroethane	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethylene	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2 Trichloroethylene	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1 Dichloroethane	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2 Dichloropropane	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroform	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methylene Chloride	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Xylene	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichlorobenzene	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

JOHN PEDNEAULT
Lab Director

Lab Number 30901

102332

Ref. 13
21 of 24

PEDNEAULT ASSOCIATES, INC. TESTING LABORATORIES
1615 NINTH AVENUE · P.O. BOX 205 · BOHEMIA, N.Y. 11716 · (516) 467-8477
AFTER 5 P.M. (516) 567-5579

June 24, 1985

TO: Village Green Realty at Garvies Point, Inc.
50 Glen Street
Glen Cove, NY 11542

RE: Gatsby's Landing - Glen Cove

Date: Collected 6/7/85 Analyzed 6/7-6/14/85 Report 6/24/85

Sampling Point

1. First Lake - East End (A)
2. First Lake - West End (B)
3. Second Lake - East End by Parking Lot (C)
4. Second Lake - West End by Parking Lot (D)
5.

Parameters		1	2	3	4	5
Turbidity	units	< 5	< 5	< 5	< 5	
Odor	units	0	0	0	0	
Color	units	< 5	< 5	< 5	< 5	
pH		7.2	7.2	7.2	7.2	
Nitrate	mg/l	0.1	0.1	0.1	0.1	
Nitrite	mg/l	< 0.007	< 0.007	0.007	0.007	
Ammonia	mg/l	0.032	0.044	0.005	0.117	
Fluoride	mg/l	0.03	0.03	0.08	0.08	
Chloride	mg/l	20.3	20.8	7.9	7.4	
Methylene Blue Active Substance	mg/l	< 0.05	< 0.05	< 0.05	< 0.05	
Sulfate	mg/l	50	50	100	96	
Total Alkalinity	mg/l	25	26	23	23	
Total Dissolved Solids	mg/l	106	100	154	22	
Calcium Hardness	mg/l	76	66	116	108	
Cyanide	mg/l	< 0.04	< 0.04	< 0.04	< 0.04	

JOHN PEDNEAULT
Lab Director

Lab Number 31862

102333

Ref. 13
22 of 24

PEDNEAULT ASSOCIATES, INC. TESTING LABORATORIES
1815 NINTH AVENUE · P.O. BOX 205 · BOHEMIA, N.Y. 11716 · (516) 467-8477
AFTER 5 P.M. (516) 567-5579

June 24, 1985

TO: Village Green Realty at Garvies Point, Inc.
50 Glen Street
Glen Cove, NY 11542

Re: Gatsby's Landing
Glen Cove

Date: Collected 6/7/85 Analyzed 6/7-6/14/85 Report 6/24/85

Sampling Point

1. First Lake - East End (A)
2. First Lake - West End (B)
3. Second Lake -East End by Parking Lot (C)
4. Second LaKE - West End by Parking Lot (D)
5.

Parameters		1	2	3	4	5
Silver	mg/l	< 0.02	< 0.02	< 0.02	< 0.02	
Arsenic	mg/l	< 0.01	< 0.01	< 0.01	< 0.01	
Barium	mg/l	< 0.05	< 0.05	< 0.05	< 0.05	
Cadmium	mg/l	< 0.001	< 0.001	< 0.001	< 0.001	
Chromium	mg/l	< 0.02	< 0.02	< 0.02	< 0.02	
Copper	mg/l	< 0.02	< 0.02	< 0.02	< 0.02	
Iron	mg/l	0.16	0.06	0.38	0.36	
Mercury	mg/l	< 0.001	< 0.001	< 0.001	< 0.001	
Manganese	mg/l	0.06	0.08	0.03	0.03	
Sodium	mg/l	6	7	14	13	
Lead	mg/l	< 0.01	< 0.01	< 0.01	< 0.01	
Selenium	mg/l	< 0.01	< 0.01	< 0.01	< 0.01	
Zinc	mg/l	< 0.02	< 0.02	< 0.02	< 0.02	

JOHN PEDNEAULT
Lab Director

Lab Number 31862

102334

PEDNEAULT ASSOCIATES, INC. TESTING LABORATORIES
1615 NINTH AVENUE · P.O. BOX 205 · BOHEMIA, N.Y. 11716 · (516) 467-8477
AFTER 5 P.M. (516) 567-5579

Ref. 13
23 of 24

June 24, 1985

TO: Village Green Realty at Garvies Point, Inc.
50 Glen Street
Glen Cove, NY. 11542

RE: Gatsby's Landing
Glen Cove

Date: Collected 6/7/85 Analyzed 6/7-6/14/85 Report 6/24/85

Sampling Point

1. First Lake - East End (A)
2. First Lake - West End (B)
3. Second Lake - East End by Parking Lot (C)
4. Second Lake - West End by Parking Lot (D)
5.

Parameters		1	2	3	4	5
1,1,1 Trichloroethane	ug/l	<1.0	<1.0	<1.0	<1.0	
Tetrachloroethylene	ug/l	<1.0	<1.0	<1.0	<1.0	
1,1,2 Trichloroethylene	ug/l	<1.0	<1.0	<1.0	<1.0	
1,1 Dichloroethane	ug/l	<1.0	<1.0	<1.0	<1.0	
1,2 Dichloropropane	ug/l	<1.0	<1.0	<1.0	<1.0	
Chloroform	ug/l	<1.0	<1.0	<1.0	<1.0	
Methylene Chloride	ug/l	<1.0	<1.0	<1.0	<1.0	
Vinyl Chloride	ug/l	<1.0	<1.0	<1.0	<1.0	
Benzene	ug/l	2.2	<1.0	<1.0	3.2	
Toluene	ug/l	2.3	<1.0	<1.0	2.7	
Xylene	ug/l	2.4	<1.0	<1.0	4.4	
Ortho Dichlorobenzene	ug/l	<1.0	<1.0	<1.0	<1.0	
Lead	ug/l	<10 10	<10	<10	<10	

JOHN PEDNEAULT
Lab Director

Lab Number 31862

102335

PEDNEAULT ASSOCIATES, INC.

Ref. 13
24.f24

FRIDAY - MARCH 8, 1985

3:00 P. M.

WEATHER:	Temperature	45°-50° F
	No Wind	
	Cloudy	

Methane Test Points:

Point A	0.2% methane
Point B	< 0.1% methane
Point C	< 0.1% methane
Point D	0.2% methane
Point E	84% methane
Point F	2.4% methane
Point G	< 0.1% methane
Point H	6.0% methane
Point I	0.7% methane
Point J	< 0.1% methane

Lab. # 30901

John Pedneault

Laboratory Director

REFERENCE NO. 14

Ref. 14
1 of 56

Village Green Realty Site

CDM

Camp Dresser & McKee

102338

Ref 14
2 of 56

FIELD ACTIVITIES REPORT

GARVIES POINT CONDOMINIUMS
GARVIES POINT ROAD
CITY OF GLEN COVE, NASSAU COUNTY, NEW YORK

MARCH 1986

102339

Ref. 14
3. f56

GARVIES POINT CONDOMINIUMS
FIELD ACTIVITIES REPORT

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APPENDICES

Appendix A - Tables and Figures

Table 1 - Sample Descriptions
Table 2 - Summary of Well Measurements
Table 3 - Analytical Results Summary

Figure 1 - Site Map
Figure 2 - Sample Location Map
Figure 3 - Well Specifications
Figure 4 - Groundwater Contour Map

Appendix B - Drilling Logs

Appendix C - Laboratory Results

(CAA22/33)

Ref. 14
4 of 56

1.0 INTRODUCTION

Field activities were conducted at the Village Green Realty site in Glen Cove, New York from November 18-22 and 25-26, and December 13, 1985. This work was performed in response to a NYDEC request and included installing and sampling four monitoring wells, composite sampling from various depth intervals from four other boreholes, and shallow soil samples from twenty other locations. Figure 1 shows the site plan and Figure 2 shows the sample locations. Table 1 summarizes the samples. Weston Analytical Laboratories provided analytical services. A representative from the New York Department of Conservation (NYDEC) was on site for the field operations.

2.0 FIELD ACTIVITIES

2.1 Boreholes

Soil samples were taken from four boreholes on November 18 and 19, 1985. Table 1 includes a description of these samples. Composite samples from the borings were made by combining the contents of two or three consecutive split spoons. The sampling interval was 4 and 6 feet to allow for more efficient sampling, to adjust for poor spoon recoveries and to minimize cross-contamination. The original interval of 5 feet was not used at the approval of the NYDEC representative. A clean spoon was used for each interval. The spoons were 2 feet long and 2 inches in diameter. Spoons and sampling trowels were cleaned with alconox and water, rinsed with tap water, then with methanol and finally with distilled water. After each hole, the drilling equipment was steam cleaned. Spoon contents were combined and mixed in a plastic bag. The contents of the bag were poured or scooped with a clean trowel into a sample jar. Trowels were decontaminated using the same method described for the split spoons. Boring logs for each of these boreholes are included in Appendix B.

At borehole B1, 18-inch long spoons were used along with the 24-inch long spoons. Boring was hindered by buried debris only at B1. Stones and pieces of wood also caused poor recovery, but sufficient soil was always available for each composite.

During drilling, no organics were detected by the HNu either in or above the holes. At boreholes B1 and B3, LEL levels greater than 0% were detected inside the hole, but not in the working area.

2.2 Well Installation and Groundwater Sampling

Four shallow monitoring wells each approximately 20 feet deep, were installed from November 20-22 and on November 25. CDM personnel supervised the well installation activities. Installation requirements regarding well depths and screen depth, were based on other wells and borings at the site. The previous drilling was done in conjunction with pre-construction activi-

ties. None of the old wells remain. The wells were installed as per NYDEC guidelines. See Figure 3. Well logs are included in Appendix B.

The first well drilled, CDM-3, was continuously spooned. Each of the other wells was spooned at 5-foot intervals. Few significant buried obstructions were encountered. Wells were set according to specifications with some minor deviations because of well depth at CDM-3. The specified depth of grout could not be achieved because of the shallow depth to the top of the screen. Adjustments were approved by the NYDEC representative.

Wells were developed by bailing approximately 40 gallons of water. CDM-1, CDM-2 and CDM-3 recovered quickly, but CDM-4 is very slow in recovering. Well casings and screens were steam cleaned prior to installation. Drilling equipment and sooons were steam cleaned between wells. The split spoon was rinsed with tap water between uses since no samples were being taken for analysis.

During drilling, no organics were detected by the HNu either in or above the hole. After well installation, the HNu probe was inserted into the headspace of each well. CDM-3 showed 0 ppm, CDM-1 and -2 showed 1-4 ppm, and CDM-4 showed 16-20 ppm. Above CDM-1, -2, and -3, the readings were 0 ppm in the breathing zones. Thus, CDM-1, -2, and -3 were sampled at Level D and CDM-4 was sampled at Level C.

Each well was sampled using a bottom-loading, stainless-steel bailer that was dedicated for the well. The bailers were rinsed with distilled water before use. After evacuating three well volumes from each well with the bailer, the necessary samples were obtained.

Samples were carefully poured from the bailer into clean sample bottles or screw-cap vials avoiding turbulence, which might result in loss of volatile organics and/or excessive oxygenation of the samples. The samples were preserved as indicated below. Nitric acid and sodium hydroxide were added to the appropriate sample containers prior to shipment.

Specified Analysis	Container	Volume (#of containers)	Preservative
1) Volatile Organics (HSL priority pollutants)	VOA vial	(2) 40ml	Cool, $4^{o}C$
2) Extractable Organics (HSL priority pollutants No Pesticides/PCB)	Amber glass	(2) 1 liter	Cool, $4^{o}C$
3) Heavy Metals (HSL priority pollutants)	Plastic	(1) 1 liter	HNO_3 (pH <2)
4) Cyanide	Plastic	(1) 1 liter	NaOH (pH >12)

As per instructions by the NYDEC, water from well development and bailing was contained in 55-gallon drums. One drum is located at each well. The drums for CDM-1, -2, and -3 are filled. The drum at CDM-4 is about half full. These drums are to be disposed of in an approved manner.

Water level measurements performed at these wells along with surveying information established the elevation of the water table at CDM-1, -2, -3 and -4 to be 2.85 feet, 9.10 feet, 9.17 feet, and 6.6 feet above mean sea level, respectively. This implies a groundwater flow toward the south or a mounding in the vicinity of the retention ponds. Elevations at CDM-1, -2 and -3 were based on a surveyed stake driven near each well. A line level and folding rule were used to transfer the elevation of the stake to the well. The elevation of CDM-4 is based on the top of the locking cap. Table 2 summarizes the water level measurements.

2.3 Shallow Soil Sampling

Shallow soil sampling took place from November 19-21. Shallow soil samples were taken by digging a hole about two feet in depth using a pick and shovel since the ground was too hard and rocky for hand augering. After

digging the hole, a clean trowel was used to scrape off material from one face. This was done to avoid cross-contamination from the pick and shovel. The sample was taken by scraping the clean face with the lip of the sample bottle or with the trowel and removing equal amounts of material along the depth of the face. Rocks and debris were excluded from the sample. One sample was taken using split spoon since it was located at a well point. Trowels were decontaminated using the same method for decontaminating the split spoons in Section 2.1. Table 1 provides a description of these samples.

3.0 ANALYSES

All analyses were performed to NYDEC specifications which follow U.S. Environmental Protection Agency (USEPA) protocol. Analyses for each sample were designated by the NYDEC. Soil samples from the borings were analyzed for Hazardous Substance List-Contract Laboratory Program (HSL-CLP) inorganics and pesticides/PCB's. Note the HSL-CLP inorganics includes analysis for cyanide. Aqueous samples from the monitoring wells were analyzed for HSL-CLP volatiles, base/neutral/acid extractables and inorganics. Pesticides/PCB's were not required for aqueous samples. Shallow soil samples were analyzed for HSL-CLP metals only. Table 1 also summarizes the analyses performed on each sample.

All duplicate samples were given unique numbers. Field blanks were identified as field blanks. Aqueous trip blanks were not identified as blanks. Soil blanks contained distilled water. Table 3 summarizes the results of the analyses. Only compounds detected in the samples are shown. The laboratory data sheets are included in Appendix C.

4.0 DISCUSSION

This discussion will be broken up into three parts: shallow soil samples results, deep boring sample results and groundwater results.

4.1 Shallow Soil Samples

Table 3 summarizes the results of the analyses; shallow soil samples were analyzed for HSL-CLP metals only. Because of the wide range of metals concentrations found in typical soils, an average concentration value for each metal was calculated from the concentrations of the discrete samples to provide a basis for comparison. The large number of samples involved justified the use of this approach. The individual samples were then compared to the average and noted by frequency of a metal exceeding the average and the locations where these higher-than-average metals occur. The metals most frequently exceeding their average value are chromium, magnesium, nickel, potassium and silver. Chromium only varies slightly and appears to be evenly distributed. The second tabulation was to determine which locations contain the most individual metals exceeding the respective averages. Of the twenty sampling locations, six contain more than six metals whose values exceed the averages. They are S04(19), S10(14), S02(13), S11(10), S05(8), and S12(7). The value in parentheses is the number of metals above the average. The remaining locations contain five or fewer metals above the average. These locations are in two clusters. One contains S04 and S05 and is located at the west end of the property near Garvies Point Road. The second cluster contains the remaining four clusters and is centered around borehole B3. Samples B31 and B41 also contained high concentrations of metals.

Based on the shallow soil sample analyses and the borehole analyses (Section 4.2), elevated metal concentrations are limited to two areas and are near the surface.

4.2 Boreholes

Samples from the four boreholes were analyzed for pesticides/PCB's, metals and cyanide. There is no consistent pattern for the vertical metal concentration profiles for the boreholes. Concentrations generally decrease with depth, although B1 has an increasing, then decreasing pattern, while B4 has a decreasing, then increasing pattern. Many metal concentrations are constant or always below the detection limit. Cyanide was not detected. The data indicates that the high metal concentrations are primarily in the upper layers of the site. The samples from the first intervals are similar

to the averages of the shallow samples. Samples B31 and B41, the first interval for the respective boreholes, have the most number of metals species exceeding the shallow soil average.

Aroclor 1248 was detected at "J" levels in all but two borehole samples. The symbol "J" means below detection levels. The value decreased with depth, or increased prior to decreasing. Some pesticidal compounds, particularly 4-4' DDD and chlordane were detected at "J" concentration levels. The highest Aroclor 1248 value was 1600J microgram/kilogram in B12. The highest pesticidal compound was 3000J microgram/kilogram chlordane in B12. Insufficient blank volume did not permit running blank analyses for these samples.

4.3 Groundwater

The boring operations re-emphasized the complexity of the surface geology at the site. Various layers of sand, clay and fill were encountered with little agreement of stratigraphy among the boreholes. A water level contour map was developed based on the four wells installed at the site. Figure 4 shows the contour map and Table 2 shows the water level measurements used to develop the map. The groundwater flows in a southerly direction across the site. The retention ponds may also effect the subsurface hydraulics. A buried stream located at the east end of the site appears to influence the flow of groundwater in that area.

Organic compounds were detected in all four wells, however, CDM-2 has the highest concentrations. Samples from this well contain detectable concentration of 17 organic compounds. The remaining wells contain concentrations of organics below detection limits or which were found in blank samples. Table 3 summarized the results. For example, CDM-1 contains detectable concentrations of tetrachloroethene, chlorobenzene and 1,4-dichlorobenzene. CDM-3 contains no detectable concentrations of organic compounds. CDM-4 contains detectable concentrations of benzene, phenol and bis(2-ethylhexyl) phthalate. These wells also contain unidentified compounds in detectable but unquantifiable concentrations. CDM-4 contains a large variety of these unidentifiable compounds. Compounds also

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detected in the blank samples are not included above.

CDM-2 contains several organic compounds; chloroform, and chlorobenzene are found in the highest concentrations, 6400 ug/l and 400 ug/l, respectively. Other compounds, principally chlorinated compounds, are present in concentration less than 100 ug/l.

The origin of these organic compounds appears to be from an off-site source. This is based on southerly flow of groundwater, the close proximity of CDM-2 to the property line and low organic concentrations found in the other three wells. Complex surface geology may account for the low concentration in CDM-1, such that flow originating from the area of CDM-2 may by-pass CDM-1.

The metal concentrations in the groundwater samples show a different pattern. In general, the concentrations of the metals found in CDM-4 are substantially higher than those in CDM-1, -2 and -3. These metals are barium, calcium, chromium, copper, iron, lead, magnesium, mercury, nickel, potassium, sodium, vanadium and zinc. Arsenic also shows an increase, but poor spike recovery requires cautious use of this data. No cyanide was detected. This data, along with the soil metal data, indicates that the metals in the groundwater are originating from an on-site source.

A review of New York State GA groundwater quality standards shows that concentrations in CDM-2 exceed the standards for vinyl chloride, chloroform, carbon tetrachloride, trichloroethylene, benzene, dichlorobenzene, chromium, iron and lead. CDM-1 exceeds standards for dichlorobenzene, chromium, iron and lead. CDM-3 exceeds standards for iron and lead. CDM-4 exceeds standards for benzene, barium, cadmium, chromium, iron, lead, mercury and zinc. However, the use of groundwater in the immediate vicinity is limited. The site is adjacent to Glen Cove Creek so there are no groundwater users downgradient of the site. Further, the source of organics appears to be off-site and once the source is removed, the organics will slowly disappear with time. The metals originate from a large source which would be impractical to remove. A measurement of the amount of metals entering the stream is beyond the scope of this investigation.

5.0 CONCLUSIONS

5.1 Soil

The large volume of material at the site precludes excavation. Metals in the soil are of primary concern, but generally produce adverse health effects only with prolonged contact and ingestion. Thus, eliminating this contact and ingestion potential would provide adaquate protection. Plans for the site call for extensive building and paving a major portion of the area. Plans for the site also inlcude covering the remaining unpaved area with about one foot of clean fill, thus minimizing any contact with the original soil at the site. No groundwater is used from the site further reducing all routes of contact from metals in the soil.

PCB's are present but in very low concentrations. As described above, the complete covering of the site will eliminate contact with these compounds.

5.2 Groundwater

The groundwater contains concentrations of organics and metals exceeding New York GA groundwater standards. This water is not used for drinking so drinking water considerations do not apply. The organics appear to originate from off-site, so remediation must occur at the source. After the source is located and removed, the organics will slowly disappear with time. Note that the design of the building includes methods for venting gases evolved from the landfill away from the buildings. Thus, volatiles that may be released from the groundwater will be prevented from collecting within the buildings.

Metals originating from the site will flow into the stream. Impervious paving will reduce the amount of water percolating down through the fill. This will, in turn, reduce the amounts of metals leaching from the fill into the stream. However, the quantity of discharge and its potential impact cannot be fully evaluated at this time. The aquatic and non-aquatic vegetation along the creek show no signs of stress. Immediate action to correct the metals discharge does not appear to be warranted.

5.3 Summary

Although elevated levels of organic compounds and metals have been detected at the site, the planned design of the gas venting system and the final clean fill and a maintained pavement cover of the site should allow for environmentally safe habitation. The off-site orgánic source should be located and removed to eliminate the flow of organically contaminated groundwater onto the site. The metals leaving the site in the groundwater into the creek do not appear to be causing an adverse environmental impact, and the cover would further reduce metals into the creek by reducing rain water percolation through the fill.

TABLE 3

GARVIES POINT

ANALYTICAL RESULTS SUMMARY

a. Volatiles, Aqueous,
micrograms/liter

Compound	Sample Number		
	GW1	GW2	GW3
Chloromethane	u	3J	u
Vinyl Chloride	u	55	u
Chloroethane	u	7J	u
Methyl Chloride	4JB	190B	5B
Acetone	u	u	5JB
1,1 Dichloroethane	u	2J	u
1,1 Dichloroethane	u	20	u
Trans 1,2 Dichloroethane	3J	92	u
Chloroform	u	6400	u
1,2 Dichloroethane	u	4J	u
2-Butanone	u	2J	u
Carbon Tetrachloride	u	14	u
Bromodichloromethane	u	26	u
1,2 Dichloropropane	u	3J	u
Trans 1,3 Dichloropropane	u	1J	u
Trichloroethane	2J	25	u
Dibromochloromethane	u	6	u
1,1,2 Trichloroethane	u	1J	u
Benzene	u	6	u
Bromoform	u	1J	u
Tetrachloroethane	9	120	u
Toluene	u	3J	u

Chlorobenzene	6	400	u
Total Xylenes	u	22	u

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TABLE 3 (continued)

a. Volatiles, Aqueous,
micrograms/liter (continued)

Duplicate

Compound	Sample Number		
	GW4	GW5	GW6
Chloromethane	u	3J	u
Vinyl Chloride	u	57	u
Chloroethane	u	7J	u
Methyl Chloride	4JB	190B	7B
Acetone	20	u	3JB
1,1 Dichloroethane	u	4J	u
1,1 Dichloroethane	u	20	u
Trans 1,2 Dichloroethane	u	97	u
Chloroform	u	6300	u
1,2 Dichloroethane	u	4J	u
2-Butanone	3J	3J	u
Carbon Tetrachloride	u	17	u
Bromodichloromethane	u	32	u
1,2 Dichloropropane	u	4J	u
Trans 1,3 Dichloropropane	u	1J	u
Trichloroethane	u	33	u
Dibromochloromethane	u	6	u
1,1,2 Trichloroethane	u	1J	u
Benzene	5	9	u
Bromoform	u	1J	u
Tetrachloroethane	u	130	u
Toluene	u	5	1J
Chlorobenzene	u	400	u
Total Xylenes	u	23	u

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TABLE 3 (continued)

a. Volatiles, Aqueous,
micrograms/liter (continued)

Compound	Sample Number GW7
Chloromethane	u
Vinyl Chloride	u
Chloroethane	u
Methyl Chloride	11B
Acetone	13B
1,1 Dichloroethane	u
1,1 Dichloroethane	u
Trans 1,2 Dichloroethane	u
Chloroform	u
1,2 Dichloroethane	u
2-Butanone	3J
Carbon Tetrachloride	u
Bromodichloromethane	u
1,2 Dichloropropane	u
Trans 1,3 Dichloropropane	u
Trichloroethane	u
Dibromochloromethane	u
1,1,2 Trichloroethane	u
Benzene	5
Bromoform	u
Tetrachloroethane	u
Toluene	u
Chlorobenzene	u
Total Xylenes	u

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TABLE 3 (continued)

b. Base/Neutral/Extractable Organics, Aqueous, micrograms/liter

Compound	Sample Number			
	GW1	GW2	GW2 Dil	GW3
Phenol	u	u	u	u
bis (2-Chloroethyl) Ether	u	1.1J	u	u
1,3-Dichlorobenzene	4.8J	12	12J	u
1,4-Dichlorobenzene	11	40	42J	u
1,2-Dichlorobenzene	4.9J	110	120	u
4-Methylphenol	u	u	u	u
Benzoic Acid	u	u	u	u
1,2,4 Trichlorobenzene	5.1J	230	240	u
Naphthalene	u	u	u	u
Fluoranthene	u	u	u	u
Pyrene	u	u	u	u
bis (2-Ethylhexyl)Phthalate	6.9J	410	400	2.5J
Chrysene	u	u	u	u
Di-n-Octylphthalate	u	u	27J	u

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APPENDICES

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APPENDIX A

TABLES AND FIGURES

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TABLE 1

SAMPLE DESCRIPTIONS
11/18/85 - 11/26/85
GARVIES POINT

Sample Number(1)	Date, Time (hrs)	Analysis (2)	Description(3)
S01	11/19,1605	M	SSC by P&S, west end of w. ret. pond, dark fill
S02	11/20,0820	M	SSC by P&S, in square building, dark brn with blue material
S03	11/20,0850	M	SSC by P&S, east of Bldg. 11, tan sand with black soil
S04	11/20,0955	M	SSC by P&S, NW corner of property, light brown sand
S05	11/20,1105	M	SSC by P&S, between Bldgs. 10 & 11, dark fill
S06	11/20,1130	M	SSC by P&S, between Bldgs. 9 & 10, brown sandy fill
S07	11/20,1215	M	SSC by P&S, SW end of property, dark brown fill
S08	11/20,1345	M	SSC by P&S, between Bldgs. 7 & 8, dark and light brown sandy clay, some grey sand
S09	11/20,1415	M	SSC by P&S, from cut between Bldgs. 6 & 7, dark fill with grey putty-like material
S10	11/20,1600	M	SSC by P&S, South of Bldg. 6, dark fill with grey putty-like material
S11	11/20,1630	M	SSC by P&S, South of Bldg. 5, dark fill, some tan soil
S12	11/21,0825	M	SSC by P&S, from cut on NE side of Bldg. 5, light brown fill
S13	11/21,0915	M	SSC by P&S, South of Bldg. 4, dark brown fill

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TABLE 1 (Continued)

Sample Number(1)	Date, Time (hrs)	Analysis (2)	Description(3)
S14	11/21,1005	M	SSC by P&S, South of Bldg. 3, dark fill
S15	11/21,1100	M	SSC by P&S, between Bldgs. 2 & 3, dark brown fill
S16	11/21,1605	M	SSC by P&S, North of Bldg. 1, dark brown fill
S17	11/21,0830	M	SSC by Splitspoon, West of Main entrance, brown clayey fill
S18	11/21,1240	M	SSC by P&S, South side of E. ret. pond, dark brown fill
S19	11/21,1425	M	SSC by P&S, West end of E. ret. pond, dark brown fill
S20	11/21,1530	M	SSC by P&S, East end of W. ret. pond, dark brown fill
S21	11/20,1215	M	Duplicate of S07.
S22	11/21,0825	M	Duplicate of S12.
TB1	11/18	I,P	Trip blank. Water supplied by Weston.
TB2	11/19	I,P	Trip blank. Water supplied by Weston.
TB3	11/20	M	Trip blank. Water supplied by Weston.
TB4	11/21	M	Trip blank. Water supplied by Weston.
FB1	11/19	I,P	Field blank. Distilled water passed over clean split spoon.
FB2	11/21	M	Field blank. Distilled water passed over clean trowel.
B11	11/18,1330	I,P	From B1, comp 0'-6'.
B12	11/18,1415	I,P	From B1, comp. 7.5'-9'.

TABLE 1 (Continued)

Sample Number(1)	Date, Time (hrs)	Analysis (2)	Description(3)
B13	11/18,1450	I,P	From B1, comp. 10'-15.5'.
B21	11/19,0830	I,P	From B2, comp. 0'-6'.
B22	11/19,0900	I,P	From B2, comp. 6'-10'.
B23	11/19,0930	I,P	From B2, comp. 10'-14'.
B31	11/19,1100	I,P	From B3, comp. 0'-6'.
B32	11/19,1200	I,P	From B3, comp. 6'-12'.
B41	11/19,1310	I,P	From B4, comp. 0'-6'.
B42	11/19,1400	I,P	From B4, comp. 6'-12'.
B43	11/19,1530	I,P	From B4, comp. 12'-16'.
B24	11/19,0930	I,P	From B2, duplicate of B23.
GW1	11/26,1100	V,E,I	Well CDM-1.
GW2	11/26,1030	V,E,I	Well CDM-2.
GW3	11/26,1000	V,E,I	Well CDM-3.
GW4	11/26,1300	V,E,I	Well CDM-4.
GW5	11/26,1030	V,E,I	Duplicate, Well CDM-2.
GW6	11/26	V,E,I	Field blank. Distilled water through clean bailer.
GW7	11/26	V,E,I	Trip blank. Water supplied by Weston.
S12MS	11/21,0825	M	Matrix Spike, duplicate of S12.
S12MSD	11/21,0825	M	Matrix Spike Duplicate, duplicate of S12.
B21MS	11/19,0830	I,P	Matrix Spike, duplicate of B21.
B21MSD	11/19,0830	I,P	Matrix Spike Duplicate, duplicate of B21.

TABLE 1 (Continued)

Sample Number(1)	Date, Time (hrs)	Analysis (2)	Description(3)
GW2MS	11/26,1030	V,E,I	Matrix Spike, duplicate of GW2.
GW2MSD	11/26,1030	V,E,I	Matrix Spike Duplicate, duplicate of GW2.

Notes:

(1) All sample numbers were prefixed with "5113-XX", where "XX" is "SL" for soils and "GW" for aqueous samples.

(2) All analyses to follow HSL-CLP protocol
I = Inorganics, including cyanide
M = Metals only
V = Volatiles
E = Base/Neutral/Acid Extractables
P = Pesticides and PCB's

(3) P&S = Sample hole dug with pick and shovel
Comp = Composite sample
SSC = Shallow soil composite sample, 0-2 feet
Ret. = Retention

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TABLE 2

SUMMARY OF WELL MEASUREMENTS
GARVIES POINT

Well	TOC[1] El, Ft	11/25/85 0600 Depth to Water, Ft	11/25/85 0600 El, Ft	12/13/85 0730 Depth to Water, Ft	12/13/85 0730 El, Ft	12/13/85 1045 Depth to Water, Ft	12/13/85 1045 El, Ft
CDM-1	16.82	13.97	2.85	13.47	3.35	13.25	3.57
CDM-2	15.04	5.94	9.10	5.75	9.29	5.71	9.33
CDM-3	16.64	7.47	9.17	7.25	9.39	7.25	9.39
CDM-4	19.6	13.0	6.6	13.33	6.3	13.29	6.3
Blkhd[2]	14.05	11.50	2.55	15.84	-1.79	7.34	6.70

Notes:

(1) TOC1 - top of inner casing elevation.
(2) Top of bulkhead at west end of property. Depth to creek level.
(3) Elevations are above mean sea level.

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TABLE 3 (continued)

b. Base/Neutral/Extractable Organics, Aqueous, micrograms/liter (Continued)

Compound	Sample Number			
	GW4	GW5	GW6	GW7
Phenol	14	u	u	u
bis (2-Chloroethyl) Ether	u	u	u	u
1,3-Dichlorobenzene	u	9.3J	u	u
1,4-Dichlorobenzene	u	34	u	u
1,2-Dichlorobenzene	u	91	u	u
4-Methylphenol	2.9J	u	u	u
Benzoic Acid	40	u	u	u
1,2,4 Trichlorobenzene	u	220	u	u
Naphthalene	1.2J	u	u	u
Fluoranthene	2.1J	u	u	u
Pyrene	2.1J	u	u	u
bis (2-Ethylhexyl)Phthalate	11	410	400	2.5J
Chrysene	1.8J	u	u	u
Di-n-Octylphthalate	u	u		u

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TABLE 3 (continued)

c. Inorganic, Aqueous,
microgram/liter

Inorganic	Sample Number			
	GW1	GW2	GW3	GW4
Aluminum	52,000	60,000	13,000	64,000
Antimony	<60	<60	<60	<60
Arsenic	21R	<10R	<10R	86R
Berium	340	400	<200	1,500
Beryllium	5	11	5	11
Cadmium	<5	<5	<5	<5
Calcium	110,000	149,000	150,000	310,000
Chromium	87	130	27	310
Cobalt	260	160	<50	120
Copper	116	120	42	880
Iron	56,000	100,000	80,000	270,000
Lead	88	95	31	1,200
Magnesium	17,000	19,000	19,000	84,000
Manganese	110,000	8,000	8,000	6,000
Mercury	<0.5	<0.5	<0.5	3.8
Nickel	135	140	<40	230
Potassium	9,000	19,000	10,000	71,000
Selenium	<5R	<5R	<5R	<5R
Silver	<10R	<10R	<10R	<10R
Sodium	160,000	580,000	67,000	360,000
Thallium	<10	<10	<10	<10
Vanadium	91	180	<50	330
Zinc	473	610	280	7,100
Cyanide	<10	<10	<10	<10

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TABLE 3 (continued)

c. Inorganic, Aqueous,
microgram/liter (continued)

Inorganic	Sample Number		
	GW5	GW6	GW7
Aluminum	52,000	<200	<200
Antimony	<60	<60	<60
Arsenic	<10R	<10R	<10R
Barium	440	<200	<200
Beryllium	12	<5	5
Cadmium	<5	<5	<5
Calcium	43,000	<5000	<5000
Chromium	130	<10	<10
Cobalt	170	<50	<50
Copper	130	<25	<25
Iron	12,000	<100	<100
Lead	120	<5	<5
Magnesium	18,000	<5000	<5000
Manganese	9,000	20	20
Mercury	<0.5	<0.5	<0.5
Nickel	150	<40	<40
Potassium	19,000	<5000	<5000
Selenium	<5R	<5R	<5R
Silver	<10R	<10R	<10R
Sodium	560,000	<5000	<5000
Thallium	<10	<10	<10
Vanadium	210	<50	<50
Zinc	650	260	290
Cyanide	<10	<10	<10

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TABLE 3 (continued)

d. Inorganic Shallow Soil, milligram/kilogram

Inorganic	Sample Numbers						
	S01	S02	S03	S04	S05	S06	S07
Aluminum	5200	9400	6800	8800	7200	7200	4400
Antimony	<6	<6.3	14	340	340	<6	<6
Arsenic	1.7R	43	8.6	200	64	5.2	3.9
Barium	100	401	67	310	120	52	49
Beryllium	<0.5	<0.61	0.63	1.1	0.76	0.75	<0.5
Cadmium	0.69R	3.1	<0.85	11	2.8	0.58	1.1
Calcium	4700	17000	2500	15000	5500	1800	2200
Chromium	20R	51	22	33	34	25	22
Cobalt	8.4	17	18	43	22	14	10
Copper	100R	660	54	570	100	40	56
Iron	34000	178000	16000	67000	18800	14000	12000
Lead	250	940	91	700	190	62	98
Magnesium	1500	1800	1800	1400	1300	870	1400
Manganese	270	890	570	1900	1300	790	570
Mercury	<0.3	0.45	<0.3	2.1	<0.3	<0.3	<0.3
Nickel	18R	6.4	20	33	4.3	17	14
Potassium	1400	1200	970	1600	950	570	670
Selenium	<0.5	<0.63	<0.5	1.0	<0.5	<0.5	<0.5
Silver	1.5	3.7R	5.5R	14R	8.6R	2.1R	3.3R
Sodium	470	2000	330	3400	1400	380	290
Thallium	<5E	<10E	<10E	<11E	<11E	<11E	<11E
Vanadium	15	25	22	28	23	22	17
Zinc	8.8R	1700R	100R	1200R	190R	62R	120R
Cyanide	NR	NR	NR	NR	NR	NR	NR

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TABLE 3 (continued)

d. Inorganic, Shallow Soil, milligram/kilogram (Continued)

Inorganic	Sample Number					
	S08	S09	S10	S11	S12	S13
Aluminum	5900	5,400	19000	4400	7900	5000
Antimony	<6	6.5	7.1	<6	9.9	<6
Arsenic	3.1	11	8.3	3.4	3.7	2.4
Barium	79	37	240	100	90	67
Beryllium	1.2	0.95	1.1	0.93	1.4	0.80
Cadmium	0.77	1.1	5.9	1.3	<0.5	1.5
Calcium	5000	1200	28000	9700	3100	7000
Chromium	24	16	52	26	27	22
Cobalt	8.6	8.1	23	7.3	11	8.9
Copper	98	61	400	280	82	63
Iron	24000	8500	130000	15000	17000	13000
Lead	210	67	640	650	190	93
Magnesium	1800	1000	3600	2300	1900	3000
Manganese	500	400	1200	410	490	380
Mercury	<0.3	<0.3	<0.3	1.6	<0.3	<0.3
Nickel	18	10	56	35	24	15
Potassium	870	610	1300	<580	860	680
Selenium	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Silver	2.1R	7.40R	9.4R	8.3R	6.6R	R14
Sodium	670	250	3300	360	430	320
Thallium	<11E	<10E	<11E	<11E	<10E	E<10
Vanadium	23	18	41	19	27	20
Zinc	250R	83R	160R	290R	200R	R150
Cyanide	NR	NR	NR	NR	NR	NR

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TABLE 3 (continued)

d. Inorganic, Shallow Soil, milligram/kilogram (Continued)

Inorganic	Sample Number				
	S14	S15	S16	S17	S18
Aluminum	5100	6400	4900	6200	4800
Antimony	<6	<6	<6	<6	<6
Arsenic	3.0	6.9	5.4	3.0	3.0
Barium	59	75	69	37	46
Beryllium	<0.5	0.76	<0.5	0.67	0.68
Cadmium	1.7	2.0	1.4	<0.5	1.9
Calcium	3800	5600	7700	2100	6100
Chromium	21	23	20	19	16
Cobalt	8.4	12	8.8	7.8	6.1
Copper	69	82	74	26	42
Iron	15000	18000	17000	10000	14000
Lead	120	100	120	27	89
Magnesium	1900	2500	3200	1500	1900
Manganese	380	410	430	180	180
Mercury	<0.3	<0.3	<0.3	<0.3	<0.3
Nickel	17	22	24	12	11
Potassium	710	870	650	590	480
Selenium	<0.5	<0.5	<0.5	<0.5	<0.5
Silver	19R	5.3R	5.1R	<0.5R	0.7R
Sodium	320	420	400	260	380
Thallium	<10E	<11E	<10E	<10E	<10E
Vanadium	21	24	22	23	19
Zinc	130R	180R	350R	36R	110R
Cyanide	NR	NR	NR	NR	NR

102368

Ref. 14
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TABLE 3 (continued)

d. Inorganic, Shallow Soil, milligram/kilogram (Continued)

Inorganic	Sample Number			
	S19	S20	S21	S22
Aluminum	3600	3700	5000	6200
Antimony	<9	<6	<6	17
Arsenic	2.9	2.1	2.6	4.9
Barium	31	44	59	81
Beryllium	0.93	0.70	<0.5	0.71
Cadmium	<0.5	1.0	1.1	1.1
Calcium	4200	2200	4900	1900
Chromium	12	13	18	21
Cobalt	7.0	5.7	10	8.1
Copper	42	43	54	36
Iron	5300	12000	12000	13000
Lead	51	78	93	690
Magnesium	1700	1300	3300	1500
Manganese	160	220	390	210
Mercury	<0.3	<0.3	<0.3	<0.3
Nickel	9.8	11	13	16
Potassium	550	<500	690	680
Selenium	<0.5	<0.5	<0.5	<0.5
Silver	<0.5R	1.5R	5.9R	1.5R
Sodium	280	310	310	310
Thallium	<10E	<10E	<10E	<10E
Vanadium	18	16	17	24
Zinc	68R	100R	120R	160R
Cyanide	NR	NR	NR	NR

102369

Ref. 14
33.656

TABLE 3 (continued)

e. Inorganic, Borings, milligram/kilogram (Continued)

Inorganic	Sample Number		
	B11	B12	B13
Aluminum	8800	10000	3200
Antimony	<5.3R	7.8R	<5.6R
Arsenic	2.0R	9.2R	6.0R
Barium	59	91	38
Beryllium	<0.5	<0.76	<0.58
Cadmium	0.44R	0.53R	1.1R
Calcium	3100	8000	9100
Chromium	31R	64R	13R
Cobalt	8.2	11	<5.8
Copper	59R	76R	34R
Iron	18000	52000	11000
Lead	110	270	150
Magnesium	1300	1300	3100
Manganese	220	310	92
Mercury	0.40	<0.41	3.2
Nickel	17R	31R	9.9R
Potassium	<550	<760	<580
Selenium	<0.5	<0.5	<0.5
Silver	4.4	<1.6	<1.1
Sodium	470	900	300
Thallium	<5E	<5E	<5E
Vanadium	25	42	13
Zinc	94R	210R	110R
Cyanide	<1	<1.6	<1

Ref. 14
34 of 5

TABLE 3 (continued)

e. Inorganic, Borings, milligram/kilogram

Inorganic	Sample Number			
	B21	B22	B23	B24
Aluminum	9400	6700	6400	7600
Antimony	<6R	<6R	<6R	<6R
Arsenic	1.6R	6.7R	4.7R	4.9R
Barium	73	36	33	32
Beryllium	<0.5	0.62	<0.6	<0.6
Cadmium	0.63R	3.3R	1.2R	1.4R
Calcium	3000	5800	8100	30000
Chromium	31R	50R	26R	36R
Cobalt	14	7.5	<6.1	8.9
Copper	330R	77R	78R	120R
Iron	36000	15000	11000	14000
Lead	260	110	56	70
Magnesium	1200	1100	670	990
Manganese	410	120	<1.8	120
Mercury	3.2	0.4	<0.3	<0.3
Nickel	28R	8.0R	<4.9R	8.2R
Potassium	1400	1300	<610	1300
Selenium	<0.5	<0.5	<0.5	<0.5
Silver	1.1	7.1	3.0	4.5
Sodium	710	360	490	590
Thallium	<5E	<5E	<5E	<5E
Vanadium	22	21	22	22
Zinc	350R	110R	68R	90R
Cyanide	<1	<1	<1	<1

102371

Ref. 14
35 of 56

TABLE 3 (continued)

e. Inorganic, Borings, milligram/kilogram

Inorganic	Sample Number	
	B31	B32
Aluminum	8600	6100
Antimony	6.6R	<5.3R
Arsenic	3.2R	1.1R
Barium	320	23
Beryllium	<0.5	<0.5
Cadmium	6.3R	<0.26R
Calcium	9500	530
Chromium	170R	15R
Cobalt	17	<5.4
Copper	460R	11R
Iron	74000	14000
Lead	210	54
Magnesium	980	<300
Manganese	500	29
Mercury	<0.3	<0.28
Nickel	79R	7.1R
Potassium	890	<540
Selenium	<0.5	<0.5
Silver	7.5	<1
Sodium	1100	200
Thallium	<5E	<5E
Vanadium	140	21
Zinc	820R	33R
Cyanide	<1	<1

Ref. 14
36 of 56

TABLE 3 (continued)

e. Inorganic, Borings, milligram/kilogram (continued)

Inorganic	Sample Number		
	B41	B42	B43
Aluminum	11000	3300	5800
Antimony	<60R	<6R	<6R
Arsenic	6.7R	3.3R	1.6R
Barium	140	<25	29
Beryllium	<0.56	<0.6	<0.5
Cadmium	1.5R	0.36R	0.3R
Calcium	8400	1900	8300
Chromium	32R	11R	12R
Cobalt	12	<5	<5
Copper	150R	42R	28R
Iron	16000	7600	15000
Lead	360	110	54
Magnesium	1600	640	760
Manganese	280	51	92
Mercury	0.35	<0.3	<0.3
Nickel	42R	<5.1R	4.5R
Potassium	680	910	<560
Selenium	0.9	<0.5	<0.5
Silver	1.7	<1	<1
Sodium	730	200	770
Thallium	<5E	<5E	<5E
Vanadium	220	13	23
Zinc	530R	57R	220R
Cyanide	1.9	<1	<1

Ref. 14
37 of 56

TABLE 3 (continued)

f. Pesticides/PCB's, Borings, microgram/kilogram (Continued)

Compound	Sample Number			
	B32	B41	B42	B43
Alpha BHC	0.02J	U	U	U
Delta BHC	U	U	U	U
Gamma BHC (Lindane)	U	U	U	U
Aldrin	U	U	U	U
Dieldrin	U	U	U	U
4,4'-DDE	0.14J	39J	U	U
4,4'-DDD	0.94J	68J	2.9J	17J
Chlordane	U	93J	27J	5.6J
Aroclor 1248	U	270J	87J	33J

Ref. 14
35 of 56

TABLE 3 (continued)

f. Pesticides/PCB's, Borings, microgram/kilogram (Continued)

Compound	Sample Number			
	B22	B23	B24	B31
Alpha BHC	U	U	U	U
Delta BHC	U	0.42J	U	U
Aldrin	U	U	U	U
Dieldrin	U		U	U
4,4'-DDE	U	3.8J	U	15J
4,4'-DDD	8.4J	5.6J	7.5J	21J
Chlordane	87J	U	6.4J	20J
Aroclor 1248	230J	7J	16J	87J

TABLE 3 (continued)

f. Pesticides/PCB's, Borings, microgram/kilogram

Compound	Sample Number			
	B11	B12	B13	B21
Alpha BHC	U	U	U	U
Delta BHC	U	U	U	0.25J
Gamma BHC (Lindane)	U	U	U	U
Aldrin	U	60J	U	U
Dieldrin	U	68J	U	U
4,4'-DDE	U	U	U	U
4,4'-DDD	140	640J	40J	8J
Chlordane	23J	3000J	84J	U
Aroclor 1248	39J	1600J	82J	U

102375

Ref. 14
39 of 56

TABLE 3 (continued)

g. VOA Tentatively Identified Compounds

Compound	Sample	Scan Number	Estimated Concentration Microgram/Liter
None found	GW1	-	-
Chlorotoluene	GW2	1023	62J
None found	GW3	-	-
None found	GW4	-	-
Chlorotoluene	GW5	1021	82J

102376

Ref. 14
40.F56

TABLE 3 (continued)

g. BNA Tentatively Identified Compounds

Compound	Sample	Scan Number	Estimated Concentration Microgram/liter
Unknown	GW1	323	10J
Unknown	GW1	1920	43JB
Unknown	GW1	1939	7J
Unknown	GW1	2146	11J
Unknown	GW1	2199	8J
Unknown	GW1	1925	34JB
Unknown	GW2	321	13J
Chloromethyl benzene	GW2	449	20J
Unknown	GW2	672	27J
Trichlorobenzene	GW2	826	44J
Unknown	GW2	1923	40JB
Phthalate	GW2	2141	20J
Phthalate	GW2	2154	17J
Phthalate	GW2	2171	91J
Phthalate	GW2	2203	93J
Phthalate	GW2	2219	20J
Phthalate	GW2	2232	46J
Phthalate	GW2	2241	17J
Phthalate	GW2	2258	14J
Phthalate	GW2	2268	25J
Phthalate	GW2	2277	54J
Phthalate	GW2	2295	29J
Phthalate	GW2	2302	17J
Phthalate	GW2	2313	20J
Phthalate	GW2	2327	11J
Phthalate	GW2	2192	47J

102377

Ref. 14
41,F52

Unknown	GW3	1084	3J
Phthalate	GW3	1527	3J
Unknown	GW3	1610	3J
Sulfur	GW3	1648	7J
HC	GW3	1770	7J
Unknown	GW3	1786	7J

Ref. 14
42.FS6

TABLE 3 (continued)

g. BNA Tentatively Identified Compounds (Continued)

Compound	Sample	Scan Number	Estimated Concentration Microgram/liter
Unknown	GW3	1922	53BJ
Unknown	GW3	1927	43BJ
Unknown Amide	GW3	1941	7J
Unknown	GW3	2149	4J
Unknown	GW3	2200	12J
Unknown	GW3	2450	4J
Unknown	GW4	1243	22J
Org. Acid	GW4	1613	16J
Sulfur	GW4	1667	910J
Unknown	GW4	1921	25JB
Unknown	GW4	1925	15JB
Unknown	GW4	1940	16J
Unknown	GW4	2088	16J
Unknown	GW4	2102	15J
HC	GW4	2148	14J
HC	GW4	2273	28J
HC	GW4	2333	10J
HC	GW4	2391	35J
Unknown	GW4	2459	14J
Unknown	GW4	2500	14J
Unknown	GW4	2512	140J
Unknown, MW218	GW4	2526	46J
Unknown	GW4	2538	57J
Unknown	GW4	2552	84J
HC	GW4	2562	16J
Unknown	GW4	2586	18J

Ref, 14
43, PSG

Unknown	GW5	325	21J
C2 Benzene, INS	GW5	356	12J
Unknown	GW5	415	6J
Chloromethylbenzene, INS	GW5	450	20J
Unknown	GW5	596	5J
Chloro-C2-benzene, INS	GW5	616	5J

Ref. 14
44 of 56

TABLE 3 (continued)

g. BNA Tentatively Identified Compounds (Continued)

Compound	Sample	Scan Number	Estimated Concentration Microgram/liter
Unknown	GW5	672	26J
Unknown	GW5	732	4J
Trichlorobenzene, INS	GW5	825	41J
Trichlorobenzene, INS	GW5	1024	11J
Unknown	GW5	1283	8J
Unknown	GW5	1362	9J
Unknown	GW5	1451	5J
Unknown	GW5	1544	5J
Unknown	GW5	1610	5J
Unknown	GW5	1773	7J
Unknown	GW5	1786	5J
Unknown	GW5	1922	26JB
Unknown	GW5	1926	17JB
Unknown	GW5	2500	20J

102381

Ref. 14
45 of 5

TABLE 3 (continued)

h. Average Inorganic Soil Concentrations, milligram/kilogram

Inorganic	Shallow Soils (#)[1]	Borings (#)[2]
Aluminum	6477 (22)	7250 (12)
Antimony	105 (7)	7.2 (2)
Arsenic	17.8 (22)	4.3 (12)
Barium	100.6 (22)	79.7 (11)
Beryllium	0.88 (16)	0.62 (1)
Cadmium	2.1 (19)	1.55 (11)
Calcium	6818 (22)	8036 (12)
Chromium	24.4 (22)	40.9 (12)
Cobalt	12.0 (22)	11.4 (7)
Copper	138 (22)	105 (12)
Iron	30,164 (22)	23883 (12)
Lead	252 (22)	144.5 (12)
Magnesium	1930 (22)	1240 (11)
Manganese	556 (22)	218.5 (11)
Mercury	0.723 (3)	0.95 (5)
Nickel	18.5 (22)	24 (10)
Potassium	845 (20)	1080 (6)
Selenium	1.0 (1)	0.9 (1)
Silver	6.275 (20)	4.7 (6)
Sodium	754 (22)	570 (12)
Thallium	- (0)	- (0)
Vanadium	23 (22)	49 (12)
Zinc	262 (22)	311.8 (12)
Cyanide	NR (0)	1.55 (2)

(1) = Number of times metal was detected out of a maximum of 22

(2) = Number of times metal was detected out of a maximum of 12

(327/7)

102382

Ref. 14
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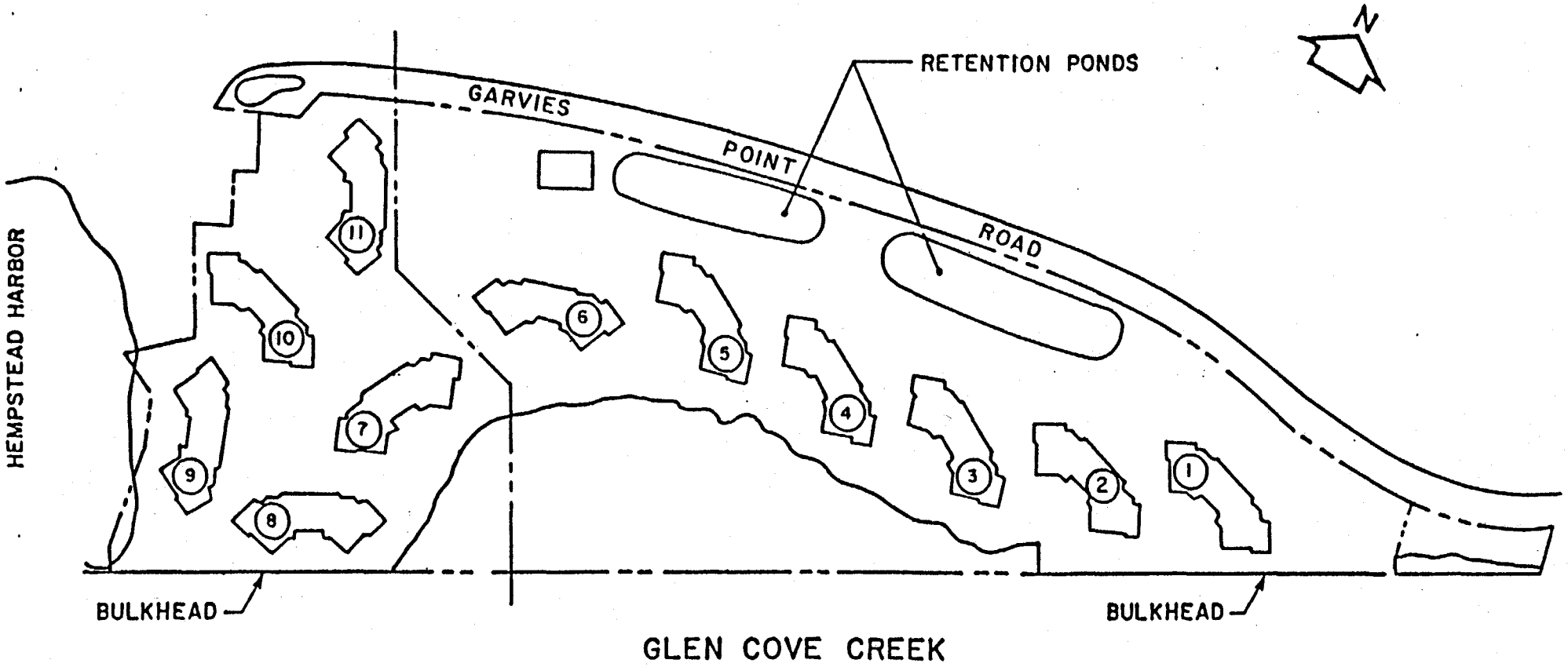
TABLE 3 (continued)

NOTES

U - Analyzed for but not detected
J - Present at less than detection limit
B - Analyte found in blank
E - Value estimated due to presence of interference
R - Sample spike recovery is not within control limits
NR - Analysis not required
INS - Isomer not specified

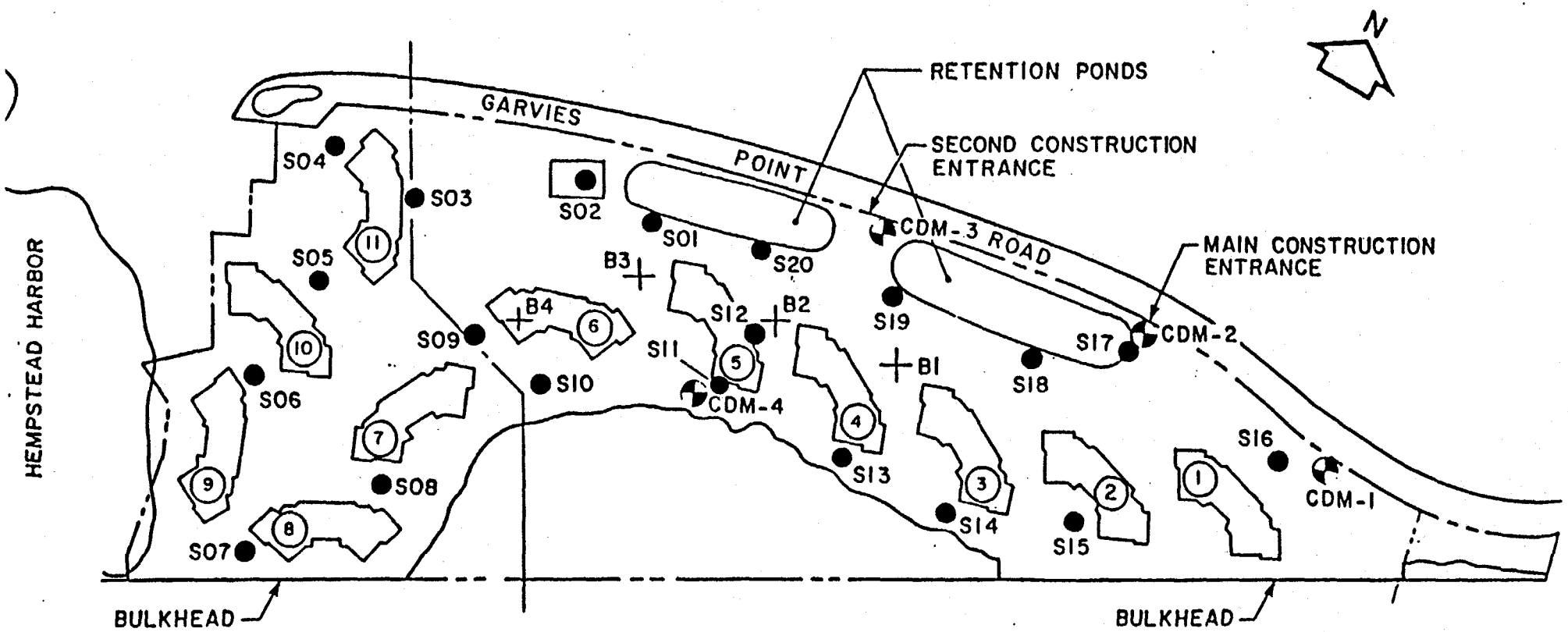
(327/7)



LEGEND:

— - - — PROPERTY LINE

~~~ SHORELINE

(#) BUILDING NUMBER AND PLANNED LOCATION

NOTE: BUILDINGS 1-6 ARE UNDER CONSTRUCTION

NOT TO SCALE

CDM

environmental engineers, scientists, planners & management consultants

102384

FIGURE 1

SITE MAP
GATSBY'S LANDING
VILLAGE GREEN REALTY
~~~



LEGEND:

- PROPERTY LINE
- SHORELINE
- WELL LOCATION
- 15' BOREHOLE LOCATION
- SHALLOW SOIL SAMPLE LOCATION
- (#) BUILDING NUMBER AND PLANNED LOCATION

NOTE: BUILDINGS 1-6 ARE UNDER CONSTRUCTION

NOT TO SCALE

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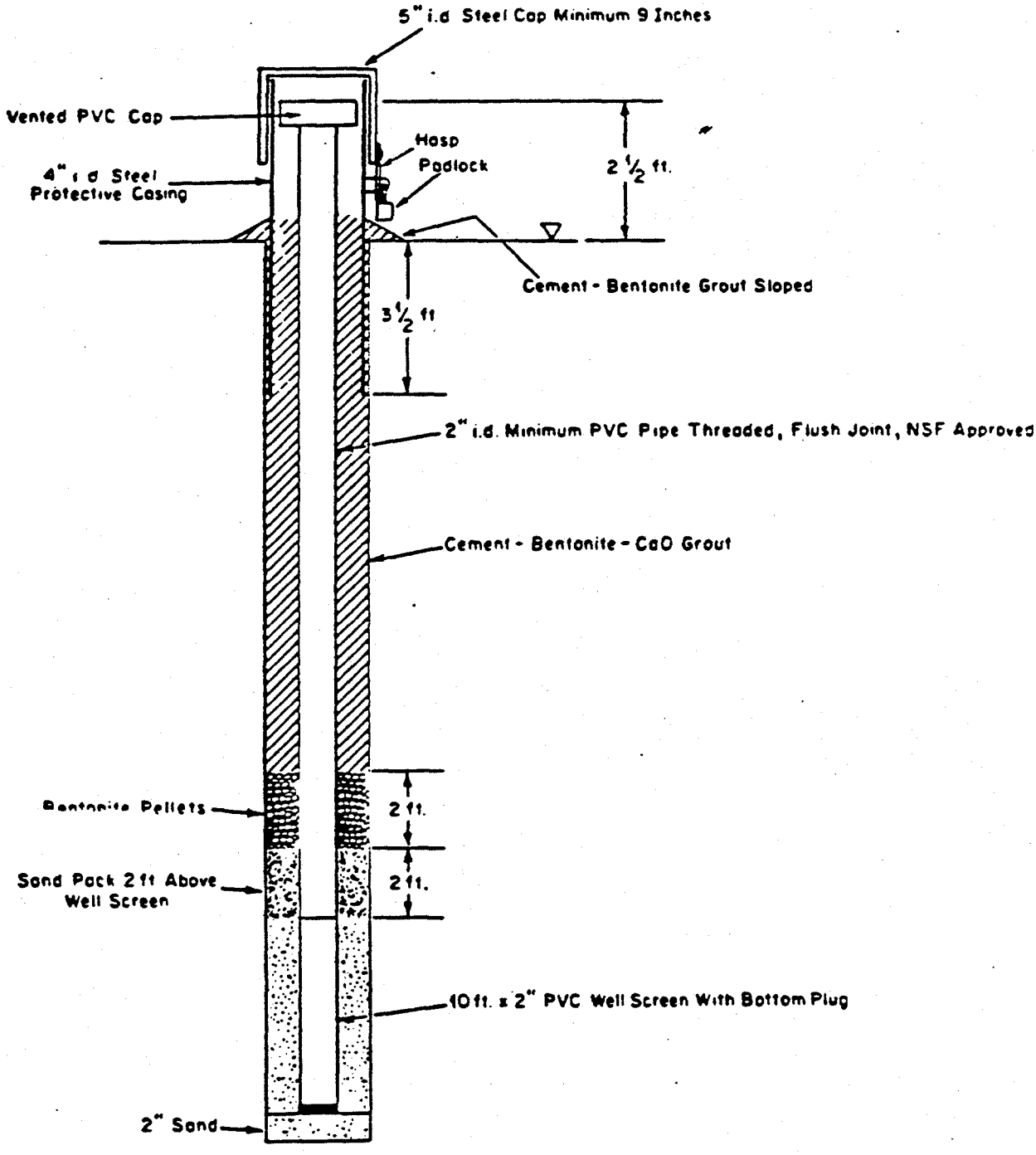
FIGURE 2

SAMPLE LOCATION MAP
GATSBY'S LANDING
VILLAGE GREEN REALTY

102385

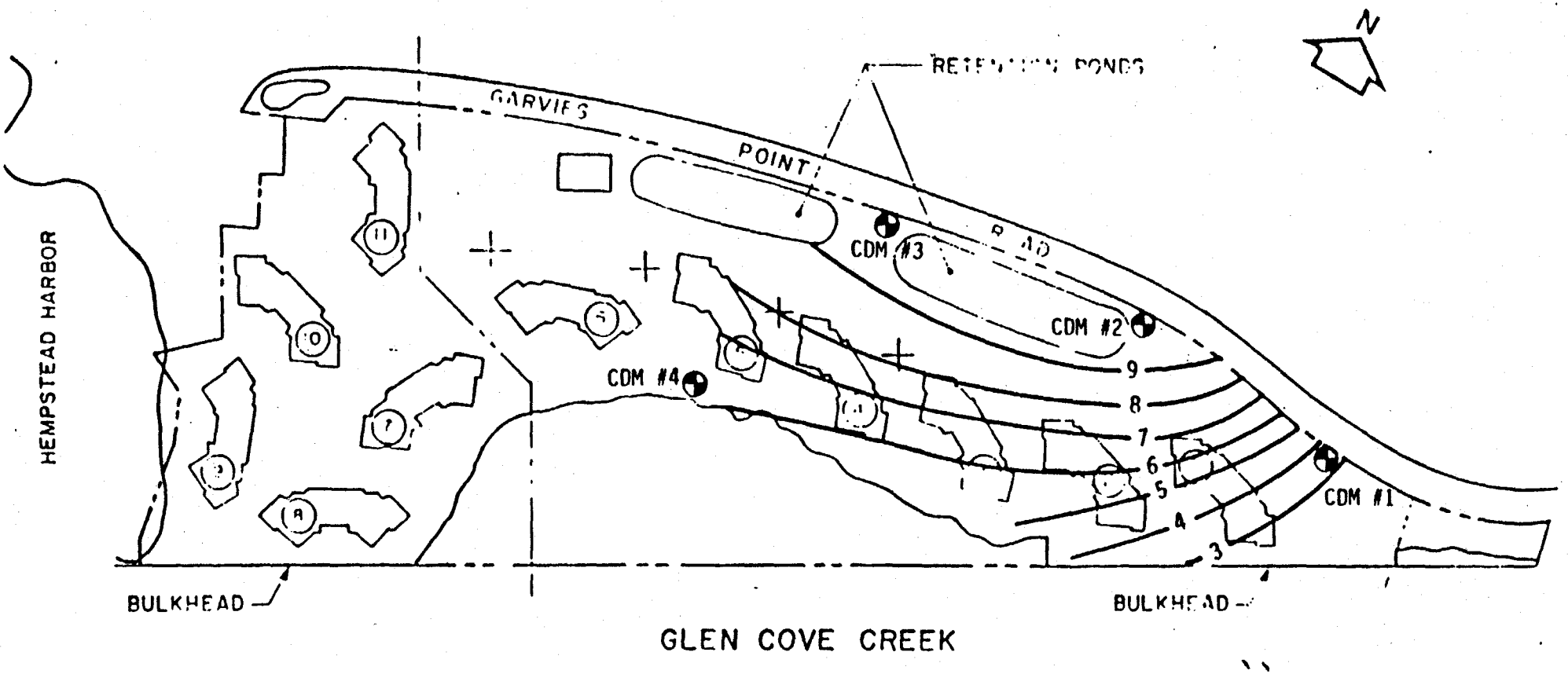


OVERBURDEN WELL

FIGURE 3

(From NYDEC Guidelines)

102386



LEGEND:

- PROPERTY LINE
- SHORELINE
- (#) BUILDING NUMBER AND PLANNED LOCATION
- 6 — GROUNDWATER CONTOUR WITH ELEVATION ABOVE MEAN SEA LEVEL, IN FEET

NOTE: BUILDINGS 1-6 ARE UNDER CONSTRUCTION

NOT TO SCALE

CDM

environmental engineers, scientists, planners & management consultants

FIGURE 4

GROUNDWATER CONTOUR MAP
GATSBY'S LANDING
VILLAGE GREEN REALTY

102387

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APPENDIX B

DRILLING LOGS

Ref. H
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Camp, Dresser & McKee, Inc. Raritan Plaza III, Raritan Center. Edison, New Jersey 0883

Soil Boring Log — Well Installation and Completion Dat

Client: Village Green Realty — Site: Garvies Point — Job No. 51134 — Surveyed Elevation: Ground

Date Drilled: 11/18/85 — Well No. B1 — Boring Co. Hydro Group — Top of Casing: N/A — Screen Length: N/A

Total Depth: 15.5' — Boring Method Used: Hollow Stem Augers — Piezometer Casing Size & Type: N/A

Field ~~Geologist~~ Engineer: J. Logan — Organic Vapor Instruments Used: HNU; GasTech explos. — Water Table Depth: 5'5

Depth (feet)	Samp. No.	Blows per 6" 140 lbs.	Sample Interval	Adv./Recov.	Org. Vap. - PPM	Sample Description	Strata Change	Equipment Installed
	1	4 5 15 17	0'-2'	2'/12"	0	Dark Brn sandy clay.		None
2.5	2 B1	3 6 4 3	2-4'	2'/4"	0	Little recovery		
5.0	3	2 1 22 6	4'-6'	2'/4"	0	Black sandy material, debris		
7.5	4 B2	4 5	6'-7.5'	1½'/ "	0	clayey/sandy black material, debris wet		
	5	1 17 30	7.5'-9'	2'/16"	0	clayey black material, debris saturated		
10.0	None	Spoon Refusal	9-10'	—	-	— Augered		
	6	3 40 Refusal	10'-11.5'	1½'/4"	0	Black sandy, saturated		
12.5	None	Refusal	11.5'-13'	—	-	No Recovery Augered, some debris	Fill	
	None		13'-14'	—	-	- Augered		
15.0	7 B3	2 5 20	14'-15.5'	15"/6"	0	Sandy with small pebbles	Native	
17.5								

Remarks: 18" spoon used after 6'

102390

54,856

Camp, Dresser & McKee, Inc. Raritan Plaza III, Raritan Center. Edison, New Jersey 08817

Soil Boring Log — Well Installation and Completion Data

Client: Village Green Realty — Site: Gurnes Point — Job No. 5113-1 — Surveyed Elevation: Ground ____

Date Drilled: 11/19/85 — Well No. B2 — Boring Co. Hydrogeo — Top of Casing N/A — Screen Length N/A

Total Depth: 14' — Boring Method Used: Hollow Stem Auger — Piezometer Casing Size & Type: N/A

Field ~~Geologist~~ Engineer: J. Logan — Organic Vapor Instruments Used: HNu ; Gastech explosimeter — Water Table Depth: 5'

Depth (feet)	Samp. No.	Blows per 6" 140 lbs.	Sample Interval	Adv./Recov.	Org. Vap. - PPM	Sample Description	Strata Change	Equipment Installed
	1	5, 11, 13, 14	0-2'	2'/16"	0	Black tan clayey sand with cinders		None
5	2 (B21)	2, 9, 5, 1	2'-4'	2'/12"	0	Light brn sandy silty with stones. Top 3' is clay		
0	3	2, 2, 2, 2	4'-6'	2'/9"	0	dark grey - black clayey silt, wet some wood		
5	4 (B22)	3, 13, 7, 3	6'-8'	2'/3"	0	Black clayey silt, some wood, wet		
	5	4, 2, 3, 6	8'-10'	2'/9"	0	Black clayey material - saturated some debris		
0	6 (B23)	3, 3, 7, 3	10'-12'	2'/4"	0	Top 8" - Black as above, with debris. bottom 4' - Brown Peat - clay w/roots	Fill	
5	7	3, 5, 6, 8	12'-14'	2'/12"	0	Black material as above and clay. some debris	Native	
0								

B21 Triplicated for MS and MSD

B23 duplicated as B24

Remarks:

102391

Ref. 14
55 of 5

Camp, Dresser & McKee, Inc. Raritan Plaza III, Raritan Center, Edison, New Jersey 08837

Soil Boring Log — Well Installation and Completion Data

Client: Village Green Realty Site: Games Point Job No. 5113-1 Surveyed Elevation: Ground ____

Date Drilled: 11/18/85 ~~Well~~ No. B3 Boring Co. Hydro Group Top of Casing: N/A Screen Length: N/A

Total Depth: 12' Boring Method Used: Hollow Stem Auger Piezometer Casing Size & Type: N/A

Field ~~Geologist~~ Engineer: J. Logan Organic Vapor Instruments Used: HNu; Gastech explosimeter Water Table Depth: 11'

Depth (feet)	Samp. No.	Blows per 6" 140 lbs.	Sample Interval	Adv./Recov.	Org. Vap. - PPM	Sample Description	Strata Change	Equipment Installed
	1	5, 7, 4, 13	0-2	2'/18"	0	Brown to dark brown silty sand, some glass, plastic		None
2.5	2 (B31)	7, 13, 7, 7	2'-4'	2'/14"	0	Top 5" - tan sand; bottom 9" - black sand with brick & glass		
5.0	3	3, 6, 6, 5	4'-6'	2'/12"	0	Tan to black sand and gravel, debris		
7.5	4	2, 4, 3, 3	6'-8'	2'/10"	Hi LEL - Hi HC 0	Coarse black sand and gravel - some tan sand intermixed.		
	5 (B32)	2, 2, 4, 5	8'-10'	2'/16"	0	Tan & brown sand, some black sand	Fill / Native	
10.0	6	5, 5, 6, 4	10'-12'	2'/18"	0	wet tan sand with some black sand		
12.5								

Remarks:

102392

Ref. 1

Camp, Dresser & McKee, Inc. Raritan Plaza III, Raritan Center. Edison, New Jersey 08817

Boring Log — Well Installation and Completion Data

Sheet 5 of

Client: Village Green Realty — Site: Garnet Point — Job No. 5113-1 — Surveyed Elevation: Ground ____

Date Drilled: 11/18/85 — Well No. B4 — Boring Co. Hydro Group — Top of Casing N/A — Screen Length N/A

Total Depth: 16' — Boring Method Used: Hollow Stem Auger — Piezometer Casing Size & Type N/A

Geologist/Engineer: J. Logan — Organic Vapor Instruments Used: HNu, Gastech explosimeter — Water Table Depth: 7'

Depth (feet)	Samp. No.	Blows per 6" 140 lbs.	Sample Interval	Adv./Recov.	Org. Vap. - PPM	Sample Description	Strata Change	Equipment Installed
	1		0'-2'	2'/18"	0	Top 8" Sm clayey sand brown; 12" blk-gry sand, wood, stones		None
5	2 (B41)		2'-4'	2'/12"	0	Black and tan sand, glass metal wood		
	3		4-6'	2'/1"	0	black, clayey, debris,		
5	4		6-8	2'/0	0	No recovery - clayey sand with debris, wet		
	5 (B42)		8-10	2'/8"	0	Black/gray sand, wet, some debris		
10	6		10-12	2'/24"	0	Blk/dark gray sand, wet Top 8" saturated.		
12.5	7 (B43)		12-14	2'/8"	0	12" blk gray sand, some glass, wet, some clam shells.	Fill / Native	
15.0	8		14-16	2'/12"	0	Top 6" clay bottom 6" tan sand with black sand, wet		
17.5								

Remarks:

102393

REFERENCE NO. 15

Ro.15
1 of 22

** PRELIMINARY WORKING DRAFT **

SUPPLEMENTARY PHASE II INVESTIGATION
WORK PLAN
GARVIES POINT CONDOMINIUMS
GARVIES POINT ROAD
GLEN COVE, NASSAU COUNTY

FEBRUARY 1987

Prepared By
RTP Environmental Associates, Inc.
and
Fanning, Phillips, and Molnar

Prepared For
Jack Parker Construction Corporation
Forest Hills, New York

DRAFT

102395

SUPPLEMENTARY PHASE II INVESTIGATION
WORK PLAN

JUN 29 1987

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1.0 INTRODUCTION

The Captain's Cove Condominium Site has been designed as a Phase II Site under the New York State Inactive Hazardous Waste Site Law. This designation indicates that hazardous materials have been detected on site and that remediation of these contaminants is necessary. In addition, the New York State Department of Conservation (DEC) has reviewed the previous Phase II Investigation Study conducted by the project owner and has determined that additional site investigations are necessary to fully characterize the impact of the site on its environs.

This work plan is intended to provide a monitoring and analysis protocol to address all DEC concerns. The project team that has been organized to design and conduct the additional studies include RTP Environmental Associates, Inc. and Fanning, Phillips and Molnar. The work plan is a document that provides a complete methodology for the collection and analysis of soil, water and air samples at the site. The DEC will review the work plan and provide an approval to proceed prior to the initiation of any proposed sampling/analysis efforts.

2.0 OBJECTIVE

The objective of the supplementary remedial investigation is to provide additional data on site characteristics and potentials regarding the characteristic, location, quantity and quality of any hazardous materials on-site. These data will be applied to a remedial investigation/feasibility study for the site and will be used in determining the appropriate approach to fully and safely remediate any potential hazards found.

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3.0 SITE RECONNAISSANCE, GEOPHYSICS, TEST BORINGS AND OBSERVATION WELLS

3.1 Site Reconnaissance

Site reconnaissance has been conducted by several groups including the DEC. Because of the nature of area, its former use as a municipal landfill and the significant amount of alteration that has occurred subsequently, the approach taken in this work plan will be to blanket the area with additional observation wells, soil borings and air samples to fully characterize the site.

3.2 Geophysics, Test Borings and Observation Wells

Lockwood, Kessler and Bartlett (March, 1985) have prepared an engineering report on the site. This report contains data on soil profiles across the site as well as other information on-site geophysics. Data is also presented on the test borings done on site. A Camp Dresser & McKee (CDM, 1986) report provides data on several groundwater wells, soil concentration profiles, metal concentrations and other site characterization data. These data have been used in developing the proposed supplementary sampling and analysis plan presented in the following section.

4.0 ADDITIONAL SAMPLING AND ANALYSIS

The following tasks are necessary to fully characterize the remaining site issues and are necessary for the preparation of an effective remediation plan. The tasks include the characterization of the upgradient and downgradient groundwater and soil quality, the interior soil ~~and air quality~~ soil gas and soil gas emmissio on the site, the geohydrology of the site and the characterization of Glen Cove Creek in the vicinity of the site.

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Five tasks have been defined. The discussion of each task provides the objective of the task, the methodology to be applied in attaining the objective and the rationale for why the task is necessary.

Task 1 - Downgradient Groundwater and Soil Quality

Objective: To characterize the contamination exiting the site into Glen Cove Creek.

Methodology:
- Install (7) new 2" downgradient border wells. CDM Well #4 will be retested.
- Sample soil at two depths (unsaturated and saturated) during well construction.
- Test for metals using Toxicity Characteristics Leachate Procedures (TCLP) in soils (6 foot composite), split sample and test for total metals in one-half of the borings. Test for volatile fraction of the Hazardous Substance List (HSL) (no composite).
- Test for metals listed in the TCLP procedure in groundwater, filtered and unfiltered.
- Test for volatile fraction of the HSL in groundwater.
- Test for conductivity, pH, COD, BOD, TOC and coliform in the groundwater.

Rationale: Downgradient wells will provide the necessary data to determine the quality of site affected subsurface groundwater migrating to Glen Cove Creek. If necessary, the quality of the upgradient wells will be measured and these data will enable a determination of the impact of this site on groundwater that eventually feeds Glen Cove Creek. The soil concentrations of metals will be compared to the TCLP standards. The groundwater concentrations will be compared to New York State groundwater standards for GA waters and if necessary, they will be used to develop a mass balance of the parameters entering Glen Cove Creek.

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Task 2 - Interior of the Site

Objective 1: To determine if soils identified in the CDM (1986) report with high metals content are leaching these metals into the groundwater.

Methodology:
- Install (5) shallow borings in the unsaturated fill at locations previously shown to have high metal content (Figure 1).
- Take continuous split spoon samples and composite samples over the six foot interval.
- Perform the TCLP procedure for metals only. In one-half of the samples perform a total extraction for metals.

Rationale: CDM had taken many soil samples all over the site and found several areas where metal concentrations were high. Those areas will be sampled and tested to determine if the metals are leaching through the soil and getting into the groundwater at concentrations that would be of concern. The concentration of metals will be compared to the TCLP standards. If significant, these data will be used in establishing the mass balance of materials exiting the site into Glen Cove Creek.

Objective 2: To determine the level of soil/gas contamination presently exiting the site to the atmosphere.

Methodology:
- Measure the volatile fraction of the HSL leaving site in air media via flux chambers at locations shown in Figure 2.
- Measure the volatile fraction of the HSL concentrations in the soil with soil gas probes at locations shown in Figure 2.

Rationale: The testing to be performed will quantify the soil gases presently at the site. These data will provide information on what is in the fill. In addition, the testing will enable the quantification of the exposure of future residents. The concentration of gas will be compared against New York State

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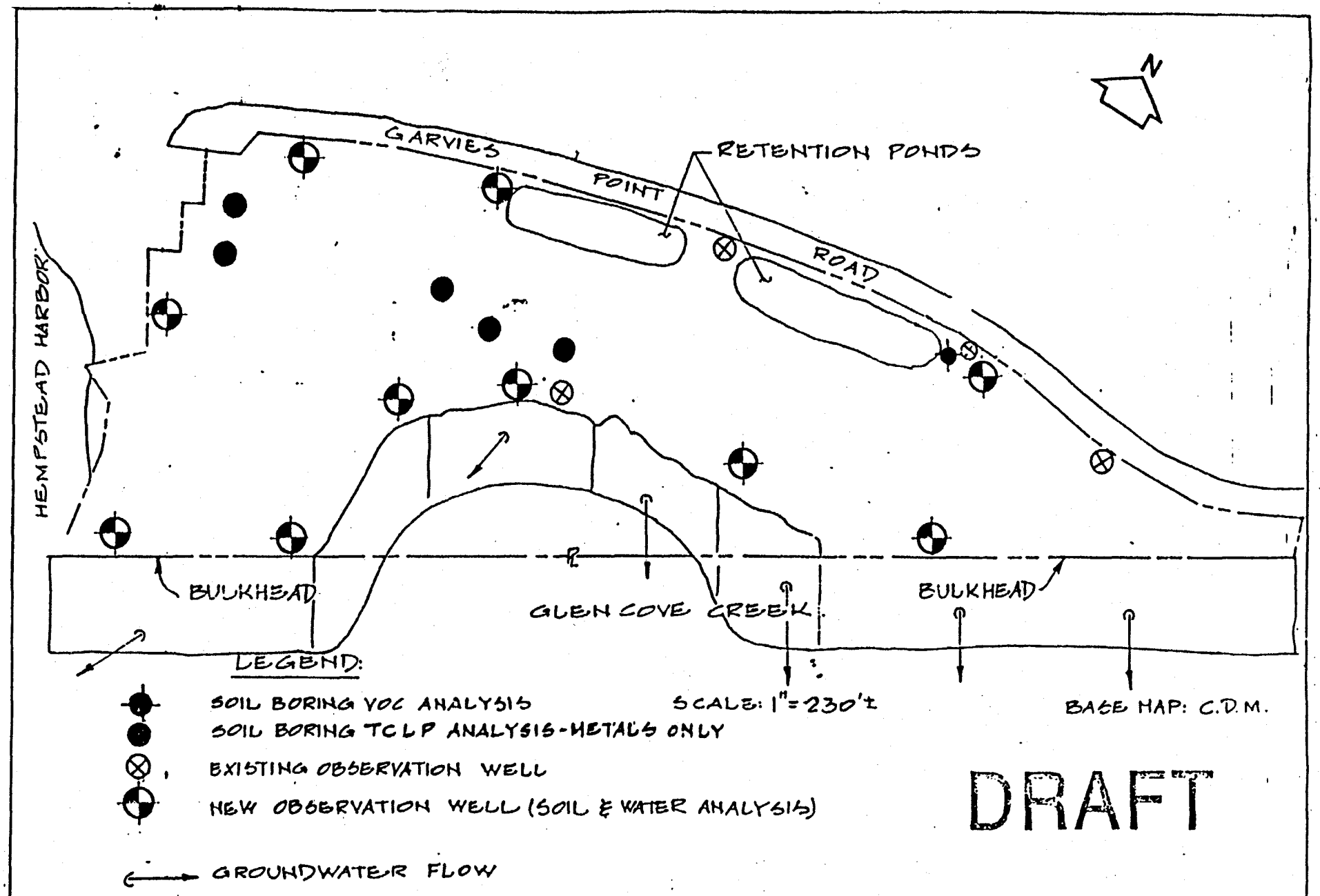
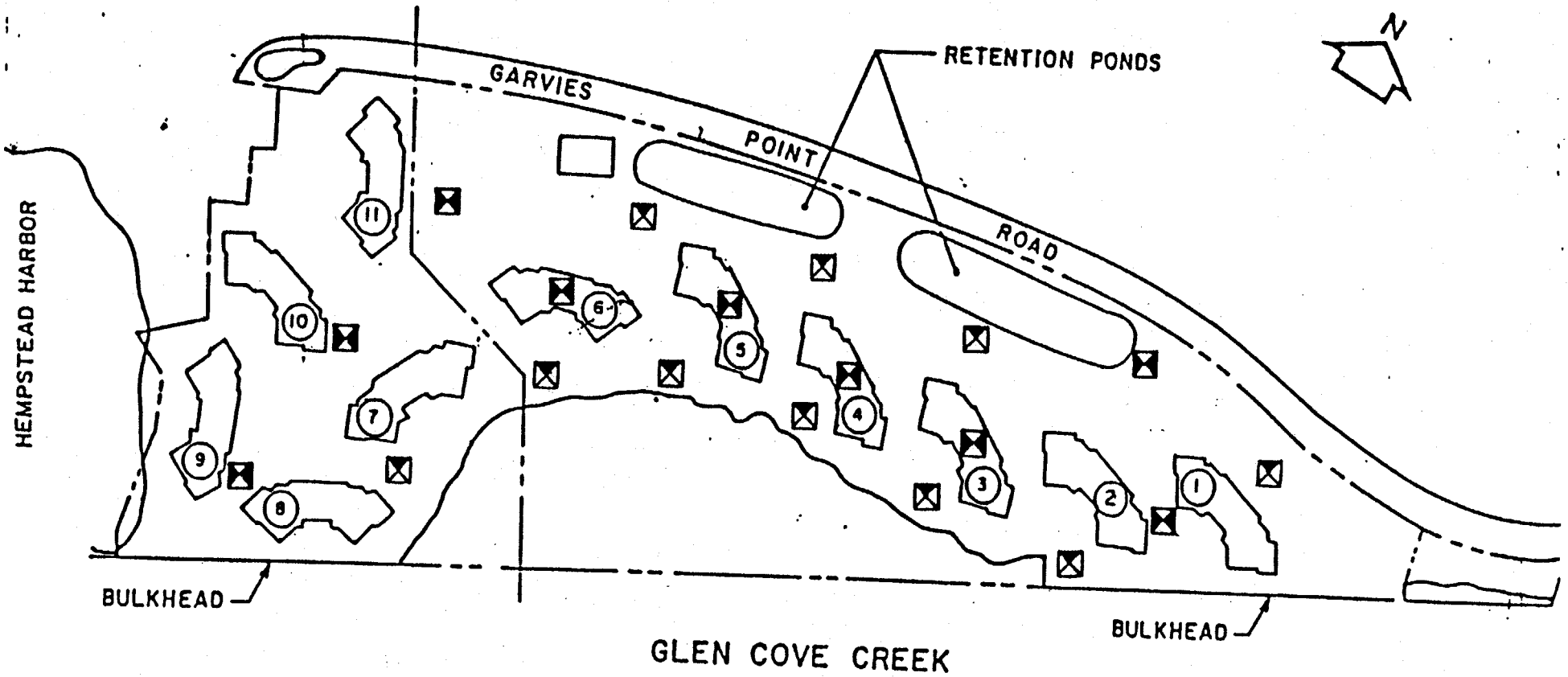


FIGURE 1- LOCATION OF PROPOSED ADDITIONAL OBSERVATION WELLS & SOIL BORINGS

F,P,M



LEGEND:

- PROPERTY LINE
- SHORELINE
- BUILDING NUMBER AND PLANNED LOCATION

NOTE: BUILDINGS 1-6 ARE UNDER CONSTRUCTION

Air Sampling Locations

- Flux Chamber and Vadose Zone (9)
- Vadose Zone Only (10)

NOT TO SCALE

FIGURE 2

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Air Quality Guidelines (AAL). These are annual exposure limits and therefore will provide a very conservative assessment. If significant, these data will then be used to determine what remedial measures will be necessary to assure the safety of future residents and the environment.

Task 3 - Upgradient Groundwater and Soil Quality

Objective 1: Determine if volatile fraction of the HSL contamination in groundwater in CDM Well #2 is coming from off site.

Methodology: Install (2) soil borings in unsaturated fill near CDM Well #2. Split spoon sample in the unsaturated zone and test for the volatile fraction of the HSL.

Rationale: If the soil directly above the groundwater is not contaminated, then the source of contamination is upgradient. If soil is contaminated with the source materials contained in the groundwater at CDM Well #2, investigate further.

Objective 2: Characterize the upgradient groundwater entering the site.

Methodology:
- Install (3) new upgradient wells along the site border (Figure 1). Leave CDM Wells #1 and #3 for additional sampling. Initially, exclude CDM Well #2 because it is screened below a peat layer.
- Sample soil at two depths (saturated and unsaturated).
- Test soil and water for the volatile fraction of the HSL. For soil, use new TCLP procedure for metals. In addition, in one half of the samples, split and perform a total extraction for metals.
- Test groundwater for metals prior to and after filtering.
- Composite six foot soil samples for metals analysis.

Rationale: These border wells will test the shallow groundwater and the soils directly above the groundwater. If the groundwater is

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contaminated and the soil is not, it can be concluded that contamination is coming from upgradient sources. If the soils are contaminated, further testing will be required to delineate the nature and extent of the contamination.

Task 4 - Geohydrology of the Site

Objective: To determine the quantative aspects of groundwater flow at the site.

Methodology:
- Level all wells.
- Record level of wells and prepare groundwater table contour map (two for high tide, two for low tide).
- Perform 8 hour pump test in 4" diameter well.
- Perform slug tests on four other 2" diameter wells.
- Prepare water balance for site to determine recharge through the site presently and after development.

Rationale: The hydrodynamics of this site are extremely complicated. The soil profiles are convoluted and are likely to act as a boundary to the flow system. However, the site can be segmented and a water balance performed using the above methodology, if necessary. This will enable an analysis of the quantity of water entering the site and the quantity of water leaving the site and hence in conjunction with Tasks 2, 3 and 5, it will be possible to prepare the mass balance of materials exiting the site.

Task 5 - Characterization of Glen Cove Creek

Objective: To sample Glen Cove Creek during low tide so as to ascertain the quality of creek water.

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Methodology: One hour before low tide, sample Glen Cove Creek at two transects, two locations on each transect, and at two depths 1/2 foot and 5 feet. Analysis to be performed includes:

- Salinity
- Conductivity
- Coliform
- VOC - (Volitile fraction of ASL)
- Metals (filtered) (TCLP only)
- COD
- TOC
- BOD

Rationale: Glen Cove Creek is the body of water that is affected most by materials from this site. The two transects will establish a snapshot of water quality during low tide conditions. This represents the most undiluted period for the Creek. A comparison of groundwater quality exiting the site (Task 1) to Glen Cove Creek water quality will then be performed. Tests at the surface and at five foot depths will be taken to insure stratification of water in the creek is not taking place.

The intent is to proceed with Task No. 1 through No. 6 in sequence; with the understanding that the results from each task could have a significant effect on subsequent tasks. If, for example, no contaminants are found to be leaching or otherwise being conveyed into the groundwater based on the first series of tests in Task 1, further analysis of the mass transport of contaminants via the water media will not be necessary. In such an event, the sampling and analysis will proceed to those portions of the sampling program required to address remaining questions concerning the site.

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5.0 BOREHOLES AND MONITORING WELL INSTALLATION

A hydrogeologist will supervise all boring and well installation activities. Supplementary to the existing four CDM Wells on-site, 10 additional monitoring wells will be installed for the collection of groundwater samples and for the completion of permeability testing. These additional monitoring wells will provide data for a more comprehensive site wide characterization of potential groundwater contamination on-site and will be used to develop full site groundwater contours, flow direction(s) and gradients at both high and low tide.

Testing borings will also be completed adjacent to the existing CDM Well #2 and in areas where the existing CDM test data indicated high metal levels (refer to Figure 1). The borings will provide additional information on the site's geology and stratigraphy.

5.1 Borehole Drilling

Boreholes will be advanced using a hollow stem auger technique to the required sampling depth. Split spoons will be used for sample collection. The sampling will be discussed in the next section. If obstructions are encountered, after five feet of depth, flush joint casing advancement and mud rotary methods or other acceptable methods will be used. If auger refusal is met before five feet, the location will be moved. If high concentration of flammable gases are encountered, mud rotary methods or other methods or other acceptable methods will be used.

5.2 Well Installation

The monitoring wells will be positioned in the unconsolidated deposits and installed in boreholes constructed using hollow stem augers, or alternatively, casing advancement and/or mud rotary methods. Construction

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and installation of these wells will follow DEC specifications for unconsolidated monitoring wells. These wells will be two inches in diameter and with a total depth and screened interval to be placed within the fill layer only. The wells will not penetrate the natural formation. Casing and screen materials will be Schedule 40 PVC. Threaded joints will be used. Bentonite will be used as the casing seal with a sand or gravel pack around the well screen. A 10 foot length of slotted screen will be set in the water bearing zone with 7 feet of the screen into the saturated zone and three feet in the unsaturated zone. A locking, shell protective outer casing will be installed, and the remaining annulus of the well will be sealed with grout.

Development water will be contained in drums and disposed of after sample analysis.

6.0 SAMPLING AND ANALYSIS

The sampling program consists of five phases: (1) The installation of two test borings adjacent to the existing CDM Well #2 to obtain soil samples from the unsaturated zone. (2) The installation of five test borings in the areas of high metal concentrations as outlined by the CDM (1986) report. Soil samples will be obtained from the unsaturated fill zone. Air quality sampling will be performed across the site. (3) During the monitoring well installation obtain two soil samples from the saturated and unsaturated zone of the fill. (4) Groundwater sampling of the nine monitoring wells. (5) Characterization of Glen Cove Creek.

6.1 Volatile Fraction of the HSL Test Borings

At one location adjacent to the existing CDM Well #2 (Figure 1), install one test boring to obtain a soil sample from the unsaturated zone to be analyzed for the presence of the volatile fraction of the HSL. The boring log for CDM Well #2 reports a four foot depth to water. Based upon this data, the

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proposed sample will be obtained from the unsaturated zone over a two foot increment from 1' - 3'.

6.2 Property Line Monitoring Well Installation

Three property line observation wells will be installed at locations as shown in Figure 1. These wells will be installed to characterize the upgradient groundwater entering the site. Additional water quality data from the existing CDM Wells #1 and #3 will be obtained by resampling. CDM Well #2 will be excluded initially from resampling, since it is screened below a peat layer. Filtered and unfiltered groundwater samples are to be obtained for metal analysis and unfiltered samples for the volatile fraction of the HSL analysis.

Soil samples are to be obtained from the unsaturated fill zone over a six foot composite increment from 0' - 6' depth. This composite sample is to be analyzed by the TCLP procedure for metals and for one-half of the samples a total extraction for metals will be performed. Soil samples to be analyzed for the volatile fraction of HSL will be selected based on the highest reading of a portable organic vapor analyzer. Composite volatile fraction of HSL samples cannot be obtained due to their volatile nature. The VOC sample obtained from the unsaturated zone from the well adjacent to CDM Well #2 will be used in conjunction with the VOC test boring to search for the point source of VOC contamination in the unsaturated zone in this area.

If the fill layer extends into the saturated zone, obtain a 6' soil sample composite (if possible) for TCLP procedure analysis and in one-half of the samples a total extraction for the same metals will be performed. Obtain one grab sample for VOC analysis. Note the depth of sample and sample location.

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6.3 Downgradient Monitoring Well Installation

Seven monitoring wells are to be installed in downgradient locations as shown in Figure 1. These wells will be installed to characterize the contamination existing on-site within the groundwater which eventually discharges into Glen Cove Creek and to obtain soil samples from the unsaturated fill and saturated fill, if present. Additional water quality data from CDM Well #4 will be obtained by resampling.

Unfiltered and filtered groundwater samples are to be obtained for metals analysis. Unfiltered samples will be obtained for VOC analysis. Soil samples will involve a six foot composite for TCLP and total metals analysis with one VOC grab sample obtained for analysis from the unsaturated fill zone. If the fill extends into the saturated zone, soil samples will be obtained from a split spoon (depth to be noted) and analyzed by the TCLP for metals only and for one-half of these sites a total metal extraction will be performed. These wells will also be analyzed for volatile compounds on the HSL.

Additional groundwater parameters to be analyzed in these downgradient wells will include specific conductivity, pH, COD, BOD, TOC and coliform.

6.4 Site Interior Test Boring Installation

Five interior soil borings are to be installed at the locations shown in Figure 1. The objective behind these test borings is to determine if the soils with high metals content as identified within the CDM (1986) report are leaching metals into the groundwater.

Composite samples over a 0' - 6' increment are to be obtained from the unsaturated fill zone and analyzed by the TCLP for metals only at one half of these site a total metal extraction will be performed. The rationale behind this sampling effort is explained in the Work Plan Summary.

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6.5 Site Geohydrology

The major objective of this section of the study is to determine the quantitative aspects of the groundwater flow. This will be accomplished by having the elevation of each well determined by a New York licensed land surveyor. The water levels of the wells will be measured over two sets of measurements at both high and low tides to produce a water table contour map for both tidal cycles. A water balance will be prepared for the site to determine recharge and outflow for the site under current conditions and after site development.

To determine the hydraulic conductivity of the site, four slug tests will be performed on four separate 2" wells. Additionally, a 4" diameter observation well may be installed and an eight hour pump test performed to determine the site hydraulic conductivity and storage coefficient.

6.6 Glen Cove Creek Characterization

The objective of this section is to sample Glen Cove Creek water during low tide to ascertain the quality of water in the Creek. This will be accomplished by obtaining water samples one-hour before low tide along two transcets at depths of 1/2 foot and 5 feet. Analyses to be performed include: salinity, specific conductivity, coliform, VOC, filtered metals, COD, TOC and BOD.

6.7 Groundwater Sampling

Dedicated stainless steel bailers will be used to collect samples. A nylon cord will be used to raise and lower bailers. The cord should not contact the water. The following procedure will be followed:

- Check the well for above ground damage.
- Remove the well cap.
- Measure and record the depth to water and the time of measurement.

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- Measure the total depth of the well.
- Remeasure and record the depth of water after a lapse of 4 to 8 minutes following initial measurement and record depth to water and time of measurement.
- If successive measurements show essentially no difference, continue the sampling procedure. Where the level change is greater than one foot per 100 feet, delay the remaining procedures until the change observed and recorded is less than that figure.
- Determine the volume of water in the well.
- Purge the well by either removing all the water from the well and allowing it to recover three times, or by removing the equivalent of three well volumes of water. Either of these procedures can be used and will be determined on the basis of geologic and/or hydrogeologic conditions. Bailers or pumps will be used for well purging. Suction hose used for evacuating the well must be discarded between wells. If a submersible pump is used for evacuation, it must be decontaminated between wells. Well purging equipment shall be cleaned as described later. Evacuated water will be collected and contained at the site until after sample analysis.
- Collect samples using a stainless steel bailer.
- Clean the sampler as described below immediately prior to inserting it into a well.
- The cable supporting the sampler should be prevented from coming contact with the water in the well. The bailer should not come in contact with any materials outside of the well casing. Clean gloves will be worn when handling a bailer and clean gloves will be required at each well location.

Samples will be carefully poured from the bailer into clean sample bottles or screw-cap vials avoiding turbulence, which might result in loss of volatile organics and/or excessive oxygenation of the samples. The sample

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bottles will be prepared with the appropriate preservatives prior to sampling as indicated below.

Specified Analysis	Medium	Container	Volume	Preservative
Volatile Organics	soil	VOA vial	(2) 40 ml	Cool, 4°C
Volatile Organics	water	VOA vial	(2) 40 ml	Cool, 4°C
TCLP Procedure-Metals	soil	glass jar	16 oz.	Cool, 4°C
Metals Total Extraction	soil	glass jar	16 oz.	Cool, 4°C
Metals Total Extraction	unfiltered water	plastic bottle	16 oz.	HNO_3
Metals Total Extraction	filtered water	plastic bottle	16 oz.	HNO^3

6.8 Decontamination

Decontamination is required to prevent cross-contamination of samples, to prevent the spread of contamination to other locations and to minimize contact by personnel with contaminants. Decontamination is required for sampling equipment, full sample containers and personal protection equipment. The equipment should be allowed to air-dry or be dried off with a clean cloth before reuse.

Large items, such as drill rig auger flights will be steam cleaned before a reuse.

Some items are to be discarded instead of decontaminated. The items include suction hoses used for evacuation of wells and nylon cords used for bailers. The choice of decontamination or discarding will depend on material, cost and size of the item.

In all cases, clean sampling equipment must be used for each sample station.

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6.9 Sampling Equipment

Decontamination of sampling equipment is required primarily to prevent cross contamination of other samples. Sampling equipment, such as trowels, bailers, hand augers, split spoons, etc. shall be cleaned in the following steps:

1) Removal of dirt or mud with a brush or cloth
2) Wash with soap (such as Alconox or Liquinox) and water
3) Rinse with tap water
4) Rinse with reagent-grade methanol
5) Rinse with distilled water

6.10 Sample Containers

The exterior of sample containers are often contaminated during sampling. To protect other personnel, such as sample manager or lab personnel, the containers should be cleaned immediately after they are brought in from the field. Containers should be washed with soap (such as Alconox or Liquinox) and water and rinsed with tap water. Containers should not be submerged in water to prevent wash/rinse water from leaking into the container.

6.11 Personal Protection Equipment

Personnel will generally wear disposable protective equipment. Outer gloves, such as butyls or vitons, should be washed with soap and water between sample. Boots should be decontaminated and removed before entering clean areas.

The drilling and sampling will be conducted with Class D personnel protection. If necessary, Class C protective equipment will be available to the field crew to assure the health and safety of on-site personnel.

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7.0 QUALITY ASSURANCE AND QUALITY CONTROL

Quality assurance and quality control will be the responsibility of all field and laboratory personnel that collect, handle, store or analyze samples. The appointed field manager will be responsible for establishing procedures to be followed by all personnel and will keep complete records of activities in field notebooks.

7.1 Samples Collected for Quality Control Purposes

The quality control program will require the collection of duplicate samples, samples for matrix spikes and the utilization of field blanks during the monitoring program. The proposed sampling program will include provisions for collecting the appropriate number of duplicate samples and utilizing field blanks as necessary to ensure quality control. These are discussed below.

7.2 Duplicate Samples

To provide an indication of analytical precision and accuracy, either five percent of all samples, or one of every twenty or less samples collected per day are to be collected in duplicate. Blind duplicate samples receive a sample identification number different from the actual sample location. Actual identification of blinds will be noted in the field notebook.

7.3 Travel Blanks

To monitor possible contamination of sample containers, distilled water blanks will be carried into the field. One blank is analyzed for each sample type (soil, groundwater) collected during each day of sampling. Blanks are to be analyzed for all parameters specified for the particular sample type during a particular field day. Blind blanks will receive a

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unique sample identification number. A complete set of travel blanks will accompany all water samples and soil samples on each day of sampling.

7.4 Field Blanks

To monitor possible contamination due to the sampling devices, field blank samples will be used. At the field location, distilled water is passed through cleaned sampling equipment and placed in sample containers for analysis. A set of field blanks will be supplied for each sample type.

7.5 Intralaboratory Splits

To evaluate laboratory quality, one sample in twenty of each type will be collected in duplicate. The duplicate will be sent to a different New York State contact laboratory. The results will be compared as to the consistency of parameters identified and to the level of concentration.

7.6 Interlaboratory Splits

To evaluate laboratory accuracy, one sample in twenty of each type will be collected in duplicate. The duplicate will be processed normally and will be identified as standard sample to the laboratory. Results will be compared as to the consistency of the parameters identified and to the level of concentration.

8.0 DATA REPORTING AND ANALYSIS

Data collected during the field monitoring program will be used to establish site conditions and in combination with the laboratory results to be furnished by the contract and quality control laboratories to identify site characteristics. These data will be evaluated to determine the nature and

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extent of hazardous materials that are on-site and to determine the effect of these materials on future site activities and the surrounding environment.

Depending on the quality and quantity of materials found, remediation alternatives will be assessed to comply with Inactive Hazardous Waste Site Remediation/Feasibility Study Guidelines. These data will, therefore, become an integral part of the ultimate remedial action to be taken for this site.

The data and analyses will be compiled into a revised Remedial Investigation/Feasibility Study document. This document will provide the information the DEC will need to ultimately select an acceptable remedial solution to the site and to establish a firm basis for a record of decision for the site.

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New York State Department of Environmental Conservation
50 Wolf Road, Albany, New York 12233-7010

Langdon Marsh
Commissioner

JUL 12 1994

Ms. Kathleen Callahan
Director
United States Environmental
Protection Agency, Region II
Emergency & Remedial Response
26 Federal Plaza
New York, NY 10278

Dear Ms. Callahan:

RE: CAPTAIN'S COVE - SITE #130032
GARVIES POINT RD., GLEN COVE(C)
NASSAU COUNTY, NEW YORK

Initially, Village Green Realty, the responsible party, executed a consent order with the Department to conduct a Remedial Investigation at the Captain's Cove site. However, during preliminary field investigations elevated levels of radioactive isotopes were found in the soil covering in the Captain's Cove site (a.k.a., Garvies Point). The presence of these isotopes has been traced to the disposal of radioactive waste originally from the Li Tungsten site.

At the time of these preliminary investigations (1989), Village Green Realty had already declared bankruptcy. After conducting a preliminary and Phase II Radiological Survey (enclosed), their funding was withdrawn by the overseer of the receivership. They still remain bankrupt at this time, and no additional investigation has been conducted since 1990.

In accordance with this Department's request of February 3, 1992, your Agency is currently exploring the appropriateness of listing this site on the National Priority List. At this time, NYSDEC feels it would be advantageous if your Agency would also evaluate the feasibility of removing all or selected portions of the radioactive wastes at the Captain's Cove site.

The NYSDEC, therefore, formally requests the EPA to take appropriate action under CERCLA and SARA to eliminate or abate any potential radioactive threats this site may pose to public safety and/or the environment.

Sincerely,

Michael J. O'Toole, Jr.
Director
Div. of Hazardous Waste Remediation

CM/dd
Sept25

c: G.A. Carlson, NYSDOH

Enclosure

bc: M. O'Teole(2)
C. Goddard
S. Ervolina
S. McCormick
R. Cowen
A. Shah
P. Merges
J. Lister
R. Rusinko

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RADIOLOGICAL SURVEY
PHASE II INVESTIGATION
GARVIES POINT
GLEN COVE, NEW YORK

DUPLICATE 6/5/90

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June 5, 1990

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1.0 INTRODUCTION

Environmental investigations at the Li Tungsten facility in Glen Cove, New York, have indicated that residual ore at the facility contains naturally occurring radionuclides such as thorium and uranium. These radionuclides are present in the ore naturally and were concentrated in the residual ore by the refining process. In April 1989, Fred C. Hart Associates, Inc. (HART) was notified of unsubstantiated allegations that some of the residual ore from the Li Tungsten operations may have been deposited at the nearby Garvies Point Condominium site, also in Glen Cove, while this site was operated as a municipal landfill. At the time of these allegations, HART was in the process of finalizing a Remedial Investigation Work Plan for the Garvies Point site for approval by the New York State Department of Environmental Conservation (NYSDEC).

In order to investigate these allegations, HART conducted a preliminary radiological survey (referred to as the Phase I Investigation in this document) at Garvies Point. The scope of this survey was described in the Radiological Survey Work Plan submitted to NYSDEC on June 1, 1989. The survey was conducted on a 100 by 100 foot system of grid points with a microR meter. This instrument measures real time radioactivity from the surface to a maximum depth of two feet. Samples were subsequently collected from three locations at the site where elevated readings were noted in the microR meter survey. HART prepared a report summarizing the results of the Phase I survey which was submitted to NYSDEC on November 27, 1989. For completeness, the results of the survey are also summarized in Section 2.1 in this report.

Based upon the results of the Phase I survey, a Phase II Radiological Survey was proposed by HART. The Phase II survey was designed to provide more detailed information on the horizontal and vertical extent of radionuclides at Garvies Point. The scope of the Phase II survey was outlined in the Radiological Survey Results report of November 23, 1989 and consisted of an aerial photograph review; a large area gamma ray survey on a 50 by 50 foot grid with an instrument capable of penetrating up to six feet of soil; and the excavation of trenches in background areas

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and areas of elevated gamma ray readings. The Phase II investigation was implemented at the site between January 23 and February 13, 1990. The results of the survey are provided in Sections 2.2 - 2.4 of this report.

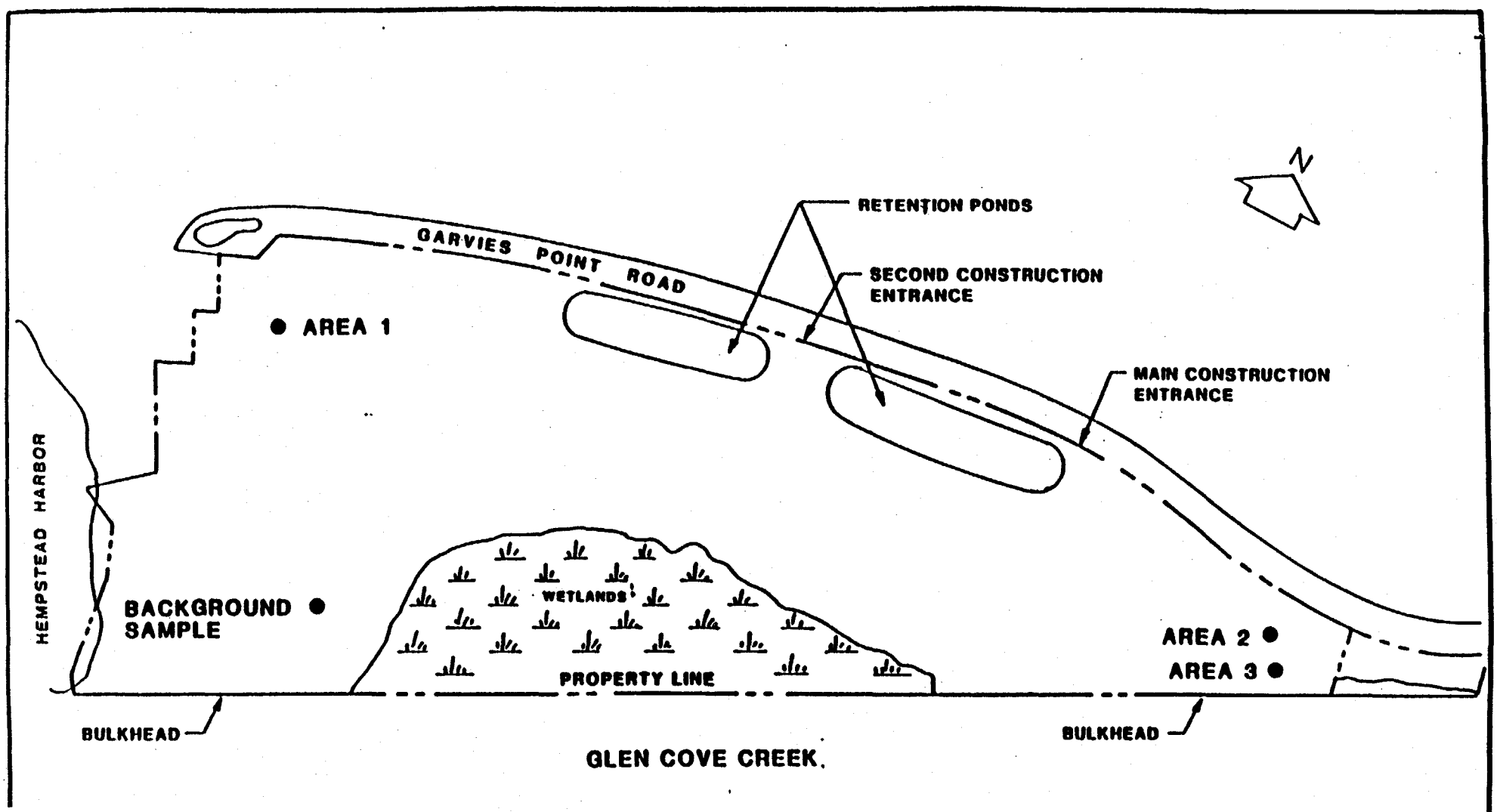
2.0 RADIOLOGICAL SURVEYS

2.1 Summary of Phase I Investigation

A field team consisting of two HART personnel and a certified health physicist performed the radiological survey on August 23, 1989. Initially, a 100 by 100 foot grid was established at the site by Baldwin and Cornelius, P.C. and HART personnel. Data was collected along the grid with two microR meters from two different manufacturers in order to verify measurements. A Geiger counter was not used because this instrument was not thought to be sensitive enough to measure the levels of radiation that were anticipated. The level of radiation was measured at each gridpoint at the ground surface and one meter above the surface. Any elevated readings between the grid points were also noted. The measurements and all relevant observations were recorded in a bound field notebook.

Agreement between the two different microR meters was excellent, indicating that the on-site measurements were accurate. Most of the site had radiation levels between 3 and 15 uR/hr as measured by the microR meters. These levels are within the normal background range of up to 20 uR/hr.

Three areas with measurements that exceeded site background were noted; the locations of these areas are shown in Figure 2-1. The area near the driveway (Area 1) had readings between 20 and 25 uR/hr. Although most of this area was covered with high grass, the highest measurements occurred in a 4 foot by 10 foot area of unvegetated soil. When digging below the surface in this area, readings up to 50 uR/hr were recorded at a depth of 6 to 18 inches. A sample for laboratory analysis was collected from this interval.



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SOURCE: CDM

FIGURE 2-1

APPROXIMATE LOCATIONS OF PHASE I SAMPLES

GARVIES POINT
GLEN COVE, NY

FRED C. HART ASSOCIATES, INC.

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Areas 2 and 3 were near each other but were not contiguous. Readings up to 60 uR/hr were recorded in Area 2 while Area 3 had readings up to 30 uR/hr. The elevated readings occurred in an approximately 10 foot diameter region at Area 2 and in an approximately 6 foot diameter region at Area 3. Similar to Area 1, readings increased below the surface in these two areas. A fairly discrete reddish clay-rich sand layer which had readings of 125 to 140 uR/hr was found in Area 2 at 6 to 10 inches below the surface. A sample for laboratory analysis was collected from this discrete clay layer. Readings at Area 3 increased from 30 uR/hr at the surface to 40 to 60 uR/hr about 10 inches below the surface. The entire interval was sampled for laboratory analysis.

In addition to the three samples collected from areas where above background levels of radionuclides were detected, one sample was collected at a grid point with background radiation levels for comparison. All samples were obtained by digging below the surface with a spade and filling a one liter glass jar. All samples were packaged in a cardboard box with styrofoam packing material and shipped to Recra Environmental, Inc. for analysis. The outside of the package was scanned with the microR meter at the time of shipment and no measurements above background were obtained. All soil samples were analyzed for gross alpha and gross beta radioactivity and the gamma spectrum of each sample was determined using a germanium detector.

The results of the radiological analyses are summarized in Table 2-1. The levels of radioactivity measured in the samples correlated qualitatively with the field measurements; i.e., the background sample had the lowest levels, and Area 2 had the highest levels.

Based upon the results of the Phase I radiological survey and the soil sample analyses, a Phase II radiological survey was proposed for the site. The purpose of the Phase II survey was to further characterize the vertical and lateral extent of radioactive materials. A smaller grid configuration and a different type of survey instrument were used to provide more detailed data. The Phase II survey included three tasks: an aerial photograph review, a large area gamma ray survey and a subsurface investigation.

TABLE 2-1

GARVIES POINT PHASE I RADIOLOGICAL SURVEY
ANALYTICAL RESULTS

Sample	Depth	Field Measure-ments (uR/hr)	Gross Alpha (PCi/g)	Gross Beta (PCi/g)	Gamma Spectra (pCi/g)									
					Tl-208	Pb-212	Bi-212	Pb-214	Bi-214	K-40	Ac-228	Th-227	Th-234	U-235
Background	Surface	3-15	4.8±2.8	12±4	0.5±0.1	1.1±0.2	1.3±0.2	1.2±0.2	1.1±0.2	15±2	2.8±0.3	0.8±0.3	2.8±0.8	0.3±0.1
Area 1	6-8 in	50	25±6	28± 5	1.9±0.2	4.9±0.5	8.7±0.9	10±1	8.0±0.8	15±2	13±2	2.6±0.7	19±2	1.2±0.2
Area 2	6-10 in	125-140	580±60	520±60	80±8	210±30	140±20	51±6	44±6	28±3	490±50	10±1	250±30	7.0±0.7
Area 3	0-10 in	30-60	200±20	140±20	8.4±0.9	23±3	15±2	51±6	41±5	16±3	51±6	12±2	100±10	7.1±0.8

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2.2 Phase II Aerial Photograph Review

2.2.1 Objective. The photographs were reviewed in order to determine the extent of landfilling at the site. This information was used to decide which areas of the site were to be investigated in greater detail during the large area gamma ray detector survey and trenching tasks.

2.2.2 Site History. The aerial photographs can be grouped into three periods, each of which is characterized by a different use of the Garvies Point Site. The earliest period is shown in the photographs taken in 1950 and 1955. During this time, the site was relatively dormant. Small boats and a building are visible near the southwest part of the site. There are several small trenches which appear to have been installed to facilitate drainage to Glen Cove Creek. Overall, the topography of the site does not appear to have been significantly altered by landfilling or other site activities. Although the U.S. Army Corps of Engineers (USACE) dredged Glen Cove Creek in 1933, 1934, and 1948, available records do not state whether this material was disposed at the site or elsewhere.

The first aerial photograph in which landfilling activities at Garvies Point are apparent is the 1962 photograph. However, since there are no aerial photographs from the period between 1955 and 1962, it is possible that landfilling activities started prior to 1962. Landfilling activities are also apparent in the photographs taken in 1966, 1969 and 1972. The most obvious change is the filling of a tidal embayment in the eastern part of the site. Other filling took place in the center of the site immediately north of the tidal flat, and east of the beach at the western end of the site. Dredge spoils from Glen Cove Creek are known to have been disposed of at the site by USACE in 1960 and 1965. The bulkhead at the mouth of Glen Cove Creek at the western end of the site was built between 1966 and 1969, although it may not have been its present height at that time. A photograph taken in 1978 appears to represent a period during which landfilling activities had stopped and vegetation was allowed to grow.

The most recent period of use is characterized by preparation for, and the start of, development of the site for use as a residential area. This

use is illustrated in the photographs taken in 1984, 1986 and 1989. During this time, the major site features which are visible today were built. These include the sales office and driveway, surface water retention ponds, and the bulkhead and partially completed buildings at the eastern end of the site.

2.2.3 Fill Distribution and Thickness. The extent and thickness of the fill at Garvies Point can be estimated by comparing the present topography of the site with the topography of the site prior to landfilling. For purposes of this study, the aerial photograph taken in 1950 was assumed to represent the original site topography. The present topography is shown in a topographic map made from the aerial photograph taken in 1989. An estimate of the fill thickness based on these data is shown in Figure 2-2.

Because there are few points on the 1950 aerial photograph with known elevations, the fill thicknesses shown in Figure 2-2 are approximate. Furthermore, there is no distinction in the figure between different fill materials or different periods of landfilling activities. Given these qualifiers, it is still clear that much of the site has been landfilled. Fill materials are thickest in the former area of the tidal embayment on the eastern end of the site, where they reach approximately 16 feet in thickness. The tidal flat and some areas along Garvies Point Road have not been filled.

2.3 Phase II Large Area Gamma Ray Survey

2.3.1 Objective. As the depth penetration of the microR meter used in the first survey was only one to two feet and fill thicknesses were thought to be 10 to 15 feet, the large area gamma ray survey was conducted to determine whether or not above background levels of radiation existed at depths of up to six feet below the surface. The results of this survey were also used in the selection of trench locations in areas of elevated gamma ray fluxes and in background locations.

2.3.2 Methodologies. The large area gamma ray survey took place from January 23 to February 8, 1990. The survey was performed by the NDL

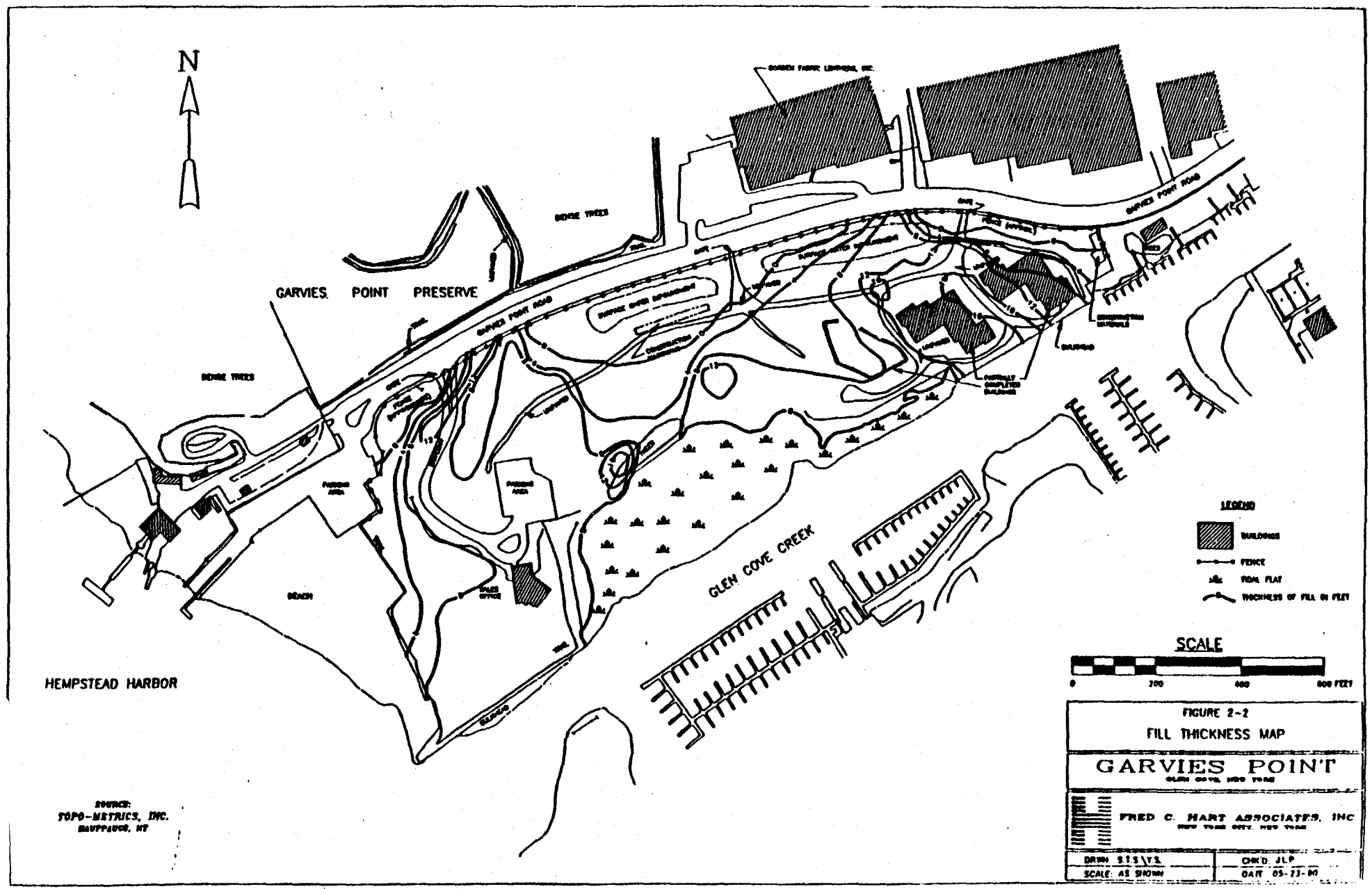

FIGURE 2-2

FILL THICKNESS MAP

GARVIES POINT

GLEN COVE, NEW YORK

FRED C. HART ASSOCIATES, INC

NEW YORK CITY, NEW YORK

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Organization, Inc. (NDL) of Peekskill, NY and was overseen by HART personnel. The large area gamma ray detector used in the survey was built by Ted Rahon of NDL.

The gamma ray detector consisted of an eight inch diameter, two inch thick, Cesium Iodide (CsI) scintillation crystal. It has been termed "large area" because of its 50 square inch face (324 sq.cm.) as opposed to the usual 0.2 to 0.8 square inch face of Sodium Iodide (NaI) detectors used in microR meters. The two inch crystal thickness and the higher gamma ray absorption coefficient of CsI make the detector more sensitive to high energy gamma rays than a microR meter. A single channel analyzer was used with the detector so that only gamma rays in the 2.6 MeV energy region were counted. The analyzer threshold was set so that the system did not respond to Cs-137 (0.662 MeV) or Ra-226 (0.609 MeV, 1.76 MeV) fields. This threshold setting made the detector effectively unresponsive to all naturally occurring radionuclides except Tl-208 (2.6 MeV). Even if the overlying "clean" soil had elevated U-238 series or K-40 concentrations, it would not effect the sensitivity of the system to detect the Tl-208 gamma ray.

The upper level discriminator of the analyzer was used to reduce detector background from cosmic radiation. The upper level was set such that the count rate from a natural thorium source was not significantly affected by opening or closing the window. However, the high energy background (>3 MeV), due mainly to cosmic rays, was substantially reduced. To limit counting error, sufficient counts at each location were collected to yield less than a 5% error. Thus, the counting period used at each grid location was determined by the count rates encountered. Counting periods ranged from 2 minutes at grid points with elevated gamma ray counts to 10 minutes at the background grid points.

Measurements on undisturbed, native Garvies Point soil indicated that indigenous thorium concentrations were very low and would provide the desired low background for the survey. With these background conditions and the instrument setup described above, a truck-load size mass of tungsten ore with a natural thorium concentration of 100 pCi/g could be

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detected under 1 to 2 meters of soil with a density of 1 to 1.5 g/cc (see calculations in Appendix A). The large area gamma ray detector was tested at New York University Medical Center AJ Lanza Laboratories using a National Bureau of Standards natural thorium source and sand as an attenuator prior to performing the survey at Garvies Point.

The gamma ray survey at the site was conducted on a 50 foot by 50 foot grid, offset by 25 feet from the grid stakes. This grid configuration was used to avoid retesting areas surveyed with the microR meter in the Phase I investigation. At each survey location, the grid point, gamma ray count and length of time the detector was run were recorded in a bound field notebook. As a result of buildings or surface water, several grid locations were offset to make them accessible.

2.3.3 Results. The data collected from the large area gamma ray survey is summarized in Table 2-2. In the field, the number of counts per minute (cpm) was recorded for each location. The criteria used to determine if a reading should be classified as "elevated" was two standard deviations above the local background. This criteria was selected because it ensured that 95% of the data selected would be above background and it minimized the chances of missing areas that were truly above background. Only a few of the gamma ray readings fell between two and three standard deviations of background, so the move conservative criteria of two standard deviations was applied. After 40 to 50 points in one section of the property were measured, the mean and standard deviation were calculated for readings collected from locations thought to be free of radioactive material. For example, the first 40 points measured on the western side of the property, excluding Area 1, resulted in a mean count rate of 125 cpm and a standard deviation of 24 cpm. Thus, the background level for the west side was 173 cpm (125+2x24). The background levels in both the middle and eastern sections of the property were approximately 145 cpm. A total of 25 grid points exceeded the background levels defined as local background plus two standard deviations. A list of these grid points is shown in Table 2-3 and the locations of these points are shown in Figure 2-3.

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TABLE 2-2

LARGE AREA GAMMA RAY SURVEY RESULTS

JANUARY 23 - FEBRUARY 8, 1990

Location	Counts Per Minute	uR/hr	Location	Counts Per Minute	uR/hr
Z-10, 1	111± 5	5	Z+25, 1	125± 4	6
Z+75, 1+25	127± 4	6	Z+75, 1+75	104± 3	6
Z+75, 2+25	194± 4*	8	Z+75, 2+75	112± 3	7
Z+75, 3+25	98± 3	7	Z+75, 3+75	120± 3	7
Z+75, 4+25	208± 6*	9	Z+75, 4+75	106± 3	7
Z+75, 5+25	129± 4	8	Z+75, 5+75	106± 3	8
Z+75, 6+25	103± 3	7	Z+75, 6+75	118± 3	8
A+25, 1+25	114± 3	6	A+25, 1+75	106± 3	7
A+25, 2+25	126± 4	7	A+25, 2+75	132± 4	7
A+25, 3+25	126± 3	7	A+25, 3+75	120± 3	8
A+25, 4+0	140± 4	8	A+25, 4+75	118± 3	8
A+25, 5+25	122± 3	9	A+25, 5+75	148± 4	10
A+25, 6+25	139± 4	11	A+25, 6+75	131± 4	9
A+25, 7+25	133± 4	9	A+25, 7+75	196± 6*	14
A+75, 1+25	126± 4	7	A+75, 1+75	135± 4	7
A+75, 2+25	114± 3	7	A+75, 2+75	129± 4	7
A+75, 3+25	130± 4	8	A+75, 4+0	164± 4	11
A+75, 4+25	145± 4	9	A+75, 4+75	126± 4	9
A+75, 5+25	115± 3	8	A+75, 5+75	96± 3	6
A+75, 6+25	96± 3	6	A+75, 6+85	158± 4*	10
A+75, 7+25	225± 7*	14	A+75, 7+75	328± 8*	22

* Values exceeding background plus 2 standard deviations.

(2529n-11)

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TABLE 2-2
(CONTINUED)

LARGE AREA GAMMA RAY SURVEY RESULTS

JANUARY 23 - FEBRUARY 8, 1990

Location	Counts Per Minute	uR/hr	Location	Counts Per Minute	uR/hr
A+75, 7+75	488±10*	35	A+75, 8+25	144± 5*	9
B+25, 1+25	116± 3	7	B+25, 1+75	106± 3	6
B+25, 2+25	118± 3	7	B+25, 2+75	118± 3	8
B+25, 3+25	125± 4	8	B+25, 3+50	127± 4	8
B+25, 4+25	130± 4	9	B+25, 4+75	143± 4	10
B+25, 5+25	113± 3	8	B+25, 5+75	114± 3	8
B+25, 6+25	129± 4	9	B+25, 6+75	84± 3	6
B+25, 7+25	258± 7*	13	B+25, 7+75	298± 8*	14
B+25, 8+25	149± 4*	9	B+75, 1+25	120± 3	6
B+75, 1+75	112± 3	7	B+75, 2+25	104± 3	7
B+75, 2+75	100± 3	7	B+75, 3+25	97± 3	7
B+75, 3+75	115± 3	8	B+75, 4+25	85± 3	6
B+75, 4+75	110± 3	9	B+75, 5+25	111± 3	7.5
B+75, 5+75	105± 3	8	B+75, 6+25	120± 3	8
B+75, 6+75	157± 4*	11	B+75, 7+25	85± 3	7
B+75, 7+75	74± 3	7	C+25, 1+25	98± 3	7
C+25, 1+75	90± 3	6	C+25, 2+25	96± 3	8
C+25, 3+75	96± 3	7	C+25, 4+25	132± 4	9
C+25, 4+75	104± 3	7	C+25, 5+25	135± 4	8
C+25, 5+75	133± 4	7.5	C+25, 6+25	99± 3	8
C+25, 6+75	117± 3	9	C+25, 7+25	128± 4	10

* Values exceeding background plus 2 standard deviations.

(2529n-12)

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TABLE 2-2
(CONTINUED)

LARGE AREA GAMMA RAY SURVEY RESULTS

JANUARY 23 - FEBRUARY 8, 1990

Location	Counts Per Minute	uR/hr	Location	Counts Per Minute	uR/hr
C+25, 7+75	111± 3	11	C+75, 1+25	102± 3	6.5
C+75, 1+75	103± 3	7	C+75, 2+25	99± 3	6
C+75, 2+75	89± 3	6	C+75, 3+25	106± 3	7
C+75, 3+75	136± 4	8	C+75, 4+25	81± 3	5
C+75, 4+75	80± 3	5	C+75, 5+25	81± 3	5.5
C+75, 5+75	135± 4	9.5	C+75, 6+25	116± 3	8
C+75, 6+75	132± 4	9.5	C+75, 7+25	155± 4*	10
C+75, 7+75	140± 4	9	C+75, 8+25	118± 3	7
D+25, 1+25	Water	-	D+25, 1+75	98± 3	6
D+25, 2+25	91± 3	6	D+25, 2+75	89± 3	6
D+25, 3+25	90± 3	7	D+25, 3+75	90± 3	6
D+25, 4+25	66± 3	6	D+25, 4+75	72± 3	5
D+25, 5+25	91± 3	5.5	D+25, 5+75	115± 3	7
D+25, 6+25	116± 3	8	D+25, 6+75	132± 4	8
D+25, 7+75	145± 4	8	D+25, 8+15	134± 4	9
D+75, 8+15	132± 4	9	D+75, 7+75	126± 4	8.5
D+75, 7+25	96± 3	6.5	D+75, 6+75	93± 3	6.5
D+75, 6+25	108± 3	7.5	D+75, 5+75	89± 3	6.0
D+75, 4+75	98± 3	8.5	D+75, 4+25	88± 3	6
D+75, 5+25	82± 3	6	E+25, 4+25	84± 3	5
E+25, 4+75	85± 3	6	E+25, 5+25	97± 3	6

* Values exceeding background plus 2 standard deviations.
(2529n-13)

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TABLE 2-2
(CONTINUED)

LARGE AREA GAMMA RAY SURVEY RESULTS

JANUARY 23 - FEBRUARY 8, 1990

Location	Counts Per Minute	uR/hr	Location	Counts Per Minute	uR/hr
E+25, 5+75	97± 3	6	E+25, 6+25	102± 3	7
E+25, 6+75	111± 3	8	E+25, 7+25	103± 3	8
E+25, 7+65	128± 4	9	E+75, 7+65	128± 4	9
E+75, 7+25	102± 4	7	E+75, 6+75	98± 4	7
E+75, 6+25	88± 4	7	E+75, 5+75	93± 4	6
E+75, 5+25	77± 3	6	E+75, 4+75	87± 4	6
E+75, 4+25	110± 4	7	F+25, 4+25	139± 4	6
F+25, 4+75	114± 4	6	F+25, 5+25	114± 4	7
F+25, 5+75	103± 4	7	F+25, 6+25	112± 4	6
F+25, 6+75	135± 4	7	F+25, 7+25	151± 5*	9
F+25, 7+75	124± 4	8	F+75, 7+75	116± 4	8
F+75, 7+25	109± 4	7	F+75, 6+75	80± 3	5
F+75, 6+25	96± 4	7	F+75, 5+75	105± 4	6
F+75, 5+25	89± 4	7	F+75, 4+75	86± 3	6
F+75, 4+25	107± 4	7	G+25, 4+25	90± 4	5
G+25, 4+75	95± 4	7	G+25, 5+25	99± 4	6
G+25, 5+75	87± 4	7	G+25, 6+25	84± 3	7
G+25, 6+75	72± 3	5	G+25, 7+50	44± 2	5
G+75, 7+70	68± 3	5	G+75, 6+75	76± 3	5
G+75, 6+25	95± 4	6	G+75, 5+75	113± 4	8
G+75, 5+25	114± 4	7.5	G+75, 4+75	117± 4	7
G+75, 4+25	86± 4	6			

* Values exceeding background plus 2 standard deviations.

(2529n-14)

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TABLE 2-2
(CONTINUED)

LARGE AREA GAMMA RAY SURVEY RESULTS

JANUARY 23 - FEBRUARY 8, 1990

Location	Counts Per Minute	uR/hr	Location	Counts Per Minute	uR/hr
H+25, 7+70	65± 3	5	H+25, 6+75	52± 3	5
H+25, 6+25	94± 4	6	H+25, 5+75	114± 4	8
H+25, 5+25	126± 4	8	H+25, 4+75	109± 4	8.5
H+25, 4+25	105± 4	6	H+75, 7+70	66± 3	4.5
H+75, 6+75	66± 3	5	H+75, 5+75	93± 4	7
H+75, 5+25	114± 4	7	H+75, 4+75	92± 4	7
H+75, 4+25	92± 4	6.5	H+75, 3+75	102± 4	6.5
I+25, 7+70	70± 3	4.5	I+25, 6+75	69± 3	5
I+25, 5+75	98± 4	7	I+25, 5+25	114± 4	7
I+25, 4+75	111± 4	7	I+25, 4+25	111± 4	8
I+25, 3+75	101± 4	6.5	I+75, 7+70	84± 3	7
I+75, 5+75	105± 4	6	I+75, 4+75	99± 4	7.5
I+75, 4+25	135± 4	8	I+75, 3+75	117± 4	9
I+75, 3+25	99± 4	8	J+25, 3+75	86± 3	7
J+25, 3+25	107± 4	8	J+25, 4+75	91± 4	6
J+25, 4+25	102± 4	7.5	J+75, 6+15	84± 3	6
J+25, 5+25	106± 4	7.5	J+25, 5+75	100± 4	7
J+25, 6+25	90± 4	6.5	J+25, 6+60	132± 4	8
J+75, 5+75	73± 3	4	J+75, 5+25	72± 2	4
J+75, 4+75	162± 5*	9	J+75, 4+25	85± 3	6
J+75, 3+75	74± 3	5			

* Values exceeding background plus 2 standard deviations.

(2529n-15)

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TABLE 2-2
(CONTINUED)

LARGE AREA GAMMA RAY SURVEY RESULTS

JANUARY 23 - FEBRUARY 8, 1990

Location	Counts Per Minute	uR/hr	Location	Counts Per Minute	uR/hr
M+25, 2+75	118± 4	8	M+25, 3+25	141± 8*	8
M+25, 3+75	142± 5*	7.5	M+25, 4+25	106± 4	5.5
M+25, 5+25	60± 3	4	M+25, Fence	66± 3	4
M+75, Fence	60± 3	4	M+75, 5+25	64± 3	4
M+75, 4+25	115± 4	6	M+75, 3+75	126± 4	6.5
M+75, 3+25	106± 4	9	M+75, 2+75	91± 4	9
M+75, 2+25	113± 4	7.5	M+75, 1+75	112± 4	7.5
N+25, 1+75	83± 3	8	N+25, 2+25	108± 4	7
N+25, 2+75	96± 4	10	N+25, 3+25	102± 4	7
N+25, 3+75	95± 4	6.5	N+25, 4+25	73± 3	5
N+25, 5+25	71± 3	5	N+25, Fence	68± 3	4
N+75, 4+75	70± 3	5	N+75, 4+25	103± 4	7.5
N+75, 3+75	88± 4	7.5	N+75, 3+25	114± 4	8
N+75, 2+75	110± 4	8	N+75, 2+25	89± 4	9.5
N+75, 1+75	94± 4	9	N+75, Bulkhead	89± 4	8
O+25, Bulkhead	104± 4	7	O+25, 1+75	123± 4	7
O+25, 2+25	118± 4	7	O+25, 2+75	107± 4	8
O+25, 3+25	107± 4	8	O+25, 3+75	96± 4	7
O+25, 4+25	143± 5	9	O+75, 3+75	112± 4	7

* Values exceeding background plus 2 standard deviations.

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TABLE 2-2
(CONTINUED)

LARGE AREA GAMMA RAY SURVEY RESULTS

JANUARY 23 - FEBRUARY 8, 1990

Location	Counts Per Minute	uR/hr	Location	Counts Per Minute	uR/hr
0+75, 3+25	118± 4	8	0+75, 2+75	62± 3	6
0+75, 2+25	137± 4	10	0+75, 1+75	131± 4	9
0+75, Bulkhead	107± 4	8	P+25, Bulkhead	129± 4	9.5
P+25, 1+75	133± 4	11	P+25, 2+25	114± 4	11
P+25, 2+75	136± 4	11.5	P+25, 3+25	108± 4	9
P+25, 3+75	99± 4	7	P+75, 3+25	214± 6*	17
P+75, 2+75	190± 5*	20	P+75, 2+25	96± 4	8
P+75, 1+75	124± 4	12	P+75, 1+25	82± 3	9
P+75, Bulkhead	87± 4	8	Q+25, 1+25	132± 4	9
Q+25, 1+50	2369± 34*	120	Q+25, 1+75	171± 9*	11.5
Q+25, 2+25	516± 16*	26	Q+25, 2+75	120± 8	7.5
Q+25, 3+10	118± 8	6.5	Q+50, 1+75	312± 12*	19
Q+75, 1+25	116± 8	5	Q+75, 1+75	130± 8	9
Q+75, 2+25	106± 7	6	R+0, 1+25	114± 8	4.5
R+0, 2+0	152± 9*	8	R+0, 2+25	138± 8*	8
R+15, 1+50	113± 8	6	R+25, 2+0	140± 8	6.5
R+25, 2+25	533± 16*	21			

* Values exceeding background plus 2 standard deviations.

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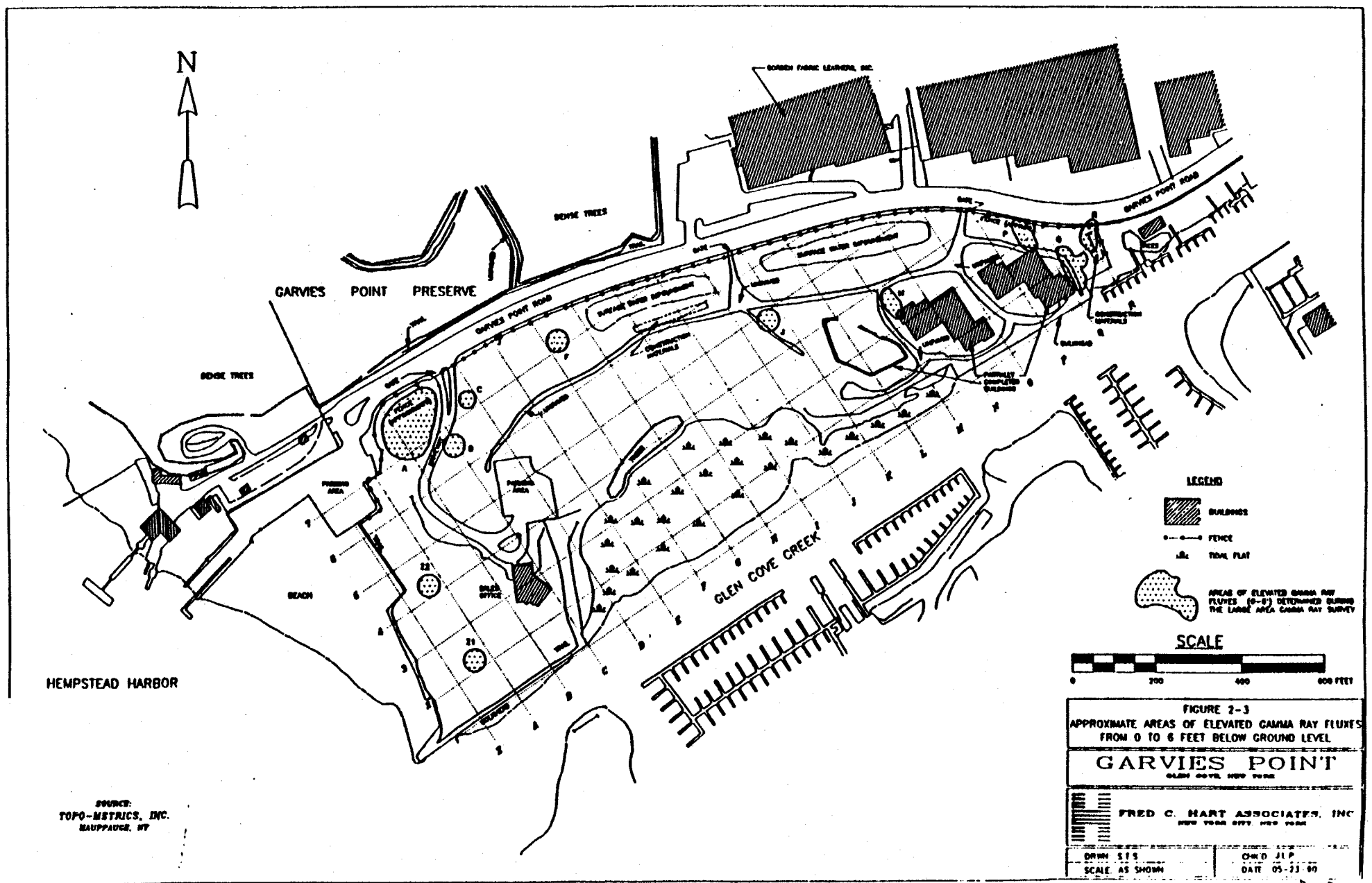
TABLE 2-3

LIST OF GRID POINTS THAT EXCEED BACKGROUND LEVELS

Grid Point	Location on Map in Figure 2-3
Z+75, 2+25	Z1
Z+75, 4+25	Z2
A+75, 6+85	A
A+75, 7+25	A
A+75, 7+75	A
A+75, 8+25	A
B+25, 7+25	A
B+25, 7+75	A
B+25, 8+25	A
B+75, 6+75	B
C+75, 7+25	C
F+25, 7+25	F
J+75, 4+75	J
M+25, 3+25	M
M+25, 3+75	M
P+75, 3+25	P
P+75, 2+25	P
Q+25, 1+50	Q
Q+25, 1+75	Q
Q+25, 2+25	Q
Q+50, 1+75	Q
R+10, 2+0	R
R+0, 2+25	R
R+25, 2+25	R



SOURCE:
TOPO-METRICS, INC.
HAUPPAUGE, NY

FIGURE 2-3
APPROXIMATE AREAS OF ELEVATED GAMMA RAY FLUXES FROM 0 TO 6 FEET BELOW GROUND LEVEL

GARVIES POINT
GLEN COVE, NEW YORK

FRED C. HART ASSOCIATES, INC
NEW YORK CITY, NEW YORK

DRWN SFS
SCALE AS SHOWN
CHKD JLP
DATE 05-23-90

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During the investigation, there was some concern that the results of the large area gamma ray detector survey could be affected by encountering soil densities of greater than 1.5 g/cc such as in areas where stone or concrete might have been dumped. An increase in soil density would reduce the effective depth of ore detection to less than 1 meter. Fortunately, concrete and stone were observed in only a few locations. Soil densities were estimated from the weights of the radionuclide samples collected and were found to range from 0.7 to 1.3. Thus, the estimated depth of detection of 1 to 2 meters was valid throughout the majority of the property. Actual ore layers were detected by the gamma spectrometer at depths of up to four feet at locations where microR meters showed only background levels.

2.4 Phase II Subsurface Investigation

2.4.1 Objective. The purpose of the subsurface investigation was to allow a visual inspection of the composition and depth of the fill material in areas of both elevated gamma ray fluxes and in background areas. Soil samples were collected for laboratory analysis to measure the range of radionuclide concentrations in the soils.

2.4.2 Methodologies. The trenching activities took place between February 9 and 13, 1990. All trenches were dug by Direct Environmental, Inc. of West Babylon, New York, using a JD 590 Trachoe and were overseen by HART and NDL personnel.

Fifteen trenches were dug in the areas of elevated gamma ray fluxes and an additional five trenches were dug at locations where background gamma ray fluxes were measured. The locations of the trenches are shown in Figure 2-4 and Table 2-4 shows the correlation between trench locations and the 25 areas of elevated gamma ray fluxes noted on Table 2-3. The trenches were approximately 3 feet wide by 5 to 15 feet in depth and up to 50 feet in length. Trench logs were filled out at each trench location by a HART geologist. Information noted on the logs included trench location and identification number, the start and finish dates, the condition and composition of the trench walls, the sample collection depths, air

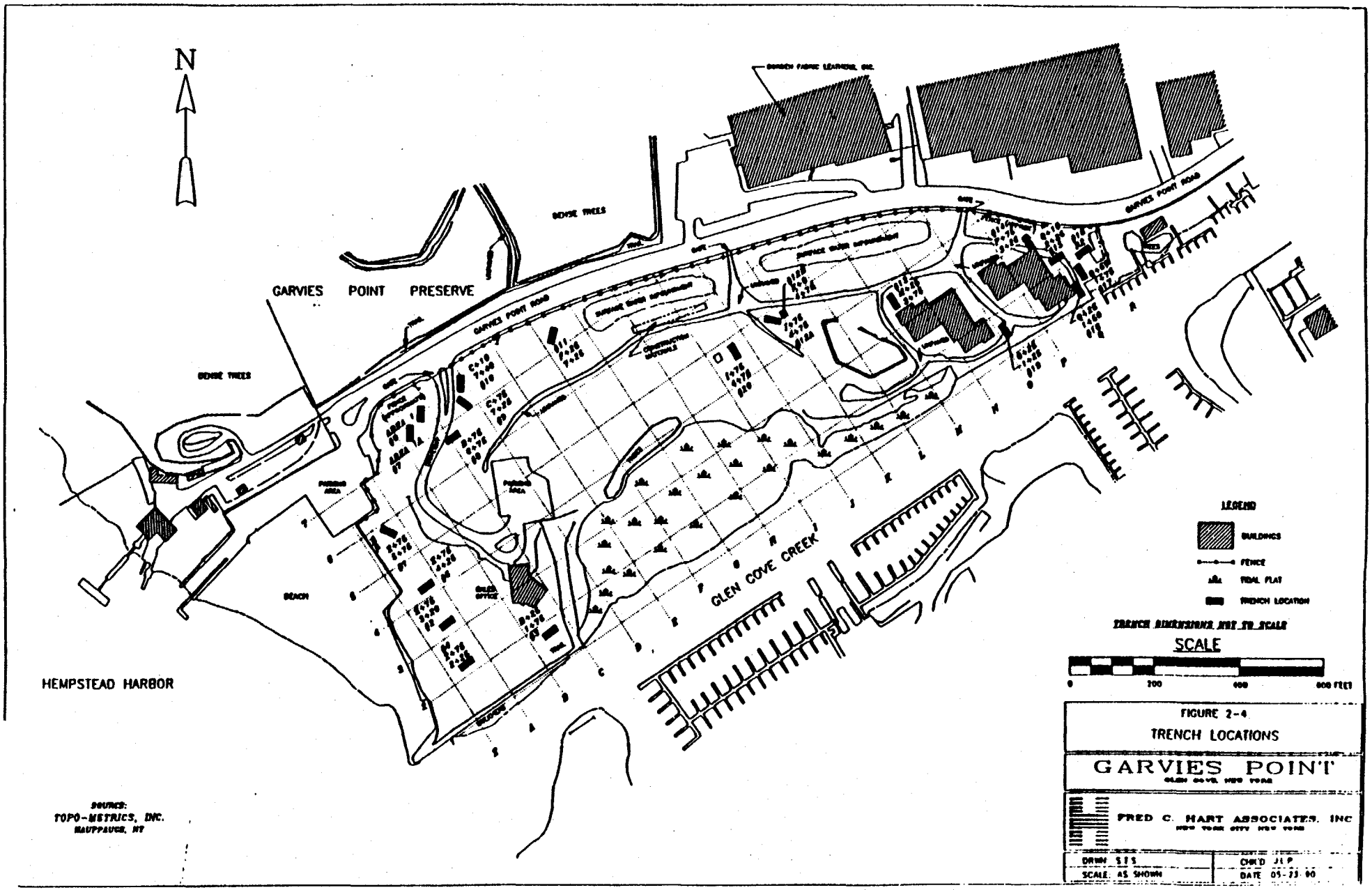

FIGURE 2-4
TRENCH LOCATIONS

GARVIES POINT
GLEN COVE, NEW YORK

FRED C. HART ASSOCIATES, INC
NEW YORK CITY NEW YORK

DRWN S.T.S.	CHK'D J.L.P.
SCALE AS SHOWN	DATE 05-23-90

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TABLE 2-4

CORRELATION BETWEEN GAMMA RAY FLUX MEASUREMENTS AND TRENCH LOCATIONS

Grid Points at which at which Elevated Gamma Ray Fluxes Were Noted	Location	NDL Trench Number and Coordiates of Trenches Excavated for Subsurface Investigation
-	Background	Number 1, Z+75, 5+75
-	Background	Number 2, Z+75, 3+20
-	Background	Number 3, B+25, 1+25
Z+75, 2+25	Z1	Number 4, Z+75, 2+25
Z+75, 4+25	Z2	Number 5, Z+75, 4+25
A+75, 6+85	A	Number 6, Area 1, B+10, 7+75
A+75, 7+25	A	Number 7, Area 1A, A+75, 6+85
A+75, 7+75	A	
A+75, 8+25	A	
B+25, 7+75	A	
B+25, 7+75	A	
B+25, 8+25	A	
B+75, 6+75	B	Number 8, B+75, 6+75
C+75, 7+75	C	Number 9, C+75, 7+25 to 7+75
	C	Number 10, C+10, 7+40
F+25, 7+25	F	Number 11, F+25, 7+25
J+75, 4+75	J	Number 12A, J+75, 4+75
	J	Number 12B, K+0, 4+75
M+25, 3+25	M	Number 13, M+25, 3+75
M+25, 3+75	M	
P+75, 3+25	P	Number 14, P+75, 3+25
P+75, 2+75	P	
Q+25, 2+25	Q	Number 15, Q+10, 2+25
Q+25, 1+50	Q	Number 16, Q+25, 1+50
Q+25, 1+75	Q	
Q+50, 1+75	Q	Number 17, Q+50, 1+75
R+0, 2+10	R	Number 18, R2 (R+0, 2+0)
R+10, 2+25	R	
R+25, 2+25	R	
-	Background	Number 19, O+25, 1+25
-	Background	Number 20, 1+75, 4+25

(2529n-23)

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monitoring readings, and the length and depth of each trench. The logs are contained in Appendix B.

During trenching activities, the work zone was monitored with a microR meter, a particulate dust monitor (PDM), a photoionization detector (PID or HnU unit) and a combustible gas indicator (CGI). Drager Tubes for vinyl chloride monitoring were available on-site in the event organic vapor concentrations exceeded three parts per million (ppm) for one minute. Five air monitoring stations were set up around the site to monitor airborne particulates in the vicinity of the work area. Two stations were set up upwind and three stations were situated downwind of the trenching activities. All work was performed in Level C protective gear in order to prevent contact with or inhalation of radionuclides in soil.

Samples were obtained by a HART geologist by collecting soil from the appropriate interval directly from the bucket of the trachoe. The instability of the trench walls made it impossible for HART personnel to enter the pits. The trachoe operator cleared away soil that fell into the trench from the sidewalls and collected a soil sample from an undisturbed location on the bottom of the trench. Soil samples were collected at two foot intervals in each trench using this technique. Each sample was properly identified, packed in coolers and documented under full chain-of-custody procedures. The samples were directly relinquished to the NDL health physicist. All samples were analyzed by the NDL Organization, Inc. of Peekskill, NY, which participates in the EPA-NV quality assurance program.

After each trench was examined, logged and sampled, the large area gamma ray detector was lowered into the trench if it was not readily apparent that elevated gamma ray fluxes were present. The detector was not lowered into any trenches known to have elevated gamma ray fluxes. By lowering the detector to the trench bottom at six to eight feet below ground level, gamma ray fluxes at depths between six feet and native soil could be measured. In this way, it was possible to evalute gamma ray fluxes through the entire thickness of the fill. The trenches were

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backfilled with soil, to the best extent possible, in the order in which the soils were excavated. After backfilling, the filled areas were surveyed for any exposed ore. The trachoe was surveyed for contamination each day and underwent decontamination at the Li Tungsten site at the completion of trenching activities.

2.4.3 Results. A total of 66 soil samples from the trenches were analyzed on an intrinsic germanium detector with a computer-based multichannel analyzer by the NDL Organization, Inc. Spectral data was reduced to radionuclide concentrations by the use of a gamma ray spectrum analysis program, the Oak Ridge National Laboratory "FUEL" gamma library, and a National Bureau of Standards mixed gamma calibration source prepared in the same geometry as the Garvies Point samples. A summary of the sampling results is shown in Table 2-6. No samples were collected from the background trenches 1,3, or 20 or from trenches 5 and 10. No samples were collected from trench 10 because the fill material encountered was difficult to sample; the lack of samples from trench 5 was an oversight. A copy of NDL's sampling report is contained in Appendix C.

The concentrations of thorium generally ranged from below the detection limit to about 28.5 pCi/g. One anomalously high concentration of thorium of 583 pCi/g was detected near the driveway at a depth of four to six feet in Area 1. Anomalously high concentrations of uranium and Ra-226 were also found in this sample from Area 1 at four to six feet. In the remaining samples, uranium concentrations ranged from below detection to about 57.3 pCi/g, and Ra-226 readings ranged from below detection to about 54.5 pCi/g.

The four upwind and four downwind air samples were analyzed and showed no detectable levels of radioactivity ($<4 \times 10^{-13}$ uCi/ml).

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TABLE 2-5

SUMMARY OF RADIONUCLIDE CONCENTRATIONS IN TRENCH SAMPLES

NDL No.	Trench Location	Sample Depth (feet)	NDL Sample Number	Th-nat pCi/g	U-nat pCi/g	Ra-226 pCi/g
2.	Z+75, 3+20	0	10	1.1	<3.9	1.1
		2	64	0.9	<2.9	0.9
		4	7	<0.9	<2.9	0.5
		6	56	<0.8	<1.3	0.4
		8	55	<0.7	<2.3	0.3
4.	Z+75, 2+25	0	19	<1.4	<3.1	0.6
		2	20	0.6	<2.1	0.6
		4	8	0.6	<1.4	0.3
		6	18	<1.3	<1.9	0.5
		8	9	<0.6	<1.4	0.4
6.	Area 1 (B+10, 7+75)	0	13	0.9	<3.4	0.9
		2	58	0.6	<2.9	0.7
		4	54	583	662	772
		6	4	1.1	52.8	2.7
		10	65	4.1	<6.1	3.1
7.	Area 1A (A+75, 6+85)	0	52	2.6	<5.9	3.7
		2	16	3.3	<6.3	3.4
		4	1	28.5	49.7	47.4
		6	11	0.5	<1.5	<0.3
8.	B+75, 6+75	0	61	0.7	<3.0	0.4
		2	5	<0.6	<2.3	0.4
		4	57	28.1	44.5	41.3
		6	14	19.3	18.8	26.4
		8	62	4.5	6.9	6.8
		12-16	59	11.6	13.9	17.8
9.	C+75, 7+25 to 75	0	17	0.8	<2.1	0.6
		2	60	0.8	<2.0	0.8
		4	63	1.8	<2.1	1.2
		6	66	<1.1	<2.0	0.5
		8	22	3.0	<8.3	4.2
10.	C+10, 7+40	4	15	4.0	<10.9	6.6
11.	F+25, 7+25	0	23	<0.9	<1.5	0.4
		2	3	1.1	<2.7	0.6
		6	2	2.1	<1.9	1.1

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TABLE 2-5

SUMMARY OF RADIONUCLIDE CONCENTRATIONS
IN TEST PIT SAMPLES
(CONTINUED)

NDL No.	Trench Location	Sample Depth (feet)	NDL Sample Number	Th-nat pCi/g	U-nat pCi/g	Ra-226 pCi/g
12A.	J+75, 4+75	0	6	0.4	<2.5	0.5
		2	53	0.8	<1.4	0.6
		6	21	0.7	<3.3	0.4
13.	M+25, 3+75	0	26	<0.8	<1.9	<0.4
		2	12	0.8	<1.8	0.6
		4	25	<0.8	<3.8	0.4
		6	24	<0.6	<2.5	0.4
14.	P+75, 3+25	2	43	<0.7	<2.0	0.8
		4	45	0.6	<1.8	0.7
		6	46	12.4	20.8	16.9
		8	48	0.6	<2.4	0.7
		10	38	0.9	<3.0	0.6
15.	Area 3	0	39	24.4	57.3	54.5
	(Q+10, 2+25)	2	44	<0.7	<4.6	0.8
		4	42	9.5	13.7	17.6
		6	51	4.8	<9.3	6.4
16.	Area 2	0	37	2.7	<5.3	0.9
	(Q+25, 1+50)	2	36	0.7	<2.6	<0.4
		4	35	0.7	<2.8	<0.4
		6	47	1.2	<4.2	0.5
		8	50	1.3	<4.8	1.9
17.	Q+50, 1+75	0	29	4.0	<12.5	3.3
		2	34	<1.0	<3.9	0.5
		4	27	4.3	<10.0	8.3
		8	28	1.7	<6.5	4.0
		10	49	0.5	<2.6	1.0
18.	R+0, 2+0	0	30	0.6	<1.8	0.4
	(R stake)	2	33	3.9	<9.7	6.8
		6	32	2.9	<6.6	4.3
		10	41	<1.8	<3.5	1.5
19.	0+25, 1+25	6	31	4.0	<7.2	11.1
		8	40	<1.0	<1.9	0.7

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3.0 DISCUSSION

3.1 Description of Site Soils

Based on the results of the subsurface investigation, there is a significant layer of fill material overlying most of the site. The nature and content of the fill was fairly consistent throughout the site. The most common debris found in the fill material included plastic trash bags, wood, bricks, glass, metal, tires, concrete and paper. At locations Z+75, 2+75 and M+25, 3+75 what appeared to be bluish-purple paint and dye waste was observed. On the eastern side of the site near locations Q+25, 1+50; Q+50, 1+75 and Q+10, 2+25, the fill was comprised of sandy soil with minor amounts of debris. Native soil encountered at the site was a reddish-brown medium-grained sand with gravel.

The fill appeared to be the thinnest, as expected based on the aerial photograph review, near the northern and western boundaries of the property. The fill thickness on the western boundary at grid location Z+75, 5+75 was approximately 3.5 feet. On the northern boundary, at location F+25, 7+25, no fill was observed. The native soil was not observed in any of the trenches on the eastern portion of the site even though trenches of up to 10 feet in depth were excavated. Groundwater was encountered in several trenches in the central and western portions of the site at approximately 8 to 10 feet below the surface.

3.2 Soil Quality

During the large area gamma ray detector survey, elevated gamma ray fluxes were measured at 25 grid points. Most of these grid points were located in one of two general areas of the property: around the main entrance/driveway area, and in the far eastern corner of the property. These results correlate well with the data collected during the Phase I survey. The area in the driveway encompasses the original Area 1 from the Phase I investigation and the eastern area encompasses both locations on the eastern side of the site, designated as Areas 2 and 3, at which elevated readings were detected in the Phase I survey.

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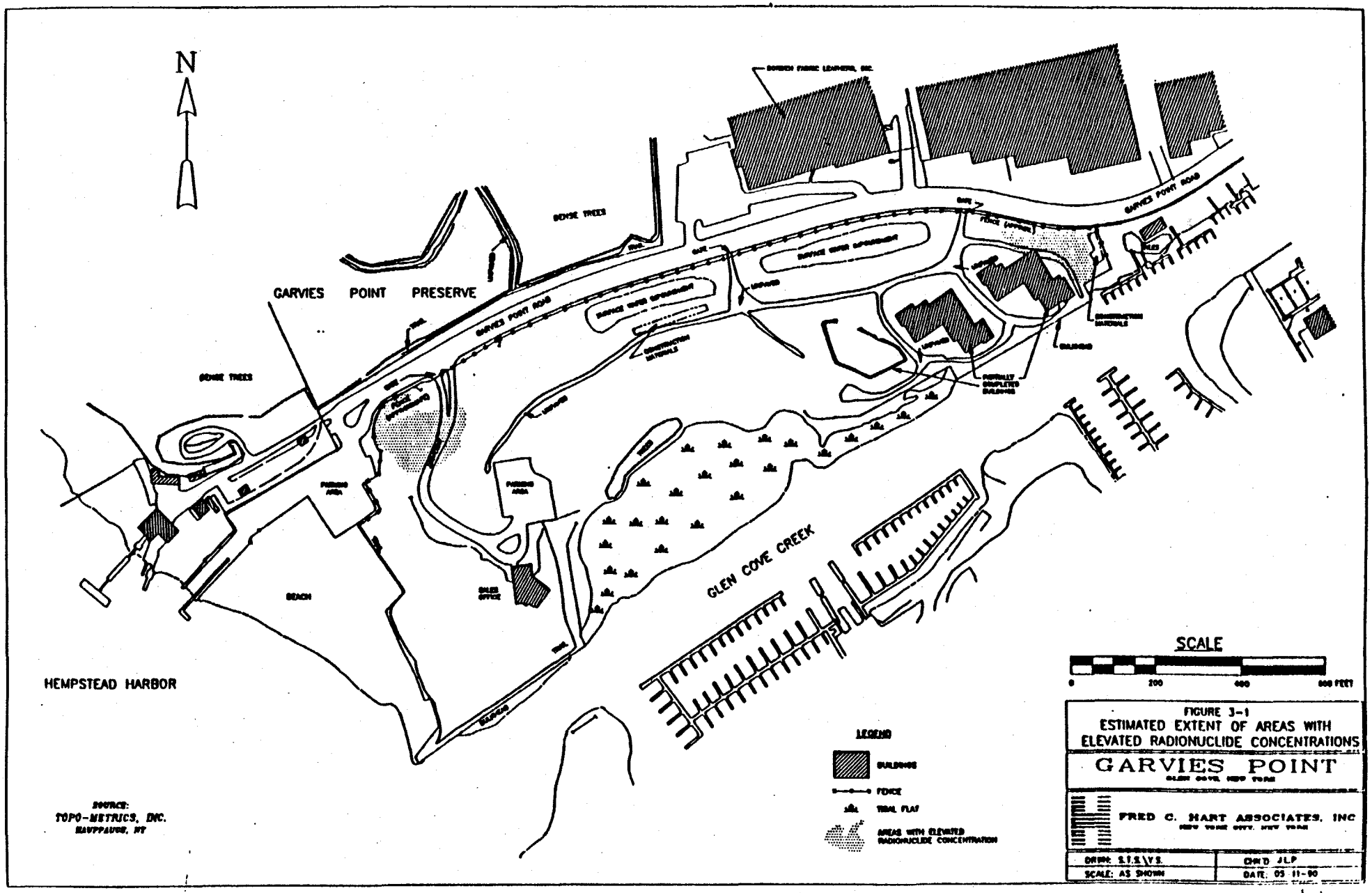
Six grid points outside of the areas designated as 1, 2 and 3 in Phase I showed elevated gamma ray fluxes during the large area gamma ray survey: Z1, Z2, F, J, M and Q+25, 1+50 (Figure 2-3). Trenches were dug at these locations to determine the source of the elevated readings. The sample results from these locations show acceptable radionuclide concentrations generally ranging from less than 1 pCi/g to 2 pCi/g. It is thought that the elevated gamma flux readings are from clean soil that was slightly enriched in thorium either as a result of natural processes or as a result of debris such as firebrick, lantern mantles, zircon process sands or small stray pieces of slag from Li Tungsten.

The sampling results from the trenches confirmed that the material containing elevated levels of radionuclides was generally found in two areas; one on the far eastern side of the property (Areas P, Q, and R) and one on the far western side near the entrance/driveway (Areas A, B, and C). It is interesting to note that the most elevated readings of thorium, uranium, and radium are found in a fairly discrete zone in both locations at about 4 to 8 feet below ground surface. In both of these areas, the elevated readings are associated with a black powder or granular material which contained concentrations of uranium and thorium series usually in the 1 to 50 pCi/g range. The physical appearance and corresponding radionuclide concentration range of this material closely matches that of the lower level tungsten ores found on Parcels A and B of the Li Tungsten property. Readings above the 4-6 foot layer tend to be close to background and in most cases, readings from below the 4-6 foot layer are close to background as well. Minor exceptions to this trend were found in trenches 8, 15 and 17. At trench 8, elevated concentrations of uranium and thorium were found at depths ranging from 4 to 16 feet. The elevated readings are directly associated with a black granular material in this trench. Slightly elevated readings in the 0-2 foot zone were found at two locations: trench 15 and trench 17 on the eastern side of the property.

An estimate of the areal extent of soils with elevated levels of radionuclides is shown in Figure 3-1. The area near the entranceway is approximately 28,750 square feet and the area in the eastern corner is


N
GARVIES POINT PRESERVE
GARVIES POINT ROAD
BOYSE TREES
BOYSE TREES
SURVICE WATER IMPOUNDMENT
SURVICE WATER IMPOUNDMENT
CONSTRUCTION MATERIALS
CONSTRUCTION MATERIALS
PARKING AREA
PARKING AREA
SALES OFFICE
BEACH
GLEN COVE CREEK
HEMPSTEAD HARBOR
PARTIALLY COMPLETED BUILDINGS
SCALE
0
200
400
600 FEET
LEGEND
BUILDINGS
FENCE
TIDAL FLAT
AREAS WITH ELEVATED RADIONUCLIDE CONCENTRATION
SOURCE:
TOPO-METRICS, INC.
HAUPPAUGE, NY
FIGURE 3-1
ESTIMATED EXTENT OF AREAS WITH ELEVATED RADIONUCLIDE CONCENTRATIONS
GARVIES POINT
GLEN COVE, NEW YORK
FRED C. HART ASSOCIATES, INC
NEW YORK CITY, NEW YORK
DRWN: S.T.S./V.S.
CHK'D JLP
SCALE: AS SHOWN
DATE: 05 11-90

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approximately 18,750 square feet. The thickness of the material containing the black granular ore varies from location to location within each area, but is an average of eight feet thick. Therefore, the total volume of soil in this area is approximately 14,000 cu yds.

3.3 Impact of Findings on Remedial Investigation

Based upon the results of both the large area gamma ray detector survey and the analysis of samples from the trenches, Ted Rahon, the NDL health physicist has determined that the Remedial Investigation can be conducted as planned with some minor modifications to the Health and Safety Plan. During any test boring activities within either of the two zones of elevated radionuclide concentrations, respirators and tyvek should be worn and all soil samples should be screened with a microR meter. Since the trenching activities did not generate any detectable levels of radionuclides in the air in the vicinity of the work area, it is unlikely that the boring activities, which cause less soil disturbance, would cause any particulate generation. Therefore, the only changes necessary to the Health and Safety plan are those mentioned above for on-site worker protection. The revised sections of the Health and Safety Plan are shown in Figure 3-2.

Access to the entire site has been restricted by the construction of a fence around all sides of the site not adjacent to the creek. In addition, "No Trespassing" signs have been posted. In order to provide protection to anyone gaining unauthorized access to the site, the areas in the vicinity of the driveway and on the eastern side of the site will be roped off and "Do Not Enter" signs will be posted. Since the majority of the site showed below background levels of radionuclides, no other access restrictions are necessary.

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Figure 3-2

TABLE 8-1

FIELD INVESTIGATION TEAM

SITE SAFETY PLAN

A. GENERAL INFORMATION

SITE: Garvies Point PROJECT NO.: 130032

LOCATION: Glen Cove, New York

PREPARED BY: John Persico DATE: January 25, 1989

REVISED BY: Laura Truettner DATE: May 11, 1990

OBJECTIVE(S): Drill test borings, install groundwater monitoring wells and conduct air, subsurface soil and groundwater sampling to identify soil and groundwater contamination, if any.

PROPOSED DATE(S) OF INVESTIGATION: Summer 1990

BACKGROUND REVIEW PRELIMINARY: COMPLETE: X

DOCUMENTATION/SUMMARY: OVERALL HAZARD: SERIOUS MODERATE LOW X UNKNOWN

B. SITE/MATERIAL CHARACTERISTICS

MATERIAL TYPE(S): LIQUID SOLID X SLUDGE X GAS X

CHARACTERISTIC(S): CORROSIVE IGNITABLE RADIOACTIVE
VOLATILE X TOXIC X REACTIVE UNKNOWN OTHER (NAME):

SITE DESCRIPTION: The site has been used as a disposal area for sediment dredged from Glen Cove Creek, low level ore from Li Tungsten and as a municipal landfill.

PRINCIPAL DISPOSAL METHOD (type and location): Surface dumping.

STATUS (active, inactive, unknown): Inactive

HISTORY: Sediment dredged from Glen Cove Creek by the Army Corps of Engineers was disposed of at the site in 1960 and 1965. From 1971 to the early 1980s, the site was used as a municipal landfill. Incinerator ash, wastewater treatment plant sludge, and household and street debris were deposited on the site during this period. Soil samples collected in 1985 contained metals and estimated levels of pesticides and PCBs and a groundwater sample from one upgradient well contained several volatile compounds in concentrations exceeding Class GA guidelines. Soil samples collected in 1989 and 1990 showed elevated levels of radionuclides in two discrete areas of the site (Figure 8-1).

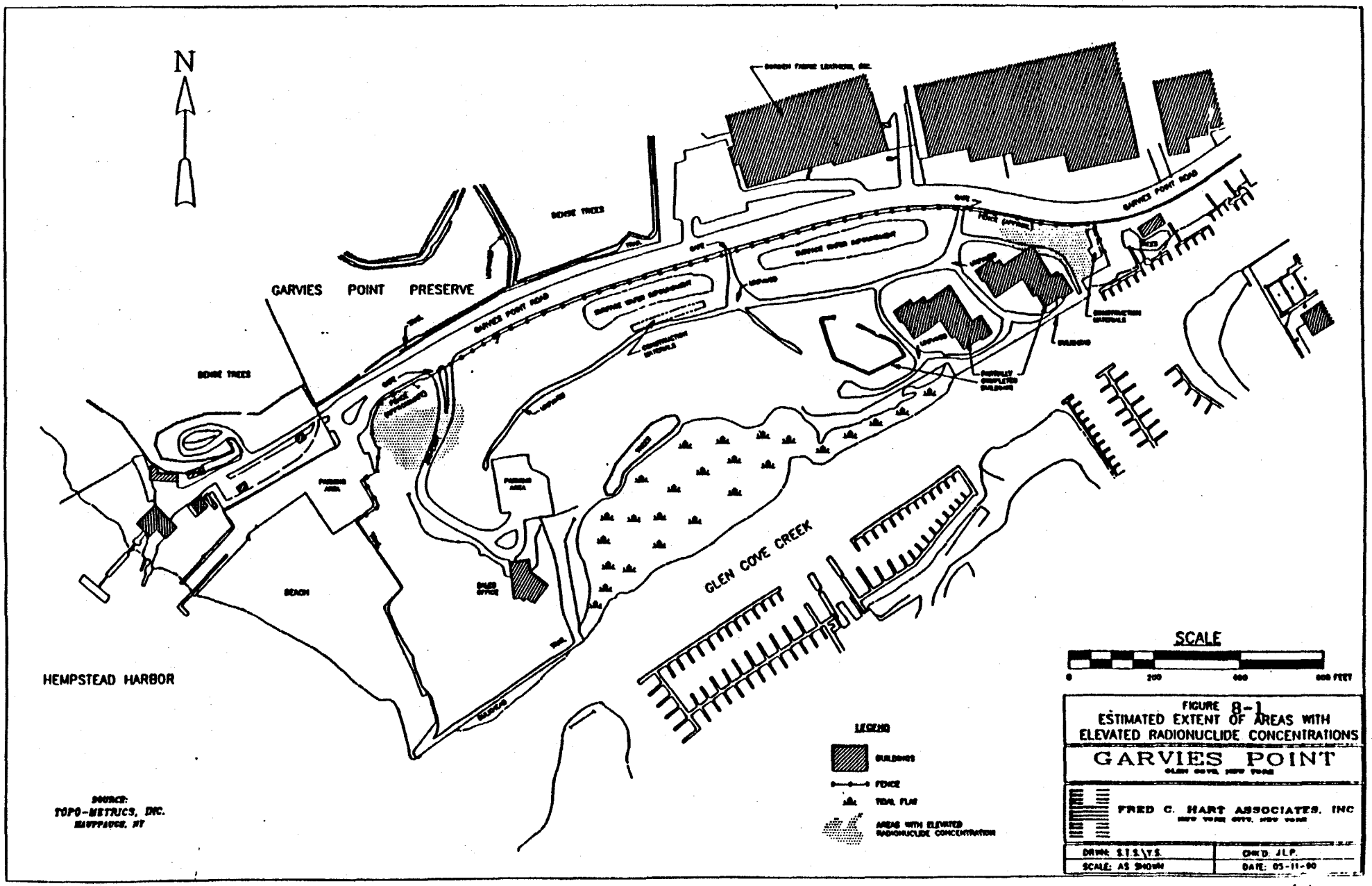

FIGURE 8-1
ESTIMATED EXTENT OF AREAS WITH ELEVATED RADIONUCLIDE CONCENTRATIONS

GARVIES POINT
GLEN COVE, NEW YORK

FRED C. HART ASSOCIATES, INC
NEW YORK CITY, NEW YORK

DRWN: S.T.S./Y.S.	CHK'D: J.L.P.
SCALE: AS SHOWN	DATE: 05-11-90

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Figure 3-2 (Continued)

TABLE 8-1 (CONTINUED)
C. HAZARD EVALUATION

Based on the 1985 and 1990 samples, a low potential exists for exposure at the site. Some particulate matter may be dispersed into the air during soil disturbance activities and a particulate dust monitor should be used to monitor these concentrations. In addition, when working in the areas shown in Figure 8-1, respirators and tyvek must be worn and all soil samples and sampling equipment should be screened with a microR meter. Certain hazards typically associated with landfills, such as production of methane or other organic vapors, must also be addressed.

D. SITE SAFETY WORK PLAN

PERIMETER ESTABLISHMENT: MAP/SKETCH ATTACHED? Yes SITE SECURED? Yes

PERIMETER IDENTIFIED? Yes ZONE(S) OF CONTAMINATION IDENTIFIED? Yes, radiological zones of contamination are identified

PERSONNEL PROTECTION:

LEVEL OF PROTECTION: D (with Level C equipment available on-site for all work conducted in radiological exclusion zones).

SURVEILLANCE EQUIPMENT AND MATERIALS: Photoionization detector, Drager air monitoring kit with tubes for vinyl chloride, combustible gas indicator, and personal particulate dust monitors, microR meter.

DECONTAMINATION PROCEDURES: All sampling equipment will be decontaminated between each use with the following procedure: detergent and water wash, distilled water rinse, nitric acid rinse, acetone or methanol rinse, hexane rinse, air dry. One decontamination area will be established on-site for steam cleaning and a separate station for hand and boot washing and disposal of personnel equipment will be established. Personnel equipment will be held on-site until sampling results become available, at which time it will be appropriately disposed of.

SPECIAL EQUIPMENT, FACILITIES, OR PROCEDURES: None

PREMISES ENTRY PROCEDURES: To be arranged with Village Green Realty at Garvies Point, Inc.

TEAM MEMBER (Major)	RESPONSIBILITY
James Perazzo	Project Director
Laura Truettner	Project Manager
Peter Conde	Field Team Leader
John Persico	Site Safety Officer
WORK LIMITATIONS (time of day, etc.):	Daylight hours

INVESTIGATION-DERIVED MATERIAL DISPOSAL: All development and purge water will be collected in 55 gallon drums and placed in an on-site, lined pool for temporary storage. A sample will be collected from the pool and (2567n-34)

Figure 3-2 (Continued)

TABLE 8-1 (CONTINUED)

analyzed for TCL organics and TAL inorganics to determine appropriate on-site or off-site disposal alternatives. Drill cuttings will be left on-site at each boring location.

E. EMERGENCY INFORMATION

LOCAL RESOURCES

POLICE: Nassau County Police 911
City of Glen Cove Police (516) 676-1000

FIRE DEPARTMENT: City of Glen Cove Fire Dept. (516) 676-0366

EXPLOSIVES UNIT: City of Glen Cove Police (516) 676-1000

AMBULANCE: City of Glen Cove Police (516) 676-1000 (request ambulance)

HOSPITAL EMERGENCY ROOM: Glen Cove Community Hospital (516) 676-5000 (request emergency room)

POISON CONTROL CENTER: Nassau County Medical Center, Uniondale (516) 542-2323

SITE RESOURCES

WATER SUPPLY: To be arranged with Village Green Realty at Garvies Point, Inc.
TELEPHONE: To be arranged with Village Green Realty at Garvies Point, Inc.
RADIO: n/a
OTHER: n/a

EMERGENCY CONTACTS

POSITION	PERSONNEL	PHONE
CORPORATE SAFETY DIRECTOR	Larry Kaufman	(609) 663-0440
PROJECT DIRECTOR	James Perazzo	(212) 840-3990
CLIENT CONTACT	Eric Zoellner	(301) 727-3351
NYSDEC CONTACT	Christopher Magee	(518) 457-5637

(2567n-35)

Ref. 17
39 of 70

Figure 3-2 (Continued)

TABLE 8-1 (CONTINUED)

F. EMERGENCY ROUTES

Directions to Glen Cove Community Hospital: Take Garvies Point Road east. Make right onto Herb Hill Road, proceed to Charles Street, make right turn and continue tc traffic light. Make left onto Forest Avenue. Take Forest Avenue north approximately 1 mile to Walnut Road. Right turn onto Walnut Road, take Walnut Road 1 block to St. Andrews Lane. Make right turn onto St. Andrews Lane and left to emergency room (see Figure 8-2 for map).

Ref, 17
40 F70

Appendix A

Calculation of Effective Depth of Ore Detection

Ref. 17
44.170

CALCULATION OF EFFECTIVE DEPTH OF ORE DETECTION

Assumptions:

Source: 5 meter diameter x 0.5 meter thick slab of thorium-bearing material (Thorium Conc: 100 pCi/g)

Source material density: 3 g/cc; self-absorp. factor: 0.17

Gamma fraction for Tl-208 2.6 MeV from Th-232 parent assuming chain equilibrium: 36%

Detector area: 324 sq.cm.

Soil densities = 1.0, 1.2 and 1.5 g/cc

BKG on 1 foot on sand: 40 cpm

Efficiency of 8"x2" CsI crystal (photofraction + single escape peak for 2.6 MeV - determined experimentally): 60%

Source strength:

100 pCi	9.8×10^6 cc	0.17	3 g	2.22 dpm	0.36 phot	0.6 cts
g			cc	pCi	dis	photon

= 2.4×10^8 cpm excluding geometry and overlaying soil attenuation

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Ref. 17
42.F70

Depth (m)	Geometry[1] Factor	Soil Density	Atten. Factor	Count Rate above BKG (cpm)
1	5.3×10^{-4}	1.5	2.5×10^{-3}	315
		1.25	6.7×10^{-3}	855
		1.0	1.8×10^{-2}	2250
1.5	4.0×10^{-4}	1.5	1.2×10^{-4}	12
		1.25	5.5×10^{-4}	53
		1.0	2.5×10^{-3}	240
2	3.0×10^{-4}	1.5	6.1×10^{-6}	0.4
		1.25	4.5×10^{-5}	3.2
		1.0	6.8×10^{-5}	4.9

1. from Principles of Nuclear Radiation Detection

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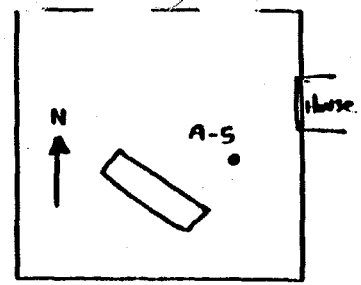
Appendix B

Trench Logs

HART

TRENCH LOG



NDL No. 1

Trench No.	Project Name/Number	Location
Z+75, 5+75	Garvies Point/ NY102-01	Glen Cove

HART Inspector	Excavator/Equip. Operator	Start/Finish Date
Suzanne Morrissey	Direct / Brent Thompson	2/9/90 (0855) — 2/9/90 (1530) ①

Elevation: Ground	Condition of Trench	Depth of Trench
	walls stable	8'

REMARKS:
- selected as a "clean" trench
- all monitoring equipment reads background
- perched trickling water

Sketch of Trench Wall

DEPTH 8'

surface — 3½' : Black-brown fill, brick fragments, medium-grained sand with gravel, auto parts, root fragments, metal shards, paper (decomposed)

3½' — 5½' : grey silty sand grading to a reddish-brown silty sand

5½' — 8' : Brown gravelly sand, medium-coarse grained

LENGTH 30'

Rf. 17 of 72

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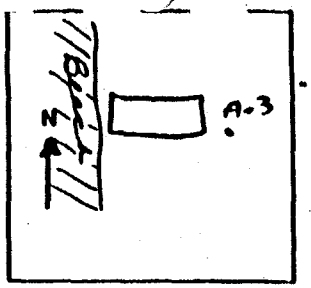
HART

TRENCH LOG



NDL No. 2

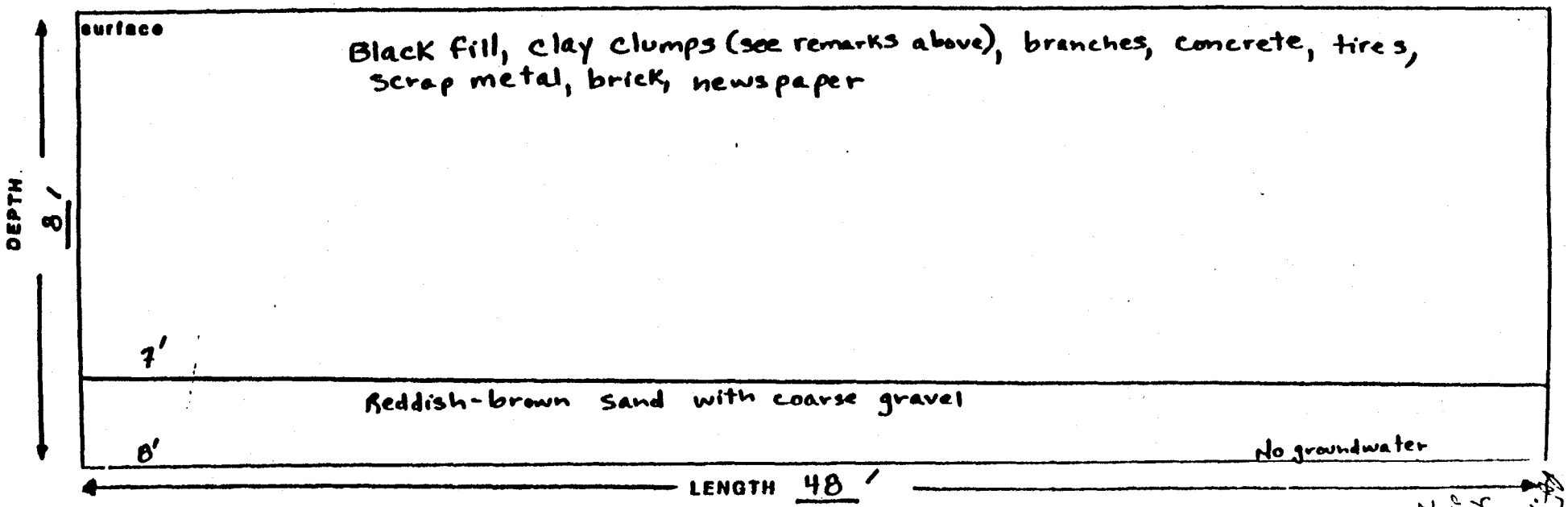
Trench No.	Project Name/Number	Location
Z+75, 3+20	Garvies Point/NY102-01	Glen Cove

HART Inspector	Excavator/Equip. Operator	Start/Finish Date
Suzanne Morrissey	Direct / Brent Thompson	2/12/90 - 2/12/90 (0830) (1120) (5)

Elevation: Ground	Condition of Trench	Depth of Trench
	stable walls	8'

REMARKS:
- samples collected at 0-6", 2', 4', 6', 8', selected as a background trench (~~clean~~)
- all monitoring equipment reads background except for 1 clay "chunk" (red & grey) which read ~11 uR/hr.

Sketch of Trench Wall



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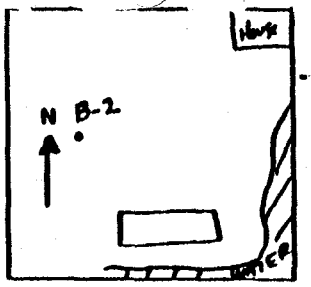
TRENCH LOG



NDL No. 3

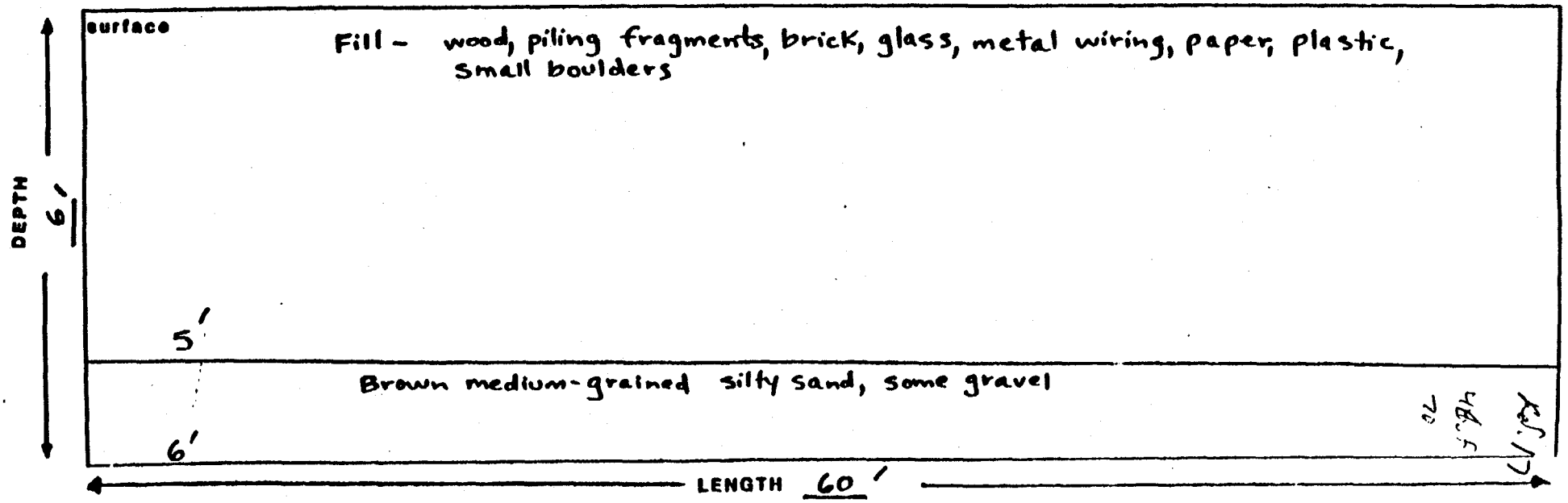
Trench No.	Project Name/Number	Location
B+25, 1+75	Garvies Point/NY102-01	Glen Cove

HART Inspector	Excavator/Equip Operator	Start/Finish Date
Suzanne Morrissey	Direct/Brent Thompson	2/9/90 - 2/9/90 (1030) (1440) ③

Elevation: Ground	Condition of Trench	Depth of Trench
	walls stable	6'

REMARKS:
- selected as a "clean" trench
- all monitoring equipment reads background

Sketch of Trench Wall



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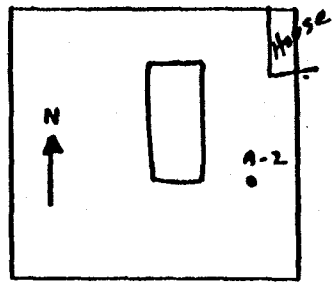
HART

TRENCH LOG



NDL No. 4

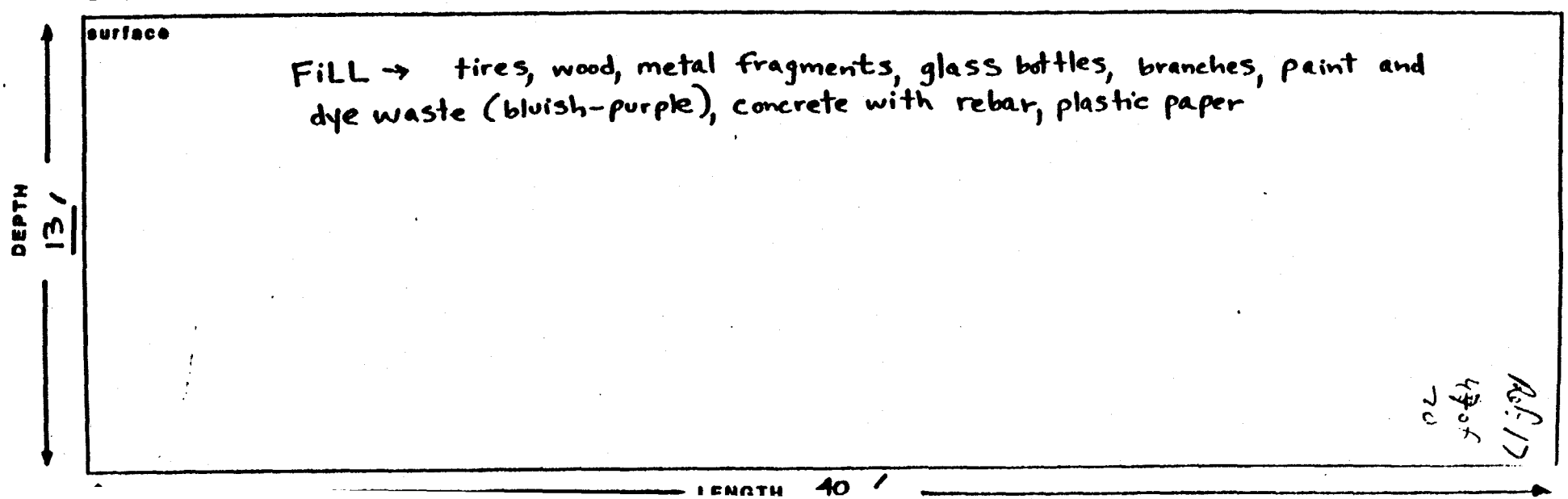
Trench No.	Project Name/Number	Location
Z+75, 2+25	Garvies Point / NY102-01	Glen Cove

HART Inspector	Excavator/Equip. Operator	Start/Finish Date
Suzanne Morrissey	Direct / Brent Thompson	2/9/90 (0935) – 2/9/90 (1445) ②

Elevation: Ground	Condition of Trench	Depth of Trench
	stable wall	13

REMARKS:
- selected as an investigative trench
- <2% LEL
- HNU and PDM read background

Sketch of Trench Wall



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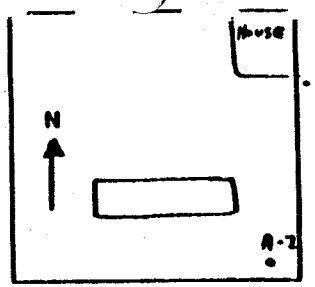
HART

TRENCH LOG



NDL No. 5

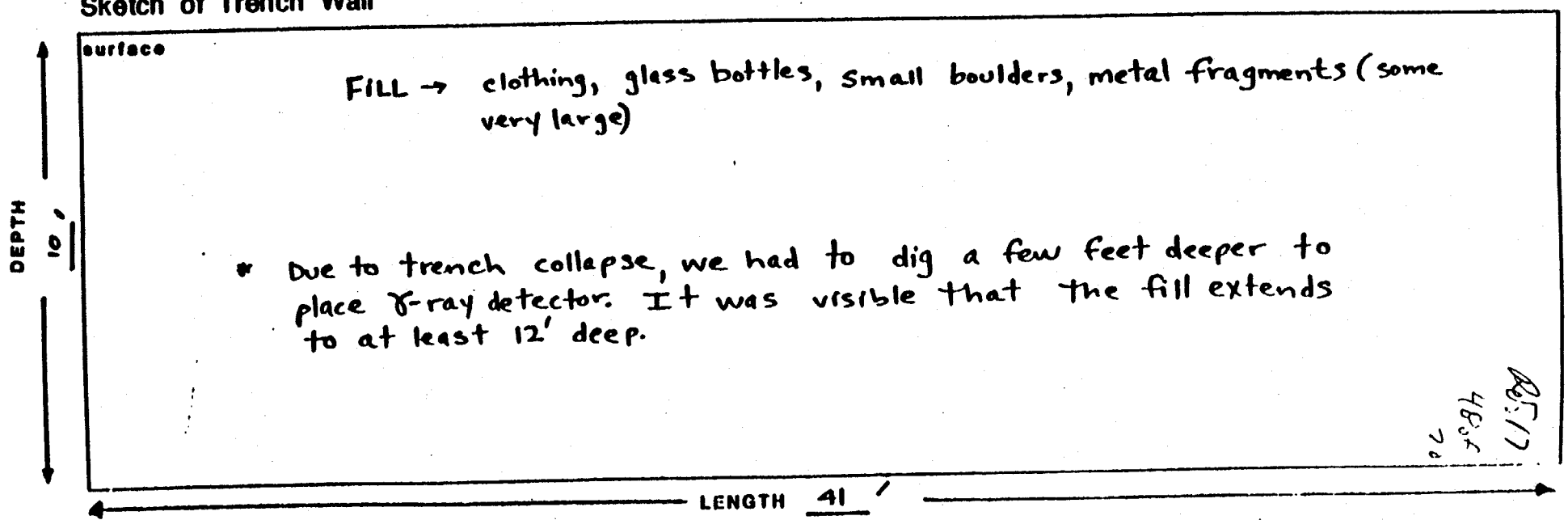
Trench No.	Project Name/Number	Location
Z+75, 4+25	Garvies Point/NY102-01	Glen Cove

HART Inspector	Excavator/Equip. Operator	Start/Finish Date
Suzanne Morrissey	Direct/Brent Thompson	2/9/90 (1115) - 2/9/90 (1435) (4)

Elevation: Ground	Condition of Trench	Depth of Trench
	walls collapsed	10'

REMARKS:
- very damp at bottom but no groundwater
- samples collected at 0-6", 2', 4', 6', 8'

Sketch of Trench Wall



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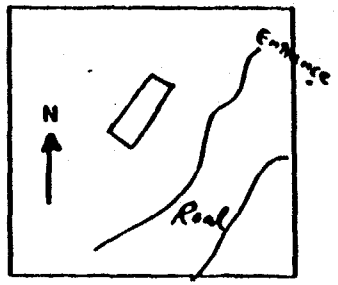
TRENCH LOG



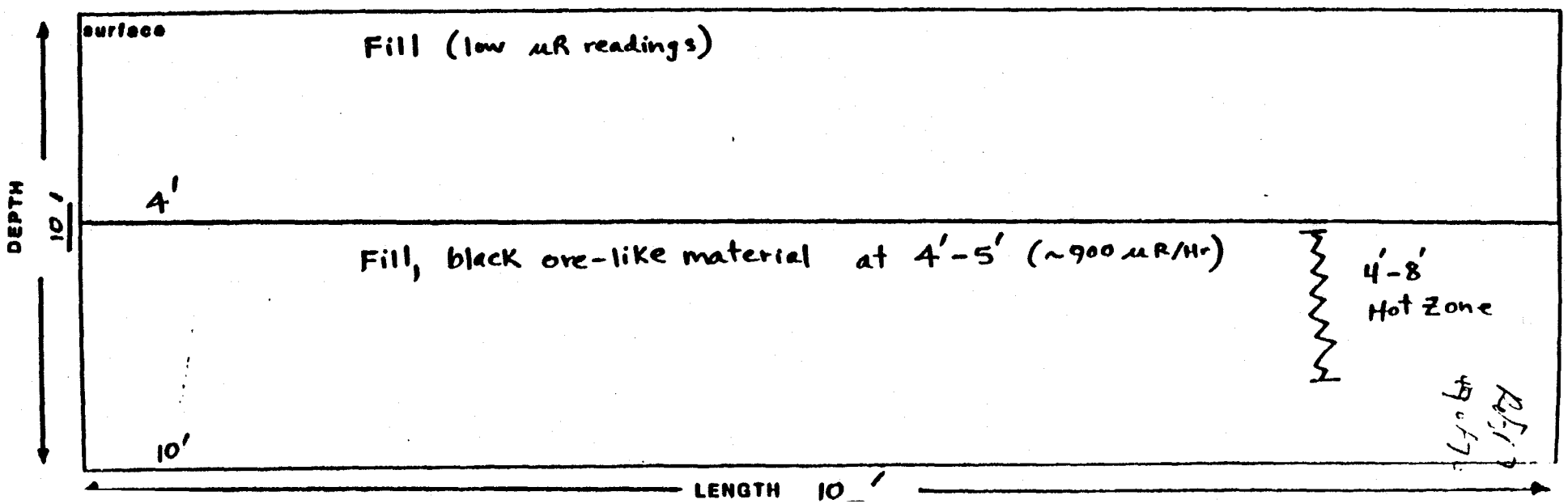
NDL No. 6

Trench No.	Project Name/Number	Location
AREA 1	Garvies Point / NY 102-01	Glen Cove
HART Inspector	**Excavator/Equip. Operator**	**Start/Finish Date**
Suzanne Morrissey	Direct / Brent Thompson	2/12/90 (0920) – 2/12/90 (1000) ⑥
Elevation: Ground	**Condition of Trench**	**Depth of Trench**
	no collapse	10'

REMARKS

- samples collected at 0-6", 2', 4', 6', 10' * 4' sample read 900-1,000 μR/hr in backhoe bucket
- Small trench, Jed Rahon didn't want to disturb too much "hot" soil

Sketch of Trench Wall



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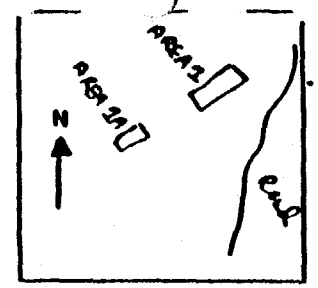
TRENCH LOG



NDL No. 7

Trench No.	Project Name/Number	Location
AREA 1A	Garvies Point / NY102-01	Glen Cove

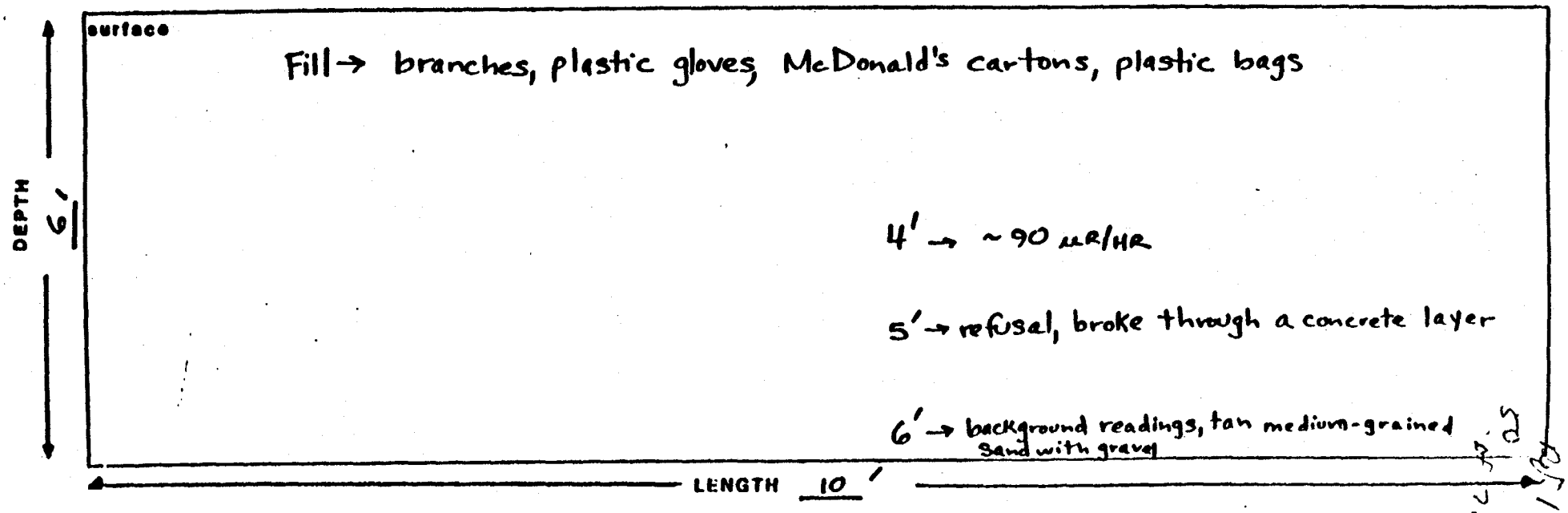
offset ~50' SW of trench at area 1

HART Inspector	Excavator/Equip. Operator	Start/Finish Date
Suzanne Morrissey	Direct / Brent Thompson	2/12/90 (1015) – 2/12/90 (1045) (7)

Elevation: Ground	Condition of Trench	Depth of Trench
	small trench, stable walls	6'

REMARKS:
• samples collected at 0-6", 2', 4', 6'

Sketch of Trench Wall



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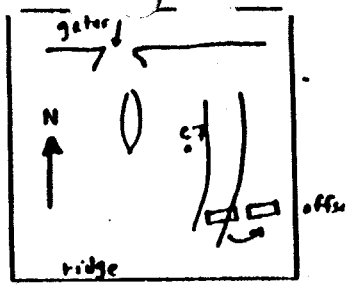
TRENCH LOG



NDL No. 8

Trench No.	Project Name/Number	Location
B+75, 6+75	Garvies Point / NY102-01	Glen Cove

HART Inspector	Excavator/Equip. Operator	Start/Finish Date
Suzanne Morrissey	Direct / Brent Thompson	2/12/90 (1130) – 2/12/90 (1220) (8)

Elevation: Ground	Condition of Trench	Depth of Trench
	partial wall collapse	14'

REMARKS:
- samples collected at 0-6", 2', 4', 6', 8', 12'
- offset ~15' SE because backhoe operator felt shock in his fingers while digging here

Sketch of Trench Wall

DEPTH 14'

surface
0-3' Brown clean (? no bricks, etc) fill soil

4' → black fill (slag? fragments), ~10.0 μR/HR

Black fill, tree branches, pilings, tar-like substance, large boulders, ~30 μR/HR

12'

Groundwater ~12-14'

LENGTH 15'

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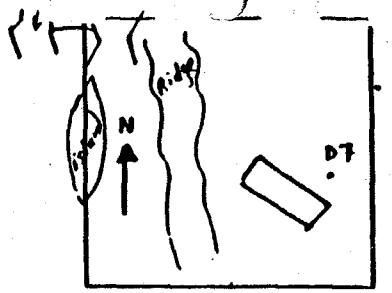
TRENCH LOG



NDL No. 9

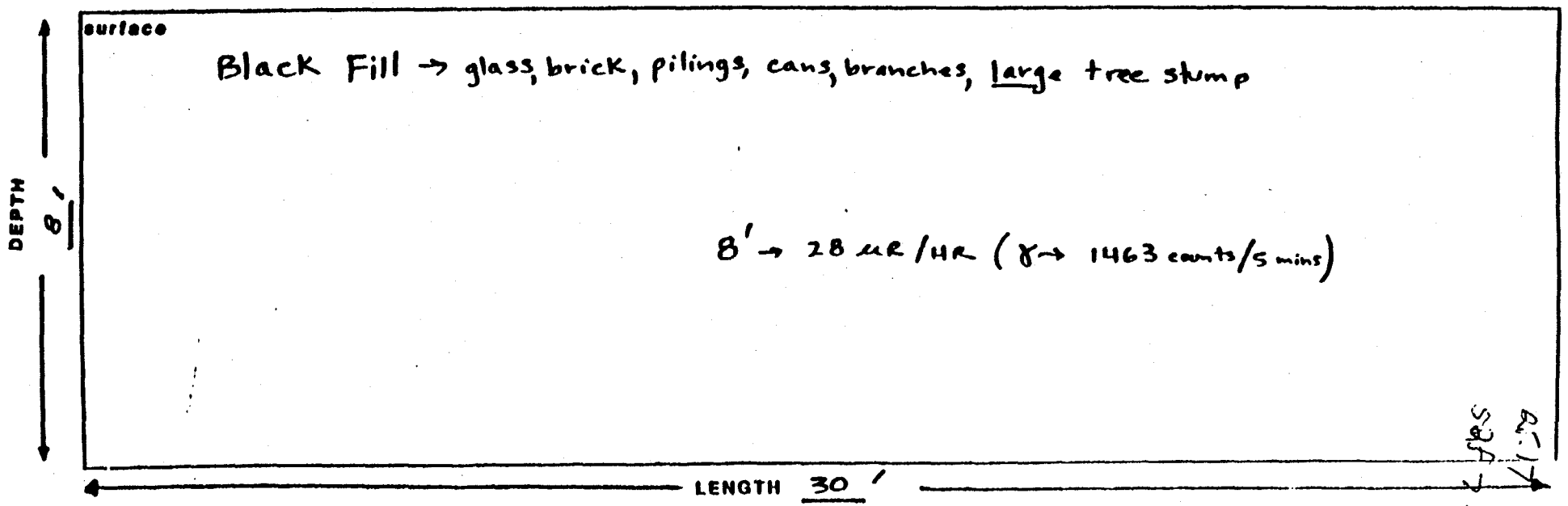
Trench No.	Project Name/Number	Location
C+75, 7+25	Garvies Point /NY102-01	Glen Cove

HART Inspector	Excavator/Equip. Operator	Start/Finish Date
Suzanne Morrissey	Direct / Brent Thompson	2/12/90 (1428) – 2/12/90 (1500) ⑨

Elevation: Ground	Condition of Trench	Depth of Trench
	walls stable	8'

REMARKS:
- samples collected at 0-6", 2', 4', 6', 8'
- all monitoring equipment background (except at 8')

Sketch of Trench Wall



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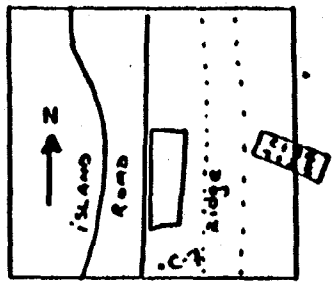
HART

TRENCH LOG



NDL No. 10

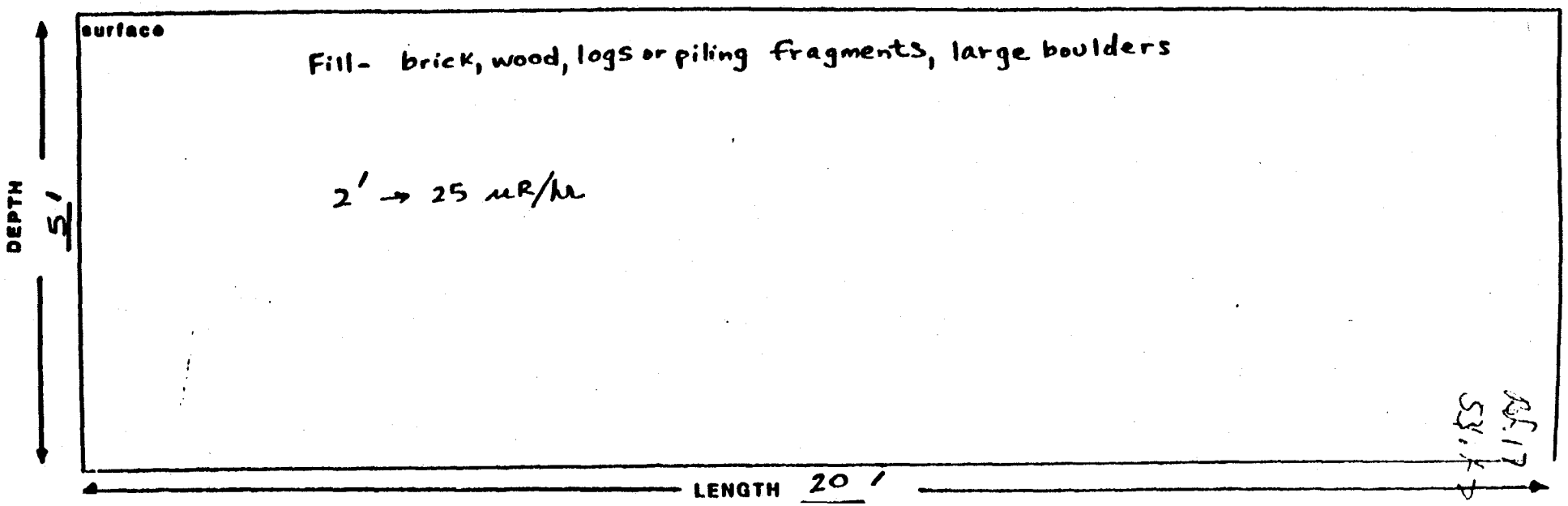
Trench No.	Project Name/Number	Location
C+10, 1+40	Garvies Point / NY 102-01	Glen Cove

HART Inspector	Excavator/Equip. Operator	Start/Finish Date
Suzanne Morrissey	Direct / Brent Thompson	2/12/90 - 2/12/90 (1500) (1510) (10)

Elevation: Ground	Condition of Trench	Depth of Trench
	walls stable	5'

REMARKS:
- all monitoring equipment read background
- Sample collected from 4' interval

Sketch of Trench Wall



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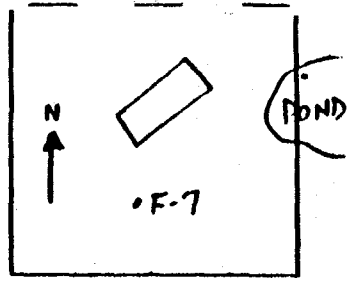
HART

TRENCH LOG



NDL No. 11

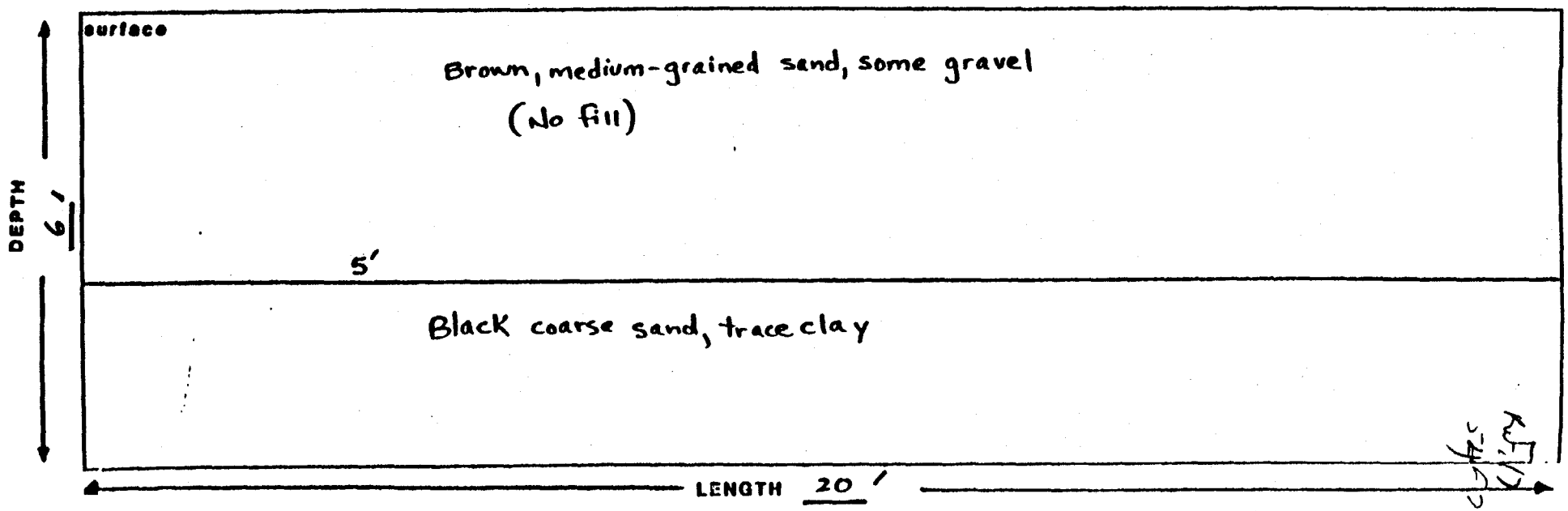
Trench No.	Project Name/Number	Location
F+25, 7+25	Garvies Point / NY102-01	Glen Cove

HART Inspector	Excavator/Equip. Operator	Start/Finish Date
Suzanne Morrissey	Direct / Brent Thompson	2/12/90 - 2/12/90 (1530) (1550) (11)

Elevation: Ground	Condition of Trench	Depth of Trench
	walls very unstable, sand collapsing	6'

REMARKS:
- all monitoring equipment reads background
- Samples collected at 0-6", 2', 6'

Sketch of Trench Wall



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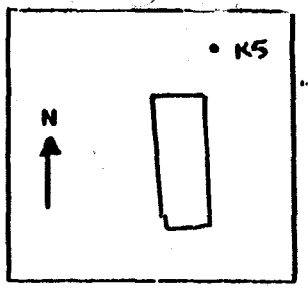
HART

TRENCH LOG



NDL No. 12A

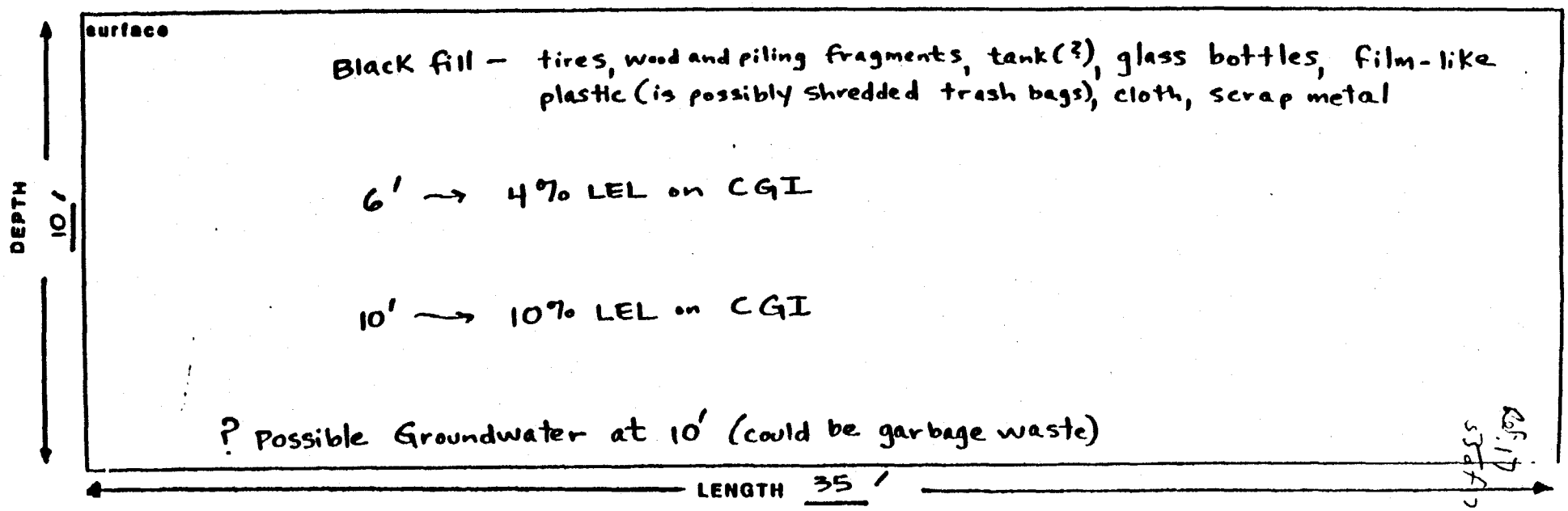
Trench No.	Project Name/Number	Location
J+75, 4+75	Garvies Point/NY102-01	Glen Cove

HART Inspector	Excavator/Equip. Operator	Start/Finish Date
Suzanne Morrissey	Direct / Brent Thompson	2/12/90 - 2/12/90 (1600) (1630) (12)

Elevation: Ground	Condition of Trench	Depth of Trench
	Collapsing walls (wet and full of garbage)	10'

REMARKS:
• Samples collected at 0-6", 2', 6'

Sketch of Trench Wall



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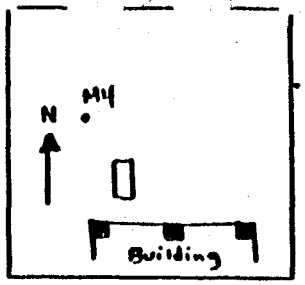
HART

TRENCH LOG



NDL No. 13

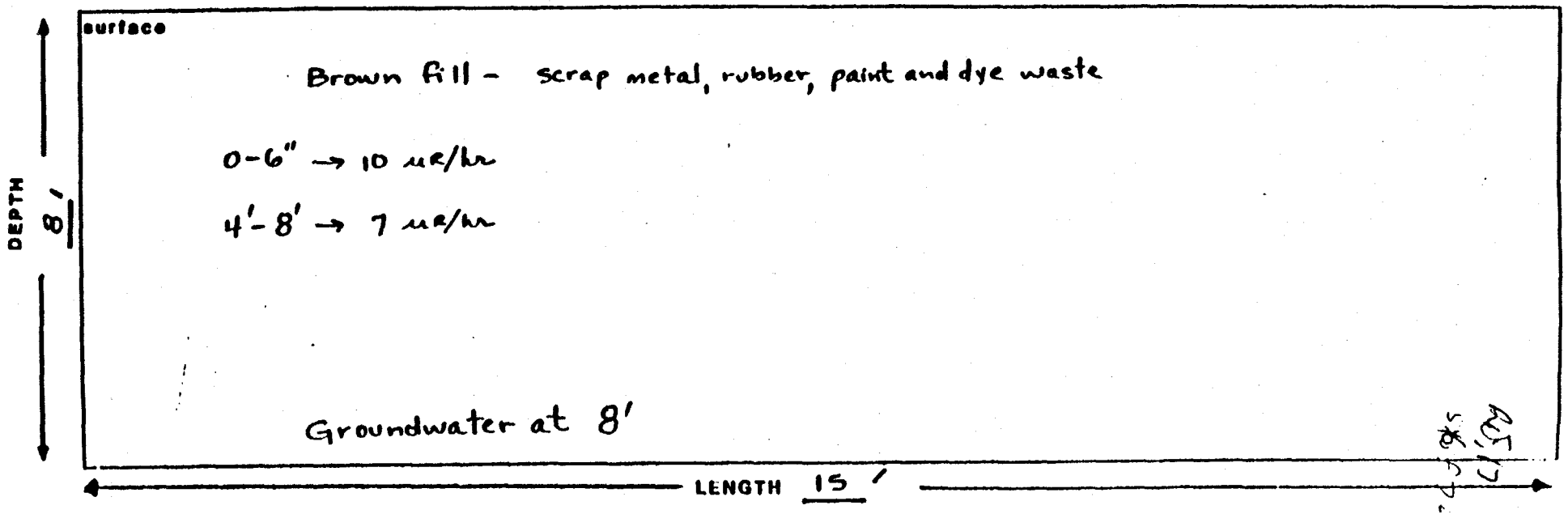
Trench No.	Project Name/Number	Location
M+25, 3+75	Garvies Point/NY102-01	Glen Cove

HART Inspector	Excavator/Equip. Operator	Start/Finish Date
Suzanne Morrissey	Direct/Brent Thompson	2/13/90 - 2/13/90 (0900) (0915) (13)

Elevation: Ground	Condition of Trench	Depth of Trench
	unstable wet walls, no collapse	8'

REMARKS:
- all monitoring equipment background
- Samples collected at 0-6"

Sketch of Trench Wall



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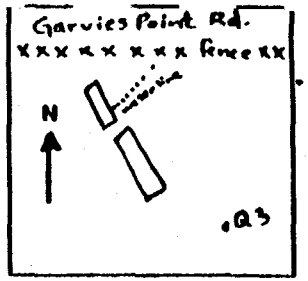
HART

TRENCH LOG



NDL No. 14

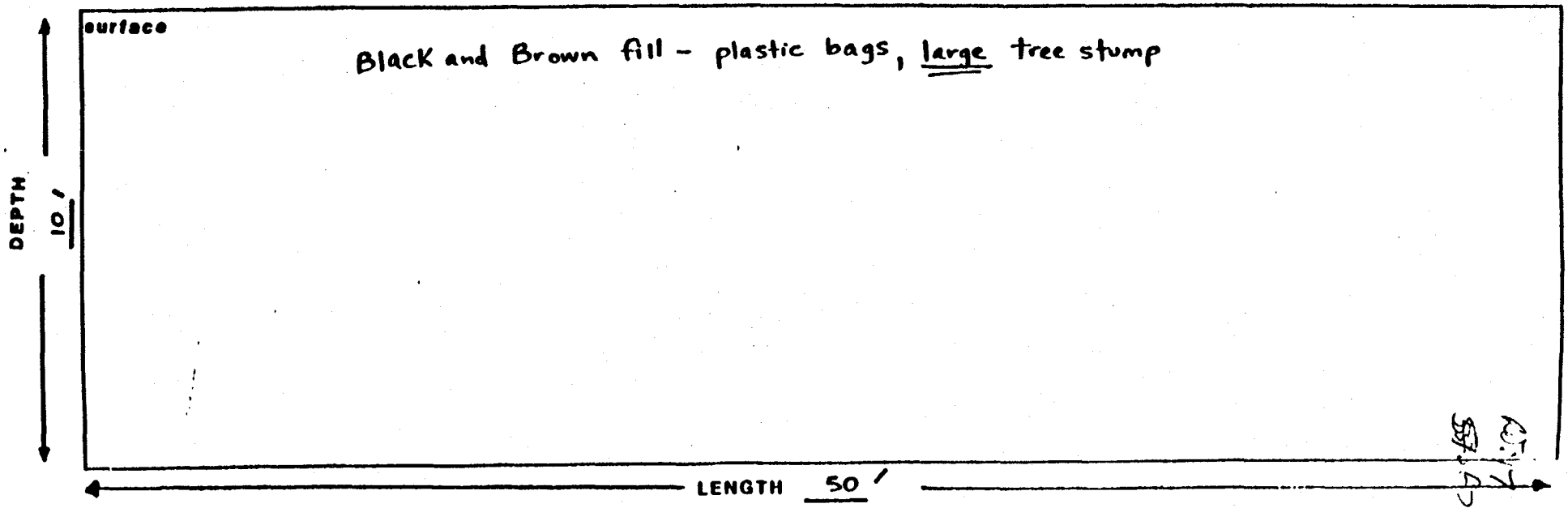
Trench No.	Project Name/Number	Location
P+75, 3+25	Garvies Point / NY102-01	Glen Cove

HART Inspector	Excavator/Equip. Operator	Start/Finish Date
Suzanne Morrissey	Direct / Brent Thompson	2/13/90 - 2/13/90 (0945) (1040) (14)

Elevation: Ground	Condition of Trench	Depth of Trench
	walls unstable, partial cave-in	10'

REMARKS:
- Samples collected at 2', 4', 6', 8', 10'
- monitoring equipment reads background
- waterline in area ∴ offset 20' south

Sketch of Trench Wall



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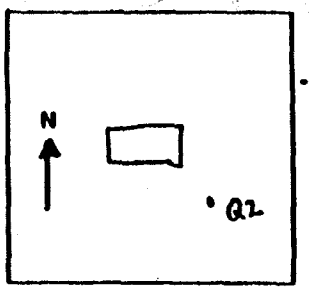
HART

TRENCH LOG



NDL No. 15

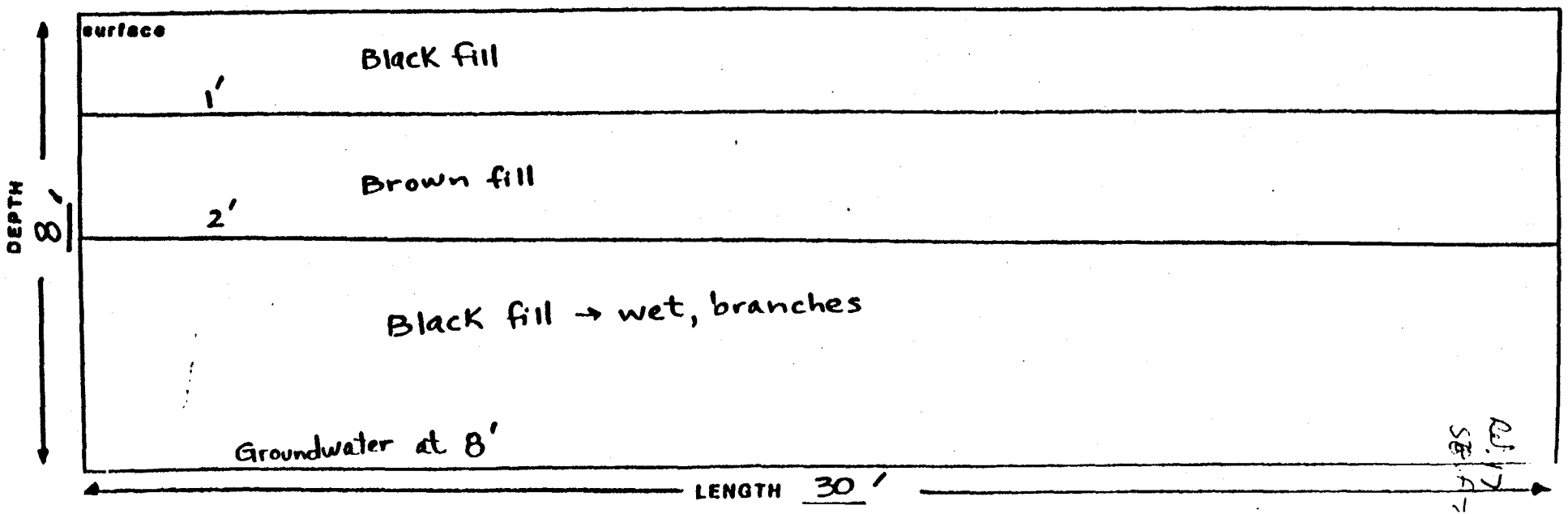
Trench No.	Project Name/Number	Location
Q+10, 2+25	Garvies Point / NY102-01	Glen Cove

HART Inspector	Excavator/Equip. Operator	Start/Finish Date
Suzanne Morrissey	Direct / Brent Thompson	2/13/90 (1045) - 2/13/90 (1100) (15)

Elevation: Ground	Condition of Trench	Depth of Trench
	unstable walls, no collapse	8'

REMARKS:
- Samples collected at 2', 4', 6'
- monitoring equipment reads background

Sketch of Trench Wall



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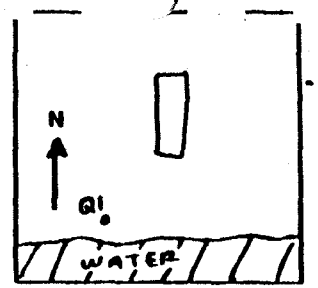
HART

TRENCH LOG



NDL No. 16

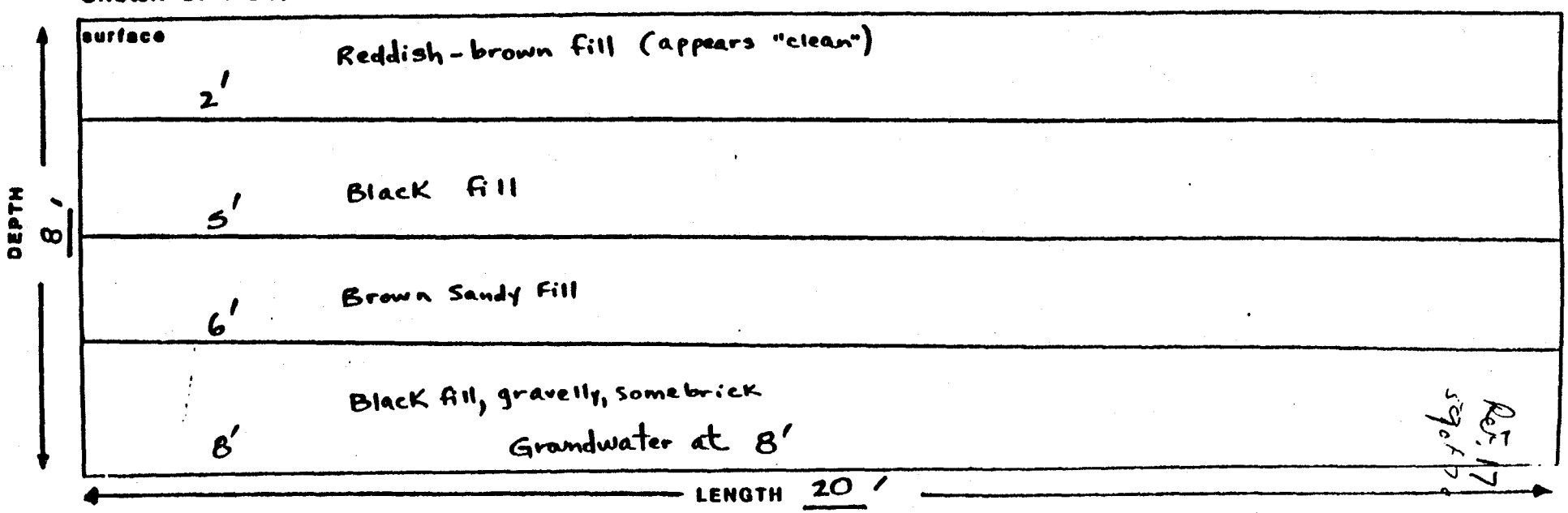
Trench No.	Project Name/Number	Location
Q+25, 1+50 (area 2)	Garvies Point/NY102-01	Glen Cove

HART Inspector	Excavator/Equip. Operator	Start/Finish Date
Suzanne Morrissey	Direct/Brent Thompson	2/13/90 - 2/13/90 (1120) (1135) (16)

Elevation: Ground	Condition of Trench	Depth of Trench
		8'

REMARKS:
- Samples collected at 0-6", 2', 4', 6', 8'

Sketch of Trench Wall



Ref. 17 sig of p

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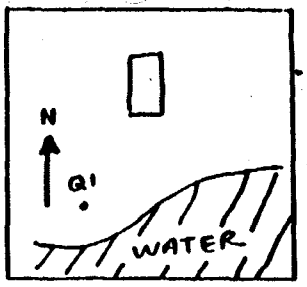
HART

TRENCH LOG



NDL No. 17

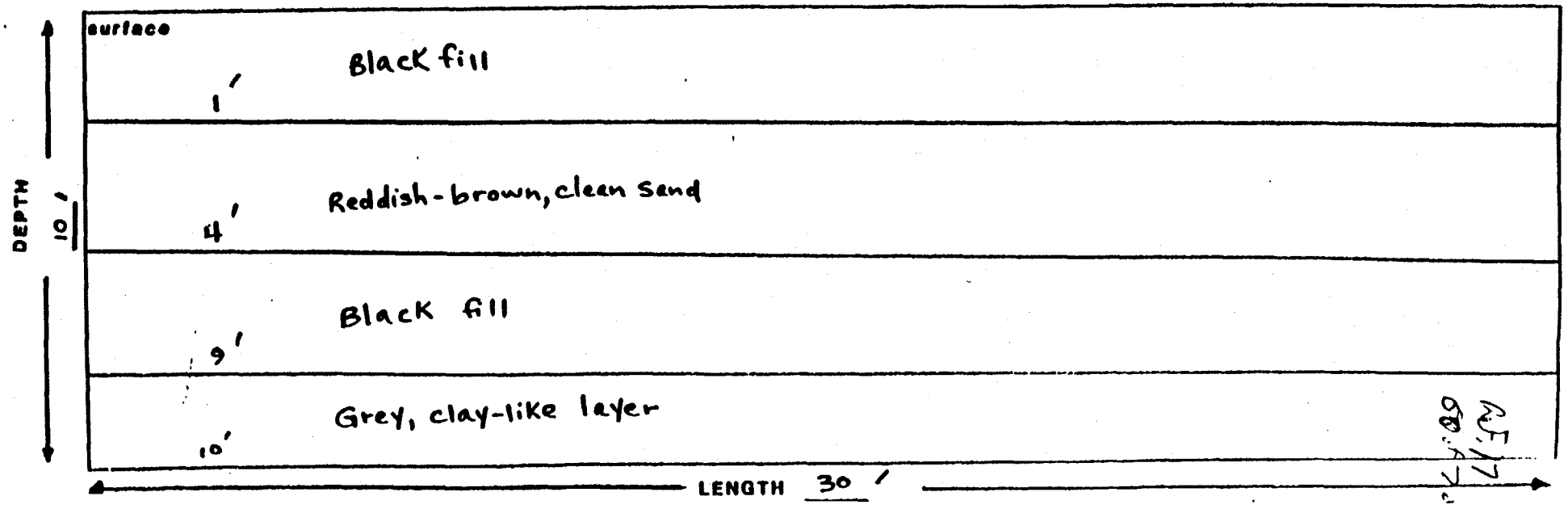
Trench No.	Project Name/Number	Location
Q+50, 1+75	Garvies Point/NY102-01	Glen Cove

HART Inspector	Excavator/Equip. Operator	Start/Finish Date
Suzanne Morrissey	Direct / Brent Thompson	2/13/90 - 2/13/90 (1145) (1215) (17)

Elevation: Ground	Condition of Trench	Depth of Trench
	Fairly stable walls	10'

REMARKS:
• Samples collected at 0-6", 2', 4', 6', 8', 10'

Sketch of Trench Wall



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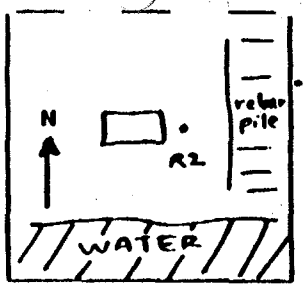
TRENCH LOG



NDL No. 18

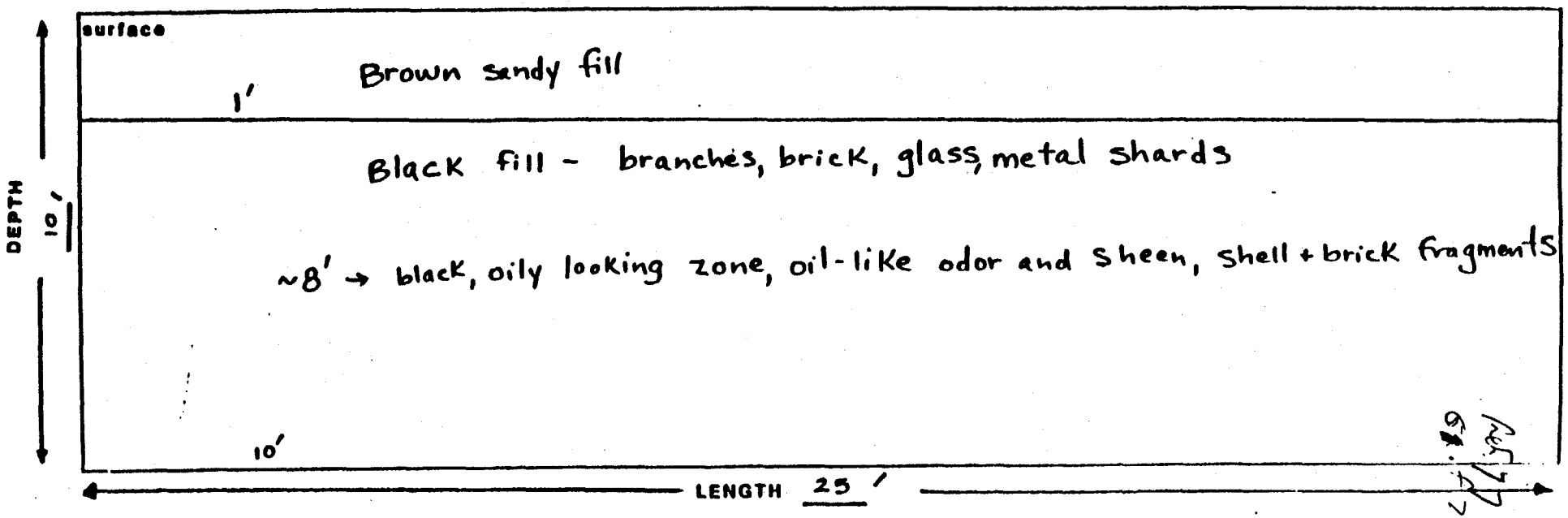
Trench No.	Project Name/Number	Location
R2 stake	Garvies Point / NY102-01	Glen Cove

HART Inspector	Excavator/Equip. Operator	Start/Finish Date
Suzanne Morrissey	Direct / Brent Thompson	2/13/90 (1345) - 2/13/90 (1400) (13)

Elevation: Ground	Condition of Trench	Depth of Trench
	walls semi-stable	10'

REMARKS:
Samples collected at 0-6", 2', 6', 10'

Sketch of Trench Wall



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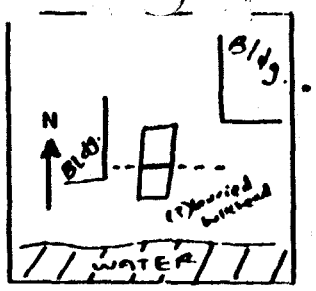
HART

TRENCH LOG



NDL No. 19

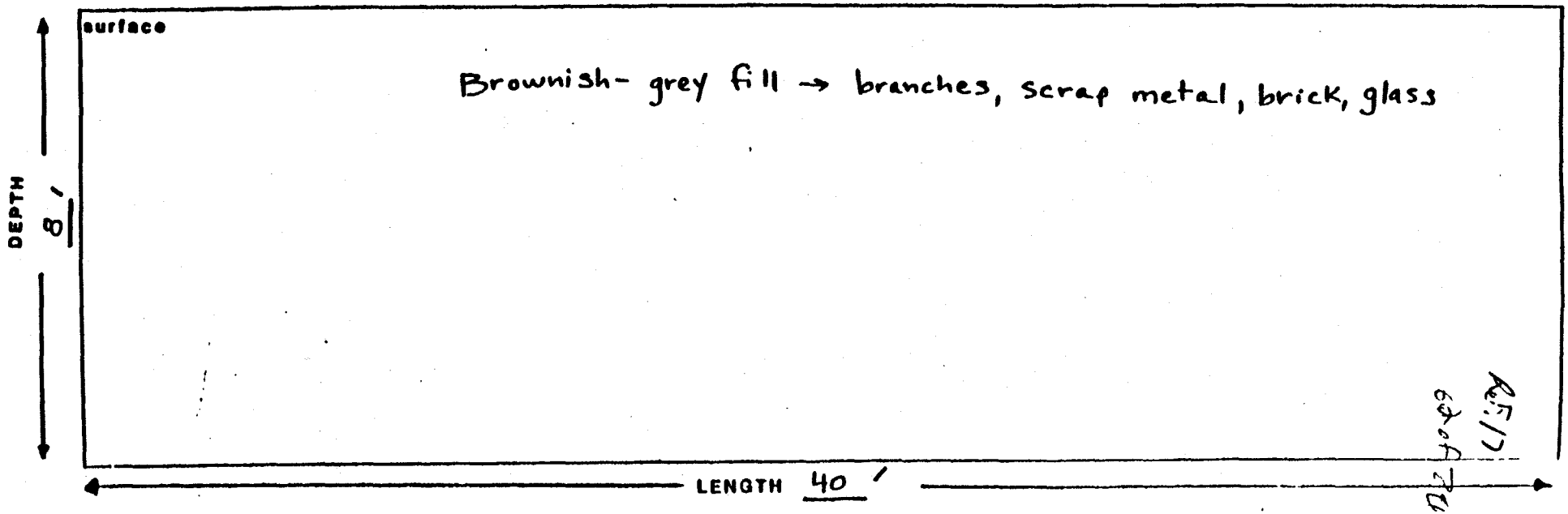
Trench No.	Project Name/Number	Location
0+25, 1+25	Garvies Point / NY102-01	Glen Cove

HART Inspector	Excavator/Equip. Operator	Start/Finish Date
Suzanne Morrissey	Direct / Brent Thompson	2/13/90 - 2/13/90 (1445) (1515) (19)

Elevation: Ground	Condition of Trench	Depth of Trench
	Fairly stable	8'

REMARKS:
- Samples collected at 8'
- Monitoring equipment reads background

Sketch of Trench Wall



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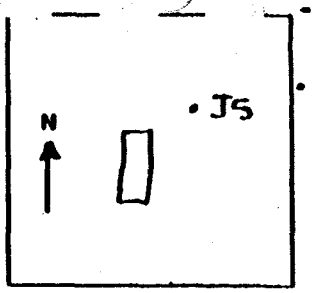
TRENCH LOG



NDL No. 20

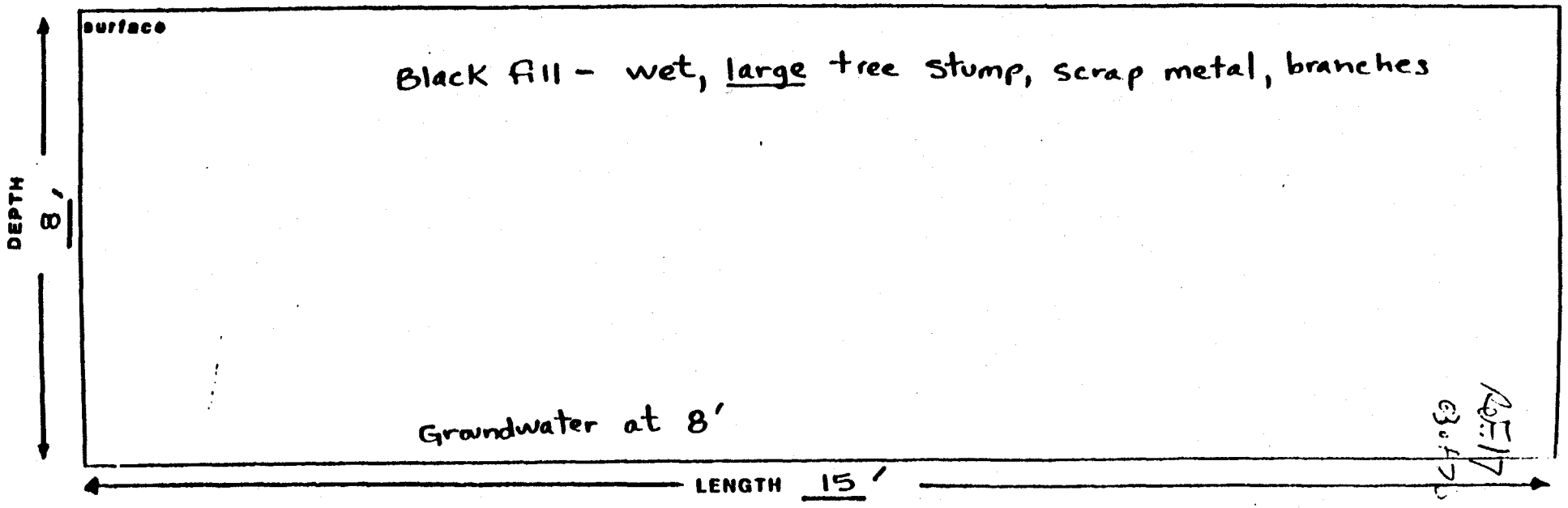
Trench No.	Project Name/Number	Location
I+75, 4+75	Garvies Point / NY102-01	Glen Cove

HART Inspector	Excavator/Equip. Operator	Start/Finish Date
Suzanne Morrissey	Direct / Brent Thompson	2/13/90 - 2/13/90 (1520) (1545) 20

Elevation: Ground	Condition of Trench	Depth of Trench
	fairly unstable	8'

REMARKS:
* No samples collected

Sketch of Trench Wall



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64.F2

Appendix C

Laboratory Analytical Data

Ref. 17
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Pit #	Grid Location	2.6 MeV CPM	Type of Trench*	Depth (ft)	Soil Description	uR/hr @ 1cm fr soil	MDL Samp. #	Radionuclide Concentration Th-nat (pCi/g)	U-nat (pCi/g)	Ra-226 (pCi/g)
1	Z+75, 5+75	106	BKG	0	top soil	7-9				
	(W side of property)			2	gray soil - some refuse	"				
				4	gray soil - some refuse	"				
				6	gray soil - some refuse	"				
		117,135,181 (N, mid, S)		8-10	yellow clay	"				
2	Z+75 3+20	112	BKG	0	top soil	6-9	10	1.1±0.4	< 3.9	1.1±0.1
	(W side of property)			2	gray soil - some refuse	"	64	0.9±0.4	< 2.9	0.9±0.1
		154 (S)		4	gray soil - some refuse	"	7	< 0.9	< 2.9	0.5±0.1
				6	gray soil - some refuse	"	56	< 0.8	< 1.3	0.4±0.1
		180,176 (N, mid)		8	yellow clay	"	55	< 0.7	< 2.3	0.3±0.1
3	B+25, 1+75	106	BKG	0	top soil	6-8				
	(W side of property)			2	gray soil - some refuse	"				
				4	gray soil - some refuse	"				
		126,135,147 (E, mid, W)		6	gray soil	"				
4	Z+75, 2+25	194	Invest.	0	top soil	6-12	19	< 1.4	< 3.1	0.6±0.1
	(W side of property)			2	gray soil - some refuse	6-9	20	0.6±0.4	< 2.1	0.6±0.1
				4	"	"	8	0.6±0.3	< 1.4	0.3±0.1
				6	"	"	18	< 1.3	< 1.9	0.5±0.1
		150,164 (E, mid)		8	"	"	9	< 0.6	< 1.4	0.4±0.2
				10	"	"				
		164 (W)		12	"	"				

*BKG - Background
Invest. - to investigate elevated reading

102484

Pit #	Grid Location	2.6 MeV CPM	Type of Trench*	Depth (ft)	Soil Description	uR/hr @ 1cm fr soil	NDL Samp. #	Radionuclide Concentration Th-nat (pCi/g)	U-nat (pCi/g)	Ra-226 (pCi/g)
5	Z+75, 4+25	208	Invest.	0	top soil	8-10				
				2	gray soil - some refuse	"				
	(W side of property)			4	"	"				
		165 (N)		6	"	"				
				8	"	"				
		113,102 (mid,S)		10	"	"				
6	Area 1 B+0, 7+75	488	Invest.	0	top soil	35	13	0.9±0.4	< 3.4	0.9±0.1
				2	brown soil	-	58	0.6±0.4	< 2.9	0.7±0.1
				3	black powder	900				
	(W side of property)			4	"	"	54	583±2	662±49	772±2
				6	"	-	4	1.1±0.6	52.8±2.4	2.7±0.1
				8	"	-				
				10	brown sand	-	65	4.1±0.3	< 6.1	3.1±0.1
7	Area 1a A+75, 6+85	158	Invest.	0	top soil	10	52	2.6±0.5	< 5.9	3.7±0.1
				2	brown soil	-	16	3.3±0.4	< 6.3	3.4±0.1
	(W side of property)			4	very hard, black layer	90	1	28.5±0.6	49.7±3.1	47.4±0.4
				6	brown sand	10	11	0.5±0.4	<1.5	<0.3

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Pit #	Grid Location	2.6 MeV CPM	Type of Trench*	Depth (ft)	Soil Descrip-tion	uR/hr @ 1cm fr soil	NDL Samp. #	Radionuclide Concentration Th-nat (pCi/g)	U-nat (pCi/g)	Ra-226 (pCi/g)
8	B+75, 6+75	157	Invest.	0	top soil (on berm)	11	61	0.7±0.5	< 3.0	0.4±0.1
	(W side - drvway berm)			2	brown soil	-	5	< 0.6	< 2.3	0.4±0.2
				4	black granular	30-40	57	28.1±0.7	44.5±3.0	41.3±0.4
				6	"	"	14	19.3±0.5	18.8±2.1	26.4±0.3
				8	"	"	62	4.5±0.3	6.9±1.6	6.8±0.2
				10	"	"				
				12-16	"	"	59	11.6±0.4	13.9±2.1	17.8±0.2
9	C+75, 7+25 to 7+75	155	Invest.	0	top soil (on berm)	10	17	0.8±0.5	< 2.1	0.6±0.1
	(W side - drvway berm)			2	brown/yellow clay	20	60	0.8±0.5	< 2.0	0.8±0.1
				4	"	35	63	1.8±0.4	< 2.1	1.2±0.1
				6	black clay-like	20	66	< 1.1	< 2.0	0.5±0.1
		292		8	"	28	22	3.0±0.4	< 8.3	4.2±0.2
10	C+10, 7+40	173	Invest.	0	top soil (edge of driveway)	10				
	(W side - at drvway pavement)			1	bricks & rubble	13				
				2	brown soil & rocks	25				
				4	black powder	25	15	4.0±0.4	< 10.9	6.6±0.2
11	F+25, 7+25	151	Invest.	0	brown sand	10	23	< 0.9	< 1.5	0.4±0.1
	(mid-property)			2	"	10	3	1.1±0.3	< 2.7	0.6±0.1
		235		6	"	10	2	2.1±0.2	< 1.9	1.1±0.1

Pit #	Grid Location	2.6 MeV CPM	Type of Trench*	Depth (ft)	Soil Descrip-tion	mR/hr @ 1cm fr soil	NDL Samp. #	Radionuclide Concentration Th-nat (pCi/g)	U-nat (pCi/g)	Ra-226 (pCi/g)
12a	J+75, 4+75 (mid-property)	162	Invest.	0	soil/gravel	9	6	0.4±0.3	< 2.5	0.5±0.1
				2	decaying refuse	-	53	0.8±0.3	< 1.4	0.6±0.1
				6	"	-	21	0.7±0.5	< 3.3	0.4±0.1
b	K+0, 4+75	149	Invest.	0	soil/gravel	10				
				2	decaying refuse	8-10				
				6	"	8-10				
13	M+25, 3+75 (near condo)	142	Invest.	0	gravel, waste concrete	8	26	< 0.8	< 1.9	< 0.4
				2	soil, refuse	-	12	0.8±0.5	< 1.8	0.6±0.1
				4	"	-	25	< 0.8	< 3.8	0.4±0.1
		143		6	"	-	24	< 0.6	< 2.5	0.4±0.1
14	P+75, 3+25 (E side of prop.)	214	Invest.	0	brown soil (near prop. fence)	17	-			
				2	brown soil	14	43	< 0.7	< 2.0	0.8±0.1
				4	"	-	45	0.6±0.4	< 1.8	0.7±0.1
				6	black vein (2' thick)	30	46	12.4±0.4	20.8±2.4	16.9±0.2
				8	yellow/black mix	-	48	0.6±0.5	< 2.4	0.7±0.2
				10	gray sand/clay	10	38	0.9±0.4	< 3.0	0.6±0.1
				>10	light brown sand	-				

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68-70

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Pit #	Grid Location	2.6 MeV CPM	Type of Trench*	Depth (ft)	Soil Description	uR/hr @ 1cm fr soil	NDL Samp. #	Radionuclide Concentration Th-nat (pCi/g)	U-nat (pCi/g)	Ra-226 (pCi/g)
15	Q+10, 2+25 (Area 3) (E side of prop.)	-	Invest.	0	brown soil (on dirt road nr condo)	40	39	24.4±0.8	57.3±4.3	54.5±0.5
				0.5	black material (thin layer)	80				
				2	brown/orange sand	15	44	< 0.7	< 4.6	0.8±0.1
				4	black material	75	42	9.5±0.4	13.7±2.0	17.6±0.2
				6	"	"	51	4.8±0.3	< 9.3	6.4±0.1
				8	gray sand/clay (water table)	10				
				>9	refuse	-				
16	Q+25, 1+50 (Area 2) (E side of prop.)	2369	Invest.	0	yellow clay w/ black+bricks	120	37	2.7±0.3	< 5.3	0.9±0.1
				2	"	14	36	0.7±0.4	< 2.6	< 0.4
				4	light brown sand	20	35	0.7±0.4	< 2.8	< 0.4
				6	gray soil	15	47	1.2±0.4	< 4.2	0.5±0.1
				8	gray sand/clay (water table)	10	50	1.3±0.2	< 4.8	1.9±0.1
17	Q+50, 1+75 (E side of prop.)	312	Invest.	0	gray soil	20	29	4.0±0.3	< 12.5	3.3±0.1
				2	light brown sand	15	34	< 1.0	< 3.9	0.5±0.1
				4	black material w/red bricks	25	27	4.3±0.4	< 10.0	8.3±0.2
				6	"	20				
				8	"	30	28	1.7±0.5	< 6.5	4.0±0.2
				10	gray mud (water table)	15	49	0.5±0.4	< 2.6	1.0±0.2

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Pit #	Grid Location	2.6 MeV CPM	Type of Trench*	Depth (ft)	Soil Description	uR/hr @ 1cm fr soil	NDL Samp. #	Radionuclide Concentration Th-nat (pCi/g)	U-nat (pCi/g)	Ra-226 (pCi/g)
18	R+0, 2+0 (E side of prop.)	152	Invest.	0	brown soil	10	30	0.6±0.5	< 1.8	0.4±0.2
				2	"	20 (60 in hole)	33	3.9±0.4	< 9.7	6.8±0.2
				4	black, yellow, gray mixed layers	20				
				6	"	-	32	2.9±0.5	< 6.6	4.3±0.2
				8	oily clay	10				
				10	light gray clay (water table)	10	41	< 1.8	< 3.5	1.5±0.1
19	0+25, 1+25 (between condos)	132	BKG	0	brown soil	10				
				2	brown/orange sand	10				
				4	"	10				
		217		6	gray/black material	10	31	4.0±0.4	< 7.2	11.1±0.2
				8	"	10	40	< 1.0	< 1.9	0.7±0.1
20	I+75, 4+25 (mid-property)	135	BKG	0	gray soil	8				
				2	garbage & ashes	8				
				4	"	8				
		94		6	"	8				

102489

REFERENCE NO. 22

Ref. 22

STATE OF NEW YORK
RADIOACTIVE MATERIALS LICENSE

Pursuant to the Labor Law and Industrial Code Rule No. 38, and in reliance on statements and representations heretofore made by the licensee designated below, a license is hereby issued authorizing such licensee to transfer, receive, possess and use the radioactive material(s) designated below; and to use such radioactive materials for the purpose(s) and at the place(s) designated below. This license is subject to all applicable rules, regulations, and orders now or hereafter in effect of all appropriate regulatory agencies and to any conditions specified below.

Licensee	3. License number
1. Name: Wah Chang Smelting and Refining Company of America, Inc.	743-0464
2. Address: 63 Herb Hill Road, Glen Cove, New York	4. Expiration date: Valid until terminated
	5. Reference number: 1

6. Radioactive materials (element and mass number)	7. Chemical and/or physical form	8. Maximum quantity licensee may possess at any one time
1. Thorium	1. Thorium oxide	1. 2300 pounds
2. Thorium	2. Thorium nitrate	2. 750 pounds
		Total thorium not to exceed ~~15 ci~~ curies .15 Ci (see in calculation) ayf

CONDITIONS

9. Authorized use. (Unless otherwise specified, the authorized place of use is the licensee's address stated in Item 2 above.) 1. As insulator in vacuum furnace.
2. Production of thoriated tungsten powder as step in manufacturing of welding rods.

0. The licensee shall conduct operations involving the use of sources of radiation in compliance with the requirements of New York State Industrial Code Rule No. 38, "Radiation Protection".

1. Any disposal of radioactive waste by the licensee by burial, through the sanitary sewer, or by other release to the environment shall be in accordance with the provisions of Part 16, New York State Sanitary Code Records of all such disposal shall be maintained by the licensee. Monitoring procedures shall be instituted where necessary to demonstrate that concentrations and quantities of radioactive material so disposed of do not exceed permissible levels.

2. The agreement material described in Items 6, 7 and 8 above:

A. Shall be used only by or under the supervision of either A. Morra or A. Bathie

B. Shall not be used in or on human beings, in products intended for uncontrolled distribution to the general public, nor in field applications where radioactivity is released.

FOR THE NEW YORK STATE DEPARTMENT OF LABOR

Date_____ by_____

Form COL-6aSL (8-63)

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