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THE NEW YORK CITY
LONG RANGE SLUDGE MANAGEMENT PLAN

GENERIC
ENVIRONMENTAL IMPACT STATEMENT III

JFK WEST, QUEENS
PHASE IA
ARCHAEOLOGICAL ASSESSMENT

583

**HISTORICAL
PERSPECTIVES** INC.



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THE NEW YORK CITY

LONG RANGE SLUDGE MANAGEMENT PLAN

GENERIC ENVIRONMENTAL IMPACT STATEMENT III

JFK WEST, QUEENS

PHASE IA ARCHAEOLOGICAL ASSESSMENT

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Correspondence with the New York State Office of Parks,
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I. INTRODUCTION

The City of New York has entered into a Consent Decree and Enforcement Agreement with the U.S. Environmental Protection Agency (EPA) and the New York State Department of Environmental Conservation (DEC) to end ocean disposal of its sewage sludge. A Long Range Sludge Management Plan is being developed by the City as part of that agreement. The Plan calls for the development of multiple City sites where dewatered sludge can be processed into sludge product with beneficial reuse technologies.

The JFK West site consists of approximately 225 acres, and excluding 6.3 acres of wetlands has a usable area of 218.7 acres. Lying east of the Howard Beach section of Queens, and about 350 feet west of John F. Kennedy International Airport, the site is bounded on the north by the Nassau Expressway, on the west by the elevated tracks of the New York City Transit Authority Rockaway Line, on the east by 130th Street and Bergen Basin, and on the south by Bergen Basin and a section of Jamaica Bay sometimes called Grassy Bay. (See Fig.2)

Generally, the project site slopes down from an elevation of 20 feet above mean low water in its northwest corner, until dropping sharply along the edge of Bergen Basin, where marsh conditions are evident. A gentler descending gradient prevails as one approaches Hawtree Basin and Jamaica Bay to the south. The southern half of the project site is presently unoccupied, except for a water tank at the extreme southern tip. (See Figs. 3a,b) At the center of the site, on Bergen Basin at Lefferts Boulevard are buildings and tanks of an oil company transfer facility. Directly north of the oil complex is a landfill and an equipment/training center with an unpaved parking lot for the operating engineers. The center and lot appear as a parallelogram in the aerial photo. The landfill, roughly 300 feet by 100 feet, is approximately 40 feet high. North of this are two extensive long-term parking lots with their related structures.

A preliminary archaeological report was begun as part of a generic environmental impact statement (GEIS III) for the Long Range Plan. However, initial research determined that since environmental conditions favorable to prehistoric settlement existed within the study area, and prehistoric resources have been recorded near the JFK West site, a full Phase IA archaeological study was deemed necessary.

Therefore the purpose of this "Phase IA Archaeological Assessment Report," is to determine the presence, type, extent and significance of any cultural resources which may be present on the site. The determination is based on archival research which documents (1) the probability that JFK West hosted any prehistoric or historical resources, and (2) the likelihood that these

resources have survived subsequent subsurface disturbances, such as construction, grading, utility installation, etc.

In order to address these concerns, various sources of data were researched. Primary source material on the project site was collected to determine the project site's original topography, and to compile a building history and disturbance record. Particularly helpful was a series of plates from the 1915 "Final Maps for the Borough of Queens," which give valuable pre-development topographical information. These and other historical maps as well as descriptions of the study area were provided by the Local History and Map Divisions of the New York Public Library. No boring data was available from the Subsurface Exploration Section of the New York City Topographical Bureau, but a description of borings done c1984 was provided by Allee King Rosen & Fleming Inc. and additional borings data was provided by Stone & Webster Engineering, Inc.

To place the JFK West site within an historical context, local and regional histories such as W. W. Munsell's History of Queens County, New York were examined, as well as local guides to New York City. William A. Ritchie's The Archaeology of New York State provided a overview of Native American culture and lifeways during the prehistoric period. Other archaeological literature, available site reports and journal publications were researched for data specific to the project area. Inquiries concerning inventoried prehistoric and historical sites were sent to the New York State Museum and the New York State Office of Parks, Recreation and Historic Preservation.

Although no subsurface investigations were conducted, a site visit (5-7-91) and a photographic record of current conditions was made. (See Photos 1-?) A 1988 aerial photograph was supplied by Stone and Webster. (See Fig. 3a,b)

II. ENVIRONMENTAL SETTING

Long Island is the result of glacial drift being deposited on top of a ridge formation which is part of the larger Atlantic Coastal Plain. In reality, Long Island has the characteristics of an elevated sea bottom - low topographic relief and extensive marshy tracts. In the last million years, as glaciers advanced and receded three times, the surficial geology of the island, including the West JFK site, was profoundly altered. "The glacier was an effective agent of erosion, altering the landscape wherever it passed. Tons of soil and stone were carried forward, carving and planing the land surface. At the margins of the ice sheet massive accumulations of glacial debris were deposited, forming a series of low hills or terminal moraines" (Eisenberg 1978:19). Circa 18,000 years ago, the last ice sheet reached its southern limit, creating the Harbor Hill moraine that traverses the length of Long Island. Before extensive alteration of the landscape during the nineteenth and twentieth centuries, a gently sloping plain extended south of the moraine to the ridge of sand hills forming the Queens mainland. Separating this ridge and the barrier beach known as the Rockaway Peninsula, was a wide expanse of tidal marsh drained into Jamaica Bay by numerous small creeks and their tributaries.

Before the extensive alterations to the landscape during the twentieth century construction of Kennedy Airport and other grading activities in the vicinity, the JFK West site lay between Hawtree and Bergen (or Remsen) Creeks, whose courses once entered the study area at its northwestern and northeastern corners, respectively. Smaller, unnamed watercourses penetrated the wetlands in and around the study area. (See Fig. 9) Between Hawtree and Bergen Creeks lay a dry, elevated area, which during the historical period was the site of Hawtree Creek Road, leading down to the shore of Jamaica Bay (See Figs. 5,7). This area of raised ground is consistently depicted on historical maps, and as the only habitable land in the area was the first to be claimed and lotted (See Fig. 8 bottom). With the construction of Bergen Basin between 1947 and 1951, a large portion of the raised land was profoundly altered. However, two sections, both west of present Lefferts Boulevard, apparently survived intact within the project site. As drawn on the Hyde 1901 map and its index map, these two sections are in the northwestern corner of the project site, lot 84 and part of lot 6, and to the south the western part of lot 8. (See Fig. 9 and 8 top)

The Final Maps of the Borough of Queens (1915) which overlay pre-fill topographic contours with planned and existing streets and current elevations clearly indicate these two areas to have been originally 0 to 5 feet above mean high water in the northern section, with dimensions of roughly 800 by 500 feet, and 0 to 10 feet above mean high water in the southern section of approximately 800 by 1000 feet. By 1915, with streets plotted in, the elevations were 10 to 12.5 feet in the north and 9 to 11.8 feet in the south. (See Fig. 10) The present USGS topographic map, Jamaica Quad, is

in general agreement with this, giving elevations of between 0 and 10 feet for the north and 0 and 15 feet for the south. (See Fig. 1) These figures suggest a layer of fill of highly variable thickness, ranging from 0 to 10 feet in the north and 0 to 15 feet in the south. The equipment/training center and northernmost parking lot sits directly atop the northern elevated section of the project site.

The remaining areas of the JFK West site, once swamp land with elevations below the mean high water line, presently range in elevation from 0 to 15 feet above mean high water, with an area in the extreme northwestern corner of the site as high as 20 feet, due to extensive filling activities and the reshaping of Hawtree Creek. These areas could have layers of fill up to 20 feet thick.

A site assessment (provided by Allee King Rosen & Fleming, Inc.) of a series of borings at the JFK West site, completed during a 1984 Department of Sanitation study, indicates that for the entire project site, the thickness of the fill layer ranges from 2 to 20 feet, fine tuning the ranges suggested by the comparison of topographic maps. The assessment's hydro-geology report indicates ground water on the project site can be anticipated to be no more than 0 - 3 feet below mean sea level.

Over 50 soil borings taken between 1959 and 1989 for construction/expansion on the Water Pollution Control Plant, that neighbors the project site to the northeast, identified a two to three foot lens of peat/organic silt/organic sand between the fill and underlying sand in the site area. Such a peat/organic lens is a result of a slow inundation of a resource-rich environment.

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III. PREHISTORIC ERA

The prehistoric era on the south shore of western Long Island can be divided into three time periods, based on prehistoric man's adaptations to changing environmental conditions. These are generally known as the Paleo-Indian (c.12,000 to 10,000 years ago), the Archaic (c.10,000 to 2,700 years ago) and the Woodland (c.2,700 to 300 years ago). In order to be able to assess the project site's potential for prehistoric exploitation, it is first necessary to review these time periods and their associated settlement patterns.

Paleo-Indian Period (c.12,000 y.a. - 10,000 y.a.)

Toward the end of the Wisconsin Glaciation, during the Late Pleistocene Epoch, the first humans wandered across the exposed land bridge which connected Siberia and Alaska. These small groups of hunters were probably following the roaming herds of megafauna which were their chief prey. The distinctive weapon in their chipped stone tool kit was the fluted point, which has been found in association with mammoth, mastodon, bison and horse remains at various sites in the southwestern United States. Although none of these "kill sites" is located east of the Mississippi, the discovery of campsites such as that at Port Mobil, Staten Island, suggest a scattered, highly mobile population in bands of approximately 20 individuals, who ranged across a vast area necessary to support lifeways organized around the hunting of migratory game (Ritchie 1980:1-3, 13). In the Northeast, the glacially lowered sea level exposed a broad coastal plain of which Long Island was a part. "This large area apparently contained abundant big game resources and provided access along the entire length of the south shore to the area that is present day Long Island" (Saxon 1978:251).

The fluted, lanceolate points, two to five inches in length with a concave base and channelled or fluted faces, presumably to facilitate hafting, exhibit a considerable range in shape and size. They were usually made from a high-grade silicious stone, often exotic to the region in which they are recovered, a function of their makers' seasonal migrations. Other artifacts in the Paleo-Indian tool kit include scrapers, knives, borers and graters, tools which indicate extensive handiwork in wood, bone and leather (Ritchie 1980:3,6).

From the locations of recorded sites in the Northeast, Paleo-Indians exhibited a marked preference for well-elevated situations. However, 30% of sites were found on or near the margins of swampy ground. Environmental characteristics which appear to have been attractive to Paleo-Indians include the proximity of major waterways, large fertile valleys and the coastal plain, where the densest population of desired food animals was supported (Ritchie

1980:7). However since 10,000 years ago, the rise in sea level estimated to be from 75 to 80 feet, has submerged large numbers of these sites.

The retreat of ice from Long Island approximately 18,000 years ago and a global warming trend circa 14,000 years before present, encouraged Paleo-Indian settlement in the Northeast. The post-glacial environment of spruce and pine underwent a gradual modification in favor of deciduous hardwoods such as oak and hickory, which have greater importance in terms of nutritional value to both animals and humans than do conifers. By 8,000 B.C., these deciduous species dominated forests along the eastern seaboard. In addition, the megafauna on which Paleo-Indian diet was based "were rapidly becoming extinct, and were being replaced by the temperate-climate fauna that are indigenous today" (Gwynne 1982:190-191).

Archaic Period (c.10,000 y.a. - 2,700 y.a.)

The warming trend at the end of the last glaciation completely transformed the northeastern coastal environment from tundra and conifer-dominated forests, to the present deciduous woodlands with generally modern distributions of fauna. Due to the dwindling contribution of meltwater from disappearing glaciers, the reduced flow of streams and rivers promoted the formation of swamps and mudflats. These wetlands created a congenial environment for migratory waterfowl, and a host of edible plant species and shellfish. The new mixed hardwood forests of oak, hickory, chestnut, beech and elm attracted such mast-eating fauna as white-tailed deer, wild turkey, moose and beaver.

Although the Archaic diet was still based on hunting and gathering, due to the greater variety of plants available and exploited, excavated Archaic sites yield a wide array of plant processing tools, including grinding stones, mortars and pestles. A marker for this period is the grooved axe. In the coastal areas of New York, have been found numerous, small "nearly always multi-component sites variously situated on tidal inlets, coves and bays, particularly at the heads of the latter, and on fresh-water ponds on Long Island" (Ritchie 1980:143). By the Late Archaic, these areas provided shellfish, small game, fish, salt hay and tuberous grasses making larger more permanent settlements possible. Semi-nomadic life is still indicated, but wandering occurred within well-defined territorial limits, with seasonal movements between camps near exploitable resources. A dietary shift to shellfish in coastal New York near the end of the Archaic suggests a scarcity of large game, and a change from the early Archaic inland adaptation of forest hunting. Coastal sites show a principal reliance upon shellfish, especially oysters, hard and soft shell clams and bay scallops, which were easily gathered all around Long Island.

Characteristic of the Late Archaic were "fish-tailed" projectile points and soapstone bowls (Ritchie 1980:142,166, 167, 171). In contrast to conditions during the Paleo-Indian, Early and Middle Archaic, "by Late Archaic times sea level was so close to present levels that its subsequent small rise has failed to obliterate much of what remains on Long Island from that period" (Gwynne 1982:192). Hence the Late Archaic Wading River complex, four sites on the north shore of Suffolk County, was found at the edge of a salt marsh, on dry ground ranging only two to seven feet above mean high water (Wyatt 1982:71).

Woodland Period (c.2,700 y.a. - 300 y.a.)

Pottery use became widespread following the use of soapstone vessels in the Late Archaic, and although copper tools were utilized during that period, the earliest copper ornaments, tubular beads, made their appearance during the Woodland. Stone or clay smoking pipes were also an Early Woodland innovation (Ritchie 1980:179-180)

Settlement patterns were substantially altered with the introduction of agriculture, the systematic cultivation of maize, beans and squash possibly beginning as early as 1000 A.D. During this time large villages within palisaded enclosures developed for the use of a semi-sedentary people, with groups moving seasonally, depending on exploitable food resources, between villages and camps of varying population concentrations. Preferred village/camp sites were in protected, elevated locations at the confluence of two water systems. "Nearly all the permanent sites are situated on tidal streams and bays on the second rise of ground above water." Despite the advent of agriculture, shellfish and small game remained an important component of the Woodland diet. Shellfish refuse heaps, termed "middens," reached immense proportions, covering from one to over three acres. Deer, turkey, raccoon, muskrat, ducks and other game were stalked with bow and arrows, replacing the spear and javelin, while dug-out boats, bone hooks, harpoons and nets with pebble sinkers were employed in fishing (Smith 1950:101; Ritchie 1980:180,267).

Contact with Europeans had far-reaching effects on Native American cultures. European goods such as metal and glass began to replace traditional materials, while European-introduced diseases decimated the population. At this time it is generally believed that western Long Island was inhabited by Munsee-speaking Canarsie Indians, members of the Delaware culture group. Due to the enormous stresses of disease and warfare with European settlers, the socio-political situation of Long Island's Native Americans was extremely fluid, with groups splitting and combining in complex ways. It has been suggested that the self-identified Rockaway Indians who sold the study area to Jamaica were a subgroup of the Canarsie. The Rockaways had their chief settlement somewhere in

Far Rockaway (Munsell 1882:195; Grumet 1981:5-6,47).

Twentieth century research by Robert S. Grumet and Reginald Bolton does not indicate the presence of an Indian village in the vicinity of the study area, but does locate Native American planting areas and a trail to Jamaica Bay about a quarter mile to the north and east of present Bergen Basin (Grumet 1981:67). (See Fig. 4) Grumet also identifies the Indian toponym Massepe, possibly meaning "the great river," as a waterway east of Hawtree Creek, apparently old Bergen Creek (Grumet 1981:31,67,71). These fresh water sources running through the salt marshes of the project area provided prehistoric man with an easily-exploitable resource-rich environment, stocked with an abundance of fish, small mammals, waterfowl and also an assortment of edible and useful reeds and shrubs. The presence of shellfish from Jamaica Bay would have provided a year-round dietary resource.

A search through the files of the New York State Office of Parks, Recreation and Historic Preservation for inventoried sites within a one-mile radius of the JFK West site has identified two, the first an Indian burial, village and shell heaps (#A081-01-0091) less than 1,000 feet north of the project area. (See Appendix A) This site, south of Aqueduct Racetrack and now under the Belt Parkway, was excavated by Ralph Solecki in 1939. Burials were found in house structures and refuse pits, shell heaps were noted and lithic material, split, broken and cracked animal bone and potsherds were recovered. One refuse pit, outlined by 14 postmolds, contained two burials, a female adult and young child shallowly (between 1.5/2 feet to 4 feet below grade) interred in a flexed position. The pit also exhibited two layers of refuse, possibly indicating either longterm or sequential site occupation. (Solecki 1947:44-49).

The site was identified as dating from the Late Woodland period, Clasons Point Phase of the East River Tradition (c1100-1700 A.D.). Such sites, averaging about an acre in extent, are typified by "profuse remains of marine shellfish," occurring as a surface veneer or in numerous pits sometimes used as graves for humans and dogs. Potsherds are very common from this period (Ritchie 1980:270-271).

The second site, listed by a state agency, is a shell heap and village, #4534 (Parker 1920, Queens County #11), located by the Historic Preservation Office as covering most of the southern half of the project site. Parker describes the site as being near the Hook Creek station on the road to Far Rockaway (Parker 1920:672). This appears to refer to the intersection of Rockaway Boulevard and the rail line that forms the western boundary of the JFK West site, placing the village at Aqueduct, probably the same village and shell heaps that Solecki excavated. Because of the proximity of these sites, and the physiographic characteristics of the JFK West

site, it is rated as having a "higher than average probability of producing prehistoric archaeological data."

As outlined above, Indian settlement patterns show a marked preference for sheltered, elevated sites close to wetland features, like the elevated areas identified within the study parcel. They are likely to have been exploited by prehistoric Americans for their processing sites, camps and more permanent communities. Although Indians would certainly have crossed and recrossed the marshy sections of the JFK West site during low tide in the course of fishing, hunting and gathering expeditions, it is unlikely that such use would provide the archaeologist with more than a few stray artifacts.

IV. HISTORICAL PERIOD OVERVIEW

Until the consolidation of Queens County with the City of New York in 1898, the West JFK site was an outlying area of Jamaica Township, approximately 2.5 miles southwest of the original settlement. Incorporated in 1656 and named Rustdorp (peaceful village) by the Dutch, Jamaica Village was first settled by a group of English from Heemstede (Hempstead in present Nassau County), who requested permission from Peter Stuyvesant to establish a town halfway between Hemstede and Amersfoort (Kings County). According to one version of the story, the settlers preferred to call the village "Jemeco," after the Indian name of a nearby beaver pond. This was eventually corrupted to Jamaica. Among the first inhabitants was Daniel Denton, appointed clerk, who wrote the historically valuable "Description of New York, formerly called New Netherland," published in London in 1670 (Brodhead 1853:619).

Jamaica's proprietors purchased surrounding lands from the Native Americans in order to strengthen the town's title to lands granted by the Dutch and English colonial governments. The first transaction occurred in 1655. For "two guns, a coat and a certain quantity off powder & lead," Casperonn, Adam or Achitterenose, Ruckquakek, Runnasuk, Anmerhas, Caumeuk, Manguaope and Waumetompack sold the great swamp at the west side of Rock Neck west to a river known as Waubheag, believed to encompass the entire present north shore of Jamaica Bay now in Queens County, including the study area. This meadowland was not worthless, as evidenced by the wrangling over similar land titles in other towns. The salt grasses that grew there were an excellent and valuable cattle feed (Kearns and Kirkorian 1988:17). The property was repurchased in 1662 from Waumitumpack (Waumetompack?), the "Sachem off Rockeway," for a trooper's coat and a kettle. However, instead of the kettle, it is reported that the sachem was satisfied with "8 bottles of lick" (Munsell 1882:193-195).

As seen in the 1859 map, the project area contains no structures, in spite of the presence of elevated land there. A road traversing this land as far as the head of Hawtree Creek, and branching off to the edge of Jamaica Bay, as well as the appellation "Bergen's Landing," indicate that the project area primarily provided access to boat landings, either for fishermen or grain shipping. A later map shows a "Johnson's Landing," near or in the northwestern corner of the study area. (See Figs. 5,6) In contrast, the waters of neighboring streams were harnessed to power gristmills, an important facility for primarily agricultural Jamaica. Old Mill or Spring Creek, 1.5 miles to the west had a mill, and Cornell Creek the same distance to the east had three (Munsell 1882:201). It is possible that Hawtree and Bergen Creeks were not suitable for the type of mills then being constructed, or that these waterways were better suited to boat traffic.

The earliest buildings erected between Bergen and Hawtree

Creeks were present by 1873. The three houses, belonging to H. L. Wyckoff, M. Hayes and Captain J. Briggs lay to the east of the road to the bay, directly east of the project area. The site of Wyckoff's house is probably in the middle of present Bergen Basin. They make use of the elevated land first shown on the 1859 map (See Fig. 5) Between 1873 and 1880 the New York, Woodhaven and Rockaway Railroad was constructed, forming the western boundary of the project area. Stations were established serving the enclaves of Ramblerville and Hamilton Beach both west of the tracks, by 1880 (Willensky and White 1988:792). By 1891 the non-meadowland had been lotted. (See Fig. 8 bottom) In spite of this it was not until after 1891 that the wetlands were lotted and the first structures appeared in the project area. According to the 1901 map, these buildings were between 910 and 940 feet east of the railroad tracks, placing them at the very edge of or in present Bergen Basin, on the southern segment of elevated land in the study area. (See Figs. 8 top,9)

Between 1901 and 1936 streets were outlined for the raised areas of the project site, which were enlarged by filling as demand for space increased. Small frame houses were erected in increasing numbers. Hamilton Beach, which along with Howard Beach was a thriving summer colony developed after 1900, expanded into the southern tip of the project area, lining the manmade canals with homes built on pilings over the marshy soil, and anchorages for small boats (Hyde 1913 I:17,18,20; Hyde 1936 IV:32; Willensky and White 1988:793). (See Fig. 11) By 1939 the waters of the Bay had become so polluted that swimming was prohibited, although boating and fishing remained popular sports (WPA 1939:587).

The residential history of the study parcel ceased rather abruptly c1942 with the construction activities for Kennedy Airport, then known as Idlewild, after Idlewild Point, which the airport's construction and landfill activities obliterated. Bergen Basin, forming the part of the southern and eastern perimeter of the project site, was excavated about 0.5 miles west of the original Bergen Creek, which also disappeared under the airport construction (Willensky and White 1988:789). (See Fig. 1)

The airport opened in 1948 and has since grown to encompass 4,930 acres including long term parking facilities on the project site. Prior to 1966 a large tank, still extant, was installed on the southeastern tip of the project site and between 1966 and 1979 Interchange 18 off the Southern Parkway was constructed north of the project site and small roadbeds were cut through the project site itself. Since 1979 an equipment training center and parking lot have been built in the project site. Efforts to protect Jamaica Bay from the continued growth along the north shore resulted in the creation of the Jamaica Bay Wildlife Refuge in 1953, which was absorbed by the Gateway National Recreation Area in 1972.

V. CONCLUSIONS AND RECOMMENDATIONS

Overwhelming evidence exists that Native Americans exploited the natural resources of western Long Island for thousands of years before the arrival of Europeans. It is also clear that the tidal marshland of the JFK West site provided an extremely rich source of food and raw materials for prehistoric man, and a dry region from which to exploit these resources.

Settlement pattern data of the prehistoric culture periods reveal a strong correlation between habitation and processing sites and the confluence of two watercourses, proximity to a major waterway, a marsh resource and/or well-drained elevated land. A review of cartographic and historical evidence confirms that all of these criteria are met in the study parcel. Hawtree Creek and its small tributaries intersected the northwestern side of the West JFK site, draining into Jamaica Bay. Surrounded by salt marsh, two large (roughly 400,000 and 800,000 square feet) well-drained areas between 0 to 5 and 0 to 10 feet above the mean high tide mark were available.

The presence of a Late Woodland village within 1,000 feet of the study area confirms the presence of Native Americans in the vicinity, who, given the large amounts of shell refuse recovered by Solecki, could not have been unaware of the well-drained areas of the West JFK site and their proximity to the shellfish beds of Jamaica Bay.

Comparison of historical and modern topographic maps indicate that in some areas the fill layer is quite thin. The southern raised area, includes a cigar-shaped section which was originally between 5 and 10 feet above mean high water. It presently has an elevation of from 5 to 15 feet, indicating at most ten feet of fill, and perhaps no fill at certain loci. (See Figs. 1,10) The surrounding area, originally between 0 and 5 feet above mean high water presently exhibits an elevation of 0 to 15 feet in its northern half and 0 to 10 feet in the other half, making it possible to estimate the thickness of fill at between 0 and 15 feet on the former and 0 to 10 feet on the latter. The northern elevated area exhibits less variation, its pre-fill elevation ranging between 0 and five feet, and a modern elevation of 0 to 10 feet on the eastern side and 5 to 10 feet on the western, thus suggesting a level of fill between 0 and 10 feet thick. The assessment of boring information provided by Allee King Rosen & Fleming Inc. agrees with these estimates describing fill layers for the whole West JFK site as between 2 and 10 feet. The uneven thickness of the fill layer is not great enough to protect any prehistoric cultural resources beneath it from the proposed spread-footing foundations, which would impact to a depth of 5 to 6 feet below grade.

Cartographic and other historical data provide no evidence that the JFK West site was occupied for any purpose during the historical period before the erection of frame structures after 1891. Even conceding the existence of privies, cisterns and wells (an unlikely prospect in an area with such a high water table), the archaeological potential of the deposits - early twentieth century secondary and seasonal housing - is not considered sufficient to carry out additional archaeological investigation. Therefore, it is the conclusion of this report that the study site is non-sensitive for the HISTORICAL period.

Based upon the data presented in these pages and summarized above, it is the conclusion of this report that the West JFK site is POTENTIALLY SENSITIVE with respect to prehistoric cultural resources. Due to the large size of the two elevated sections of this parcel, roughly 800,000 and 400,000 square feet, in a resource-rich environment, it is recommended that an analysis of soil borings taken from the identified, i.e. the c1915 elevated, areas be conducted. A borings study could help determine (1) the depth below fill of the c1915 grade, (2) the degree of disturbance of the c1915 stratigraphy, and (3) the groundwater table on the potentially sensitive areas. This data will be a factor in determining the sensitivity of the project site and the need for any further archaeological consideration.

The recommended soil boring tests should be monitored by a SOPA-certified archaeologist, working in coordination with the on-site geotechnician. The borings should be carried out far enough in advance of construction so that archaeological fieldwork can be performed if the boring data should so warrant it. However, it is very probable that site soil borings will be necessary for sludge facility foundation design purposes and it would be both efficient and economical to coordinate these soil tests with the requirements for archaeological study.

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WPA

1939 The WPA Guide to New York City (1982 reprint). Pantheon
Books, New York.

Wyatt, Ronald J.

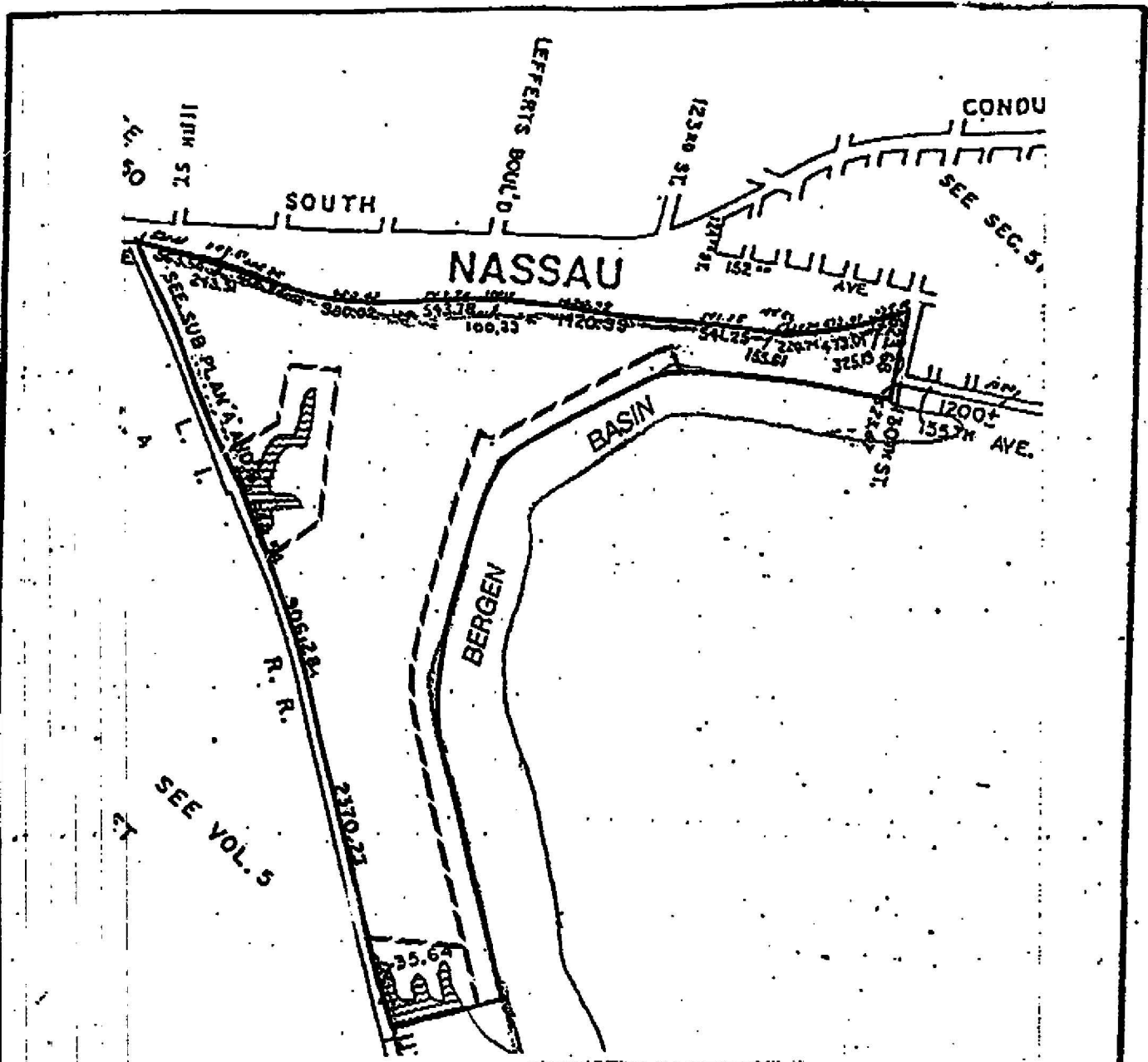
1982 "The Archaic on Long Island." in The Second Coastal
Archaeology Reader, vol. V (J. Truex, ed.). SCAA, Stony
Brook, NY.

Figure 1

USGS Topographic Map, Jamaica Quad. current

Figure 2

Site Map provided by Allee King Rosen & Fleming, Inc.



Wetland Area



Adjacent Area Boundary

Note: Wetland areas are based on NWI Wetland Maps and do not represent wetland delineations in the field.

Source: City of New York Tax Maps
1980 National Wetland Inventory Map

New York City Department
of Environmental Protection

SLUDGE
MANAGEMENT

DEPARTMENT OF PORTS AND TRADE
WEST JFK SITE
WETLAND BOUNDARY MAP

Figure 3a

Aerial Photograph, 1988
Provided by Stone & Webster Engineering, Inc.

Note: Northern section of the sludge site is shown
in Figure 3a and the southern section of the
sludge site is shown in Figure 3b.
See locational diagram:

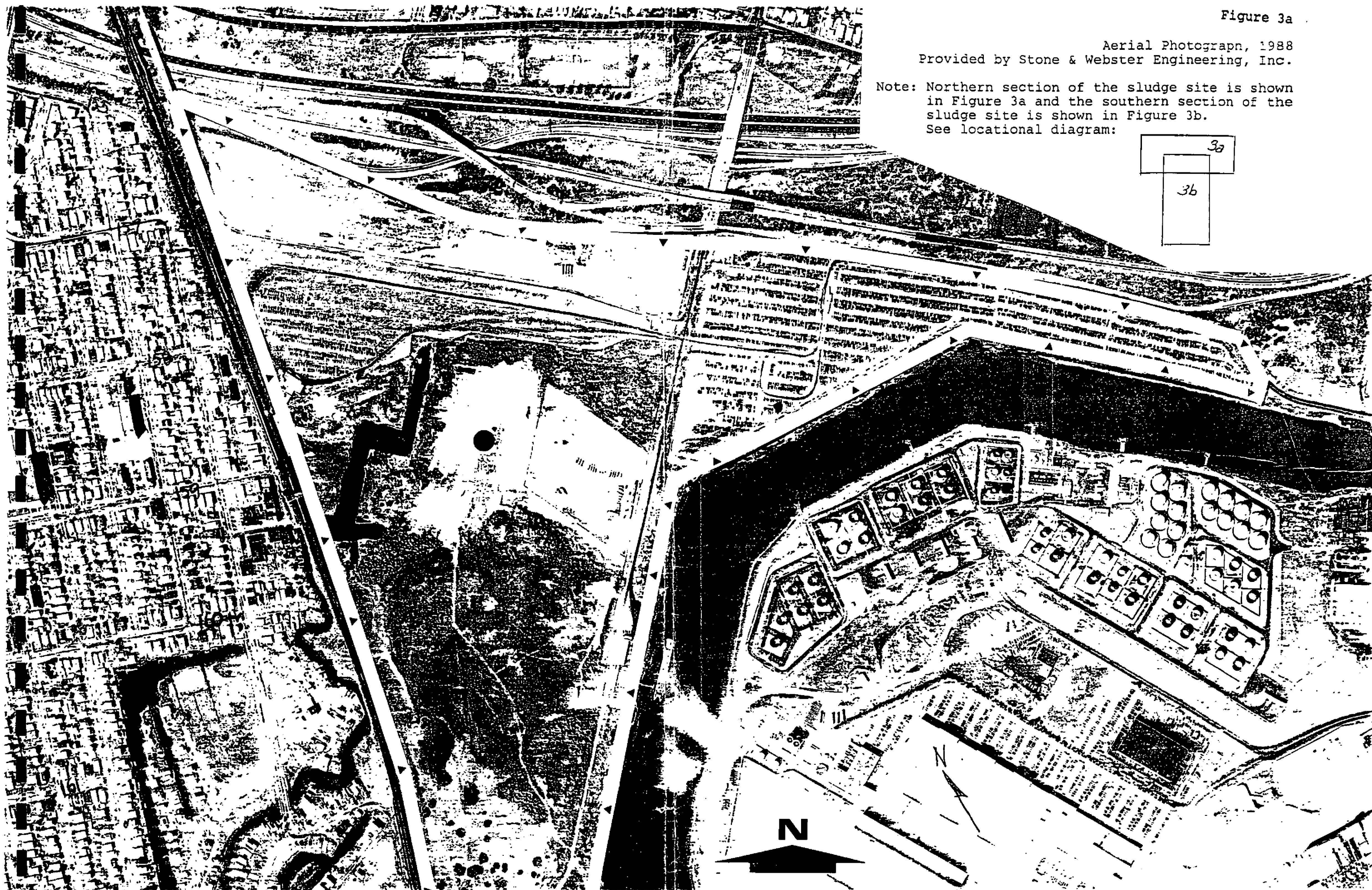
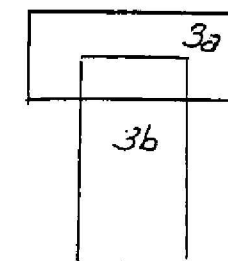


Figure 3b

Aerial Photograph, 1988
Provided by Stone & Webster Engineering, Inc.

Note: Northern section of the sludge site is shown in Figure 3a and the southern section of the sludge site is shown in Figure 3b. See locational diagram:

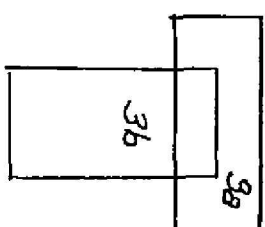
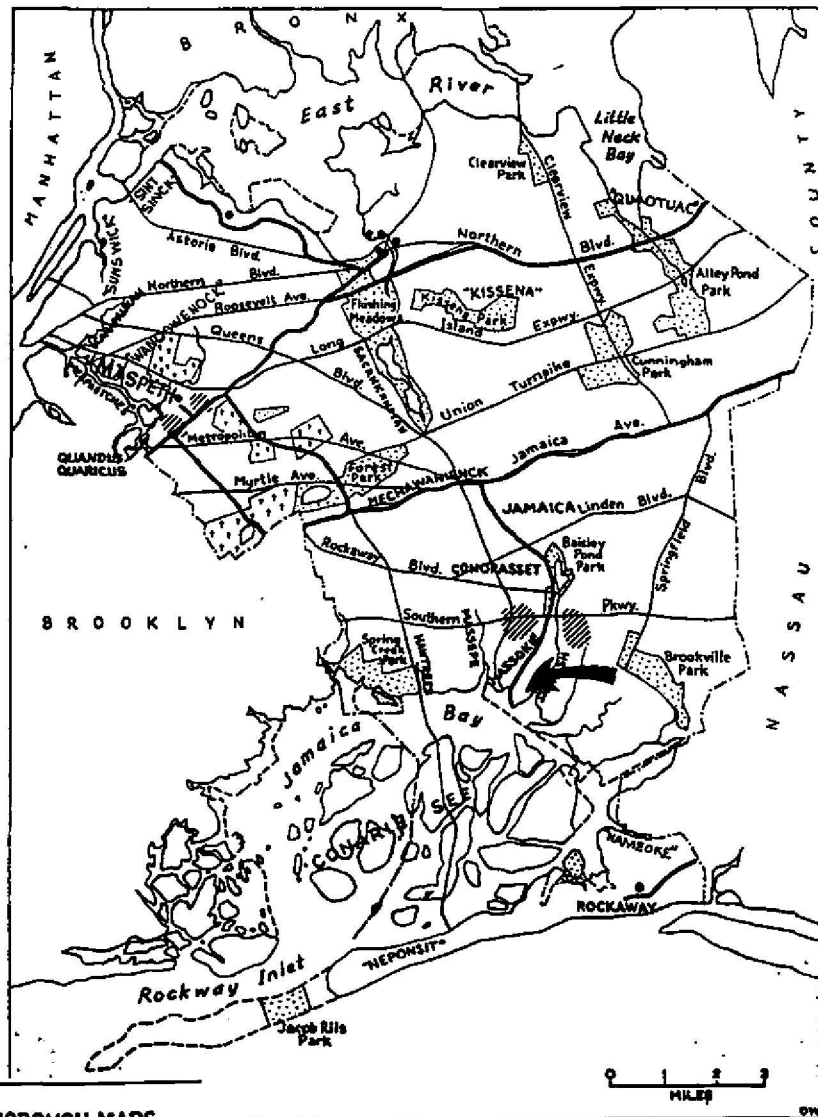


Figure 4

Map of Indian Trails and Planting Fields

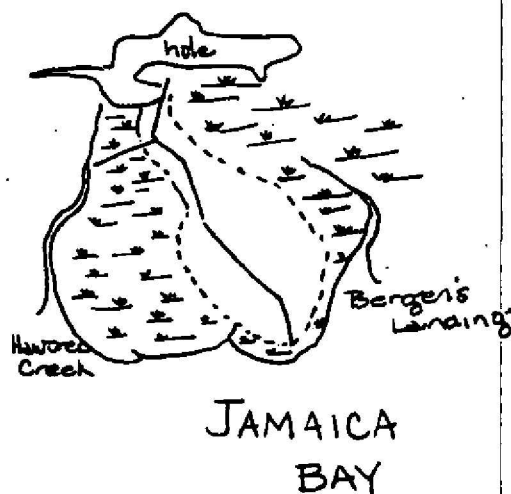
Photocopied from Grumet 1981:71.



LEGEND FOR FIVE BOROUGH MAPS

- TRAIL (AFTER BOLTON 1922)
- PLANTING AREAS AND OLD FIELDS
- TEHNEMA: INDIAN NAMES OF LOCAL ORIGIN
- "ABIN" NAMES NOT OF LOCAL ORIGIN
- HABITATION SITE
- PRESENT-DAY CITY PARKS
- MODERN SHORELINE
- CEMETERY

Figure 5



WALLING TOPOGRAPHIC
MAP OF THE COUNTIES OF
KINGS AND QUEENS
1859 NYPL

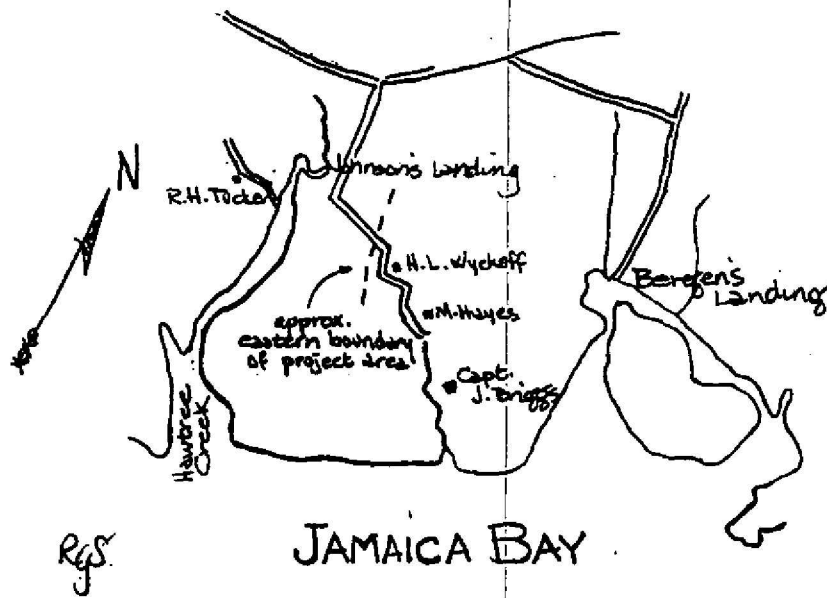


EAS/RGS

Scale:

0 1/4 1/2 miles (1/4 mile to 1cm)

Figure 6



1873
BEERS

ATLAS OF
LONG ISLAND

plates 91 & 92

Scale: 160 rods to 1 inch

NYPL

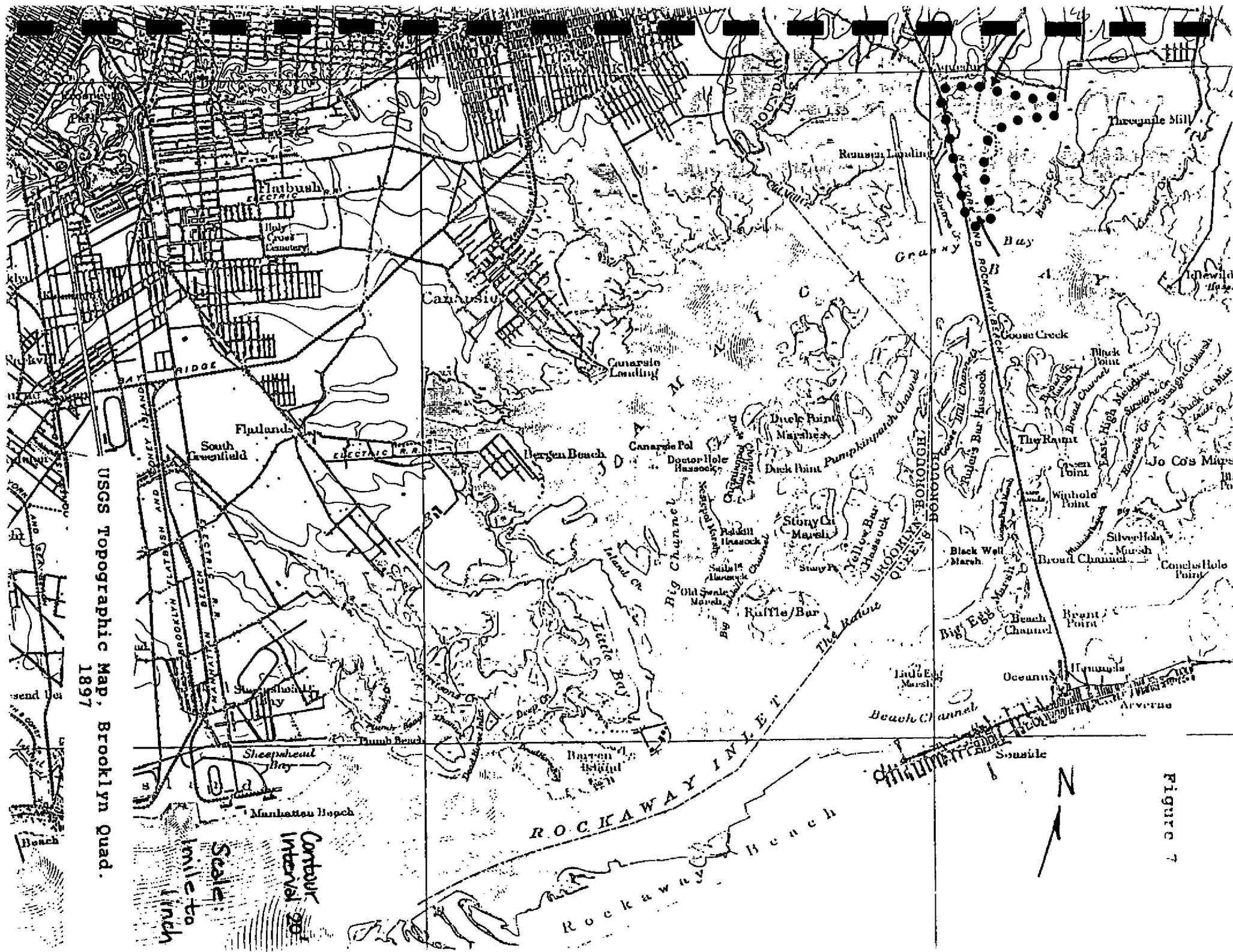
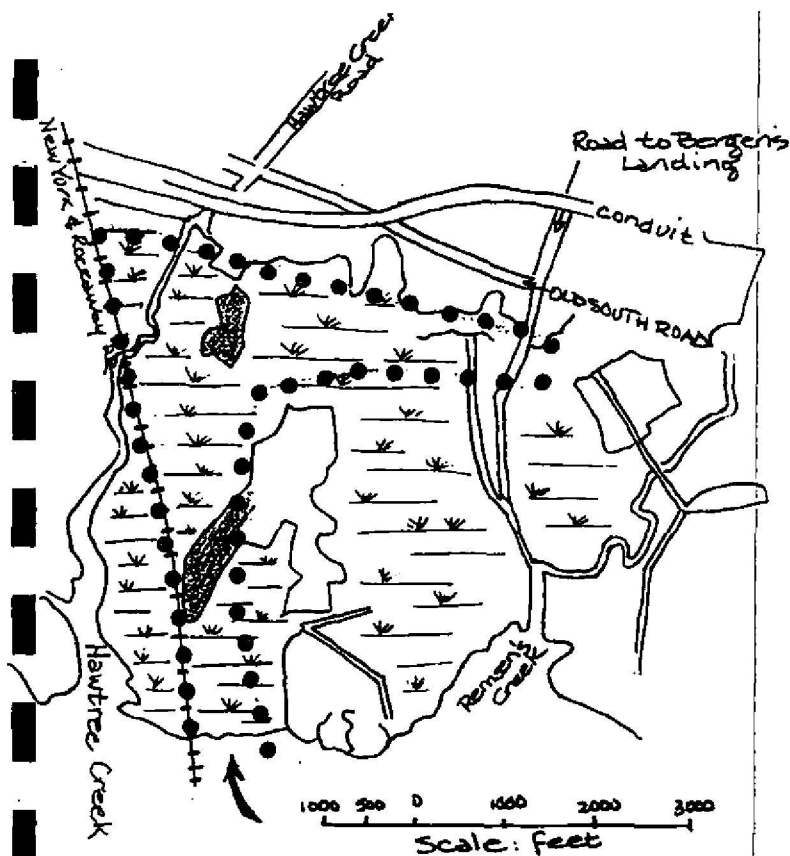
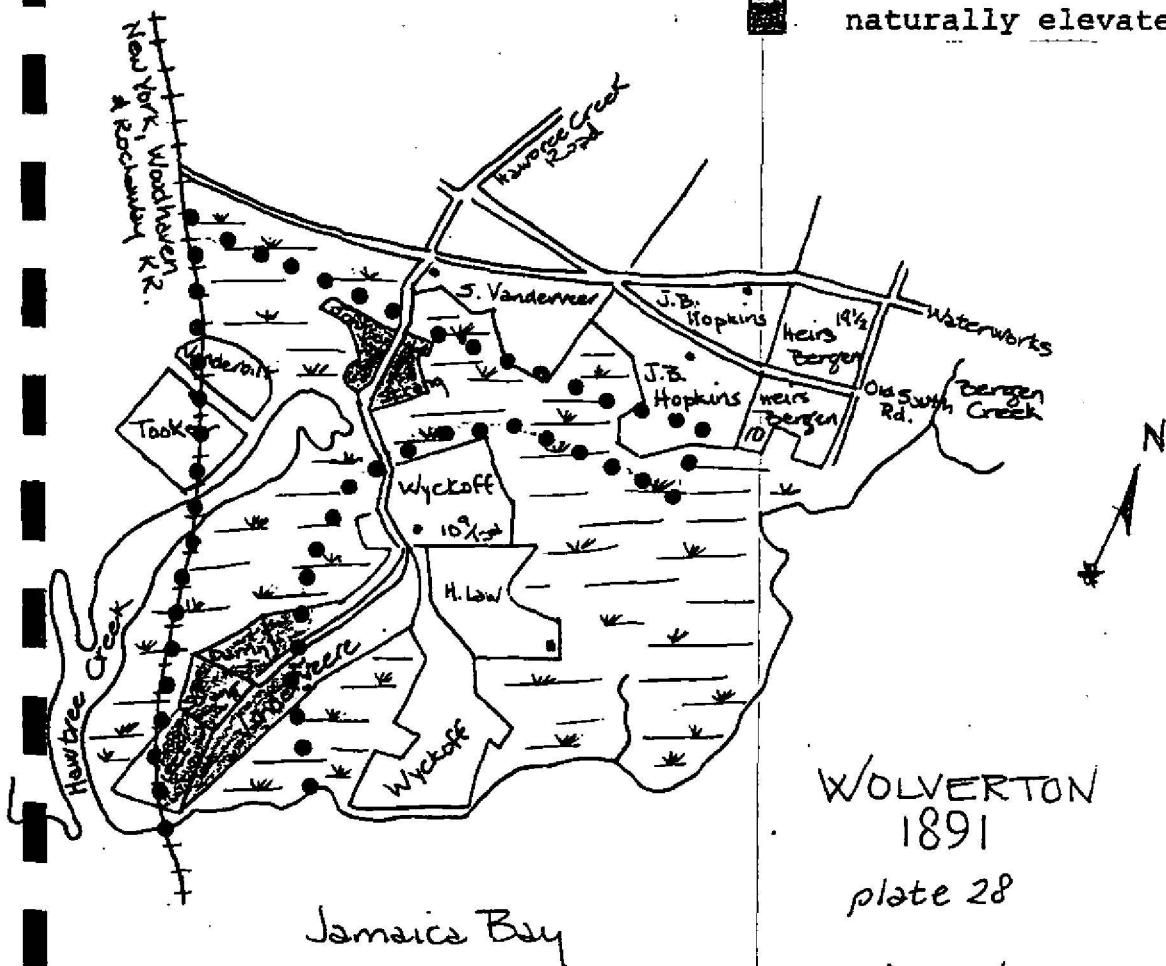


Figure 7

Figure 8



- • • approximate boundaries of sludge site
- naturally elevated areas





ATLAS OF THE BOROUGH OF QUEENS

vol. 1, plate 17

NYPL - RGS

600 feet to 1 inch

approximate boundaries
of sludge site



Photo 1

West JFK Sludge Management Site: Lefferts Boulevard
view: north to south



Photo 2

West JFK Sludge Management Site
Note landfill hillock in background.
view: east to west from Lefferts Boulevard



West JFK Sludge Management Site
view: east to west

Photo 3



Photo 4

West JFK Sludge Management Site
view: northeast to southwest from JFK's "old" long term parking
entrance, or immediately west of 130th Place

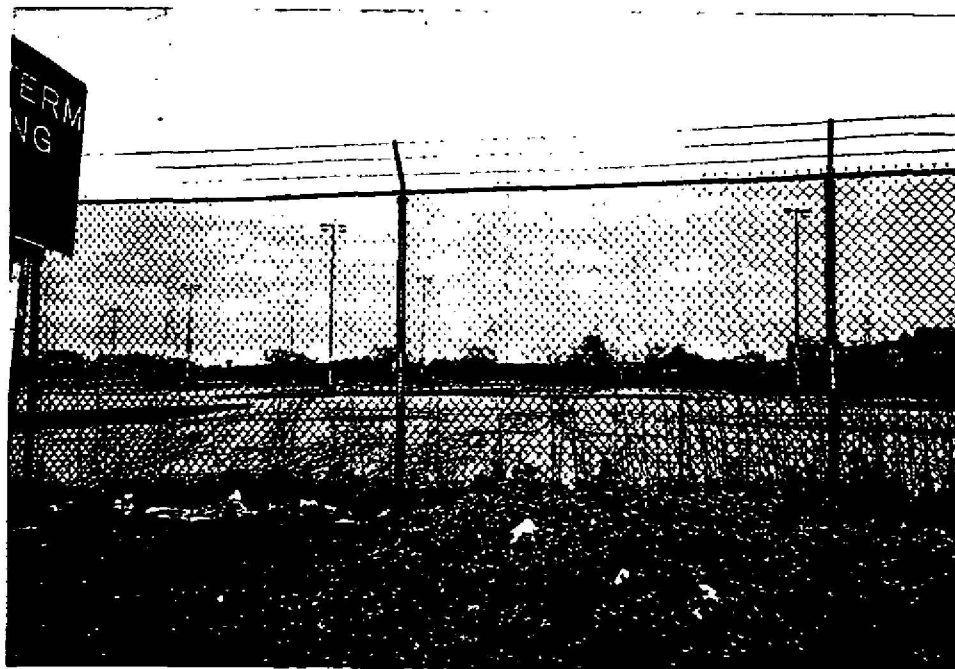


Photo 5

West JFK Sludge Management Site
view: southwest to northeast from Lefferts Boulevard



Photo 6

West JFK Sludge Management Site
view: southwest to northeast, Lefferts Boulevard on the left and
Basin in the background



APPENDIX A

CORRESPONDENCE WITH THE NEW YORK STATE OFFICE
PARKS, RECREATION, AND HISTORIC PRESERVATION
and the
NEW YORK STATE MUSEUM, OFFICE OF THE STATE ARCHAEOLOGIST

PROJECT:

NEW YORK STATE MUSEUM: OFFICE OF THE STATE ARCHEOLOGIST
PREHISTORIC SITE FILE: FILE USE REQUEST FORM
PROJECT SCREENING FILE

NAME

Cecce Kirkorian

ADDRESS

P.O. Box 331 Riverside CT 06478

AC PHONE #

203 698-1147

AGENCY/COMPANY/INSTITUTION REPRESENTED

Historical Perspectives

The screening file gives site locations within generalized .5 mile circles.

PURPOSE OF REQUEST: (Identify the proposed project and contractor, indicate the nature of the work, depth and extent of ground disturbance)

Stodge III Project

EVENTUAL DISTRIBUTION OF DATA: (Specify range of data use and distribution, publication, reproduction, etc.).

client, municipality & review agency

REQUESTED APPOINTMENT:

1st Choice

date

time (or any)

2nd Choice

date

time (or any)

(Appointments are on the hour between 9 a.m. and 12 noon on Wednesday of each week. Mail this request at least two weeks in advance of the appointment date. You will be notified by mail of your appointment date and time).

U.S.G.S. 7.5' MAPS REQUESTED: (indicate 15' maps)

Jamaica

FOR THE FOLLOWING attach the project map, site data list and self-addressed envelope to this request. Responses will be mailed or provided on the following day.

The following site(s) may be within or adjacent to the project area.

If so, please provide the location of:

SITE #. 7.5' MAP

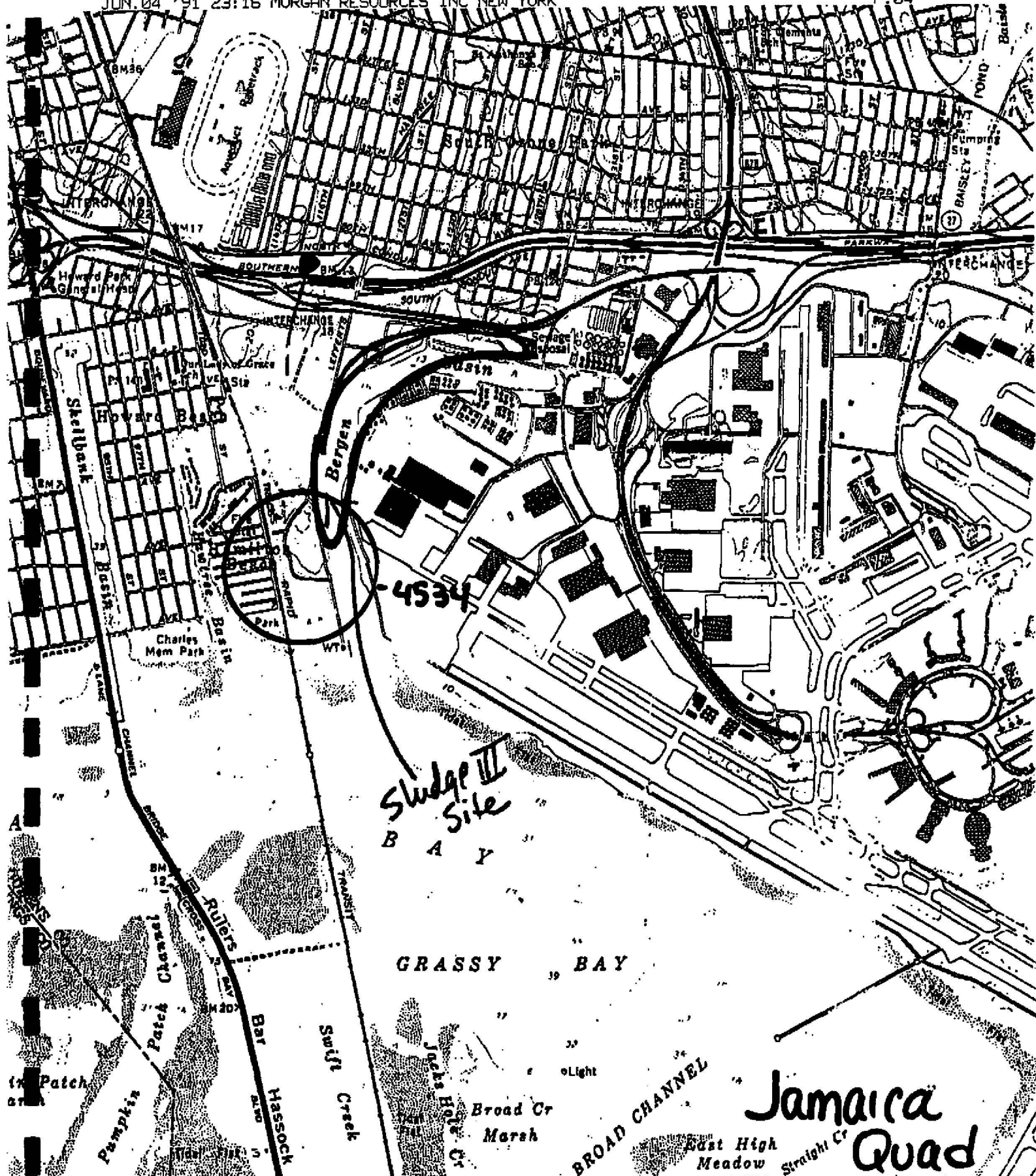
4534Jamaica☒

Please provide a sensitivity rating for the attached project area.

I understand that the information provided is to be used solely for the preparation of an environmental impact statement as required by State or Federal law.

(Signature)

(Date)



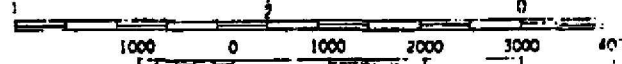
4534

Sludge II Site

GRASSY BAY

Jamaica Quad

SCALE 1:24,000



SAPO

Jamaica Quad

New York State Museum sites:

NYSM#	other#	Name	time per.	type	source of data	project	quad
4534	ACD QUMS-11	—	—	shell heap + village	Parker		

Office of Parks, Recreation and Historic Preservation

Archeological Sites:

ADP 1-01-009/							

Building/Structure Forms:

National Register Listings:

	listed	
	listed	

Previous Surveys:

In Historical Perspectives on Jamaica 7.5'

New York State Museum Prehistoric Archaeological Site Files

EVALUATION OF ARCHAEOLOGICAL SENSITIVITY FOR PREHISTORIC (INDIAN) SITES

Examination of the data suggests that the location indicated has the following sensitivity rating:

- ☒ HIGHER THAN AVERAGE PROBABILITY OF PRODUCING PREHISTORIC ARCHAEOLOGICAL DATA.
- ☐ AVERAGE PROBABILITY OF PRODUCING PREHISTORIC ARCHAEOLOGICAL DATA.
- ☐ LOWER THAN AVERAGE PROBABILITY OF PRODUCING PREHISTORIC ARCHAEOLOGICAL DATA.
- ☐ MIXED PROBABILITY OF PRODUCING PREHISTORIC ARCHEOLOGICAL DATA.

The reasons for this finding are given below:

- ☒ A RECORDED SITE IS INDICATED IN OR IMMEDIATELY ADJACENT TO THE LOCATION AND WE HAVE REASON TO BELIEVE IT COULD BE IMPACTED BY CONSTRUCTION.
- ☐ A RECORDED SITE IS INDICATED SOME DISTANCE AWAY BUT DUE TO THE MARGIN OF ERROR IN THE LOCATION DATA IT IS POSSIBLE THE SITE ACTUALLY EXISTS IN OR IMMEDIATELY ADJACENT TO THE LOCATION.
- ☒ THE TERRAIN IN THE LOCATION IS SIMILAR TO TERRAIN IN THE GENERAL VICINITY WHERE RECORDED ARCHAEOLOGICAL SITES ARE INDICATED.
- ☒ THE PHYSIOGRAPHIC CHARACTERISTICS OF THE LOCATION SUGGEST A HIGH PROBABILITY OF PREHISTORIC OCCUPATION OR USE.
- ☐ THE PHYSIOGRAPHIC CHARACTERISTICS OF THE LOCATION SUGGEST A MEDIUM PROBABILITY OF PREHISTORIC OCCUPATION OR USE.
- ☐ THE PHYSIOGRAPHIC CHARACTERISTICS OF THE LOCATION ARE SUCH AS SUGGEST A LOW PROBABILITY OF PREHISTORIC OCCUPATION OR USE.
- ☐ EVIDENCE OF CULTURAL OR NATURAL DESTRUCTIVE IMPACTS SUGGESTS A LOSS OF ORIGINAL CULTURAL DEPOSITS IN THIS LOCATION.
- ☐ THE PHYSIOGRAPHIC CHARACTERISTICS OF THE LOCATION ARE MIXED, A HIGHER THAN AVERAGE PROBABILITY OF PREHISTORIC OCCUPATION OR USE IS SUGGESTED FOR AREAS IN THE VICINITY OF EITHER PRESENT OR PREEXISTING BODIES OF WATER, WATERWAYS, OR SWAMPS. A HIGHER THAN AVERAGE PROBABILITY IS ALSO SUGGESTED FOR ROCK FACES WHICH AFFORD SHELTER. DISTINCTIVE HILLS OR LOW RIDGES HAVE AN AVERAGE PROBABILITY OF USE AS A BURYING GROUND. LOW PROBABILITY IS SUGGESTED FOR AREAS OF EROSIONAL STEEP SLOPE.
- ☒ PROBABILITY RATING IS BASED ON THE ASSUMED PRESENCE OF INTACT ORIGINAL DEPOSITS, POSSIBILITY UNDER FILL, IN THE AREA. IF NEAR WATER OR IF DEEPLY BURIED, MATERIALS MAY OCCUR SUBMERGED BELOW THE WATER TABLE.
- ☐ INFORMATION ON SITES NOT RECORDED IN THE N.Y.S. MUSEUM FILES MAY BE AVAILABLE IN A REGIONAL INVENTORY MAINTAINED AT THE FOLLOWING LOCATION(S).

COMMENTS:

cc: N.Y.S. OFFICE OF PARKS, RECREATION AND HISTORIC PRESERVATION; HISTORIC PRESERVATION FIELD SERVICES BUREAU

ARCHAEOLOGICAL SITE INVENTORY FORM

DIVISION FOR HISTORIC PRESERVATION
NEW YORK STATE PARKS AND RECREATION
ALBANY, NEW YORK

518 474-0479

FOR OFFICE USE ONLY

UNIQUE SITE NO. A081-01-0091
QUAD. _____
SERIES _____
NEG. NO. _____

REPORTED BY: Wendy Harris (PIN 0031.00)
YOUR ADDRESS: _____ TELEPHONE: _____
ORGANIZATION (if any): Volkmann Associates
DATE: 4/78

1. SITE NAME: Aqueduct Site, NCM# 86
2. COUNTY: Queens TOWN/CITY: _____ VILLAGE: _____
3. LOCATION: near head of Hawthorne (this area now contains the Belt Pky & the ballpark south of 144th Place)

4. PRESENT OWNER: _____
5. OWNER'S ADDRESS: _____

6. DESCRIPTION, CONDITION, EVIDENCE OF SITE:

- | | |
|---|--|
| <input type="checkbox"/> STANDING RUINS | <input type="checkbox"/> CELLAR HOLE WITH WALLS |
| <input type="checkbox"/> SURFACE TRACES VISIBLE | <input type="checkbox"/> WALLS WITHOUT CELLAR HOLE |
| <input type="checkbox"/> UNDER CULTIVATION | <input type="checkbox"/> EROSION <input type="checkbox"/> UNDERWATER |
| <input type="checkbox"/> NO VISIBLE EVIDENCE | <input type="checkbox"/> OTHER _____ |

7. COLLECTION OF MATERIAL FROM SITE:

- | | | |
|--|------------------------|------------------|
| <input type="checkbox"/> SURFACE HUNTING | BY WHOM _____ | DATE _____ |
| <input checked="" type="checkbox"/> TESTING | BY WHOM <u>Smith</u> | DATE <u>1950</u> |
| <input checked="" type="checkbox"/> EXCAVATION | BY WHOM <u>Solecki</u> | DATE <u>1939</u> |
| <input type="checkbox"/> NONE | | |

PRESENT REPOSITORY OF MATERIALS: _____

8. PREHISTORIC CULTURAL AFFILIATION OR DATE: Clayton's Point Focus of the
C. 1100 - 1700 AD Late Woodlands

HISTORICAL DOCUMENTATION OF SITE:

Smith, Carlyle Shreeve. 1950 "The Archeology of Coastal New York." Anthropological Papers of the Am. Museum of Natural History. Vol. 43, Part 2. p 170

Doelck 1947 "An Indian Burial at Aqueduct." Bulletin of the Historical Society of Connecticut. No 21, pp 44-49

10. POSSIBILITY OF SITE DESTRUCTION OR DISTURBANCE:

~~1985 Dept. Transp.~~ Vollmer Assoc, Inc. 1980 Nassau Expressway Cross

11. REMARKS:

Bay Blvd. to Atlantic Beach Bridge
Transportation Project Report

12. MAP LOCATION

7 1/2 MINUTE SERIES QUAD. NAME: _____

15 MINUTE SERIES QUAD. NAME: _____

U.S.G.S. COORDINATES: _____

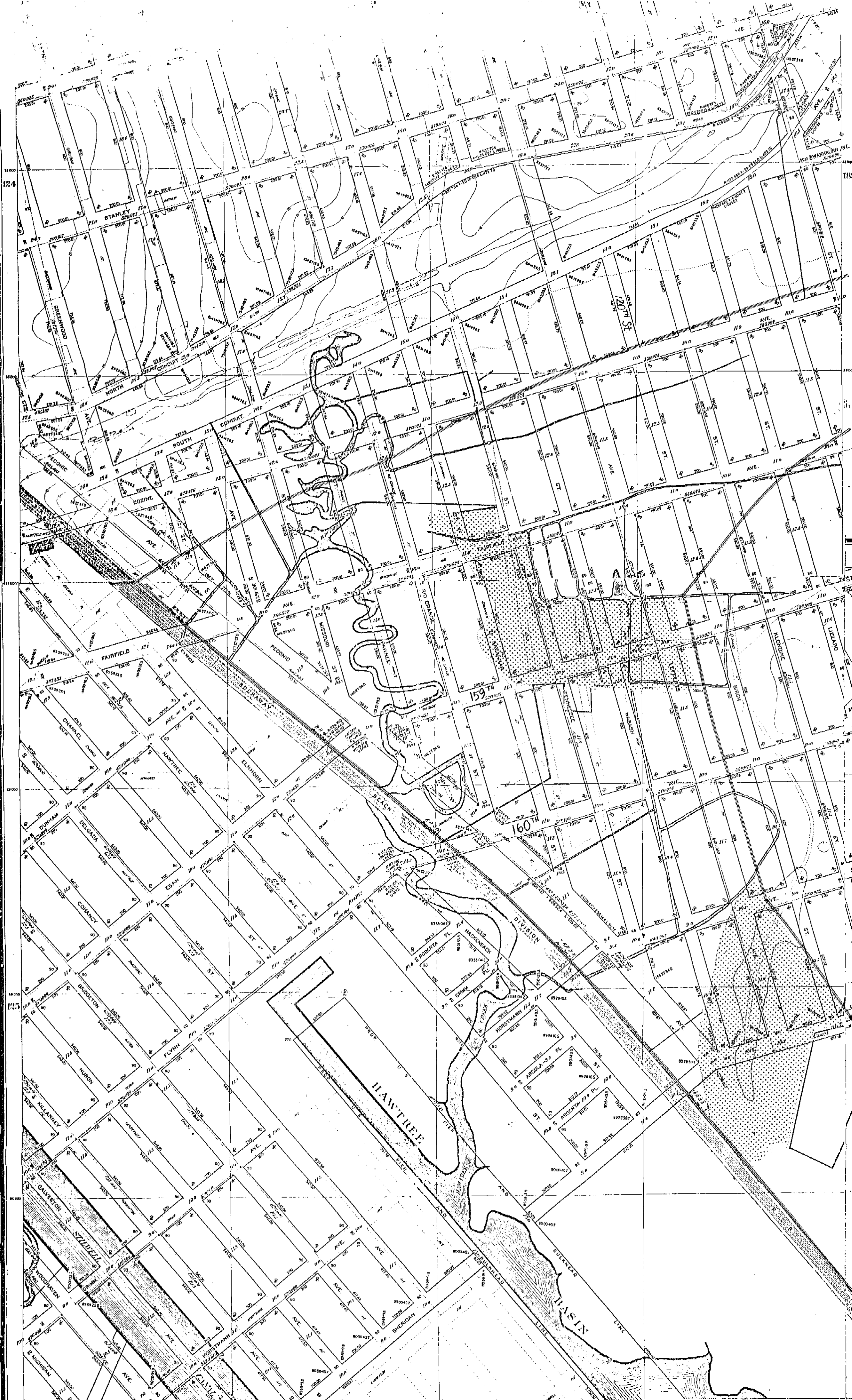
D.O.T. COORDINATES: (if known) _____

ATTACH SKETCH, TRACING OR COPY OF MAP

SOURCE OF MAP:

13. PHOTOGRAPHS (optional)

(ATTACH)



JFK WEST, QUEENS

approximate boundaries of project site
naturally elevated areas

NOTICE: PARTS OF THIS MAP MAY HAVE BEEN CHANGED BY MORE RECENT ADJUSTMENTS. BE SURE TO CHECK WITH LATEST ADJUSTMENTS.

MAP
SHOWING STREET SYSTEM FOR THE TERRITORY DESIGNATED AS
SECTION 176
of the Final Maps of the Borough of Queens
City of New York, Borough of Queens
Office of the President
Topographical Bureau
1925

MAP
SHOWING STREET SYSTEM FOR THE TERRITORY DESIGNATED AS
SECTION 177
of the Final Maps of the Borough of Queens
City of New York, Borough of Queens
Office of the President
Topographical Bureau
1925

MAP
SHOWING STREET SYSTEM FOR THE TERRITORY DESIGNATED AS
SECTION 178
of the Final Maps of the Borough of Queens
City of New York, Borough of Queens
Office of the President
Topographical Bureau
1925