J O-ANN MCLEAN ARCHAEOLOGICAL CONSULTANTS
4 DUNNE PLACE, LYNBROOK, NEW YORK 11563

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REPORT

ARCHAEOLOGICAL SURVEY

FIELD INVESTIGATION

159TH STREET/ROCKAWAY BOULEVARD

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PREPARED FOR: EDWARD J. MINSKOFF EQUITIES, INC.

PREPARED BY: JO-ANN MC LEAN
PRINCIPAL INVESTIGATOR

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159th STREET AND ROCKAWAY TURNPIKE PROJECT

JAMAICA, QUEENS COUNTY, NEW YORK CITY

NEW YORK

ARCHAEOLOGICAL SURVEY

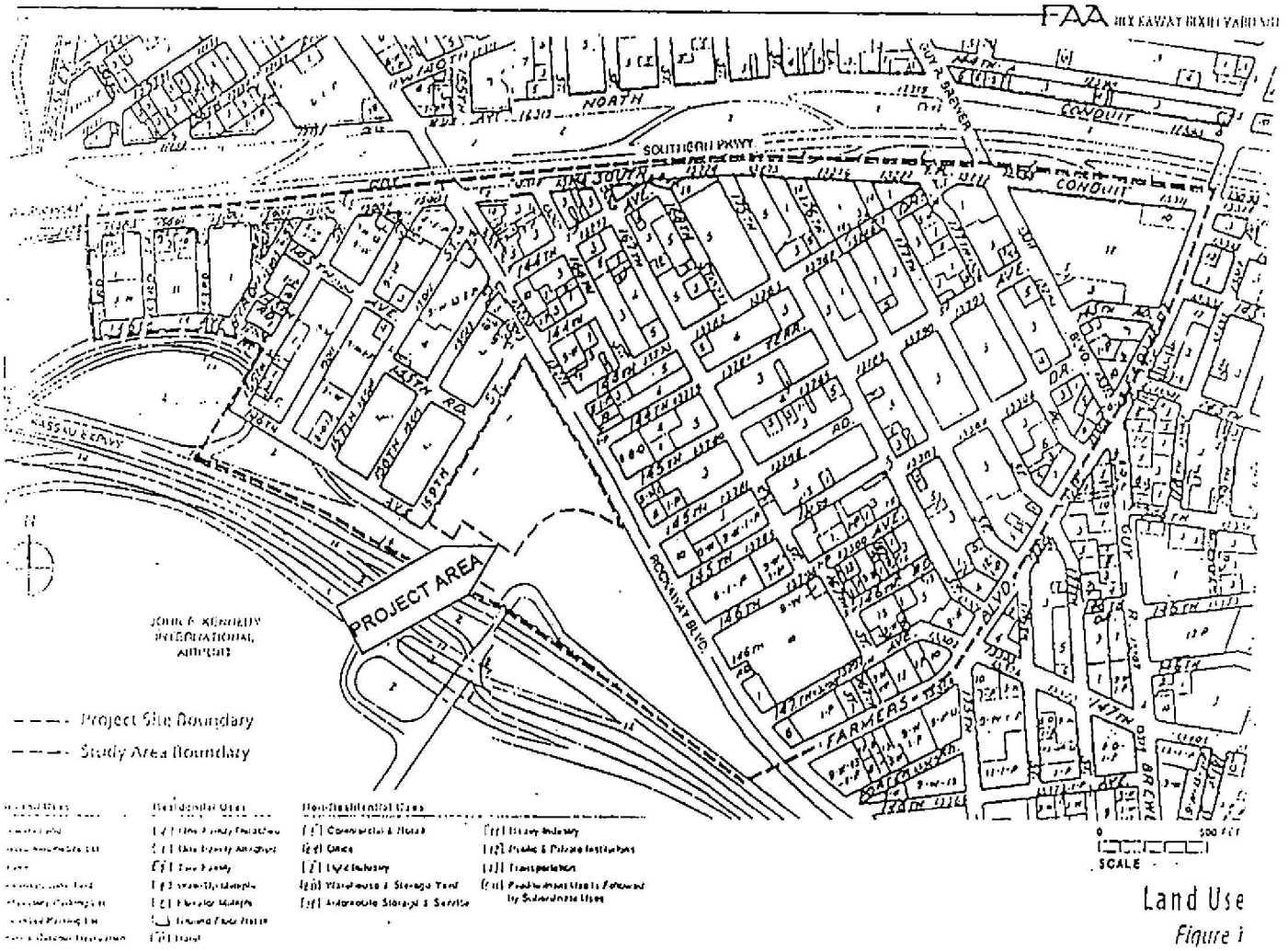
I. INTRODUCTION

An Archaeological Documentary Research survey includes researching relevant maps, references and archival sources pertaining to a project area to determine whether or not historic and/or prehistoric cultural resources are potentially present. This research includes an investigation of the landscape to assess episodes of ground disturbance which might have deeply buried or destroyed such resources.

As required by the City Environmental Quality Review Technical Manual, information acquired during the Documentary Research survey should 1) identify the potential for significant cultural deposits (historic and/or prehistoric) at the project site 2) evaluate the integrity of the project site to produce any significant deposits 3) provide a course of treatment for any such deposits if identified 4) upon the identification of significant deposits provide data to register the site with the National Register of Historic Places.

A documentary study, 'Archaeological Survey Documentary Research 159th Street/Rockaway Turnpike (Boulevard)' (McLean 1997) was prepared for Edward J. Minskoff Equities, Inc. for the proposed project located at 159th Street and Rockaway Turnpike (Boulevard), Fourth Ward, Jamaica, Queens County, New York City; Lot. # 14260/North of Nassau Expressway (Figure 1). It examined the geologic setting, prehistoric sensitivity, and the historic occupation and development of the Jamaica Bay environs and project area. This report discussed the relevance of these findings to the

proposed project and provided conclusions and recommendations for field testing. A Course of Treatment was outlined indicating the potential of historic and prehistoric resources on the project site and their proposed locations. It also recommended field methodology to investigate these resources. Part 1 of this report summarizes that report. Part 2 of this report details the field testing methodology employed during investigation of the identified potential cultural resources at this site, the results of this testing, conclusions and recommendations for site management.



Land Use

Figure 1

Figure 1- Land Use/ Study Map 1997- Courtesy Allee, King, Rosen & Fleming, Inc.

PART I

I. SUMMARY - DOCUMENTARY STUDY

A. Location

The site is bounded on the north/east by the Rockaway Boulevard, the south/west by the Nassau Expressway, the north/west by 159th Street and the south/east by a point of land meeting the intersection of the Rockaway Boulevard and the Nassau Expressway (near Farmers Boulevard). (See Figure 1)

All of the property is 3 to 6 feet below grade. Most of the property is cleared and covered with grass and/or tall marsh grass. Some deciduous and flowering trees line the property, especially on the north and the east. Low shrubs are scattered along the borders.

The corner of 159th and Rockaway consists of low lying land containing sheds and a basketball court with blacktop surface. At the opposite corner, the northwest, stands the radar tower and two outbuildings.

B. Physio-Geologic Setting

Jamaica Bay and Environs

> "Jamaica is the southwestern town in Queens County. It is bounded on the south by Rockaway Beach, a narrow neck of land belonging to Hempstead which extends between the ocean and Jamaica Bay; on the west by towns of Flatlands and New Lots, in Kings county; on the north by Newtown and Flushing and on the east by Hempstead. It has an average length and breath of about seven and one-half miles and includes a surface of about fifty-seven square miles. About one-third of the town, in the southwestern part is covered by the waters of Jamaica Bay, which communicates with the ocean through Rockaway Inlet. Through its central portion this bay is thickly interspersed with low islands which are separated from each other by narrow water passages. Between its northern boundary and the bay the town occupies a portion of the level part of the island south from what is known as the "backbone" (Munsell, p. 194)

Approximately 55,000-10,000 years ago this "backbone" gave way to a ridge of small sandy hills and marshland. The tidal marsh became known as Jamaica Bay and environs which included several creeks that drained the mainland. The soils associated with glacial out-wash are typically stratified sand and gravel. The grains are generally sand or gravel size and are rounded as a result of water transport. In general the sandy out-wash materials are loose in consistency. These wetlands would have supported native vegetation, especially marsh grasses. Figure 2, (Renard,1835) illustrates this physical landscape.

Dramatic changes occurred to the physical manifestation of this landscape during the twentieth century. The project area, however, within this tidal marsh environment was and remains above mean high water, potentially having provided habitable upland on the edge of the marsh.

The 1915 Final Maps of the Borough of Queens suggests that most of the project area lay five feet or less above mean high water. Only the northwest portion of the project area bordering Rockaway Turnpike and 159th Street was depicted as being above this level. Although the soil borings (See McLean, 1997) did not delineate the marsh line (ie. evidence of peat across the site) making it difficult to determine the natural sands from fill sands, they did contribute to a further understanding that most of the area was below or just above mean high water. Water was encountered at two feet five inches to three feet below grade in three of the six tests. These tests were conducted in sections of the property that could have received up to several feet of fill.

Borings near the northwest corner demonstrated this area to be one of the highest sections on the property. Both these borings demonstrate consistency with the historic maps that indicate that this portion of the property is on upland, just above the marsh line.

Figure 2 - 1835, U.S.G.S. Map Coastal Long Island

C. Prehistory of Jamaica Bay environs and the project area

Historic records (Munsell, 1882; Grumet 1981) clearly indicate that at the time of European contact three groups of Native American Algonkians utilized the area of Jamaica Bay and environs. It is certain that these Native Americans utilized all the water resources located within the Jamaica Bay area, establishing processing sites, temporary and/or permanent camps. These natives would have been exploiting the abundant marine resources in the area on a seasonal or year round basis. The files of the New York City Landmarks Preservation Commission report several identified sites recorded within a two miles radius of the project area. According to Boesch (1996a;see Figure 3) eight previously identified sites or culturally sensitive areas are recorded for the Borough of Queens within a two and one-half mile radius of the project area. They are described below. Please refer to Figure 3:

> Site:" #71. Seventeen sites identified along route of the Belt Parkway in Queens. Sites excavated during construction of the parkway. Solecki nd, 1941. [*.5mile N/NW project area*]
>
> #64. Traces of occupation. Parker, 1922 [*2.5miles SW project area*]
>
> #65. Shell midden. Parker 1922 [*1.5 miles S/SW project area*]
>
> #44. Campsite. Solecki, 1941 [*1 mile S/E project area*]
>
> #45. Campsite. Solecki, 1941 [*.5 mile N/E project area*]
>
> #48 Habitation Site - alternative location for contact period Village of Jemeco (site #8). Site reportedly also contains Woodland period component. According to Hazelton (1925), site located at South End of Beaver Pond [*1 mile N/NW project area at Baisley Pond*]
>
> (#8 Habitation site on Beaver Pond with possible contact period component Massapequa Village reportedly referred to as Jameco by contact Period Native Americans. The name reportedly translates as Beaver Pond. #48 alternative for Village of Jameco. (NYSM#4531;ACP-Quns-8-not shown beyond 2.5mile limit;nw of project)
>
> #33. Aqueduct Site habitation and burial site at head of Hawtree Creek,Smith 1950;Solecki 1982. [*2.5 miles W project area*]
>
> #73. Artifacts from private collection (collected in Springfield area) Kerns and Kerkorian 1988:18)." (Boesch;1996a)

Additionally Boesch (1996b) records:

#12. Project area considered sensitive for prehistoric materials

Due to it's proximity to known prehistoric sites, availability of fresh water, it's location between the two branches of Long Neck Creek (McLean, 1997) and it's depiction as upland which would have provided an elevated position from which to exploit local marine resources and wetland features, the project area was considered sensitive for aboriginal sites. This opinion was corroborated by the New York State Museum which evaluated the area as having a "High probability of producing Prehistoric Archaeological Data". (See McLean, 1997).

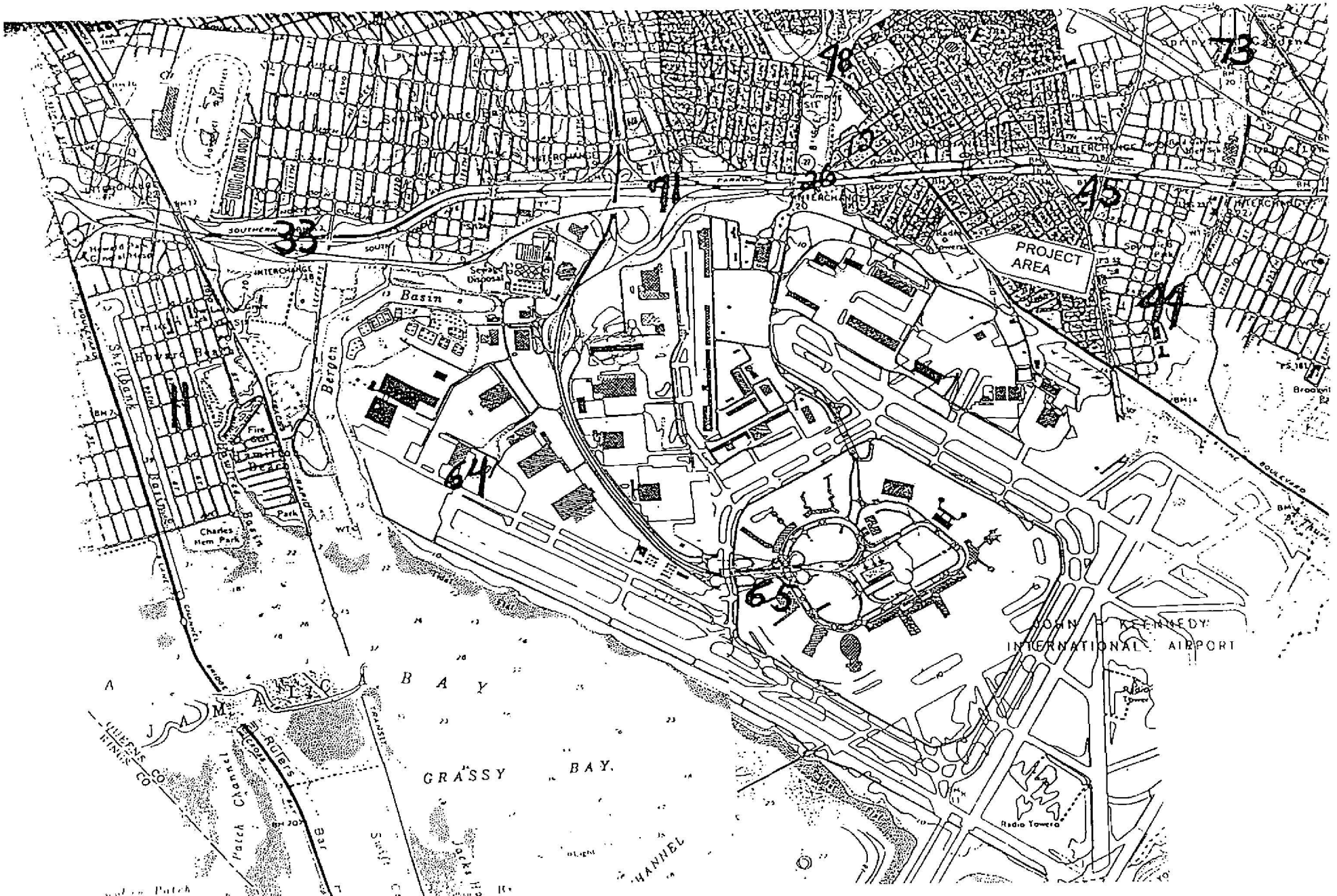


Figure 3 - Map of Identified Sites in Queens;Boesch 1996; on file NYC Landmarl Preservation Commission

D. HISTORIC BACKGROUND

The history of Jamaica begins with the execution of a land deed in 1655 with the local Native American groups. In 1656 the settlers, originally from Hempstead, petitioned the Governor General of the New Netherlands, Peter Stuyvesant, for the as yet uninhabited land between Carnesse and the town of Hempstead. (Munsell, p.195) A 1660 patent was granted naming the town 'Rustdorp'. Munsell further discusses the division of lands among the original settlers and newcomers, including the common lands and the property around Beaver Pond. According to Gibson (nd),

> " The first official settlement was established around the Beaver Pond area. Each man was granted a house lot within the stockade, a plantation lot for farming, a forest lot for firewood and a meadow for raising cattle and horses. As exemplified in the land distribution, Rustdorp, during that time, was primarily an isolated farming community" (Gibson,nd).

When the British overran the New York Dutch colony the name of Rustdorp was changed to Jamaica, derived from a Native American word for Beaver. The town of Jamaica splayed out around the originally settled area of Beaver Pond, but did not reach the project area with the exception of the Nassau Water Works Aqueduct which ran just to the west of the property site northeast to Baisley Pond. In the late-nineteenth century the Jamaica and Brooklyn Plank Road provided the once isolated farming community a convenient way to move their produce from Jamaica to Brooklyn and New York City. These farms, provided the urban metropolis with farm products and goods to be consumed in the urban center and played a significant role in the growth of New York City.

Although the rich wildlife of Jamaica Bay and it's use as resort land is discussed by Munsell no discussion of the ownership of the marshlands was located. However, a

L.I. Review Star article (7/30/48) mentions that "Each upland farmer who tilled the soil of Richmond Hill, Ozone Park, Forest Hills and Jamaica was given a piece of marshland so he would have a source of salt-hay to bed down his cattle. The division of the lands in the southeastern portion of Jamaica, bordering the marsh and of the marsh itself is first illustrated in the Conklin Survey, (1860 no photo available) and do not appear to change in the 1891 Wolverton map (Figure 4). Note the lone structure present in the area of the project. Prior to the nineteenth century discussion of the project site as meadow and/or a resource for salt hay are the only evidence of it's use.

While the town of Jamaica was growing the section of Jamaica encompassing the project area saw some early nineteenth century occupation (Please see McLean, 1997). The 1852 Dripps map shows the area as marsh and upland along Rockaway Turnpike. The 1873 Beers Atlas (Figure 5) shows some structures along the south/west side of Rockaway Turnpike, while the 1891 Wolverton (Figure 4) illustrates several small parcels in the area of the project site east of *Allen* and west of *P. Foster.* The structure shown in the corner of this area is likely either *H. Spaulding* or *W. B.S. Sh.* previously indicated on the 1873 Beers Atlas.

The 1901 Hyde Map delineates the beginning of modern building in this section of southwest Jamaica. The small parcels that make up the project area remain unchanged with perhaps the addition of two buildings on *Spaulding* next to the *Kelner Realty Co.* (formerly *P. Foster*). Continued changes during twentieth century did not appear to disturb the Spaulding structures which seem to remain in situ until at least the 1930's. No direct information regarding the occupants nor occupation

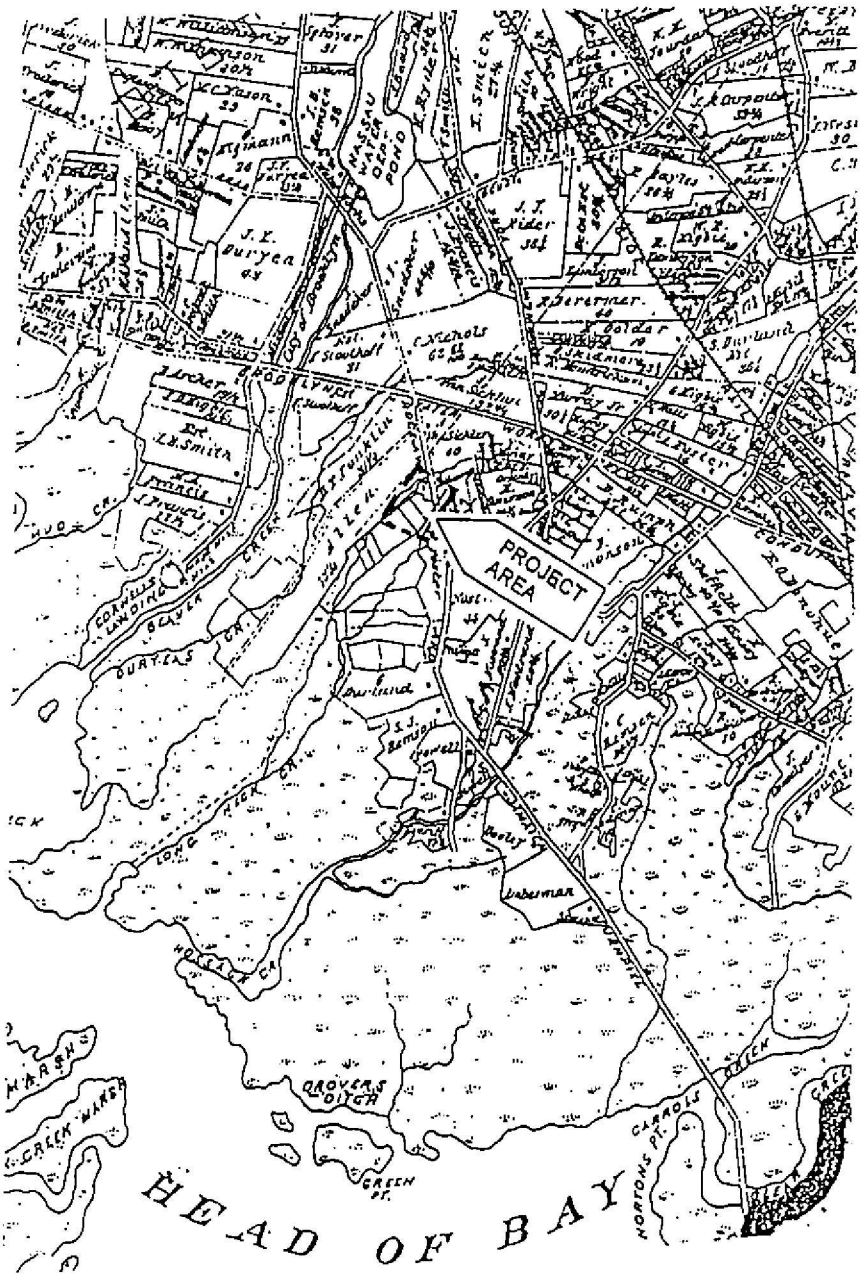


Figure 4 - Wolverton Map 1891

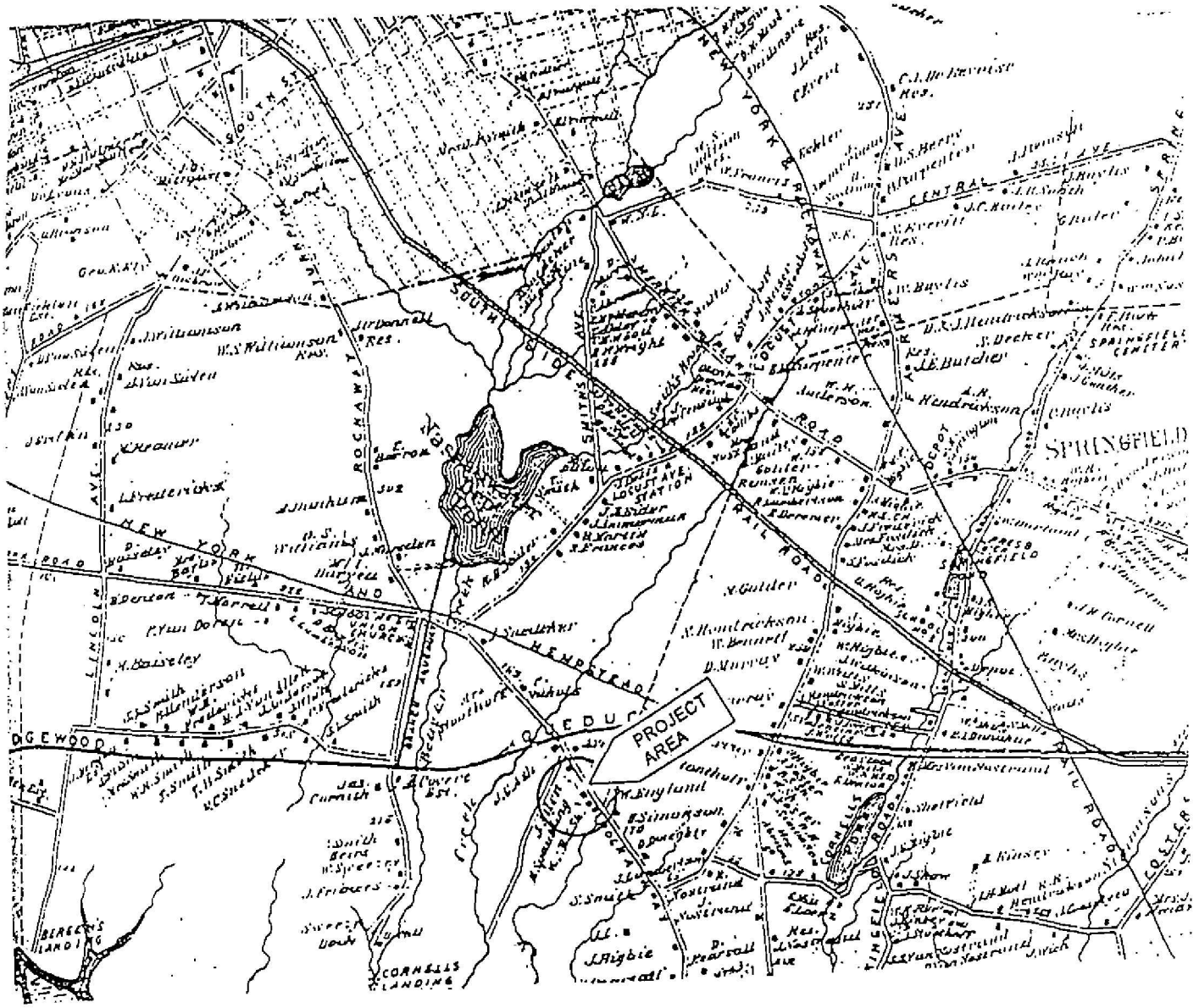


Figure 5 - Beers Atlas 1873

associated with these structures was identified. No mention of Spaulding was noted in any of the referenced researched.

Later twentieth century changes occurred in the vicinity, especially the construction of Idlewild, later Kennedy, Airport which may have initiated the removal of these structures. Figure 1 illustrates the final designation of the vicinity and the current size and shape of the project area and adjacent land.

E. CONCLUSIONS OF THE DOCUMENTARY STUDY

Prehistoric Cultural Resources and Recommendations

Undisputed dramatic topographical change has occurred to the southwestern section of Jamaica in the area of Jamaica Bay and environs. Extreme fill episodes associated with the building of Idlewild and Kennedy Airports, have undoubtedly produced deeply buried stratified prehistoric cultural resources in some areas. In addition dredging episodes may have inadvertently deposited prehistoric materials on top of historic living surfaces resulting in the potential for recovery of prehistoric materials from disturbed strata.

Most of the land within the project area, with the exception of the northwest corner, was close to or below mean high water indicating that it was not suitable for prehistoric occupation. This northwest corner land surface bordering Rockaway Turnpike and 159th Street being somewhat higher than the marshland to the south might have offered natives a point of departure into the marsh or served as a processing area.

Much of the area that might have been utilized by Native Americans had been disturbed by historic construction and demolition. Grading associated with these

episodes may have disturbed prehistoric materials remaining within the first 2 feet across the area and/or heightened the grade protecting them. Although the marsh lands certainly would have been exploited by these people, the expectation of more than scattered finds there is unlikely. Additionally this low lying marsh area might have undergone deep fill episodes (up to five feet) leaving prehistoric levels five to seven feet below current ground surface. Areas which might not have been impacted by previous construction excavation and may yield prehistoric materials were believed to be in the northwest corner and are marked on Figure 6.

Prehistoric cultural resources could contain evidence of subsistence strategy, local resource exploitation and settlement patterns which would add to our knowledge and understanding of north east coast native groups. It was determined that investigation of these resources might aid in addressing the following: 1. An investigation of the relationships between marsh land, upland, habitation and processing site function and location? 2. Temporal and spatial land use; A Paleo component has been linked with the Baisley Pond area. What are it's spatial limits and what implications do they have for further understanding the Paleo period? 3. Can food preferences within an abundant and rich environment be recognized and explored through the recovery of faunal debris? Do they have implications for understanding cultural reality and taboo among Algonkians? 4. Seasonal and permanent habitation or processing site patterns might be delineated for this coastal group. 5. Raw material availability and preference might be determined through lithic analysis.

The proximity of the project site to two remarkable Queens sites, The Aqueduct Site, a Native American burial site, village and shell heaps (See Figure 3;Solecki; # 33)

and a large shell midden and village site to the south west (Parker, 1920 #11) add credibility to the line of questioning suggested above. These two sites excavated in the 1920's may be related and may have extended as far as the uplands of the project area. Potential for prehistoric cultural resources was considered to be very high.

The main structure was to be placed on one of the points of the site requiring six feet of fill. With the potential of previously deposited five feet of fill the total depth of fill in this area could reach eleven feet. The proposed ten foot basement would likely not impact any deeply buried deposits. The proposed pilings would clearly extend into potentially sensitive areas, if present, however, their dimensions would not impact a substantial portion of these potential resources. Therefore, no archaeological investigation was recommended for this area. The grading and construction related activities for the proposed Guard House, roadways, curbs, and landscaping as well as the running of sewer, and electrical lines had the potential for impact to the prehistoric materials east of the proposed main structure. Therefore, field testing was recommended. The course of treatment for these potential resources is outlined below.

Historic Cultural Resources and Recommendations

This area of Jamaica clearly represented a portion of an early farming community in the seventeenth and eighteenth century, exploited mostly for it's salt hay. The nineteenth century, construction of the Jamaica and Brooklyn Plank Road, allowed for easier travel to and from the city making Jamaica the rest stop for farmers bringing their products to the city markets and a contributing factor in the growth and urbanization of New York City. Some urbanization was begun in the early twentieth

century which abruptly ended with the utilization of the marshland as home to Idlewild Airport.

No references to any significant activity, significant person, event nor group was established during the documentary research relative to the project site. Of possible historic significance, however, was the *J. Spaulding* homestead which was present as far back as the 1873 Beers Atlas map (possibly the Dripps 1852). This structure appeared to remain at least until 1931 and potentially until the property was acquired for the construction of the Idlewild Airport. At least one outbuilding was associated with this two story house structure and might have survived with it. Even in the face of continued reuse of the land the section potentially containing features associated with these structures does not appear to have been utilized. The section once containing the Spaulding residence and outbuilding directly behind it experienced no subsequent documented sub-surface disturbance. Therefore, it was believed that privies, cisterns and wells associated with the original construction of the *Spaulding* house and the *Wm.S.Sh.* may remain in situ.

Although nothing of known historic significance occurred on the project site, the early Spaulding Homstead had the potential to contribute to our understanding of early farm life along the marsh area of Jamaica, in the shadow of New York City, during the nineteenth century. The house and associated outbuildings were believed to have been bulldozed and graded into sheet scatter across the property, however, foundations, privies, cisterns etc. had potential to remain in situ under fill in those areas flagged on Figure 6. All other structures were built post 1901 and did not demonstrate any archaeological significance.

It was determined that investigation of the Spaulding remains may add to our knowledge of the development of New York as urban center and to the farm/city relationship. 1. Research into these potential cultural resources may prove informative for those studying the transition from a farm economy to an urban/industrial area. 2. Questions regarding the age of the Spaulding Structure might be addressed by locating and studying it's foundation and builder's trenches. 3. Trash deposits and filled features such as privies and cisterns may provide household items informative of the types of goods in use and/or available to this farm family and how they compare with other early farmsteads both on Long Island and in New York City. 4. Questions regarding privy and cistern construction, placement and/or use might also be addressed.

Most of the building plans (Figure 6), appear to avoid the area of sub-surface historic potential, however, the establishment of sprinkler systems, sewer and utility lines running toward Rockaway Boulevard would likely impact the integrity of these potential features therefore, field testing was recommended. The course of treatment recommended for the historic resources is addressed below.

G. COURSE OF TREATMENT

After consultation with the Landmarks Preservation Commission a final Course of Treatment was submitted on 1/14/98 and accepted by LPC 1/20/98. This course of treatment was designed to address the research questions listed above.

"Course of Treatment...
The goal of the proposed Course of Treatment diagramed below is to determine,

1. The presence or absence of prehistoric archaeological materials through sub-surface field testing.

2. The presence or absence of historic cultural resources. If the presence of historic features is identified by the field testing strategy the Director of Archaeology, LPC will be notified. A Topic Intensive Research Study will be undertaken to determine the probability of addressing the historic research questions listed above by first establishing a specific trail of occupancy and occupation of the project site in the area of the *Spaulding* house. This research in consultation with The Director of Archaeology, LPC will determine the mitigation plan for these historic resources.

3. If the presence of prehistoric resources is determined, the Director of Archaeology, PLC will be notified. A mitigation plan will be established.

4. If the findings are negative this will be clearly stated in the report.

Scope of Work

The recommended testing strategy to determine presence or absence of significant cultural resources for 159th Street and Rockaway Blvd. consists of:

Method

Historic Archaeology

Four backhoe trenches are recommended in the area of proposed historic sensitivity. If presence of intact historic deposits or features are identified during the sub-surface field testing strategy a Topic Intensive Research Study of the *Spaulding* and related structures will be necessary. This Topic Intensive Research will consist of a Title Search to establish continuity of occupation, life style, occupation and economics of the inhabitants of these structures as well as the likelihood of locating privy or cistern features. Research will be conducted of the tax, census, water and sewer records and other pertinent City directories.

The results of this research and consultation with the Director of Archaeology, LPC will determine the extent of mitigation of the identified historic features.

If the Topic Intensive Research and/or mitigation of historic features are required, they will be conducted as a change order to this proposal.

Prehistoric Archaeology

Seven backhoe trenches are recommended in the areas of proposed prehistoric sensitivity. These are illustrated on the attached Figure C1R.[see McLean 1997b) These tests will be at least two feet wide and extend to depths of sterile sub-soil where possible or to the water level, to determine the distribution of any ground surfaces revealing prehistoric materials (or unless primary historic features are encountered that preclude it, such as foundations, privies, cisterns, trash pits etc. or dump site features such as cement or automobiles). Trench depth will depend on these conditions. Shoring of trenches is not anticipated.

Field Testing

Strategically placed shovel tests may be employed for additional control.

The principal archaeologist will supervise all work and monitor backhoe trenching; two to three field personnel will be present.

Soils will not be screened; However, if areas of significant deposits are identified soils in backhoe bucket will be screened, excavation will stop, the strata will be flagged. Recovered materials will be bagged in the field and returned to the laboratory for identification and cataloging. A photographic and profile record will be kept.

Mitigation

If sub-surface cultural materials are identified, consultation with LPC and Edward J. Minskoff Equities, Inc. may result in mitigation of these materials which will be performed under a change order to this proposal.

Report

A report documenting the testing phase and findings including site drawings (stratigraphy, maps), photographs, results and recommendations will be prepared by the principal investigator for submission to the proper officials. " (McLean, 1998)

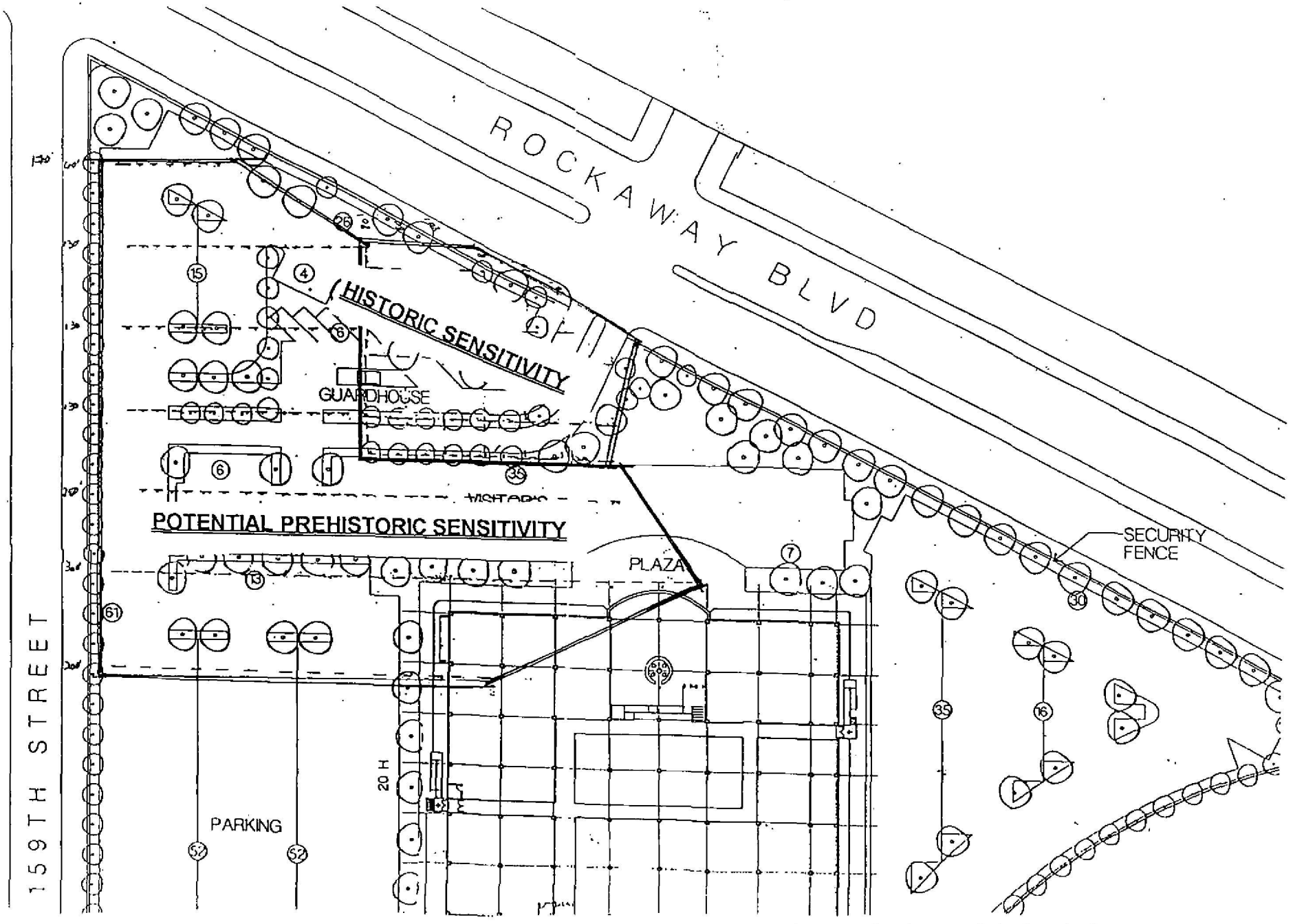


Figure 6 - Areas of designated sensitivity

PART II

I. FIELD TESTING

A. INTRODUCTION

The area under investigation is the triangular shaped, northeast section of the property noted on Figure 6; Plates 1 and 2. The area a total of 500 feet along Rockaway Boulevard and 350 feet along 159th Street was tested. As demonstrated above, this triangular section had been identified as potentially historically and prehistorically sensitive. The Course of Treatment designated that eleven backhoe trenches be employed for testing. Sixteen backhoe trenches and 7 shovel tests were excavated.

B. METHODOLOGY

The datum was designated as the corner of Rockaway Boulevard and 159th Street.

A 1986 Dynahoe backhoe was employed. Backhoe excavation consisted in sixteen uniform trenches. Thirteen ran north/south (northeast/southwest) across the area designated as sensitive. Three ran east/west. All trenches were approximately 2-1/2' wide (the width of the backhoe shovel) and excavated beyond the upper levels of sterile soils to investigate for deeply buried stratified deposits. The depth and stratigraphy of each section was monitored and appropriate information noted on "Trench Recovery Sheets". This information is contained Appendix B. A minimum of 1 soil profile was drawn for each trench. Soil profiles are located in Appendix C of this document. The soils were not screened with the exception of Feature soils.

Feature soils were dry screened, through 1/4" wire mesh. Materials were bagged and labeled in the field and returned to the laboratory for identification.

Shovel test pits were excavated by natural strata to a maximum depth of 36". All soils were dry screened, through 1/4" wire mesh. Stratigraphic and other information was recorded on standardized "Shovel Test Pit" forms and all cultural material was collected by stratigraphic context.

All recovered materials were washed and cataloged. Ceramics were classified by raw material and where appropriate, by manufacturing technique, decorative treatment and function. Glass was classified by form, function and color. The sources used in the identification and dating of the ceramics, glass and metals were Baugher-Perlin (1982), Boggess (1996), Greer (1996), Jones (1986), Ketchum (1987), Lang (1992, 1995), Muncey (1970), and Spillman (1983). Unless otherwise noted the dates for ceramics and glass represent date of manufacture, not date of deposition. There is a time lag between manufacture date/transport date and actual date of deposition. The lag time varies in length according to artifact use class (Hill 1982).

Coal/slag, brick fragments, mortar and plaster were counted, recorded and discarded. Representative samples of all discarded materials were saved. All faunal material was sorted and counted.

C. TESTING PROGRAM

Trenching proceeded in a manner consistent with identification of either prehistoric or historic sub-surface cultural resources (Please refer to Map 1;Appendix D for the following discussion).

AREA OF HISTORIC SENSITIVITY

Trenches 1-4

Trenches 1-4 ran northeast/southwest along the east axis of the property. Trench 1 was excavated 60 feet west of Rockaway Boulevard for the length of the sensitive area, with the exception of the 'basketball court/shed area' in the northeast corner. It was approximately 300 feet long. Trench 2 ran parallel and 10 feet west of Trench 1. Trench 3 was placed 10 feet west of Trench 2. It ran parallel to Trench 2 for approximately 350 feet. Trench 4 was placed 20 feet west of Trench 3. It ran parallel to Trench 3 for a total of 375 feet.

Trenches 1-4 were excavated in approximately twelve foot sections with 5 foot balks (Plate 3). This methodology was employed because water often encountered at 30 inches immediately flooded the lower levels and caused cave-ins. The balks prevented full collapse of the trench and allowed time to observe each section without immediately flooding. Excavation in sections also aided in establishing control of the extremely long trenches. They were excavated to a maximum depth of 9 feet.

Trenches A-G

Trenches A, B, C, D, E, F and G were placed in the area of potential historic sensitivity.

Trenches A, B, and C were placed parallel to Trench 1, 28 feet west of Rockaway Boulevard and at the foot of the terrace that lines the east side of the project

site. They began at 325 feet south of datum and ran south for a total of 150 feet. They were excavated through sterile soil to a maximum depth of 36".

Trenches D, E, and F

Trenches D, E, and F ran east and west across the area of potential historic sensitivity. Trench D was placed at 440 feet south of datum and ran due west from Trench C. It was approximately 75 feet long. Trench E was placed at 400 feet south of datum and ran due west of the center of Trench B. It was 190 feet long. Trench F was located adjacent to the north end of Trench A (at 340 feet south of datum) and extended 150 feet west.

Trench G

Trench G was placed in the terrace directly east of Trench A, approximately 25 feet west of Rockaway Boulevard. It ran for 115 feet south.

AREA OF PREHISTORIC SENSITIVITY

Trenches 5 ,6, 7, 8 and 9

These tests were placed in the north/western section of the area designated as sensitive. The north walls of these trenches ran along 159th Street. This area was presumed to potentially contain prehistoric materials.

Trench 5 was located south of the fence at the corner of 145th Road and 159th Street. Its length was 150 feet. Trench 6 was placed 50 feet east of Trench 5. It ran north/south 150 feet from the 159th Street fence. Trench 7 was placed 45 feet east of Trench 6. It ran 150 feet south from the 159th street fence. Trench 8 was placed between Trench 6 and Trench 7. It began 50 feet south of the fence on 159th Street

and ran for 50 feet. Trench 9 was placed between Trench 7 and Trench 4, on the 159th Street fence. It was 50 feet in length.

Shovel Tests

Seven shovel tests were placed strategically. STPs 1, 2 and 3 were placed along the east line of the property into the terrace to test for architectural features. Shovel Tests 4, 5, 6 and 7 were placed to determine the spatial distribution of Feature 1.

D. RESULTS OF THE FIELD TESTING PROGRAM

Stratigraphy

In general the test trenches revealed uniform soils of mostly undisturbed stratified sands (Plate 4). The stratigraphy, in general appears to be naturally deposited as follows (see Plates 5 and 6):

Stratum I	Dark brown sandy loam with roots (1-10")
Stratum II	Fine orange/orange-brown sand (10-36" up to 60")
Stratum III	Grey/green sand (36-70")
Stratum IV	Brown pebbly sand (70-140" and beyond)

Exceptions to this soil profile occur:

Trench 3 Sections 6, 7 and 8 demonstrate a deeper Dark Brown loam up to 20" (Plate 7) and Trench 4 sections, 5, 6, and 7 exhibit a 4-5" tan sand level below the dark brown loam and below that a 12-20" dark brown loam.

These deposits are directly behind the section of the property that was once occupied by the Spaulding residence and may reflect use of the land for gardening etc. However, they are also located on the outside edge of the American Legion Field, c.

1931 (now, PAL baseball diamond) and may represent a fill episode associated with leveling the ground at that time.

Trench 5 (Plate 8) exhibited extreme differences in stratigraphy from the rest of the site.. This trench placed closest to the marsh line contained:

North side of trench:

Stratum I	Dark Brown loam w/roots (0-8")
Stratum II	Brown/tan sand (8-14")
Stratum III	Black/Brown- peat/bog (14-33")
Stratum IV	Tan/orange sandy clay (33"+)

South side of trench:

Stratum I	Dark Brown/Black loam w/roots (0-6")
Stratum II	Brown/tan sand (6" +)

Water was encountered a 8"

Buried ground surfaces were encountered clearly in Trenches E, F, and G. Twentieth century materials were associated with fill in these trenches. They are discussed below. No buried ground surfaces contained materials from or related to prehistoric occupation of the area.

Trenches, 1, 2, 3 and 4

Trench 1 revealed uniform sterile soils. Water was encountered at 30" at the south end (see Plate 4). The north end of the property being higher evidenced relative changes in the uniform stratigraphy. The final section of Trench 1 was excavated to 90". Disturbed soils were encountered between 6-60". This disturbance can probably be attributed to removal of gas tanks associated with gas stations located on the site in the early twentieth century. Water was encountered at 72". The trench was sterile of cultural materials.

Trench 2

Trench 2 exhibited the same general stratigraphy as Trench 1 with the exception of Section 3. Of importance is the identification of Feature 1 within Trench 2 Section 3 (350 feet south of datum and 81 feet west of Rockaway Boulevard). Feature 1 is a trash pit, probably 3-1/2 feet in diameter. There are at least two deposits present. The later deposit is located 15" below the surface (Plate 9A & 9B). It consists of ash and slag. A mottled orange brown mixed matrix separates it from the earlier deposit. This earlier deposit consists of brown loam mixed with glass fragments, whole and part bottles, brick, ceramic and one recovered butchered mammal bone (rib). It extends from approximately 26" to at least 48" (see Profile Appendix C). The center was inadvertently excavated by backhoe, both sides remain in situ. Due to encroaching water and imminent collapse this feature was quickly shored with plywood and backfilled. This was essential to maintain the integrity of the remaining portion of the feature and to avoid accidents. Certain diagnostic materials were removed from the feature wall. They are discussed below.

The materials recovered from the deeper deposit include a patent medicine bottle, "ATWOOD'S JAUNDICE BITTERS...MOSES ATWOOD GEORGETOWN MASS" (Plate 10) was located near the top. These bottles are dated as early as 1840 and as late as 1875. Further, a Manhattan firm purchased Atwood in 1875 and continued bottling until 1948 (Fike 1987).

Also recovered was an aquamarine, transparent, blob-top bottle with the remnants of a metal stopper still encircling the neck. Embossing on the body is "D. & R. ...48...Wt 12TH St....New York.", on the bottom "D & R." (Plate 11). This is probably a

spring water or soda water bottle. The soda water industry was introduced to New York after the 1830's and the blob-top bottle was prevalent during the early days of the industry. (Muncey 1970:103-104). "To hold the cork under pressure, a wire was placed over the top of the bottle and secured around the neck." (Muncey 1970:104) The invention of the Hutchinson stopper in 1879 and it's general adoption post 1879 indicates that this specimen was produced between 1830 and 1879. The bottle was removed from the lowest exposed point in the feature (48"). Also recovered from this low level, was a base fragment of black or very dark brown salt glaze stoneware with Albany slip interior. The flat un-footed bottom was crossed wire cut, indicating that it was a wheel made utilitarian stoneware, dated post 1850 (Greer p. 67;Plate 12). A large mammal rib bone, with cut ends was also recovered from 48". The full depth of this feature is unknown due to water intrusion.

Shovel Test Pits 4-7 were placed five feet north, south, east and west of Feature 1 to test its spatial distribution. They were sterile with the exception of a few pieces of flat and bottle glass.

Trench 3

Trench 3 stratigraphy was similar to that already encountered. However in Sections 7, and 8 the dark brown loam (Stratum I) extended to 22 inches. This is the outside edge of the fill for the baseball field.

Section 6 revealed shallow pocket of trash at about 12". This was identified as Feature 2.

Feature 2

Feature 2 was a small shallow pocket of probably mid-twentieth century materials (ash and slag, metal and glass). These materials are described in Appendix B.

Trench 4

Trench 4 was distinctive for two reasons. First, Section 3 contained a trash pit. This was designated as Feature 3 (350 feet from datum). Second, it displayed unusually deep dark brown loam (up to 21 inches) in sections 5, 6, 7 and 8. In this trench the orange/brown sand began as low as 21-31 inches. It seems that this additional dark brown loam was brought into the site as fill to heighten the grade.

Feature 3

Feature 3 is a trash pit encountered in Trench 4 Section 3. Two backhoe buckets contained materials from this early to mid-twentieth century trash pit. This pit starts at 8". It's depth is not known. The backhoe soils were screened all materials were retrieved. With identification of Feature 3 excavation of Trench 4 was halted (see profile Appendix C).

It contained ceramics, flat and bottle glass, and metals. The ceramics include industrial whiteware "The Horn & Harda...", and yellowware pie plate fragments. The 9" or 10" pie plate is probably representative of the 7", 8", 9" and 10" round, shallow, flared side pie plates listed in 1850 by Goodwin Pottery of East Liverpool. No potters mark was noted (Plate 13). Glass included, Atlas Mason jar fragment variants 1896-c. 1940 (Spillman 1983:132), and Ball Mason jar fragments c.1888-1935, the majority of which were made after 1900 (Spillman 1983:131). Metals included unident oxidized

machine parts and a pitchfork. This feature was separated from the balance of the trench by plywood, covered with plastic and back-filled for safety reasons.

Trench A, B, C, D, E, F AND G and Shovel Test Pits 1-3

Identification of Feature 1 dictated the placement of Trenches A and Trench B. These trenches and shovel tests were placed east of Feature 1 anticipating that foundation or other architectural features would be encountered. Shovel Test Pits 1-3 were placed to test for architectural features along the terrace rising along the east edge of the property. No architectural materials were encountered. The trenches were sterile of cultural materials (Plate 14).

Trench C, Trench D, Trench E, Trench F, Trench G

Since an understanding of the stratigraphy had been determined through Trenches 1-9, Trenches C, D, E, F, and G were not excavated as deeply thus avoiding water intrusion and the need to conduct the trenches in segments. It was assumed that evidence of historic materials would be within the first 24-36 inches.

Trench C was placed at the bottom of the bank that lines the east side (along Rockaway Boulevard) of the project site. Features 4, 5, and 6 were identified within it.

Feature 4, Feature 5 and Feature 6

Feature 4 was identified between 450 and 475 feet south of the northwest corner of the property. It was a cement rubble deposit (approximately 25 feet long) lying at the base of the bank and extended to depth of approximately 30" . Water was also encountered at this depth. No related materials were recovered with the twentieth century cement.

Feature 5 was identified at 440 feet south of datum and 26 feet west of Rockaway Boulevard. It appeared to be an extremely disturbed cobble feature one course deep. It was possibly a walk or path ending with a very large flat cobble. (elevation 4' from street level.) The cobbles appeared to be going up hill, therefore excavation of the upper part of the terrace was under taken. The cobble path led to a ledge of large cobbles placed in a semi-circle (elevation 2 1/2'-3' from street level). These features are likely the remains of landscape features, perhaps a retaining wall, for the bank or a terraced walkway leading down to the lowland section of the property (Plate 15 and 16;also plan view Appendix C).

Feature 6 two small round cement drainage boxes were uncovered at 420 feet south of the northeast corner (Plate 17). They were connected by a pipe. The water level here was about 36 inches and this may relate to this mid to late twentieth century feature.

A flat cement platform or floor with bolts in it was located adjacent to and south of Feature 5. This twentieth century footing was identified as Feature 9 and may be related to Feature 4.

Trench D

Trench D was placed due west of Feature 5 in order to test for the spatial distribution of this feature. Its length was 75 feet. The soil immediately east of Feature 5 was disturbed. It revealed a twentieth century trash deposit. It included a plastic "Bar-B-Que Potato Chip" bag, plastic bottles, the base of a "Hellman's Cholesterol Free Reduced Calorie Mayonaise". These materials were discarded in the field. The balance of the trench was sterile.

Trench E

Trench E was placed directly west of the center of Trench B. The trench was 190 feet long. At about 90 feet west a dark brown fill was identified below the current surface loam, which thickened as the trench traveled west. It appeared to be a fill episode which overlies an earlier ground surface. Ground water was encountered at higher levels as the trench proceeds west. It seems likely that this low lying land was filled to bring it to grade and make it usable, probably in the 1930's when the land was employed to house a ball field. The dark brown fill material, found generally between 8-20", contained historic artifacts. These appeared to be late nineteenth century to mid-twentieth century artifacts. These materials included asphalt roof tiles, whiteware, brick, asphalt, and non diagnostic glass and ceramics. Identification of a Hobble skirt type Coca Cola bottle, however, dated this fill as clearly post 1916. Specific changes in stratigraphy are described in Appendix A.

The stratigraphy of this trench provides evidence of at least one fill episode of the property. The natural elevation declines as it gets closer to the marsh where water is reached as high as 20". It seems likely that this low lying fill was brought in to make the land usable. Although some fill may have been brought in during occupation of the property, it seems more likely that it was installed with the building of the American Legion baseball field circa 1930. Of importance is the fact that the artifacts recovered were clearly within the dark brown fill material and not at the interface of the dark brown loam and the orange brown sand. No evidence, therefore, of sheet scatter associated with demolition of the Spaulding structures was encountered in this trench nor generally across the property.

Trench F and Feature 7

Trench F was placed adjacent to and extended 150 feet west of Trench A. It contained less artifactual materials than Trench E. However, Feature 7 was encountered at it's east end.

Feature 7

The first 7 feet of Trench F revealed a cobble feature. The feature consisted of small to medium size (4") cobbles placed flat on the ground (Plate 18; elevation 4' from street level). The west end terminated in a large cobble (12"x6"). Beyond the large cobble the soils were sterile. Within the feature, mortar like cement covered some of the cobbles, providing a flat surface (Plate 19). This feature appears to be a path or other landscape feature. It may have been originally cobbled and later covered with cement. The stratum immediately covering the cobbles and cement was a 10 inch level of mortar, brick and brick fragment debris. This feature maintains its integrity but looks very similar to the disturbed Feature 5, 115 feet to the south.

Beyond the corner stone of Feature 7 the soils retain the original natural stratigraphy to approximately 72' west. From this point on fill is encountered. Historic materials within dark brown loam are encountered between 100-150 feet west. These include asphalt roofing tiles, non-diagnostic glass and metals. Water was hit at 31".

Trench G/Feature 8

Trench G was placed directly east of Feature 7 and ran west for approximately 115 feet. It was cut into the bank lining the east side of the property (Plate20). It was placed there with the assumption that features related to Feature 7 would be encountered. Feature 8 was encountered directly east of Feature 7 (Plate 21; see

profile/plan Appendix C). Feature 8 consisted of a semi-circular row of large cobbles placed in the orange/brown sand stratum (elevation 2 1/2' from street level). Overlying the cobbles was a 10 inch stratum of mixed matrix fill soil and 16 inches of dark brown loam. The feature was quite disturbed, however, large and small cobbles appeared to extend from the first level, to a stepped or sloping cobble path running down the bank (elevation 3 1/2' from street level) to the intact cobble path (Feature 7; elevation 4' from street level). Feature 7 and 8 are likely terraced landscape features leading from the higher elevation of the property to the lower. Very few artifacts were associated with this feature. Of notable exception was a Rheingold Beer can, found crushed in the center of Feature 8; "Rheingold...". Beer cans were not in use in the U.S. until 1934. War World II temporarily limited the use of cans and it was after the 1950's that cans again began to be used. The Rheingold Brewing Co. (mid 1850's-mid 1970's), of New York, New Jersey, and Massachusetts would have been using flat top cans for it's local beer between 1960-1975 (George Miller, personal communication) providing a *terminus post quem* for the fill deposition. Whether this fill episode is related to the demolition of the expanded Spaulding residence or outbuildings is unknown as there are no other diagnostic artifacts.

Trench 5, Trench 6, Trench 7, Trench 8, and Trench 9

These trenches were placed with their north ends running along 159th Street. This area was presumed to potentially contain prehistoric materials. None were located.

Trench 5 was placed running south of the fence at the corner of 145 th Road and 159th Street. This trench was sterile of cultural materials.

Trench 6 was placed 50 feet east of Trench 5. It ran north south 150 feet from the 159th Street fence. Stratigraphy consisted of Dark brown loam from 0-17" and 17-36" orange sand. A pocket of 20th Century trash (burned linoleum floor tiles, screw type bottles, all discarded) was encountered between 6-14 " seven feet south of the north wall. These materials were discarded in the field. The balance of the trench was sterile. Trenches 7, 8 and 9 were sterile.

No evidence for prehistoric use of the land is this area was uncovered.

E. DISCUSSION

The project site demonstrated an absence of prehistoric artifacts. No evidence of use of the land by Native Americans was uncovered. Although a few of the trench sections were taken to a depth of 9 feet to investigate for deeply buried stratified deposits, no ground surfaces containing evidence of prehistoric occupation nor prehistoric deposits were encountered.

Historic materials encountered were in the form of artifacts and landscape/garden features. These range, temporally, from mid-nineteenth century to mid-twentieth century. Significant feature deposits relating to the earliest historic occupation of the land have possibly been encountered. Based on the artifacts recovered, the lower levels of Feature 1 is a mid-to late nineteenth century trash pit. The location of this feature west of (behind) Features 7 and 8 is likely no accident.

Features 7 and 8 are the remains of landscape or architectural features likely associated with the back yard of the Spaulding residence. This residence would have been located east of the features and on the higher ground now occupied by the Rockaway Boulevard. Feature 8 is likely a terraced landscape/garden wall which led

down the natural bank to the low lying marshland. Feature 7, a cobble path with large cobble corner piece, is likely a path leading from the terraced wall out toward the marsh. The spatial distribution of these features to Feature 1 indicate that these features were probably traversed as trash was carted from the house to the Feature 1 trash pit.

The configuration of Feature 5 is significantly similar to that of Features 7 and 8. Although somewhat more disturbed, a cobble path with large cobble corner piece is identifiable leading to higher ground and a cobble terrace. The elevations of the terrace and the cobble corner piece are analogous to Features 7 and 8 and confirm the relationship. The landscape features may have represented the two ends of the Spaulding's formal grounds before descending to the marsh area.

Feature 3, was probably reached by the same cobble terraced path. Somewhat farther west from the features described above, it was also somewhat later. Based on the artifacts recovered (the lowest levels were left in situ) Feature 3 was a trash pit utilized during the late nineteenth and early twentieth century. The household and farm tool metals indicate that it was probably functional during a time that the Spaulding residence was still be occupied as a farm/homestead.

Based on the spatial distribution of the Features and their relationship to Rockaway Boulevard it is now assumed that the Spaulding house, privy and cistern were located on the higher ground in the area of the now expanded Rockaway Boulevard. No evidence of a privy or cistern were located. They may also have been located on the high ground. Additionally, the mortar and brown sandy loam matrix overlying these features is assumed to be remnants of the debris of the demolition of

the house. The proportion of materials represented however, does not represent the remains of a major demolition episode. Neither is the debris of this demolition found as sheet scatter across the lower section of the property. It is believed that most of the debris associated with the demolition of the Spaulding house and related structures was removed from the immediate area.

Feature 2 was a shallow pocket of mid- twentieth century materials and Features 4, 6, and 9 are all twentieth century features and not applicable to our discussion.

As stated earlier the materials associated with Trench E and F were clearly located within the fill materials and therefore without provenience. The fill soil, represents grading of the property that is clearly unlike the fill episodes related to the growth of the local airports. All documentation relating to the airport fill episodes points to the dredging of the Jamaica Bay and use of sand for fill. The soils encountered in this study appeared to be naturally stratified and deposited sands with the exception of the dark brown fill. It is believed that this fill episode coincided with the development of the land as a ball field, c. 1930, and is not related to the development of Idlewild nor Kennedy Airport.

F. CONCLUSIONS AND RECOMMENDATIONS

Clearly garden/landscape features were identified on the project site. Also identified were trash pits associated with early and later use of the Spaulding homestead. These conclusions were discussed with Dr. Daniel Pagano and Dr. Arthur Bankoff of the Landmarks Preservation Commission during a site visit on February 2, 1998. It was agreed that development of the property would likely require 4-6 feet of fill. Since all historic features are located below grade, Feature 1 (4' below street

grade) Features 5, 7, and 8 (2 1/2'-4' below grade), impact to them could be avoided. Therefore, it was determined that no mitigation of these features would be necessary.

It is recommended that proposed construction clearly avoid the areas of sensitivity. These areas are delineated on Figure 7. Discussion, with LPC concluded that if the engineering drawings do not demonstrate avoidance of these features LPC must be notified so that the drawings can be modified or mitigation can be conducted.

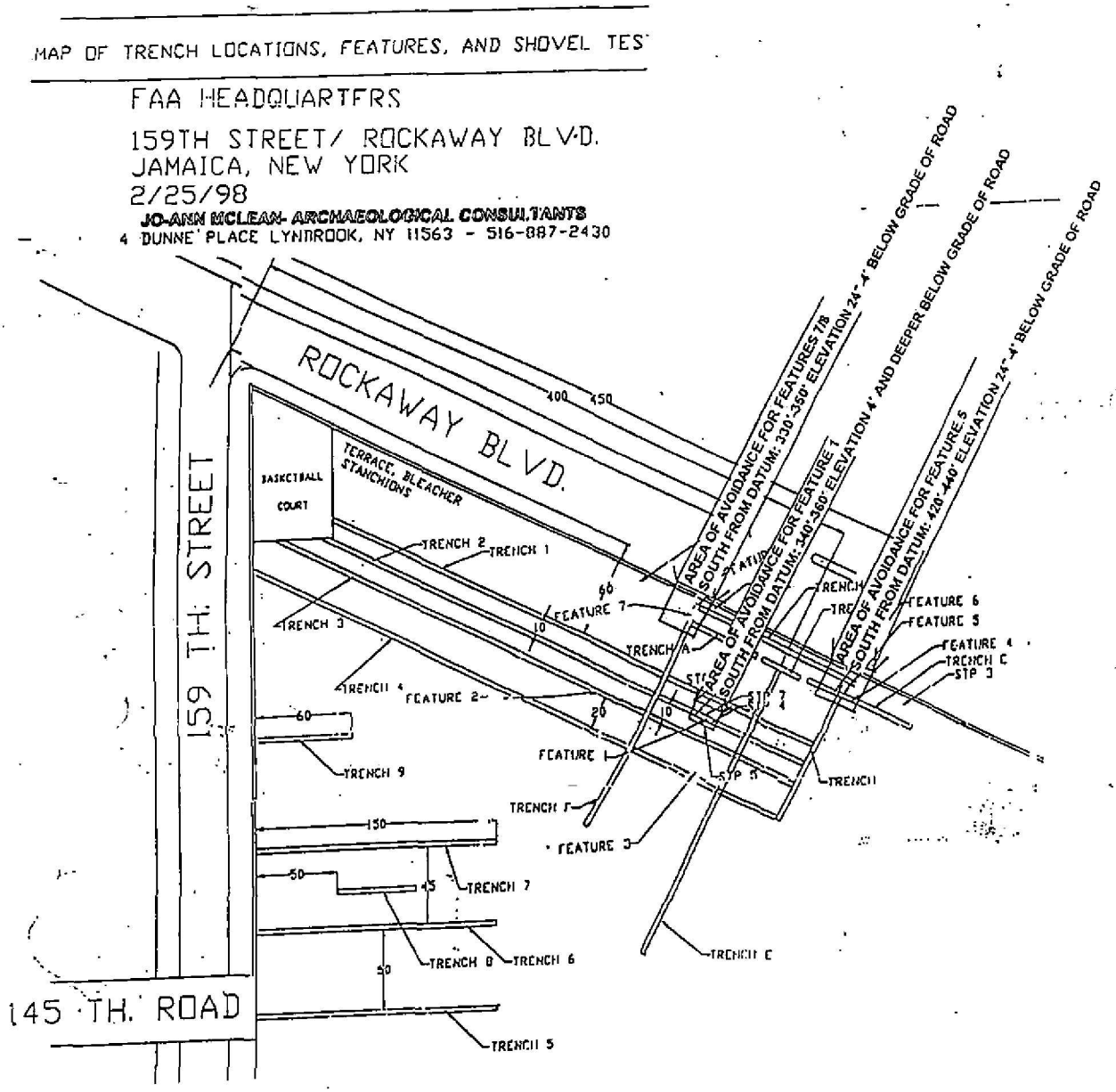


Figure 7 - Designated areas of avoidance

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Personal Communication

Mr. Geroge Miller
Queens Public Library
Long Island Research Library
Jamaica, New York

APPENDIX A

Plate 1 - Looking north north/west across project area to 159th Street

Plate 2 - Looking north/west toward 145 Road

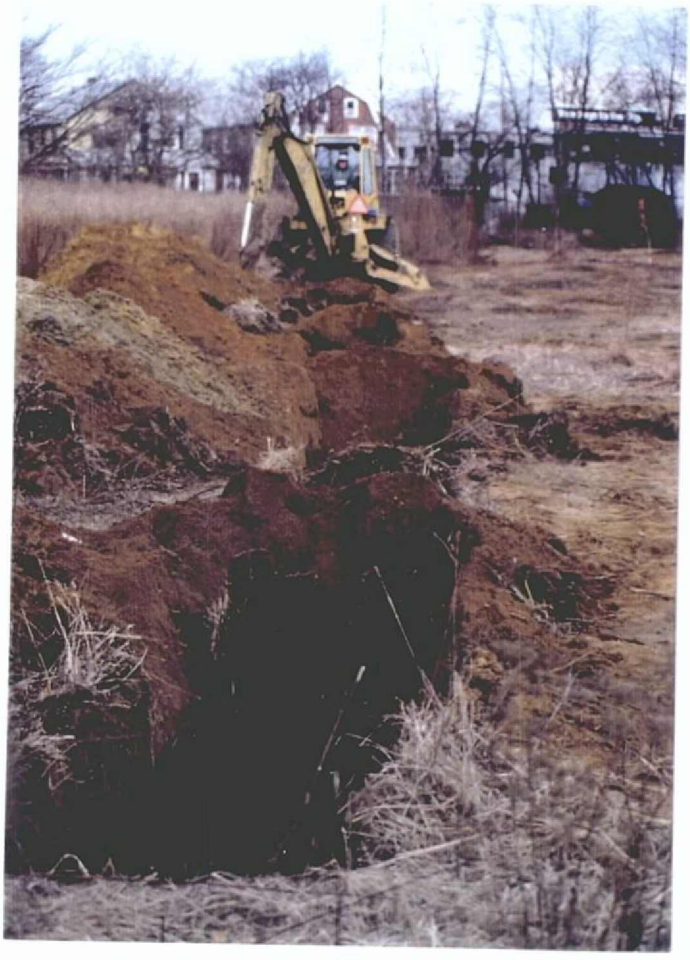


Plate 3 - Trenching in sections

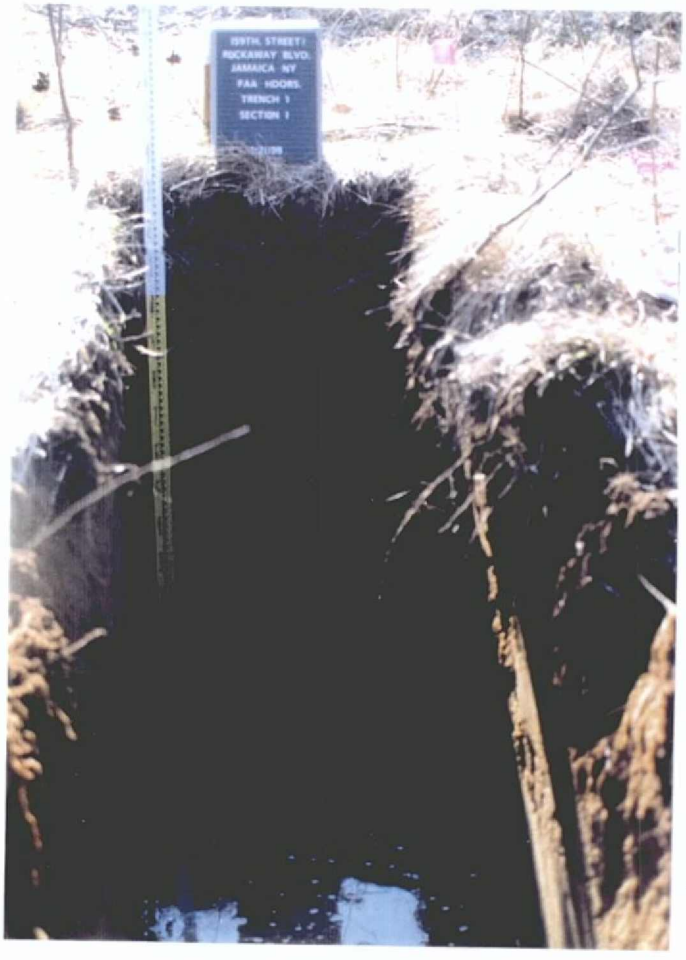


Plate 4 - Trench 1 Section 1

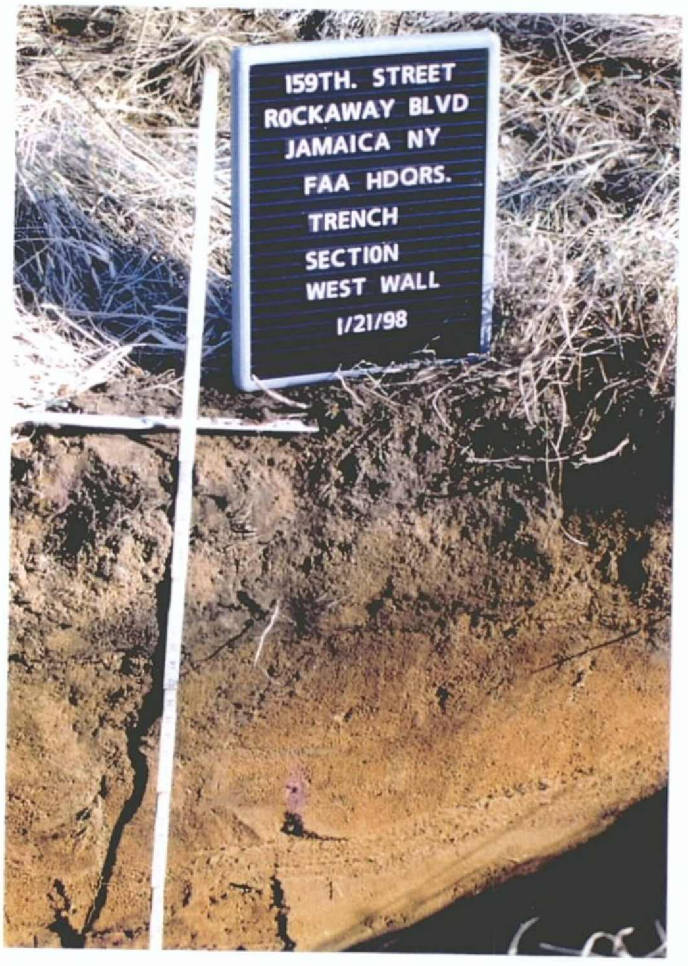


Plate 5 - Trench 2 note soils

Plate 6 - Trench 1 Section 7 note soils

Plate 7 - Trench 3 Section 8

Plate 8 - Trench 5

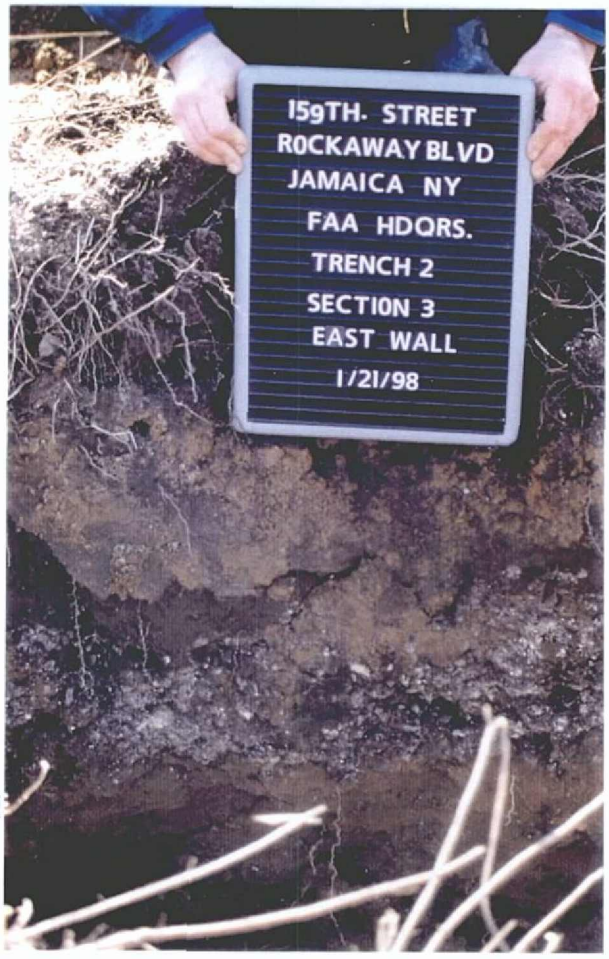


Plate 9A - Trench 2 Section 3 - East Wall - Feature 1

Plate 9B - Trench 2 Section 3 - West Wall -Feature 1

Plate 10 - Attwood Bitters Bottle - Feature 1

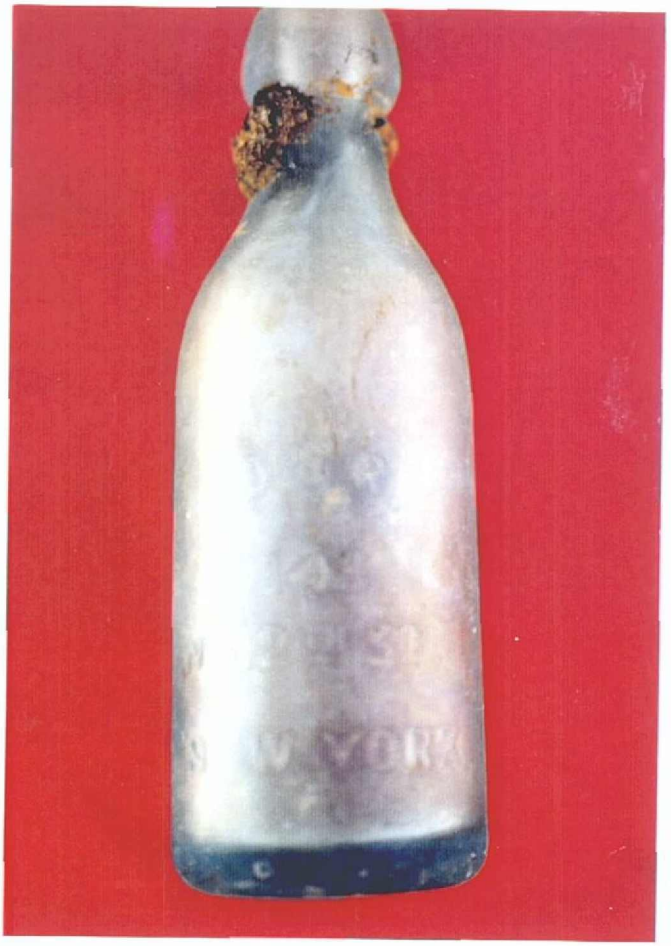


Plate 11 - Soda Water Bottle - Feature 1

Plate 12 - Stoneware Base Sherd - Feature 1

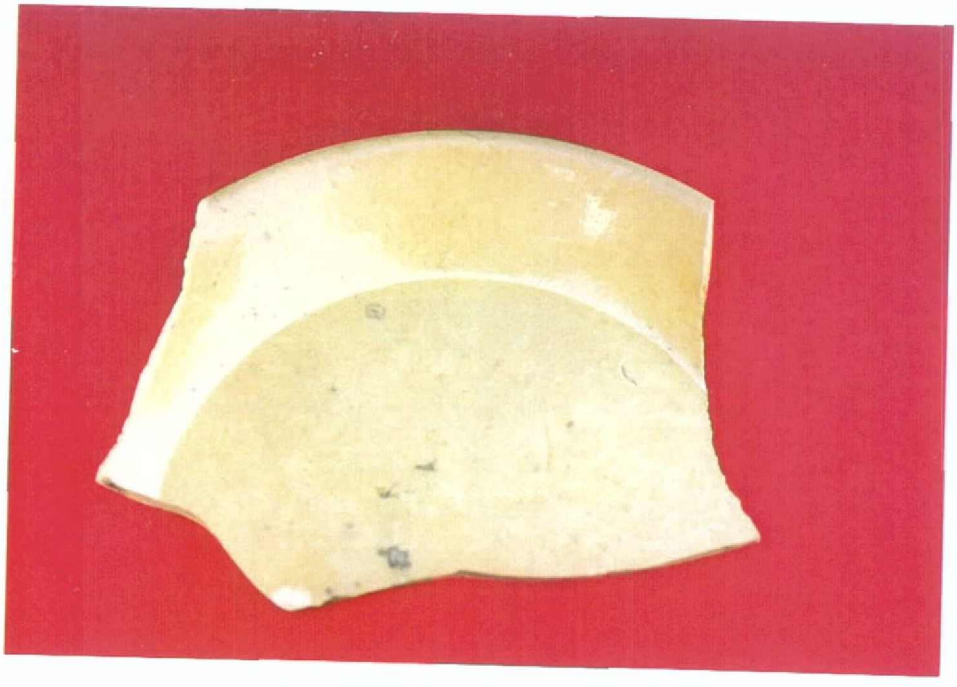


Plate 13 - Yelloware Pie plate sherd - Feature 3

Plate 14 - Trench A

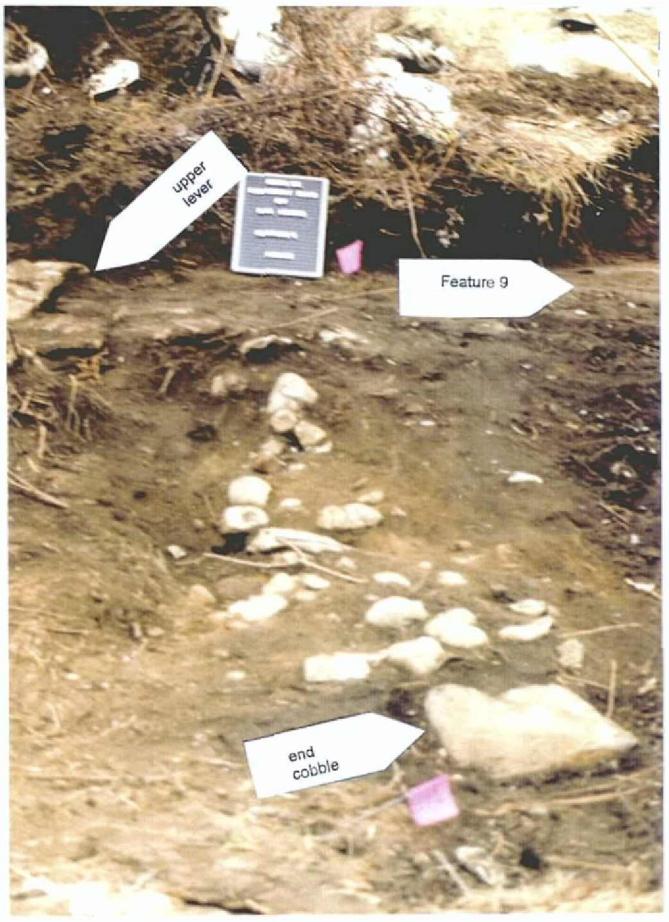


Plate 15 - Feature 5 - Trench C (Cobble path)

Plate 16 - Feature 5 - Trench C (Upper Part of Terrace)

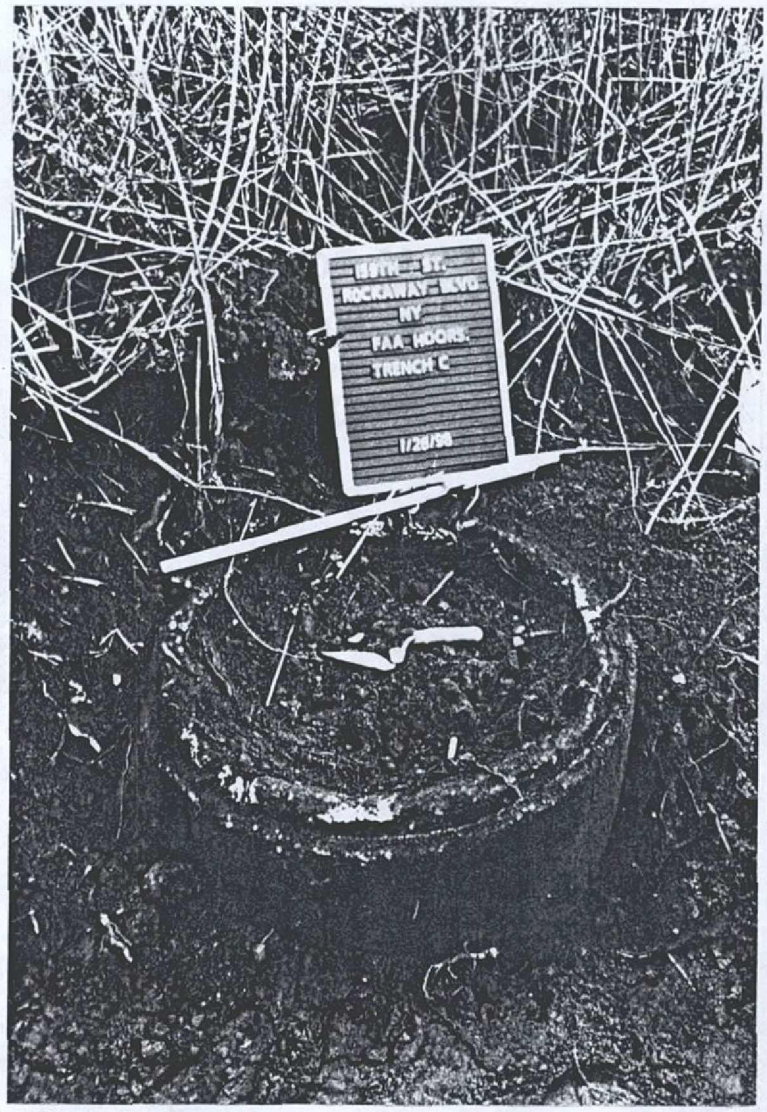


Plate 17 - Feature 6 - Trench C

Plate 18 - Feature 7 -Trench F

Plate 19 - Feature 7 - Trench F

Plate 20 - Bank Along Rockaway Boulevard

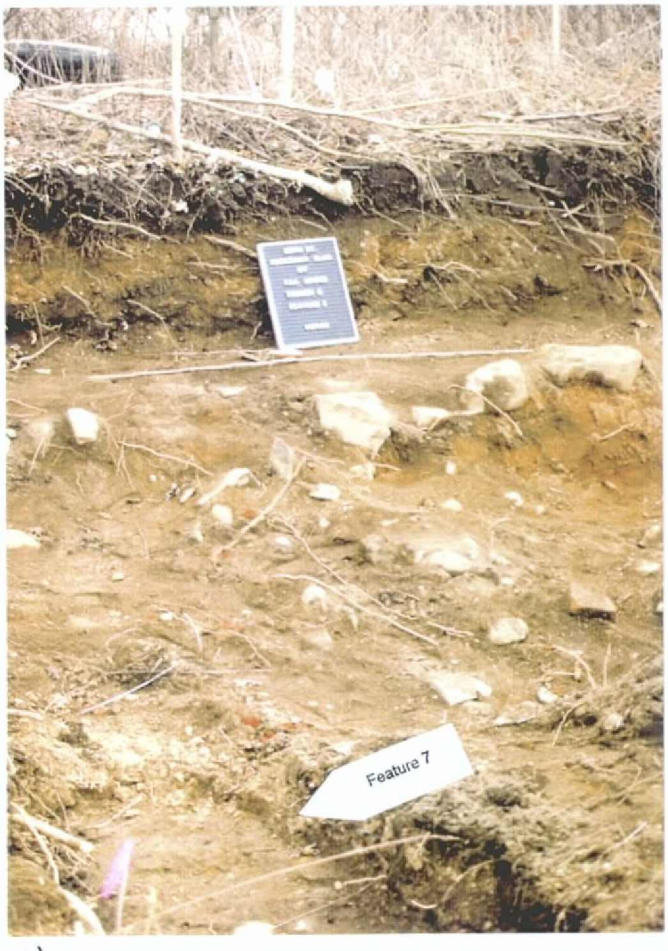
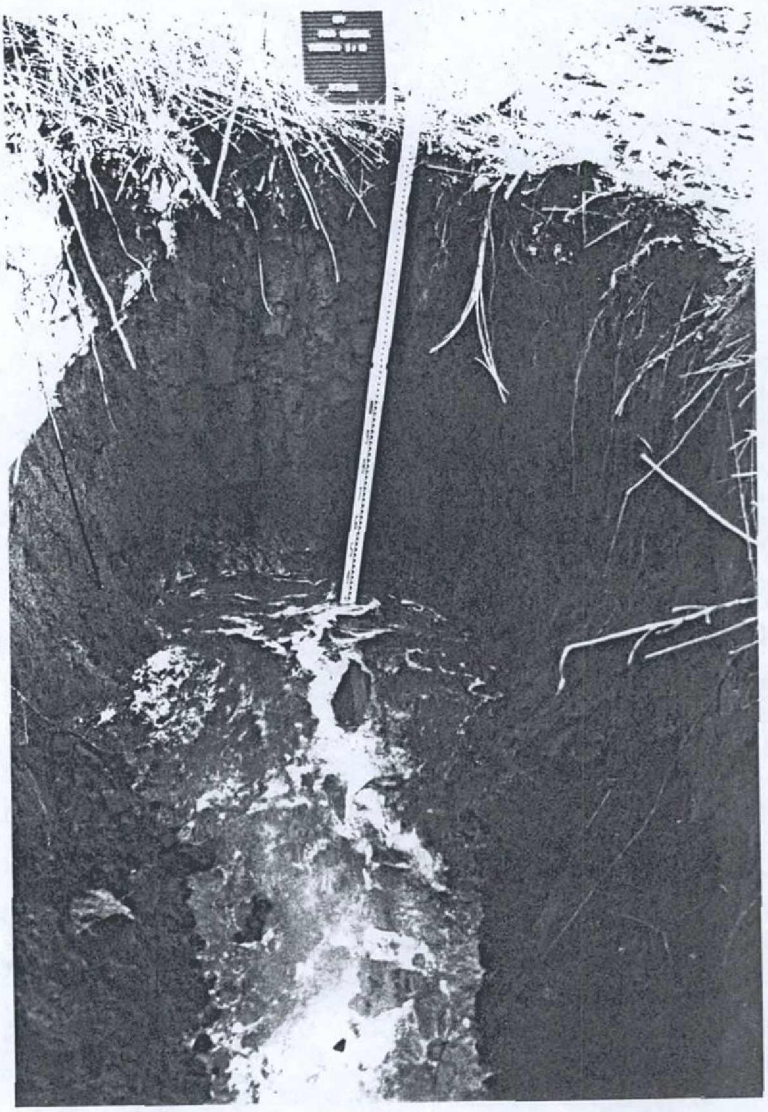


Plate 21 - Feature 8 - Trench G (cobble terrace)

Plate 22 - Trench 3 Section 12



APPENDIX B

159TH STREET
3/13/98

TABLE 1

TEST #	DEPTH	SOIL COLOR/TYPE	CULTURAL MATERIALS	QUANTITY
STP 1	0-6"	DK. BROWN LOAM	NONE	
	6-26"	ORANGE/BN. SAND W/ SMALL PEBBLES	NONE	
	26-36"	ORANGE BROWN SAND W/ PEBBLES	NONE	
STP 2	0-6"	DK. BROWN LOAM	NONE	
	6-36"	ORANGE/BN SAND W/ PEBBLES	NONE	
STP 3	0-6"	DK. BROWN LOAM	NONE	
	6-24"	ORANGE BN. SAND W/ PEBBLES	NONE	
STP 4	0-1"	DISTURBED LOAM	NONE	
	1-8"	DK BROWN LOAM	COAL	1
	8-22"	ORANGE BN. SAND	NONE	
STP 5	0-1"	DISTURBED LOAM	NONE	
	1-9"	DK BROWN LOAM	COAL	1
	9-19"	ORANGE BN. SAND	NONE	
STP 6	0-2"	DISTURBED LOAM	NONE	
	2-10"	DK BROWN LOAM	NONE	
	10-22"	ORANGE BN. SAND	NONE	
STP 7	0-1"	DK. BN. LOAM W/ROOTS	COAL	1
	1-7"	DK. BN. LOAM	GLASS, FRAGMENT, CURVED, AMBER (BOTTLE)	1
	7-20"	ORANGE BN. SAND	NONE	

159TH STREET
3/13/98

TABLE 1

TRENCH 1				
SECTION 2	0-11"	DK. BN. LOAM W/ROOTS	NONE	
	11-13"	BROWN LOAM W/SAND	NONE	
	13-36"	ORANGE BN. SAND W/ ORANGE PEBBLY LENSES	NONE	
	36-72"	GREY/GREEN SAND	NONE	
	WATER AT 28"			
SECTION 7	0-9"	DK. BN. LOAM W/ROOTS	NONE	
	9-40"	ORANGE BN. SAND	NONE	
	40-47	ORANGE/TAN SAND W/ PEBBLES	NONE	
	47-58"	GREY/GREEN SAND	NONE	
SECTION 8	0-6"	DK. BN. LOAM W/ROOTS	NONE	
	6-50"	BROWN ORANGE MIXED MATRIX SAND	NONE	
	50-63"	GREY/GREEN SAND	NONE	
	63-90"	GREY/GREEN SAND W/ PEBBLES	NONE	
	WATER AT 72"			
TRENCH 2				
SECTION 1	0-10"	DK. BN. MIXED MATRIX SAND	NONE	
	10-12"	DK. BROWN SAND	NONE	
	12-35"	ORANGE BROWN SAND W/ ORANGE MOTTLING	NONE	
	35-62"	ORANGE BROWN SAND		
	62-72"	GREY/GREEN SAND	NONE	
SECTION 2	0-12"	DK. BN. LOAM W/ROOTS	NONE	
	12-54"	ORANGE BROWN SAND	NONE	
	WATER AT 48"			
SECTION 3	0-12"	DK. BN. LOAM W/ROOTS	NONE	
	12-18"	MIXED MATRIX BN. LOAM AND SAND	NONE	
FEATURE 1A	18-22"	ASH AND SLAG MIXED MATRIX	SLAG	9 (SMALL SAMPLE)

159TH STREET
3/13/98 TABLE 1

			COAL	2
	22-27"+	MIXED MATRIX OR/BN SAND	NONE	
FEATURE 1B	27-48"	MIXED MATRIX OR/BN SAND TRASH PIT		
			CERAMICS: PORCELAIN, WHITE, RIM SHERD	1
			REDWARE, UNGLAZED, SHERDS	4
			BRICK, FRAGMENTS	10
			GLASS, CLEAR, FLAT	1
			UNIDENT METAL, FRAG	1
			NAIL, UNIDENT, OXIDIZED	1
	@34"		BOTTLE, MEDICINAL ,BITTERS, "ATWOOD'S JAUNDICE BITTERS... MOSES ATWOOD GEORGETOWN MASS" (1840-1875)	1
	@48"		BOTTLE, SODA WATER, AQUAMARINE, BLOB TOP, METAL WIRE, "D.& R...48..WT.12TH ST...NEW YORK" (1830-1879)	1
	@48"		STONEWARE, SALT GLAZED, ALBANY SLIP, BASE SHERD(POST 1850)	
			BONE, RIB, LARGE MAMMAL, CUT ENDS	1
SECTION 6	0-16"	DK. BN. LOAM W/ROOTS	NONE	
	16-22"	TAN SAND	NONE	
	22-54"	ORANGE SAND	NONE	
	54-70"	GREY/GREEEN SAND	NONE	
	WATER AT 54"			

TRENCH 3

SECTION 1	0-4"	DK. BN. LOAM W/ROOTS	NONE
	4-33"	ORANGE BN. SAND	NONE
	33-50"	ORANGE BN. SAND MOTTLED WITH GREY	NONE
	50-60"	GREY/GREEN SAND	NONE
SECTION 3	0-8"	DK. BN. LOAM W/ROOTS	NONE
	8-50"	ORANGE BN. SAND	NONE
	WATER AT 42"		
SECTION 6	0-10"	DK. BN. LOAM W/ROOTS	NONE

159TH STREET
3/13/98

TABLE 1

FEATURE 2	10"-13"	DK. BN. LOAM W/ASH			
			GLASS, CLEAR, FLAT,	3	
			CLEAR, BOTTLE,"REGIS.."	1	
			NAILS, CUT	5	
			SPIKES	2	
			SLAG	331	(DISCARDED)
			UNBURNED COAL	72	(DISCARDED)
			BRICK, FRAGMENT	1	(DISCARDED)
			BONE, PARTIAL,MEDIUM MAMMAL(SHEEP?)	1	
SECTION 7	0-17"	DK. BN. LOAM	NONE		
	17-45"	ORANGE BN. SAND	NONE		
	WATER AT 45"				
SECTION 8	0-22"	DK. BN. LOAM	NONE		
	22-45"	ORANGE BN. SAND	NONE		
	WATER AT 45"				
SECTION 10	0-10"	DK. BN. LOAM W/ROOTS	NONE		
	10-46"	ORANGE BN. SAND	NONE		
	46-56"	TAN SAND	NONE		
	56-60"	GREY/GREEN SAND	NONE		
	WATER AT 58"				

TRENCH 4					
SECTION 1	0-10"	DK. BN. LOAM W/ROOTS	NONE		
	10-38"	ORANGE BN. SAND	NONE		
SECTION 3	0-4"	DK. BN. LOAM W/ROOTS	NONE		
	4-13"	DK. BN. SANDY LOAM W/ ORANGE MOTTLING	NONE		
	13-20"	ORANGE SAND	NONE		
FEATURE 3	13-22"	MIXED SANDS			
			CERAMICS:		
			STONEWARE:		
			RIM FRAG., SALTGLAZE, GREY BODY WHITE INT./ ALBANY SLIP EXT.	1	
			EARTHENWARE:		
			CUP HANDLES,	4	
			BASE SHERDS	32	
			RIM SHERDS	16	
			BODY SHERDS	60	

159TH STREET
3/13/98

TABLE 1

MOLDED FLORAL DECO, RIM SHERDS	2
FLOWBLUE, SHERDS	3
WHITEWARE: PINK AND GREEN FLORAL BAND DECO	
CUP, BODY SHERDS	6
PLATE, RIM SHERDS	14
BASE, SHERDS	1
BODY, SHERDS	2
WIDE GOLD BAND DECO ON RIM,	
RIM SHERDS	4
THIN GOLD BAND ON RIM, RIM SHERDS	4
BODY, SHERDS	2
SMALL DISH, BASE SHERD	1
GREEN BAND W/OVERLAY OF GILT BAND	
AND STYLIZED FLUER DE LIS	
CUP, RIM AND BODY SHERDS	8
PLATE RIM AND SHERDS	2
BASE SHERDS W/MAKERS MARKS:	
"YOULON"	1
"ANCHOR POTTERY..J.E.	
(ANCHOR IN CENTER)	1
"VITREOUS..EDWIN MKNOW..	
CHINA CO..1411"	1
"DRESDEN...CHINA"	2
"USA...AVC"	1
"..RIAL"	1
"..FFALO"	1
"..UCH.."RESS...EM"	1
YELLOWARE, PIE PLATE SHERDS	10
PORCELAIN:	
BISQUE FRAGS, PINK EST/WHITE INT.	
(DOLL HEAD?)	6
TEACUP, BASE SHERDS, INTERIOR	1
GEOMETRIC BAND; CHRUSANTHEMUM	
OVERGLAZE, PAINTED ON BODY "JAPAN"	1
TEACUP, BASE SHERDS EXT.GEOMETRIC	
GREEN/GOLD BANDS, PAINTED OVERGLAZE	3
RIM FRAG, ORANGE PAINTED BAND UNIDENT	
DECO	1
TEACUP, RIM SHERD, GEOMETRIC DECO	1
PLATE SHERD,GEOMETRIC ORANGE/GOLD DECO.	
PAINTED OVERGLAZE	1
SOFTPASTE:	

TABLE 1

BASE SHERDS, MUG/BEAKER	3
HANDLE SHERD	1
BODY SHERD	3
BASE SHERD	1
FIGURINE, MOLDED, BASE AND BODY SHERDS,LEAF AND FLORAL DECO, "148...F1/2..ANI..."	4
GLASS:	
BOTTLE GLASS, BALL AND ATLAS JARS	
BODY FRAGS	68
BODY W/ MARKINGS: "..EAL"	1
"..AT.."	1
"..Ba.."	1
"SEAL.."	1
"SUR.."	1
"ST..M.."	1
"..TLA.."	1
RIM SHERDS, THREADED	5
LID, FRAGMENTS	6
"SEAL"	1
BASE FRAGMENTS	5
"..AT..TRAD.."	1
"..ATL.."	1
"TRADE.."	2
"LAS..."	1
"SEAL...TRADE MARK RE..."	1
"MARK REC.."	1
"REC...LAS..."	1
"ATLA.."	1
BLUE GLASS, NECK AND RIM FRAGS	
THICK,	3
NECKS	2
SHOULDER	
BODY, "..ERWECK.."	1
"ROC..I.I..."	1
BASE FRAGS	2
BLUE GLASS, PATENT MEDICINE/BITTERS BOTTLES	
NECK AND SHOULDER	1
BASE	1
BODY, .."ASTORIA.."	2

159TH STREET
3/13/98

TABLE 1

"..ZERWEC.."	1
"..CHAS FLETCHER.."	1
GLASS, CLEAR	
NECK/RIM SHERDS	5
NECK/SHOULDER SHERDS	3
BASES	16
BODY, FRAGS	34
PATENT MED/EXTRACT BOTTLES:	
NECK/RIM FRAGMENTS	4
BODY, FRAGS	2
"THE GREAT ATLANTIC & PACIFIC TEA COMPANY	
JERSEY CITY, N.J.	1
"PROSPHOL, REGISTERED...	
U.S. PATENT OFF"	1
"RX..FK"	1
WHOLE, "RONCLU...4CC"	1
"TRADE MARK...VASELINE...	
CHESEBOROUGH...NEW YORK"	
SCREW TOP	1
"CAPACITY 2 1/2 OZ"HOURGLASS SHAPE	1
AMBER, BOTTLE GLASS	
NECKS	2
BODY FRAGMENTS	10
TABLEWARE:	
TUMBLER, OCTAGONAL SHAPE, CLEAR	5
CUT GLASS, BASE, STARBURST PATTERN	1
FLAT, CLEAR, BLUE	32
METALS:	
PICHFORK	1
MACHINE PART, CIRCULAR W/ SPOKES	7
UNIDENT, OXYDIZED	26
PIPE	1
GAS LAMP, FLUE	1
WHISTLE, MOUTHPIECE (COPPER/BRASS ALLOY)	1
GUN SHELL CASING	1
KEY	1
JEWELRY:	
PIN BACK (ALLOY)	1

159TH STREET
3/13/98

TABLE 1

PIN, HORSESHOE SHAPE (ALLOY) 1

FAUNAL:
SHELL, HARDSHELL, CLAM FRAGMENTS 19

SECTION 5	0-8"	DK. BN LOAM W/ROOTS	NONE
	8-13"	TAN SAND	NONE
	13-26"	DK. BROWN LOAM	NONE
	26-56"	ORANGE SAND	NONE
SECTION 6	0-4"	DK. BROWN LOAM/ROOTS	NONE
	4-8"	BROWN LOAM W/SAND	NONE
	8-11"	TAN SAND	NONE
	11-23"	DK. BN. LOAM	NONE
	23-48"	ORANGE SAND	NONE
	WATER AT 48"		
SECTION 7	0-8"	DK. BROWN LOAN/ROOTS	NONE
	8-10"	TAN SAND	NONE
	10-31"	DK. BROWN LOAM	NONE
	31-62"	ORANGE SAND	NONE
TRENCH 5			
NORTH END	0-8"	DK. BN. LOAM/ROOTS	NONE
	8-14"	BN./TAN SAND	NONE
	14-33"	BLACK ORGANIC SOIL BOG	NONE
	33"-	TAN/ORANGE SANDY CLAY	NONE
	WATER AT 30"		
SOUTH END	0-6"	DK. BN. LOAM/ROOTS	NONE
	6-12"	BN/TAN SAND	NONE
	12"	BLACK ORGANIC/ BOG	NONE
	WATER AT 8"		
TRENCH 6			
	0-17"	DK. BN. LOAM/ROOTS	NONE
	17-33"	ORANGE BROWN SAND	NONE
	33-48"	GREY/GREEN SAND	NONE

159TH STREET
3/13/98

TABLE 1

TRENCH 7				
	0-17"	DK. BN. LOAM/ROOTS	NONE	
	17-33"	ORANGE BROWN SAND	NONE	
	33-48"	GREY/GREEN SAND	NONE	
TRENCH 8				
	0-12"	DK. BN. LOAM/ROOTS	NONE	
	12-32"	ORANGE BROWN SAND	NONE	
	32-48"	GREY/GREEN SAND	NONE	
TRENCH 9				
	0-6"	DK. BN. LOAM/ROOTS	NONE	
	6-34"	ORANGE BROWN SAND	NONE	
	34-48"	GREY/GREEN SAND	NONE	
TRENCH A				
	0-12"	DK. BN. LOAM /ROOTS	NONE	
	12-36"	ORANGE BROWN SAND	NONE	
TRENCH B				
	0-12"	DK. BN. LOAM /ROOTS	NONE	
	12-34"	ORANGE BROWN SAND	NONE	
TRENCH C				
	0-11"	DK, BN. LOAM /ROOTS	NONE	
	11-34"	ORANGE BROWN SAND	NONE	
TRENCH D				
	0-4"	DK. BN. LOAM /ROOTS	NONE	
	4-20"	DISTURBED MIXED MATRIX(1ST 7 FT)	BAR-B-QUE CHIP BAG	1
			PLASTIC BOTTLE, COKE	1
			JAR TOP, HELLMANS CHOLESTEROL FREE MAYONNAISE	1
	20-32"	ORANGE BROWN SAND	NONE	
TRENCH E				
	0'-10'			
	0-4"	DK. BN. LOAM W/ROOTS	NONE	
	4-32"	ORANGE BROWN SAND	NONE	
	32-38"	GREY/GREEN SAND	NONE	

159TH STREET
3/13/98

TABLE 1

10'-90'		
0-4"	DK. BROWN LOAM	NONE
4-32"	ORANGE BROWN SAND	
32"+	GREY/GREEN SAND	NONE
90'-124'		
0-4"	DK. BROWN LOAM	NONE
4-9"	BROWN SAND	
9-21"	DARK BROWN LOAM	CERAMICS: STONEWARE, GREY, SALT GLAZED, INT. ALBANY SLIP GLAZED 1 ASPHALT FRAGMENTS 6 (DISCARDED) LONOLEUM FRAGMENTS 14+ (DISCARDED)
21-32"	ORANGE BROWN SAND	NONE
32+	GREY/GREEN SAND	NONE
124'-135'		
0-4"	DK. BROWN LOAM	NONE
4-15"	BROWN ORANGE MIXED MATRIX	NONE
15-28"	DK. BROWN LOAM	CERAMICS: STONEWARE, SHOULDER/NECK,FRAG.SALTGLAZED BANDED DECO WIDE AND THIN COLBALT PAINTED BANDS 1 (1ST HALF 20TH C) EARTHENWARE, WHITE GLAZED, 2 SIDES, (TILE FRAGMENT) 1
28"-36+	ORANGE BROWN SAND	NONE
135'-145'		
0-4"	DK. BROWN LOAM	NONE
4-16"	BROWN ORANGE MIXED MATRIX	NONE
16-34"	DK. BROWN LOAM	CERAMICS: PORCELAIN, SOFT PASTE, HANDLE, CUP, NO DECO1 GLASS: JAR, CLEAR BASE FRAG, SLIGHTLY CONCAVE BOTTLE, SHOULDER, "PRID..OF THE ..FARM. ..CATSU..." 1
145'-175'		
0-6"	DK. BN. LOAM W/ROOTS	NONE
6-15"	BROWN ORANGE MIXED	

159TH STREET
3/13/98 TABLE 1

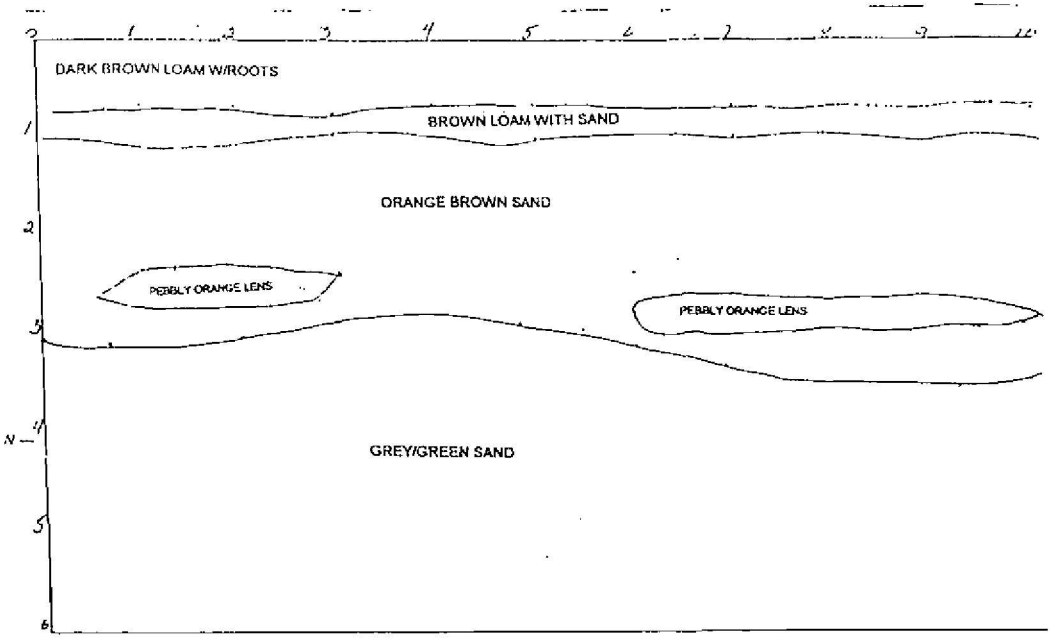
	MATRIX	NONE		
15-35"	DK. BROWN LOAM	GLASS:		
		BOTTLE, COCA COLA, HOBBLE SKIRT	1	
		TYPE (POST 1916)		
		AMBER, NECK, LIP FRAGMENTS	1	
TRENCH F				
0'-7'				
0-10"	DK. BN. LOAM/ROOTS	NONE		
10-12"	BROWN LOAM W/SAND	NONE		
FEATURE 7 12-22"	MIXED MATRIX SANDS			
	W/ MORTAR	MORTAR FRAGMENTS	223	(DISCARDED)
		CEMENT FRAGMENTS	42	(DISCARDED)
		BRICK FRAGMENTS	12	(DISCARDED
		COAL	1	
22"	COBBLE FLOOR			
7'-72'				
0-10"	DK. BN LOAM W/ROOTS	NONE		
10-32"	ORANGE BROWN SAND	NONE		
32+	GREY/GREEN SAND	NONE		
72'-100'				
0-10"	DK. BN LOAN W/ROOTS	NONE		
10-20"	DK. BROWN LOAM	CERAMICS:		
		STONEWARE, LIP/RIM FRAG, SLAT GLAZED, GREY EXT./		
		ALBANY SLIP INT.	1	
		REDWARE, FRAG, INT/EXT CLEAR GLAZE	1	
20-36+	ORANGE BROWN SAND	NONE		
100'-150'				
0-4"	DK. BN. LOAM W/ROOTS	NONE		
4-39"	DK. BROWN LOAM	CERAMICS:		
		WHITEWARE, FRAGMENTS, DISH	2	
		RIM SHERD, CHAMBER POT (?)	1	
		GLASS:		
		CLEAR, CURVED, FRAGMENT, BOTTLE	1	
		BRICK, RED	1/2	(DISCARDED)
		FAUNAL:		
		SHELL, HARDSHELL CLAM, FRAG	1	
		SNAIL WHOLE	1	
WATER AT 31"				

159TH STREET
3/13/98 TABLE 1

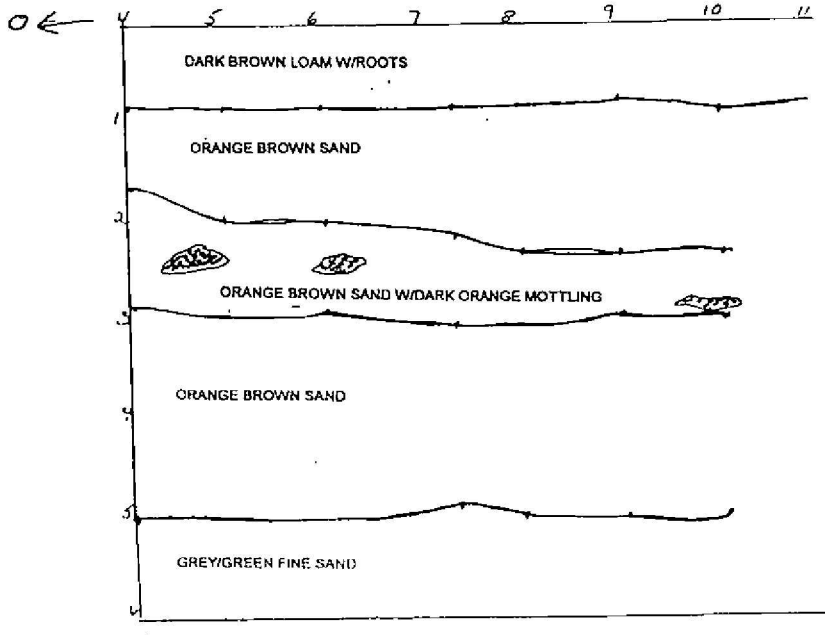
	39" +	ORANGE BROWN SAND	NONE		
TRENCH G					
	0'-8'				
	0-12"	DK. BN LOAM W/ROOTS	NONE		
	12-20"	ORANGE/TAN MOTTLED SAND W/MORTAR	MORTAR		(UNCOLLECTED)
FEATURE 8	20-36"	DARK BROWN LOAM	MORTAR (25% OF MORTAR)	200	(DISCARDED)
			CERAMICS:		
			WHITEWARE, FRAGMENTS	3	
			PORCELAIN, BASE FRAGS, CUP	1	
			GLASS:		
			CLEAR, FLAT, THICK	13	
			FLAT	1	
			BRICK, FRAGMENTS:		
			RED	5	
			ORANGE	6	
			RED, WHOLE	1	
			RED, HALF "..RRY.."	1	
			WOOD, FRAGMENTS (CEDAR?)	1	
			NAIL, OXIDIZED, CUT	8	
	36-45"	ORANGE BROWN SAND	AT INTERFACE W/ ABOVE RHEINGOLD BEER CAN/ FLAT TOP,CRUSHED (POST 1950)		
	8-125'				
	0-12"	DK. BN. LOAM W/ROOTS	NONE		
	12-30"+	ORANGE BROWN SAND	NONE		

KEY
DK. = DARK
BN. = BROWN
OR. = ORANGE

APPENDIX C

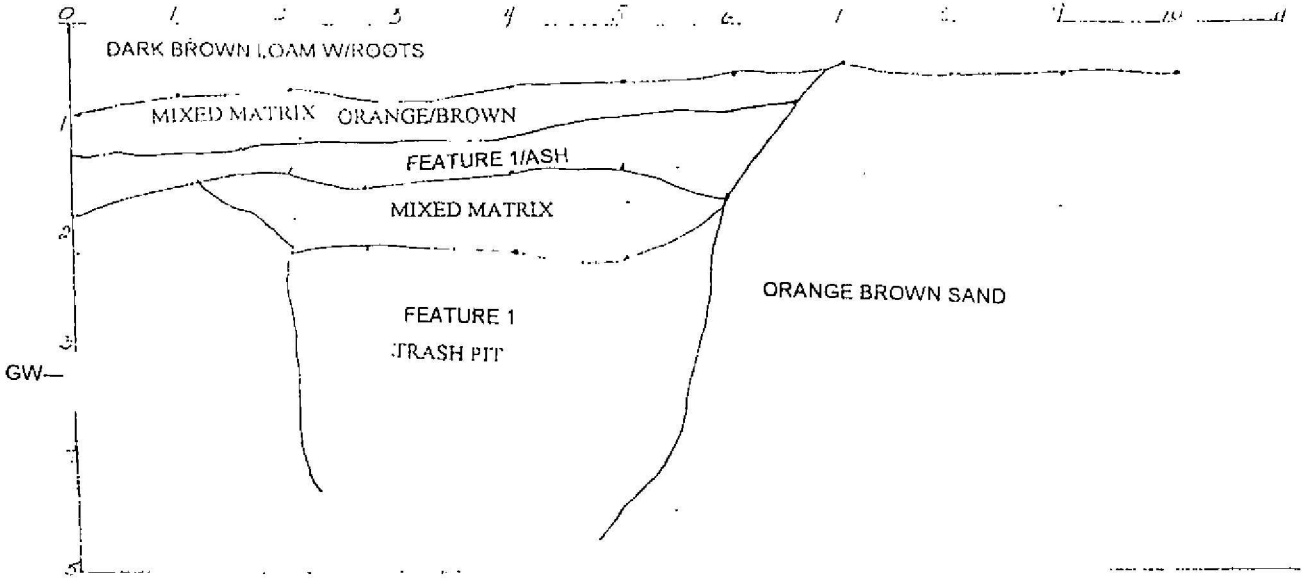


TRENCH 2 EAST WALL

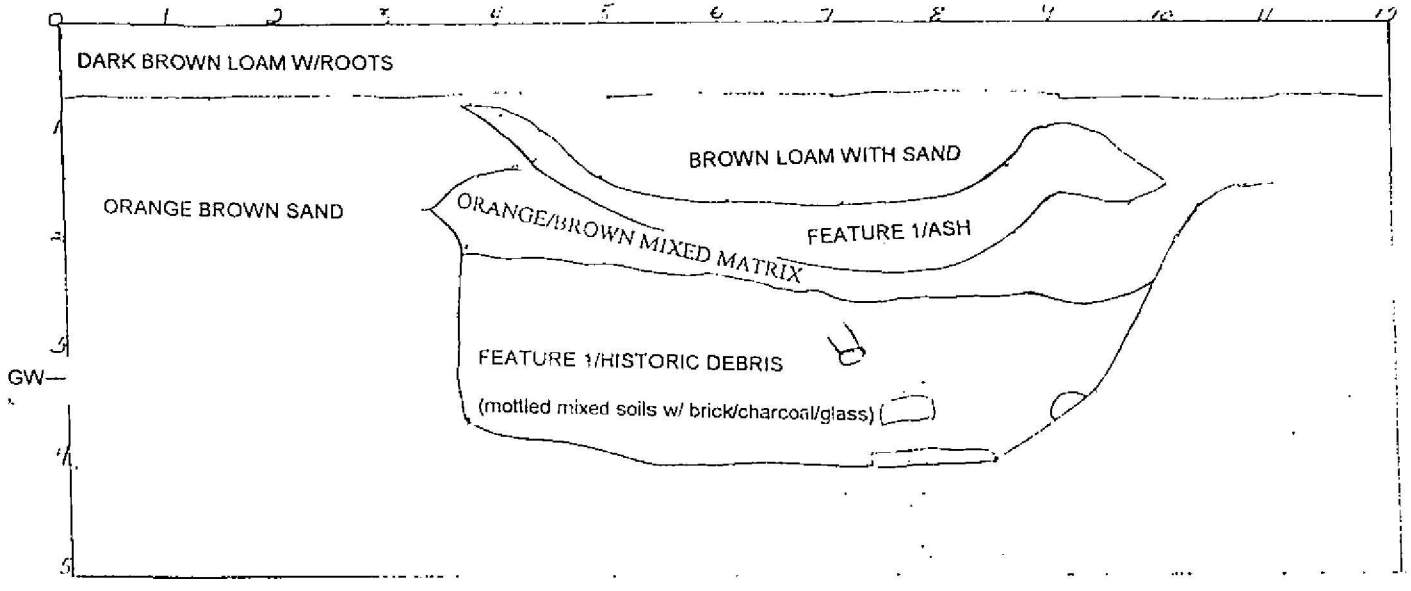


TRENCH 1 EAST WALL

PROFILE AND PLAN DRAWING
159TH STREET/ROCKAWAY BLVD
FAA HEDQUARTERS.
TRENCH 1 SECTION 2
TRENCH 2 SECTION 1
1/21/98
MEASURED IN FEET



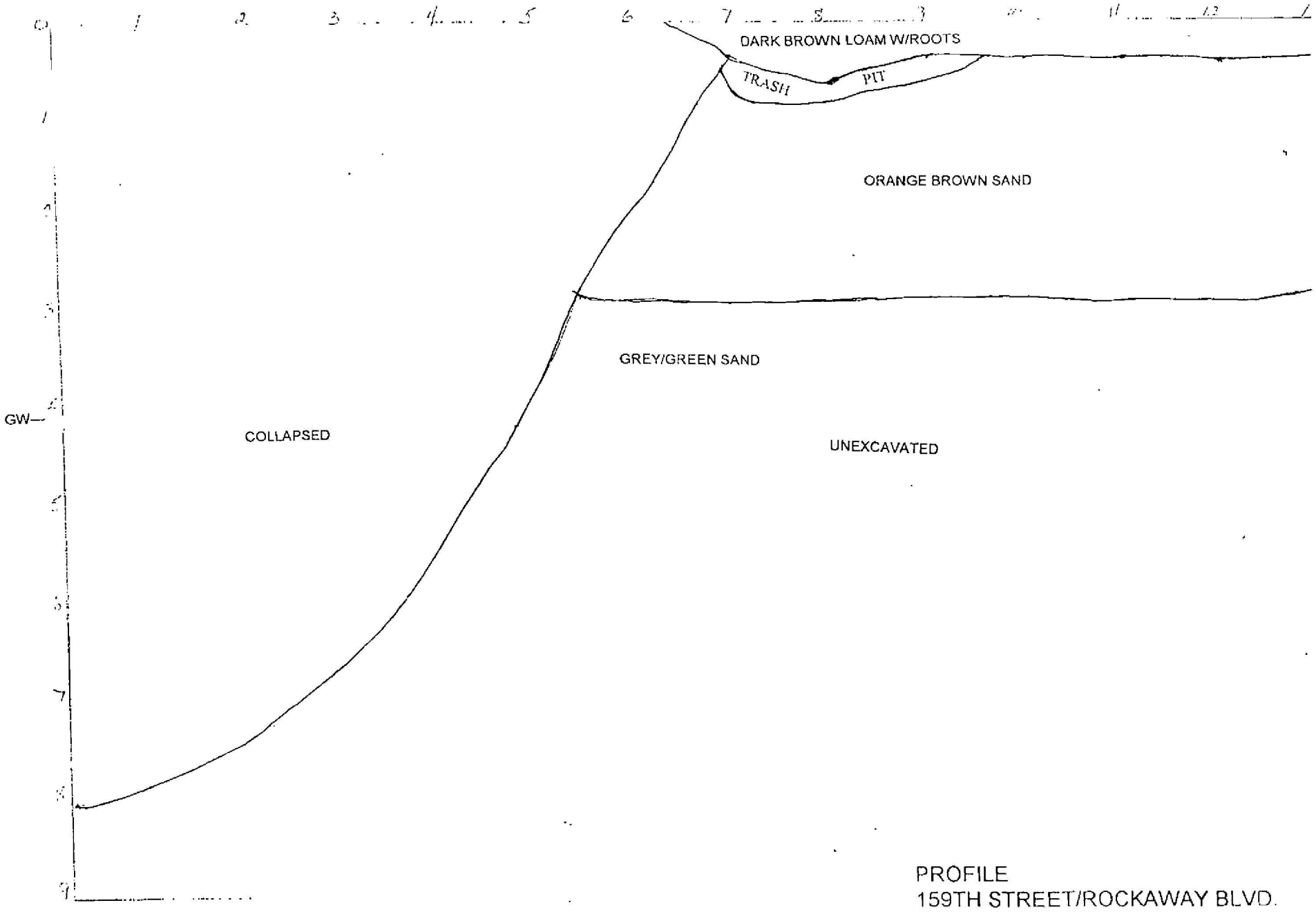
TRENCH 2/FEATURE 1 WEST WALL



TRENCH 2/FEATURE 1 EAST WALL

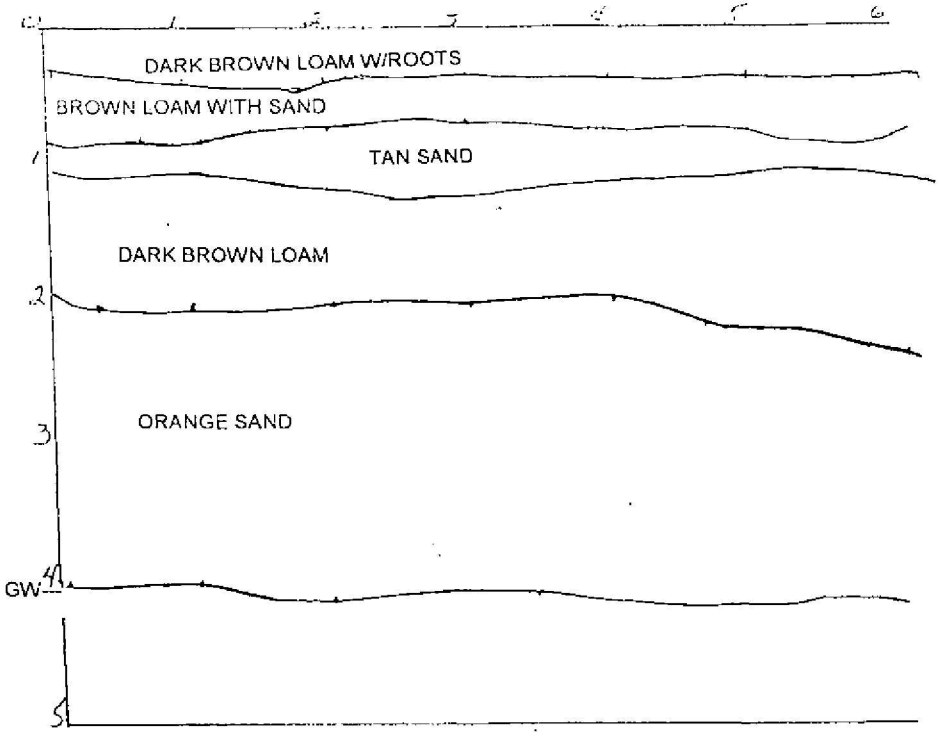
PROFILE
159TH STREET/ROCKAWAY BLVD.
FAA HEDQUARTERS.
TRENCH 2 SECTION 3
WEST AND EAST WALL
1/21/98

MEASURED IN FEET

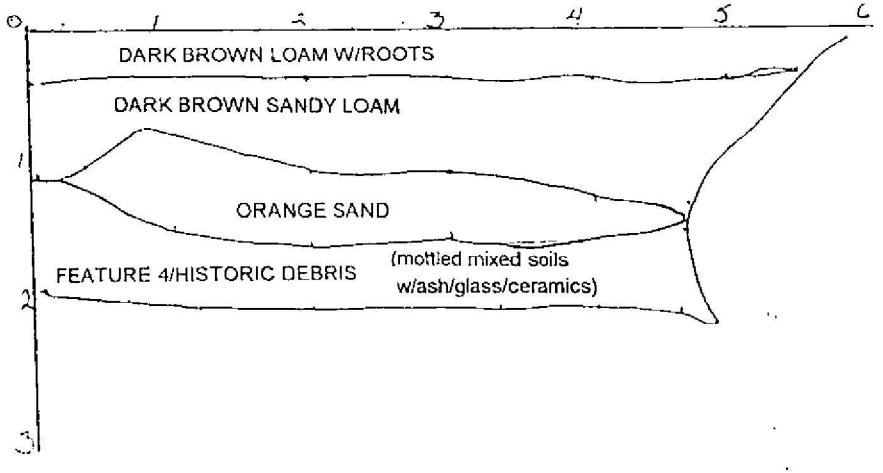


PROFILE
159TH STREET/ROCKAWAY BLVD.
FAA HEDQUARTERS.
TRENCH 3 SECTIONS 6
1/21/98

MEASURED IN FEET



TRENCH 4/SECTION 6 WEST WALL

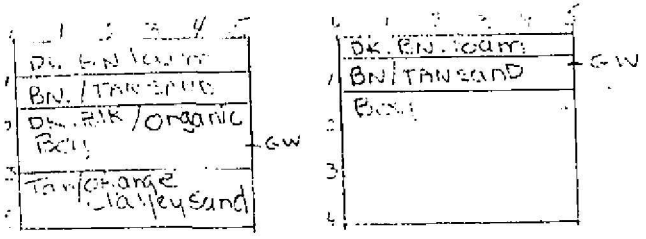


TRENCH 4/FEATURE 3 EAST WALL

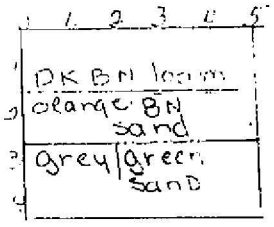
PROFILE
159TH STREET/ROCKAWAY BLVD.
FAA HEDQUARTERS.
TRENCH 4 SECTIONS 3 AND 6
1/21/98

MEASURED IN FEET

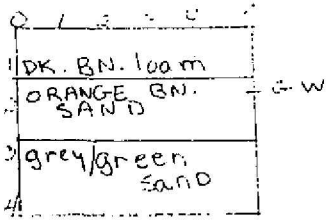
TRENCH 5



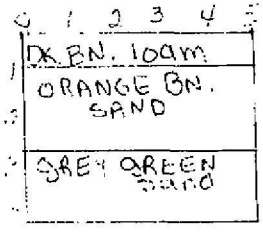
TRENCH 6



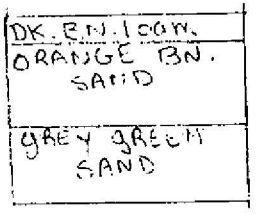
TRENCH 7



TRENCH 8

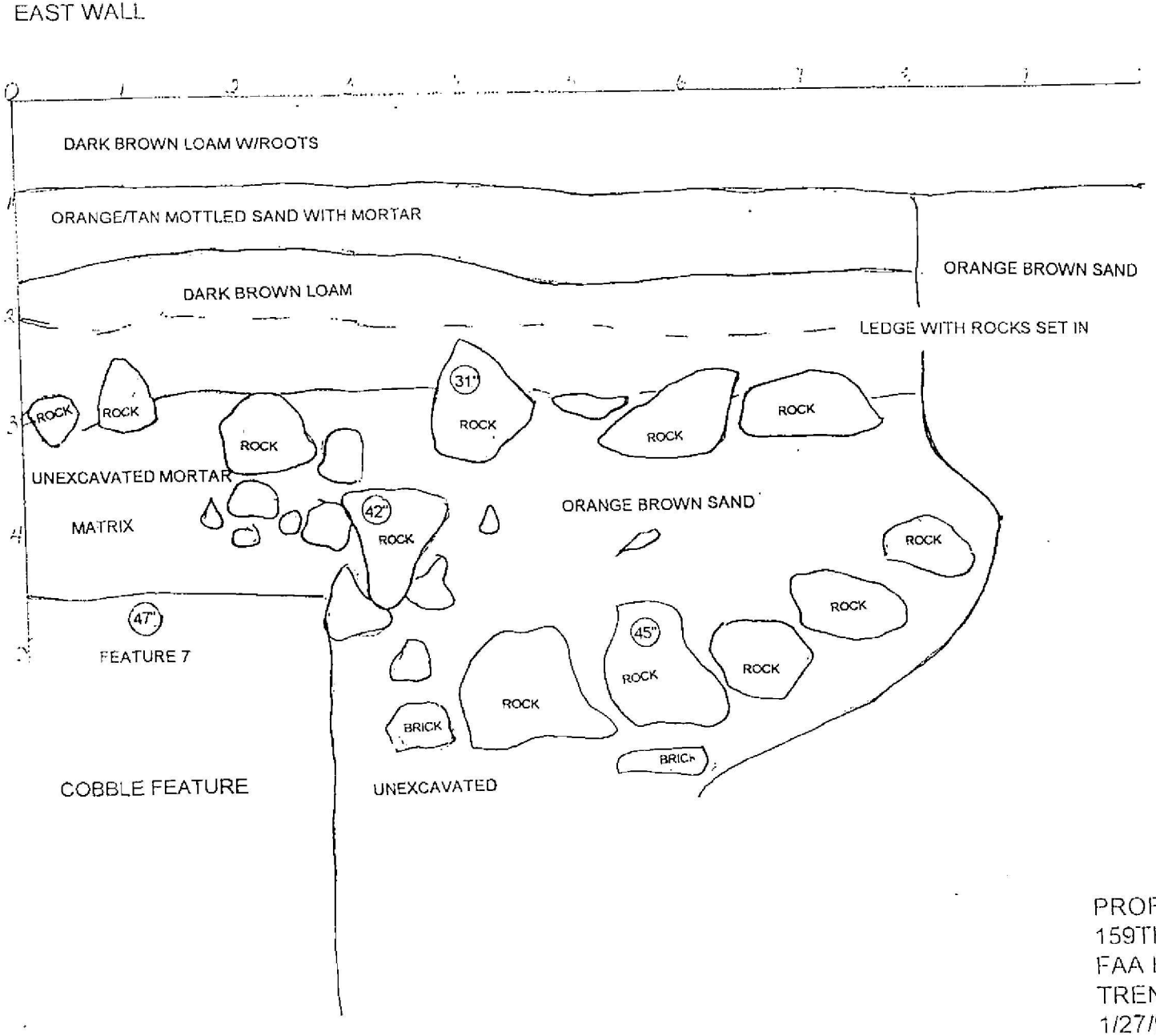


TRENCH 9



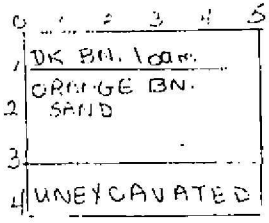
PROFILE DRAWINGS
159TH STREET/ROCKAWAY BLVD.
FAA HEDQUARTERS.
TRENCHES 5,6,7,8,9
1/27/98
MEASURED IN FEET
NORTH WALL

TRENCH G FEATURE 8
EAST WALL

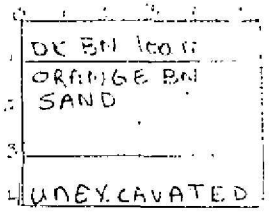


PROFILE / PLAN DRAWING
159TH STREET/ROCKAWAY BLVD
FAA HEDQUARTERS.
TRENCH G FEATURE 8
1/27/98
MEASURED IN FEET
ELEVATIONS IN INCHES FROM TOP OF TERRACE

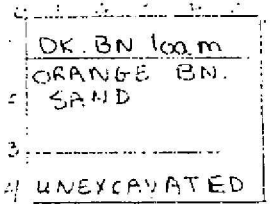
TRENCH A

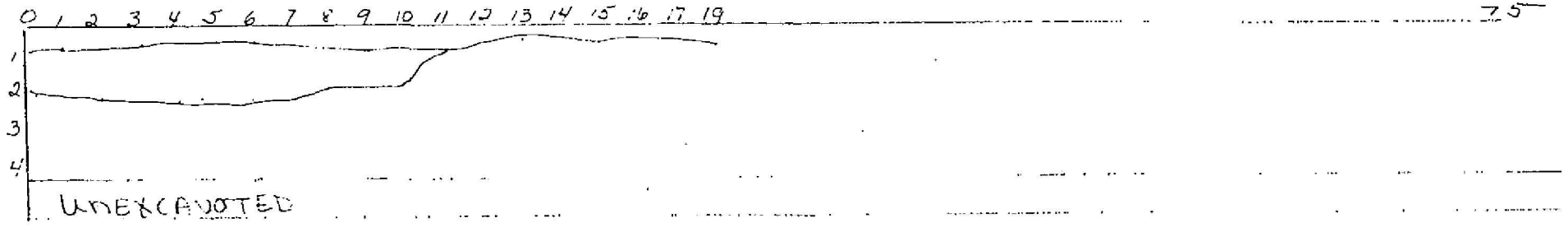


TRENCH B



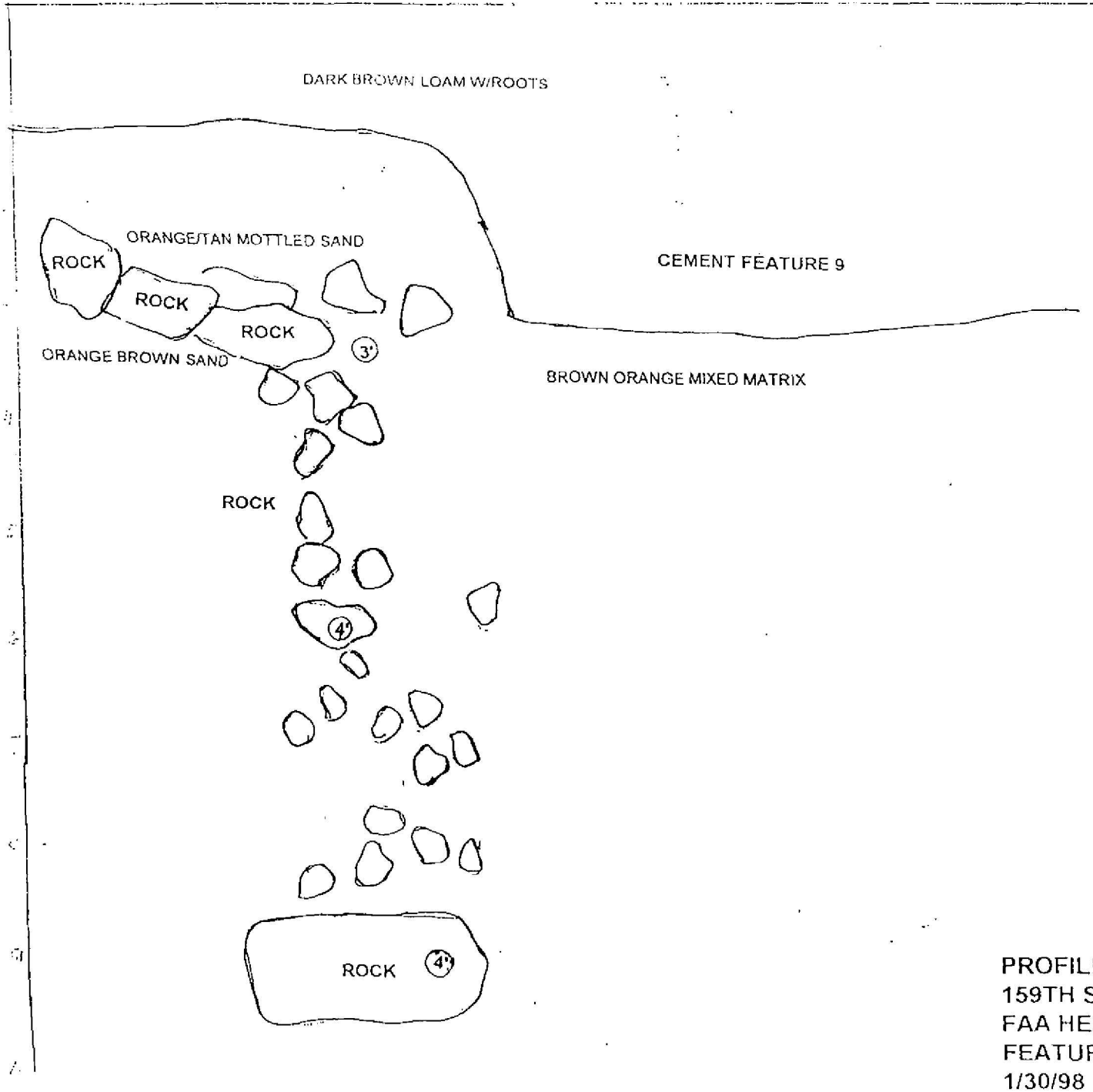
TRENCH C



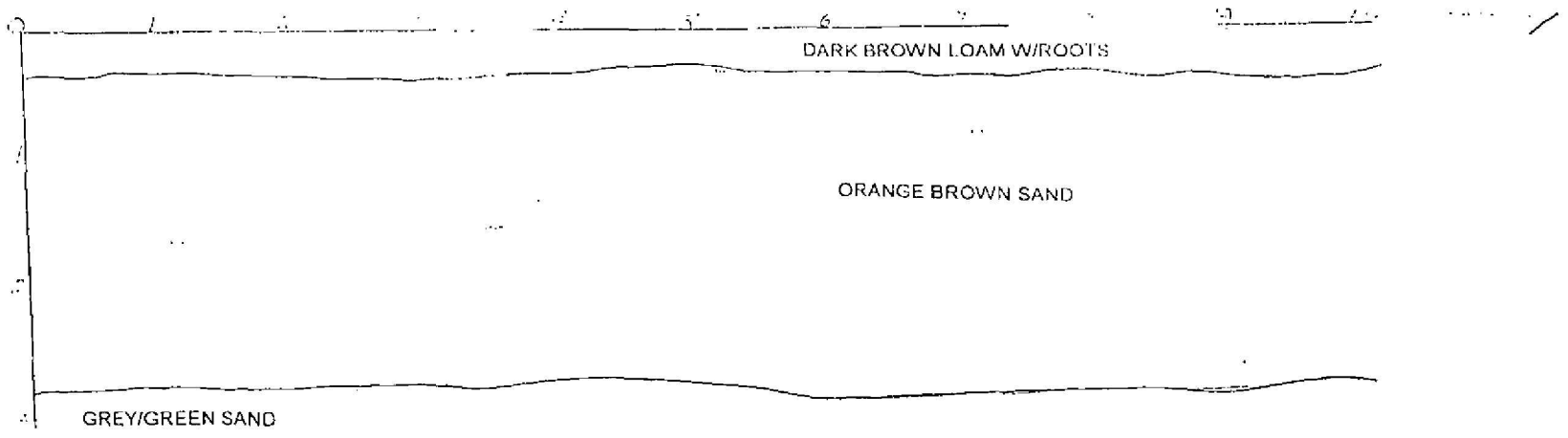


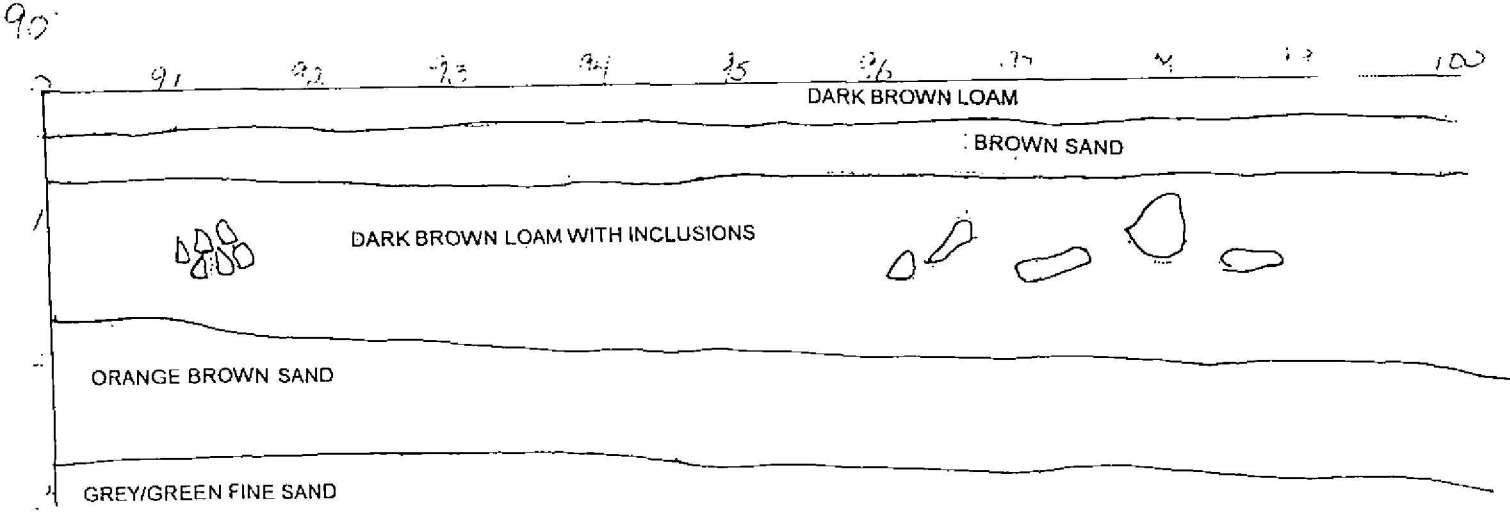
TRENCH D

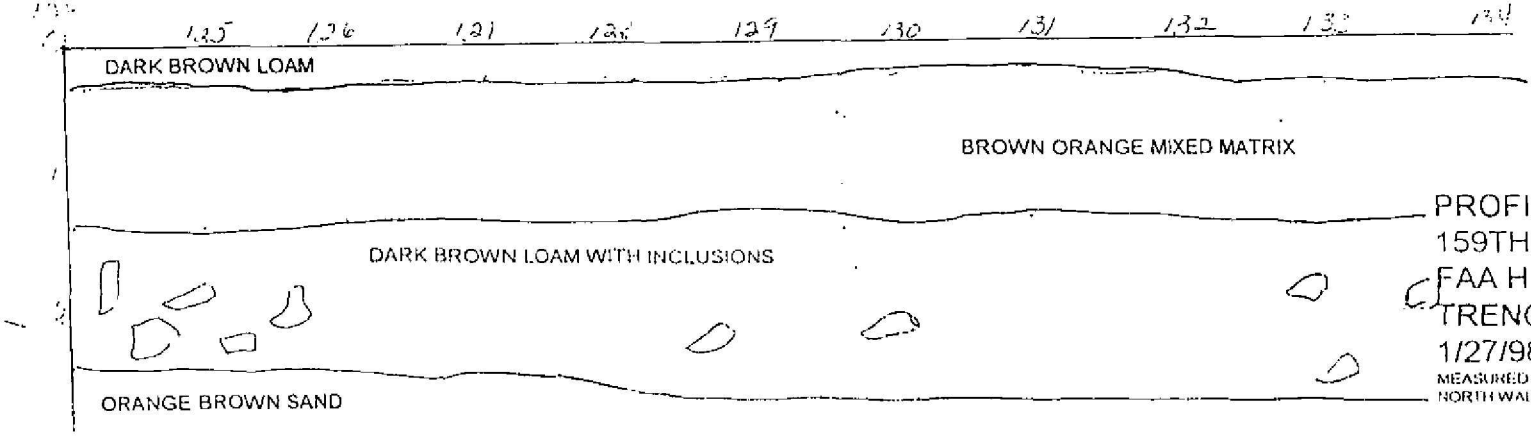
PROFILE DRAWINGS
159TH STREET/ROCKAWAY BLVD.
FAA HEDQUARTERS.
TRENCHES A,B,C,D
1/27/98
MEASURED IN FEET
EAST WALL



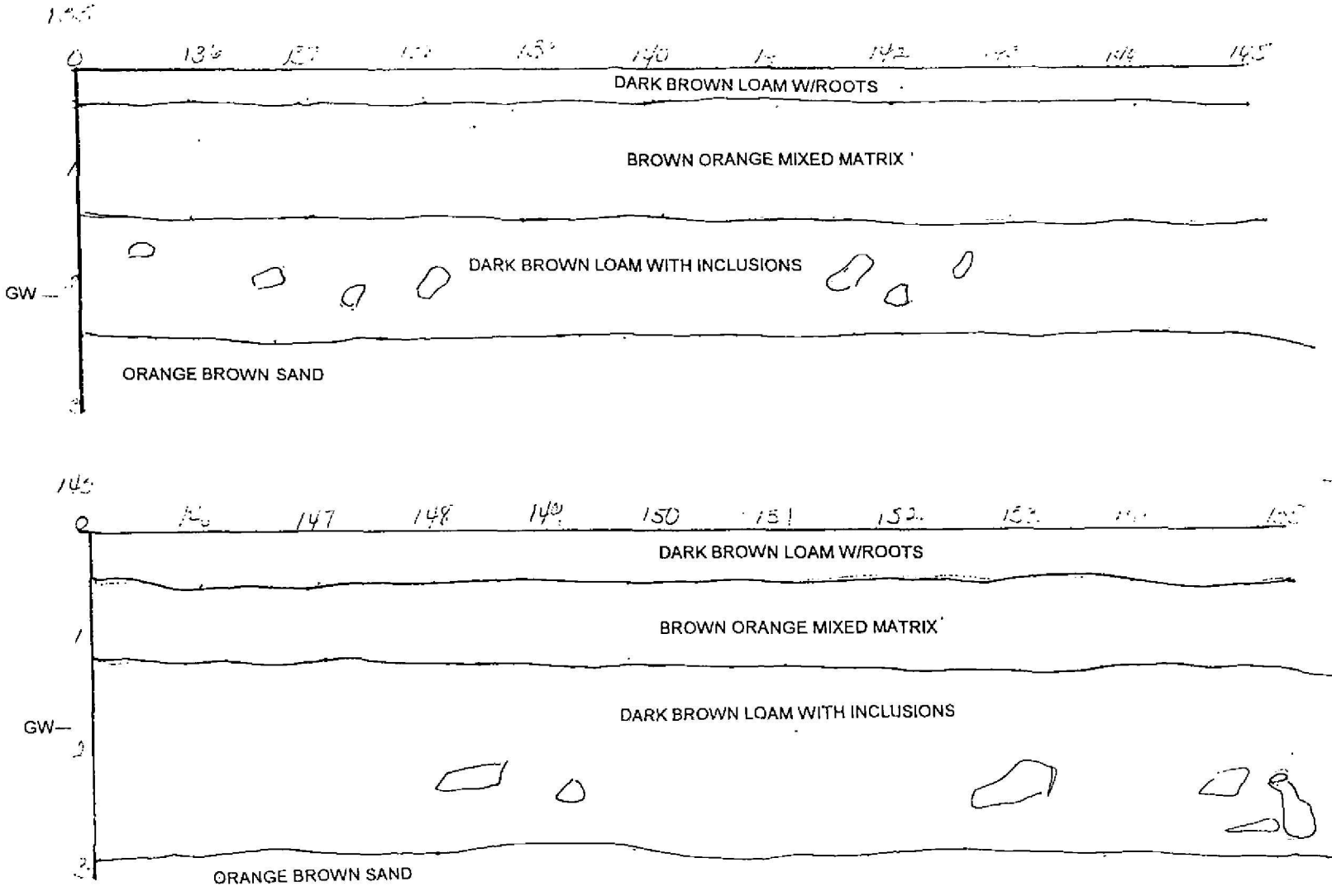
PROFILE /PLAN DRAWING
159TH STREET/ROCKAWAY BLVD.
FAA HEADQUARTERS
FEATURE 5
1/30/98
MEASURED IN FEET
ELEVATIONS FROM STREET LEVEL



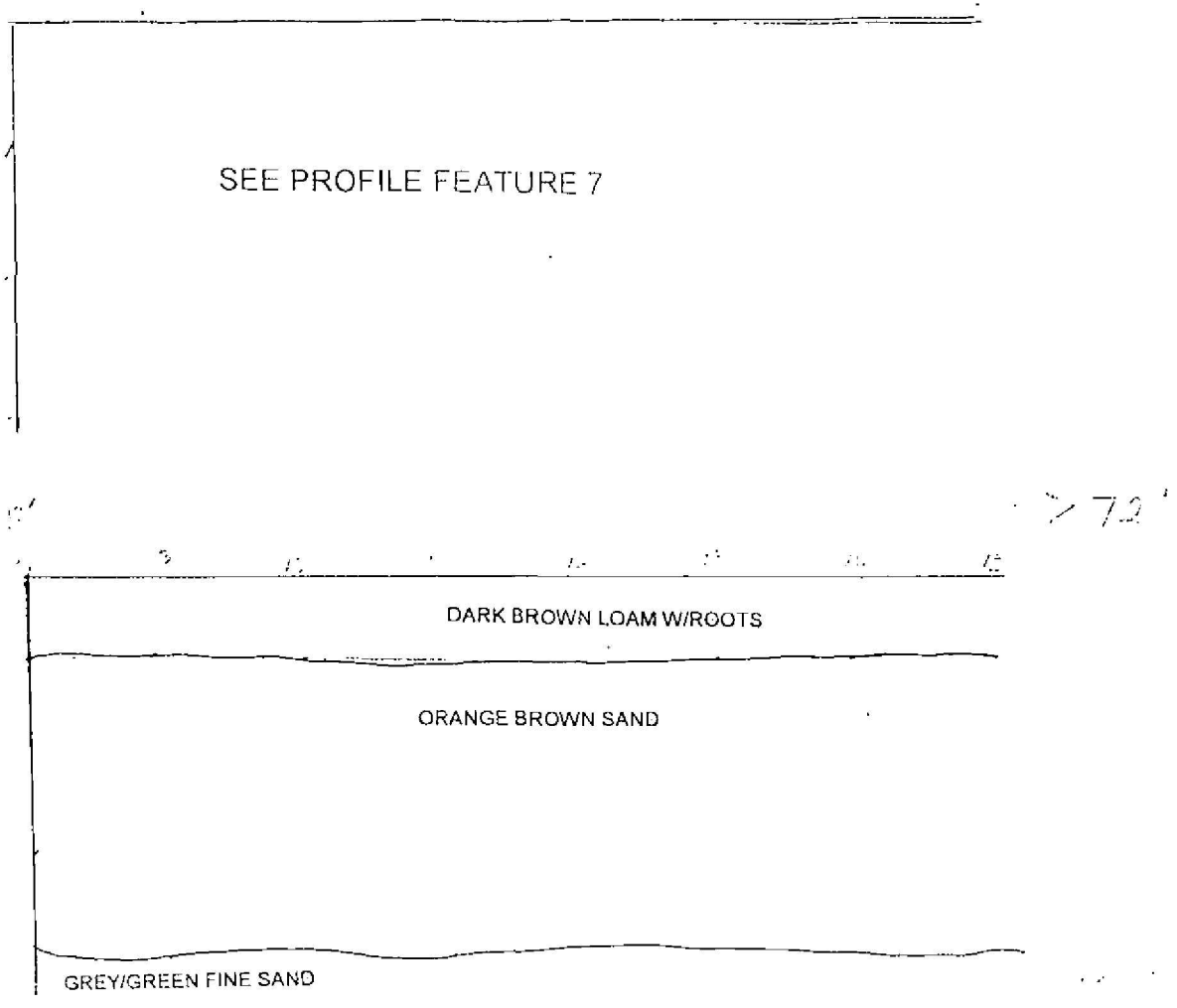




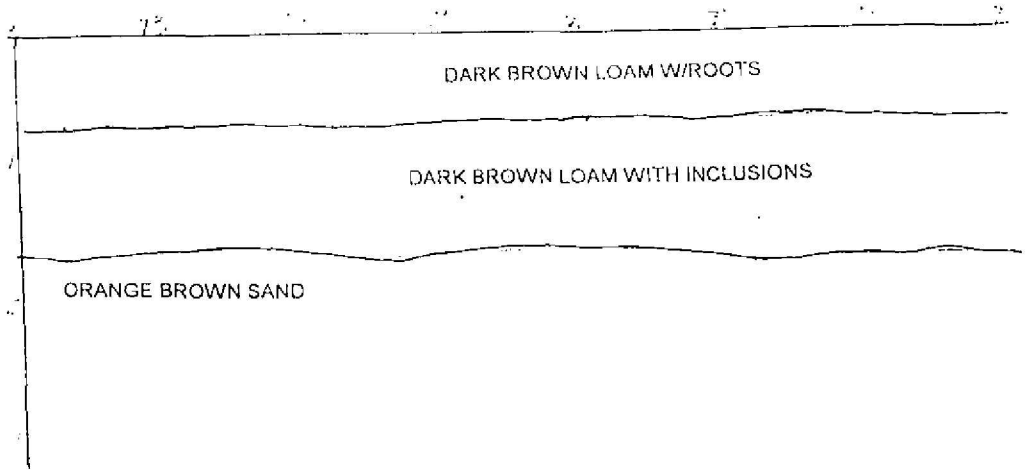
PROFILE DRAWINGS
159TH STREET/ROCKAWAY BL
FAA HEDQUARTERS.
TRENCH E (0'- 175')
1/27/98
MEASURED IN FEET
NORTH WALL

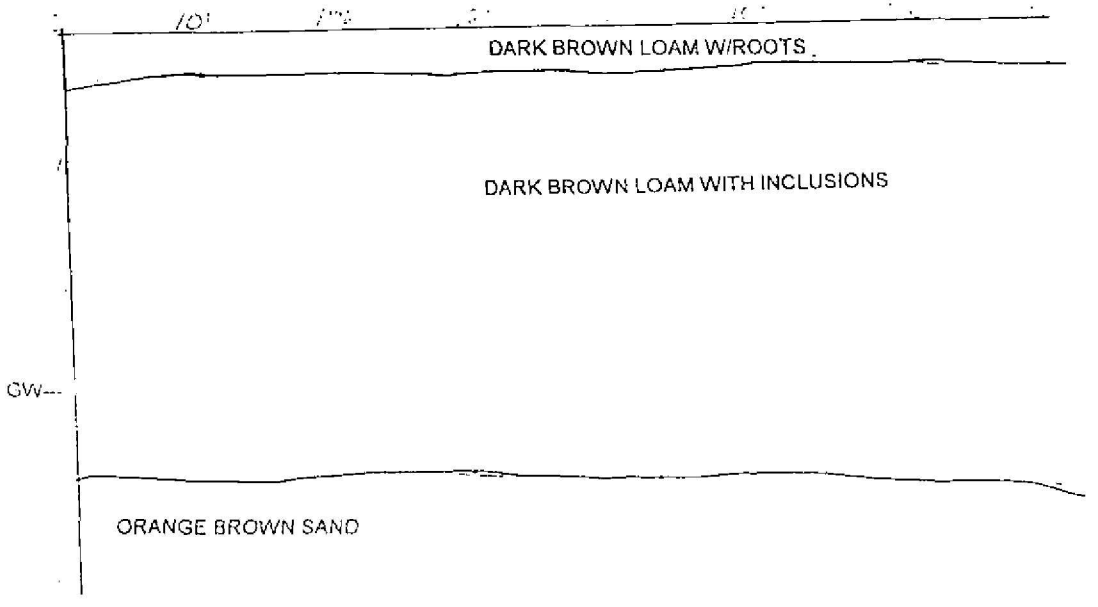


PROFILE DRAWINGS
159TH STREET/ROCKAWAY BLVD.
FAA HEDQUARTERS.
TRENCH E (135'-175')
1/27/98
MEASURED IN FEET
NORTH WALL

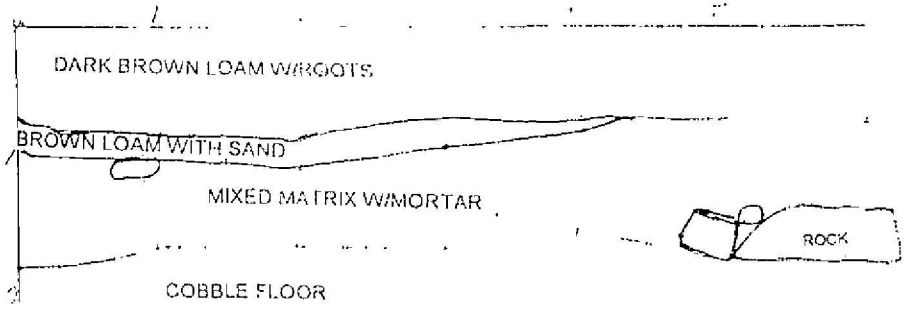


PROFILE
159TH STREET/ROCKAWAY BLVD.
FAA HEDQUARTERS
TRENCH F
1/26/98
MEASURED IN FEET

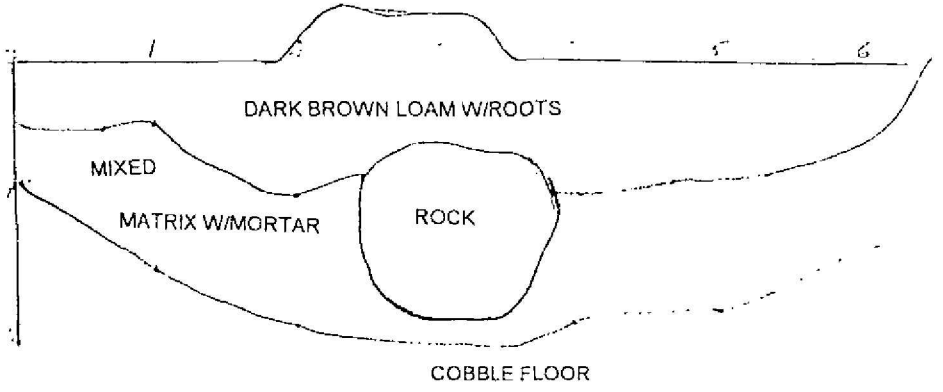




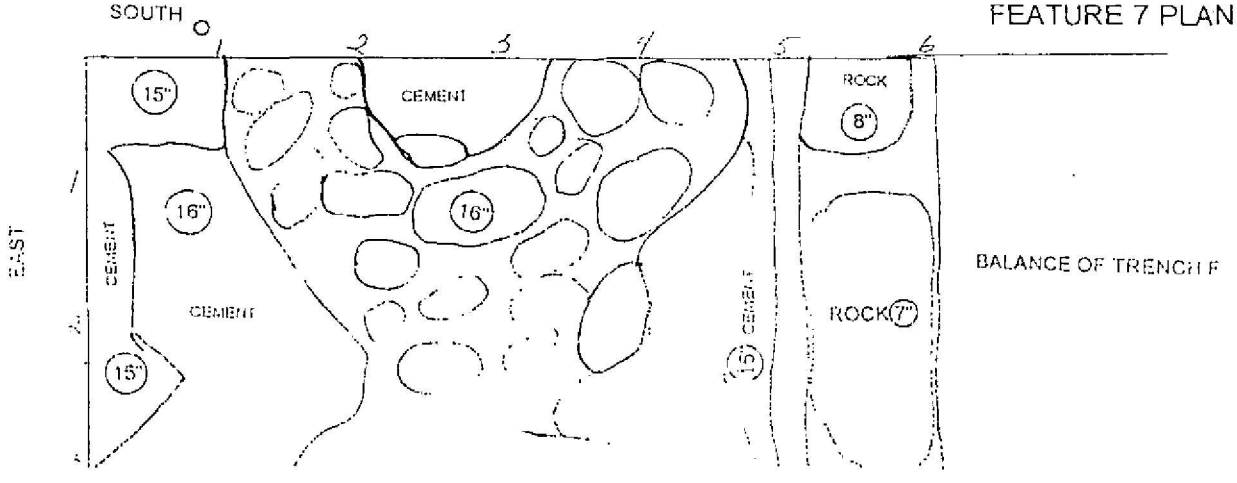
PROFILE
159TH STREET/ROCKAWAY BLVD
FAA HEDQUARTERS.
TRENCH F
1/26/98
MEASURED IN FEET



FEATURE 7 SOUTH WALL



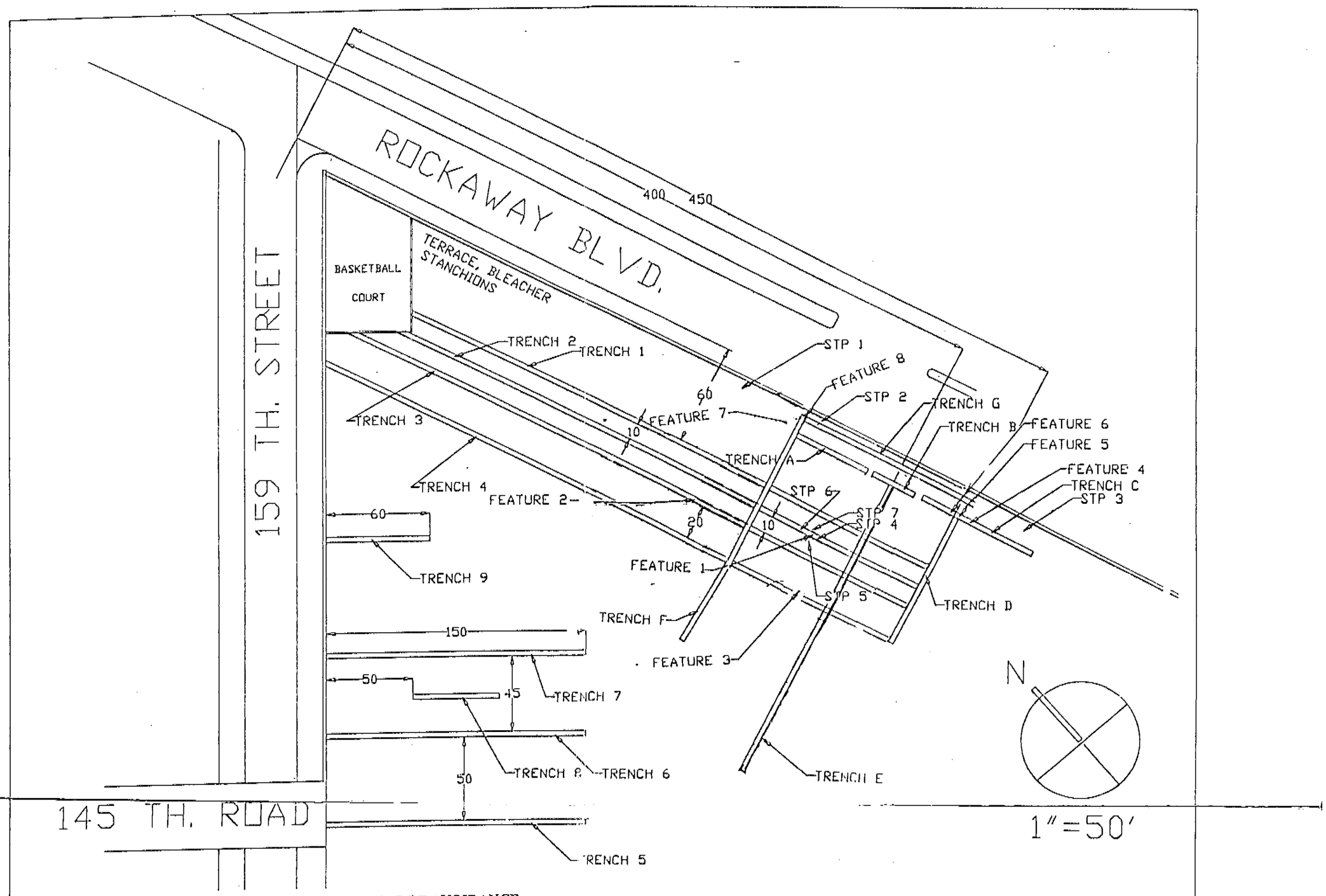
FEATURE 7 NORTH WALL



FEATURE 7 PLAN VIEW

PROFILE AND PLAN DRAWING
159TH STREET/ROCKAWAY BLVD.
FAA HEDQUARTERS.
TRENCH F FEATURE 7
1/26/98
GRAPH PAPER IN FEET

APPENDIX D



NOTE: HIGHLIGHTED AREAS = DESIGNATED AREAS OF AVOIDANCE

MAP OF TRENCH LOCATIONS, FEATURES, AND SHOVEL TEST PITS

FAA HEADQUARTERS

159TH STREET/ ROCKAWAY BLVD.
JAMAICA, NEW YORK
2/25/98

JO-ANN MCLEAN- ARCHAEOLOGICAL CONSULTANTS
4 DUNNE PLACE LYNBROOK, NY 11563 - 516-887-2430