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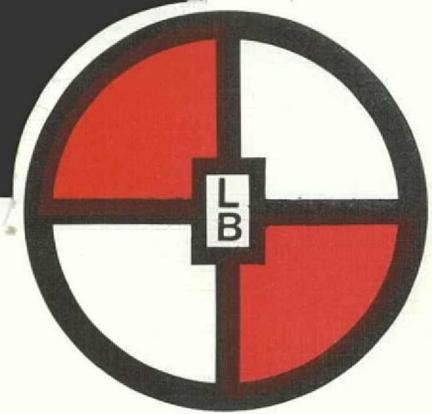
Case I

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ENVIRONMENTAL REVIEW

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ENVIRONMENTAL REVIEW DIV.

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A SECONDARY LEVEL STUDY  
OF THE PROPOSED  
CORRECTIONAL FACILITY IN ROSSVILLE,  
STATEN ISLAND, NEW YORK

CEQR NO. 88-071R

*1989*

PREPARED FOR:

NEW YORK CITY DEPARTMENT OF CORRECTION  
NEW YORK, NEW YORK

PREPARED BY:

LOUIS BERGER & ASSOCIATES, INC.  
EAST ORANGE, NEW JERSEY

SEPTEMBER 1989

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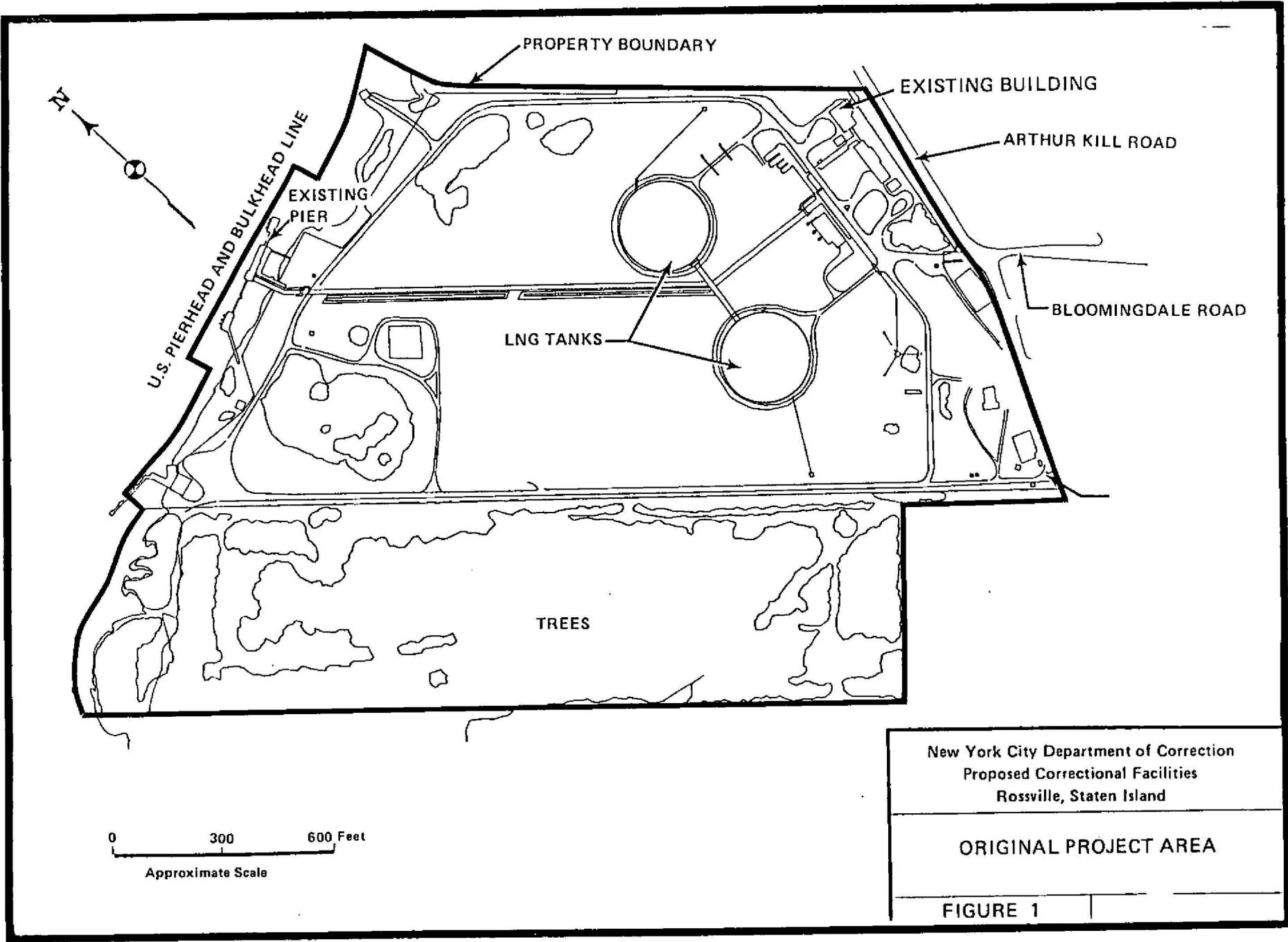
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## A. INTRODUCTION

A Phase IA cultural resources assessment was completed by Louis Berger & Associates, Inc. (LBA) in September 1988 on the proposed site for a correctional facility in Rossville, Staten Island, New York. At that time, the study consisted of background research and a field reconnaissance of the 101-acre project tract (Figure 1). Examination of archaeological site files, cultural resource surveys, and cartographic materials took place at the Staten Island Institute of Arts and Sciences, the New York State Office of Parks, Recreation and Historic Preservation, the New York State Museum, and the Staten Island Historical Society. This research established that there were six known archaeological sites located in the project area. Four of these sites were situated in the western portion of the tract, along Chemical Lane: (1) the Smoking Point Prehistoric Site; (2) a historic building foundation in association with eighteenth- and/or nineteenth-century ceramics; (3) the Chemical Lane Site, which contains both prehistoric and historic components; and (4) the Pottery Farm Prehistoric Site. The two remaining sites (Rossville Campsite and Mason Mansion) were located within close proximity to a liquefied natural gas (LNG) tank farm in the eastern section of the tract. In addition to the above archaeological resources, LBA identified four houses (listed on the New York State historic structure inventory) that are immediately adjacent to the project area. These houses are at 12 Hervey Street, 18 Hervey Street, 2876 Arthur Kill Road, and 29 St. Lukes Avenue.

The Phase IA study concluded that construction of the proposed correctional facility within the western portion of the project tract had the potential to impact significant archaeological resources. Rubertone (1974) had previously conducted an archaeological field assessment of this western property and recommended additional excavation of buried prehistoric components prior to any future construction. Specifically, she called for additional excavations at the Smoking Point and Pottery Farm sites.

A reconnaissance survey of the eastern section during the Phase IA study observed that construction of the tank farm had involved extensive grading. Given the amount of apparent disturbance, the study determined that this area of the project tract had an extremely low potential for intact Late Archaic to historic period archaeological remains. The study did, however, point out the possibility of the presence of deeply buried Paleo-Indian and Middle Archaic deposits below the tank farm area. Archaeological materials dating to these periods were found at a tank farm two miles to the south (i.e., Port Mobile [Kraft 1977]). In order to determine whether these types of cultural resources exist, the Phase IA study recommended that soil borings from within the tank farm area should be examined to verify age and depth of any paleosoils.

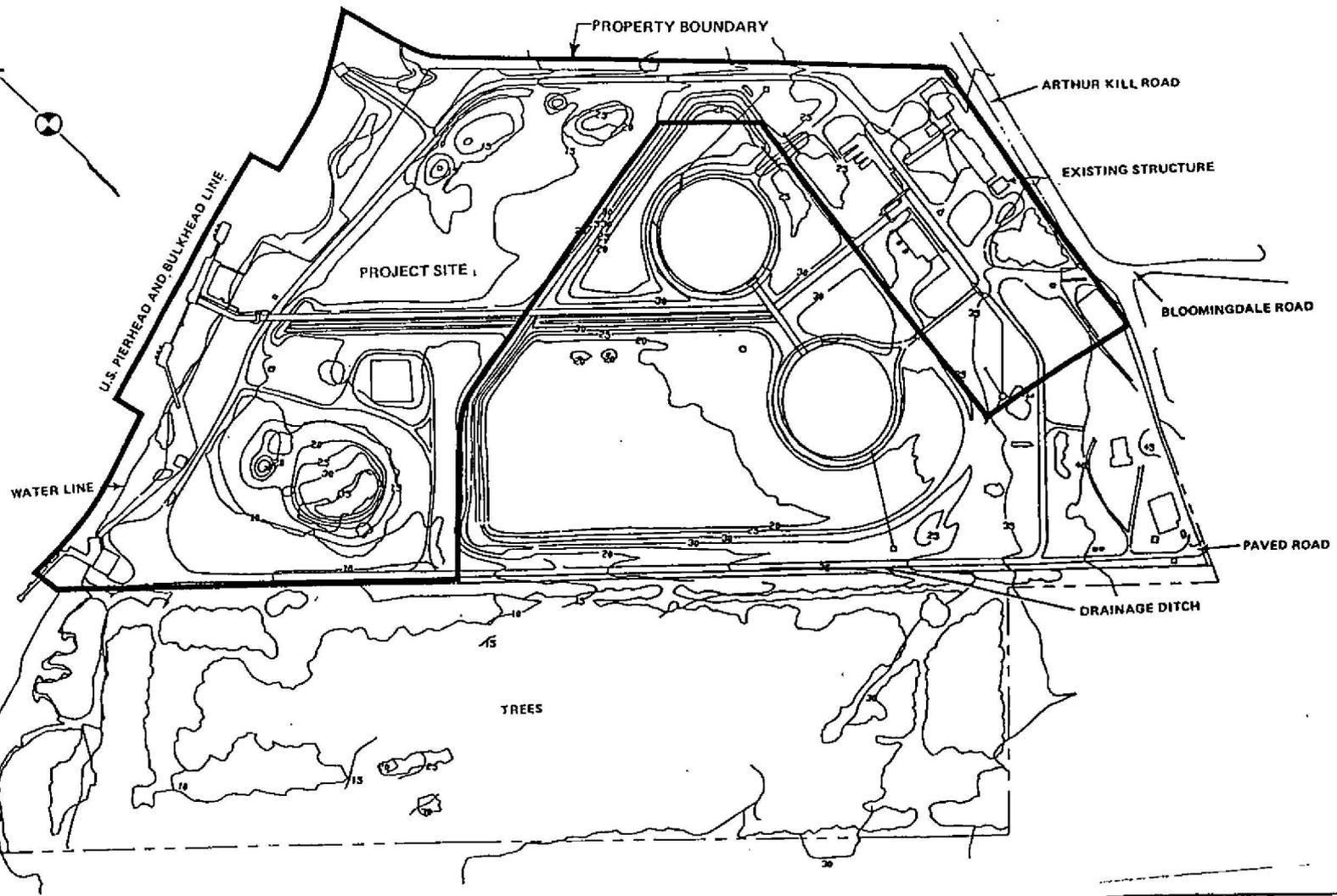
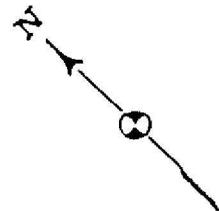


Since the completion of the Phase IA survey report in September 1988, the proposed project area for the correctional facility has been modified. The tract has been reduced to 33 acres, eliminating the western section and the LNG tanks from development (Figure 2). Therefore, the proposed undertaking would not impact the four sites located along Chemical Lane. However, the New York City Landmarks Preservation Commission (NYCLPC), after reviewing the Phase IA report, recommended that a secondary level study was required to address the potential for deeply buried Paleo-Indian and Middle Archaic cultural resources within the redefined project area. This secondary study would consist of an examination and evaluation of the soil deposits below the tank farm by a geomorphologist and archaeologist. Comparisons were then to be made with data from the Port Mobil Site, to the south of the tank farm, where archaeological material from the Paleo-Indian period had been recovered from another tank farm area. The result of this part of the secondary level study would consist of a discussion assessing the potential (or lack of potential) for recovery of early Native American material based on depth of grading and disturbance at the LNG Site, and depth of archaeological deposits at the Port Mobil Site. In addition, the secondary level study required an assessment of potential impacts to an area immediately east of the project tract that has been identified by the New York City Landmarks Commission as a potential historic district "study area."

## B. DESCRIPTION OF PROJECT AREA

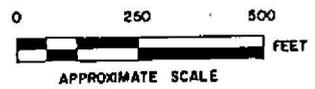
The project area is located on the western shore of Staten Island, within the Inner Lowland subprovince of the Atlantic Coastal Plain physiographic province. The landforms in and around the project environs have been directly influenced by glacial activity. The south shore of Staten Island is dominated by a thick mantle or blanket of glacial terminal moraine deposits. The north and west shores of Staten Island, including the project tract, are covered by a nearly flat-lying glacial outwash plain which gradually reaches the Arthur Kill and Kil Van Kull waterways.

The project tract is part of a larger 101-acre liquefied natural gas (LNG) storage tank facility. Grading of the original tract, prior to and during the construction of the LNG tanks and associated support buildings in the early 1970s, has altered the original grade and contours. This construction included some excavation of natural soils and the placement of controlled, compacted fill beneath the tanks. The western portion of the site, between Chemical Lane and the impoundment berms surrounding the tanks, is covered with natural vegetation and forms a shallow depression that drains much of the western section of the tract toward the Arthur Kill. Existing site topography, shown on Figure 2, varies from mean sea level at the Arthur Kill to approximately 45 feet at the southern boundary of the site. The surface of the



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Rosville, Staten Island

TOPOGRAPHY OF THE PROJECT SITE  
AND ADJACENT AREA

FIGURE 2

project site is characterized by an undulating topography marked by spoil piles and road construction.

### C. FIELD INVESTIGATIONS AND RESULTS

#### 1. Prehistoric Investigations

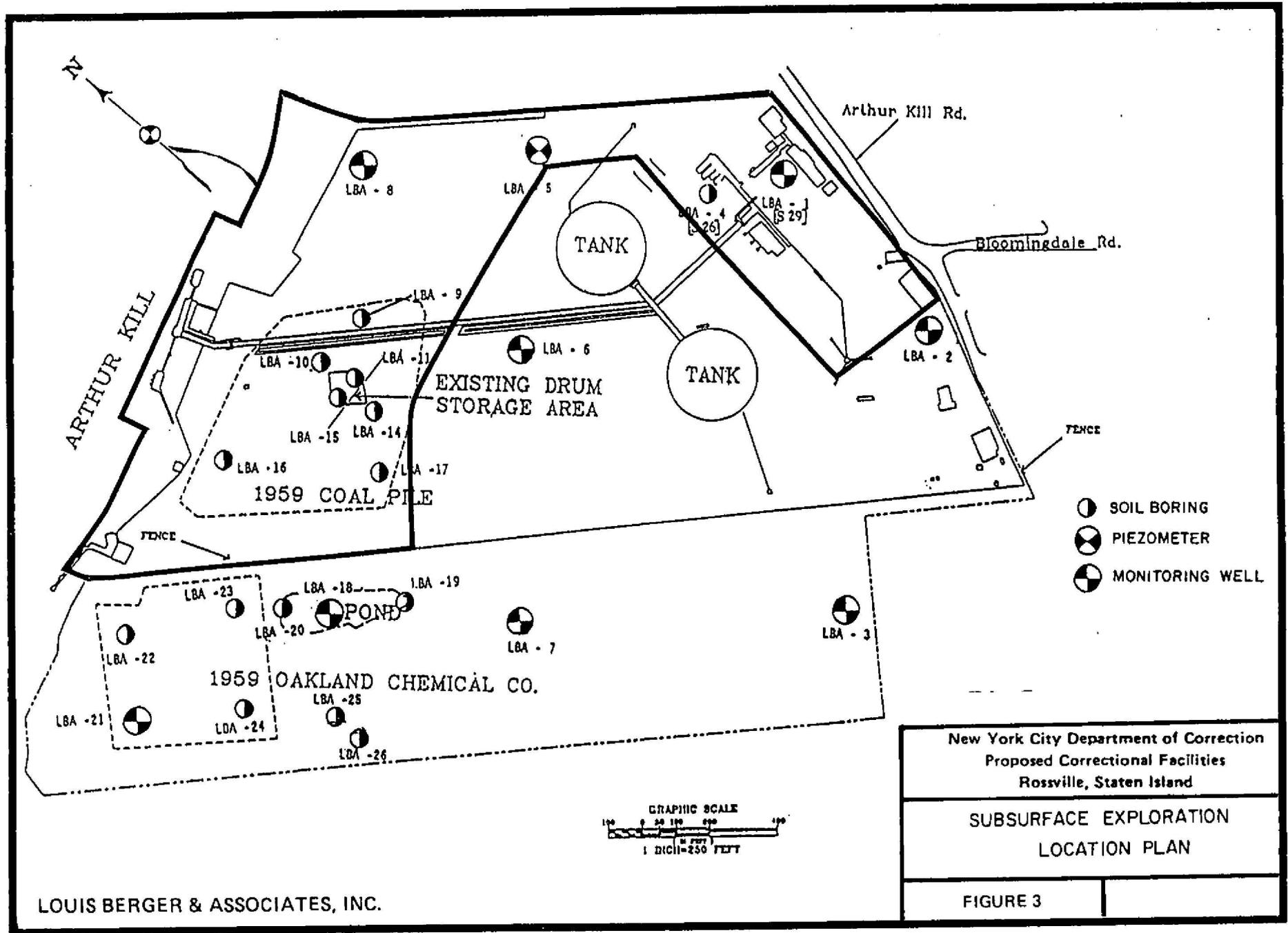
A previous subsurface investigation was performed by Raamot Associates (1971) on the proposed site and adjacent parcel for the design and construction of the existing LNG tanks. The locations of the explorations performed are shown on Figure 3. Boring logs from the explorations are presented in the appendix to this report.

The combined investigations indicated that the soils at the site consist of an upper layer of loose granular soil ranging in thickness from a few feet to more than 10 feet. Underlying this stratum is an approximately 15-foot-thick layer of reddish brown sand with a clay matrix as well as coarse gravel and occasional boulders (upper till stratum). Below this stratum is a water-bearing sand stratum varying in thickness from 35 feet to 70 feet. Interrupting this stratum, at a depth of about 27 feet, is a thin layer of varved clayey silt with thicknesses of approximately two to five feet. The next layer consists of sand in a clay matrix with occasional boulders which appear to be glacial till. The depth of this layer varies between 10 feet and 55 feet below sea level and is between 5 feet and 20 feet thick. Discontinuous interbedded layers of brown varved silt and gray varved silt and clay underlie this lower till deposit down to an elevation of about 60 feet below sea level. Beneath these deposits lie a nearly uniform layer of hard red and gray mottled clay down to depths of 70 feet to 115 feet below sea level. This clay is underlain by 30 feet to 60 feet of hard desiccated gray and dark green clay.

Explorations performed for the LNG tank design encountered bedrock at depths of 180 feet to 215 feet, corresponding to elevations of about 145 feet to 160 feet below sea level. The encountered bedrock consisted of brown, highly fractured mudstone, with intrusions of highly fractured gray diabase.

Clean Harbors recently excavated 24 borings within the project area (see Figure 3). The boring program involved sampling of soils and groundwater, and the installation of groundwater monitoring wells and piezometers. The explorations were generally advanced to 20-foot depths. As part of the secondary cultural resource study, six of the Clean Harbors borings were examined, in the field, by an LBA staff archaeologist and geomorphologist. Logs of all borings are presented in the appendix, and selected soil logs taken from the Clean Harbors explorations are presented in Figure 4.

The soil characteristics recorded by Clean Harbors are in general agreement with the findings of Raamot's investigations. Loose



- SOIL BORING
- ⊗ PIEZOMETER
- ⊙ MONITORING WELL

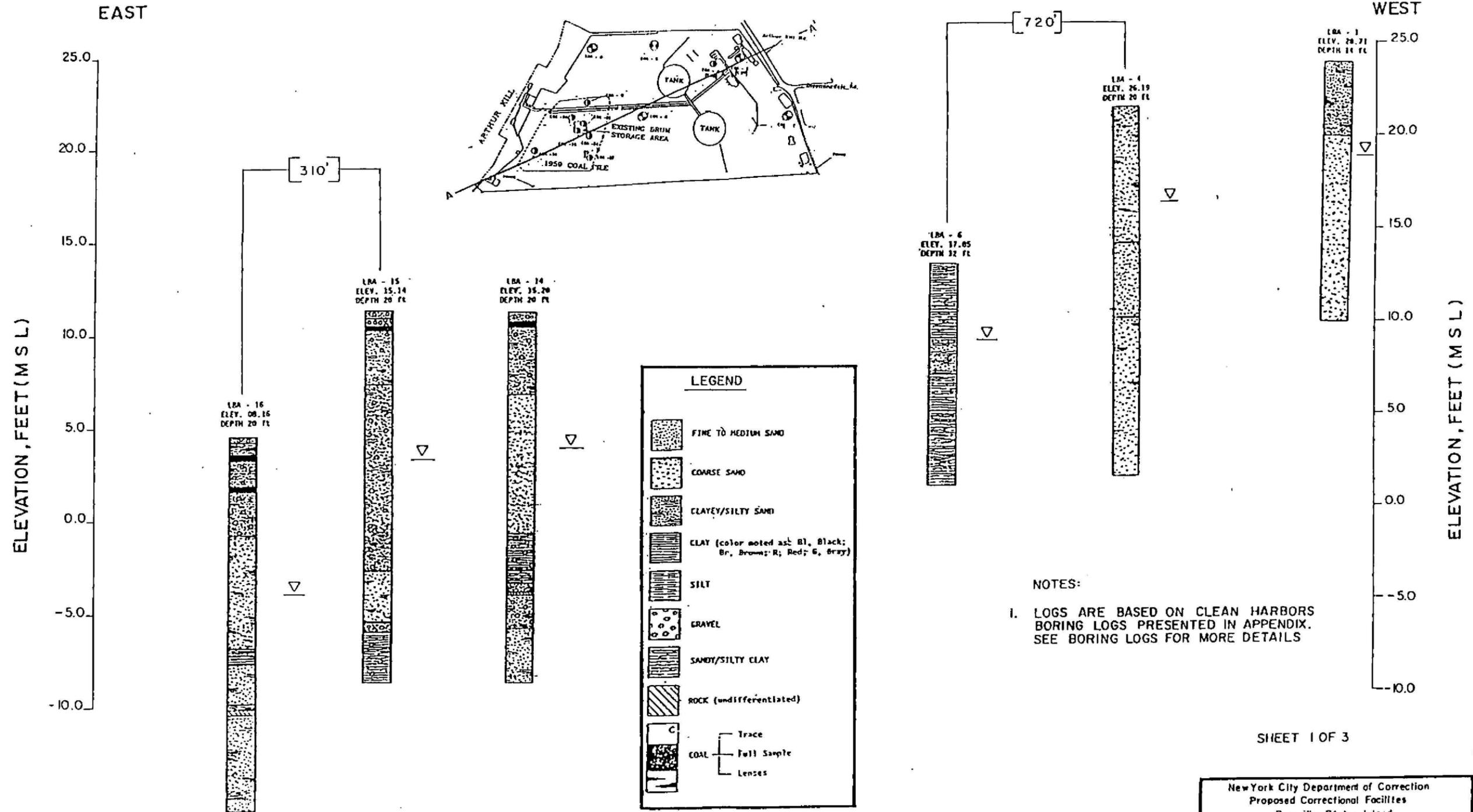
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SUBSURFACE EXPLORATION  
 LOCATION PLAN

FIGURE 3

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SECTION A-A'

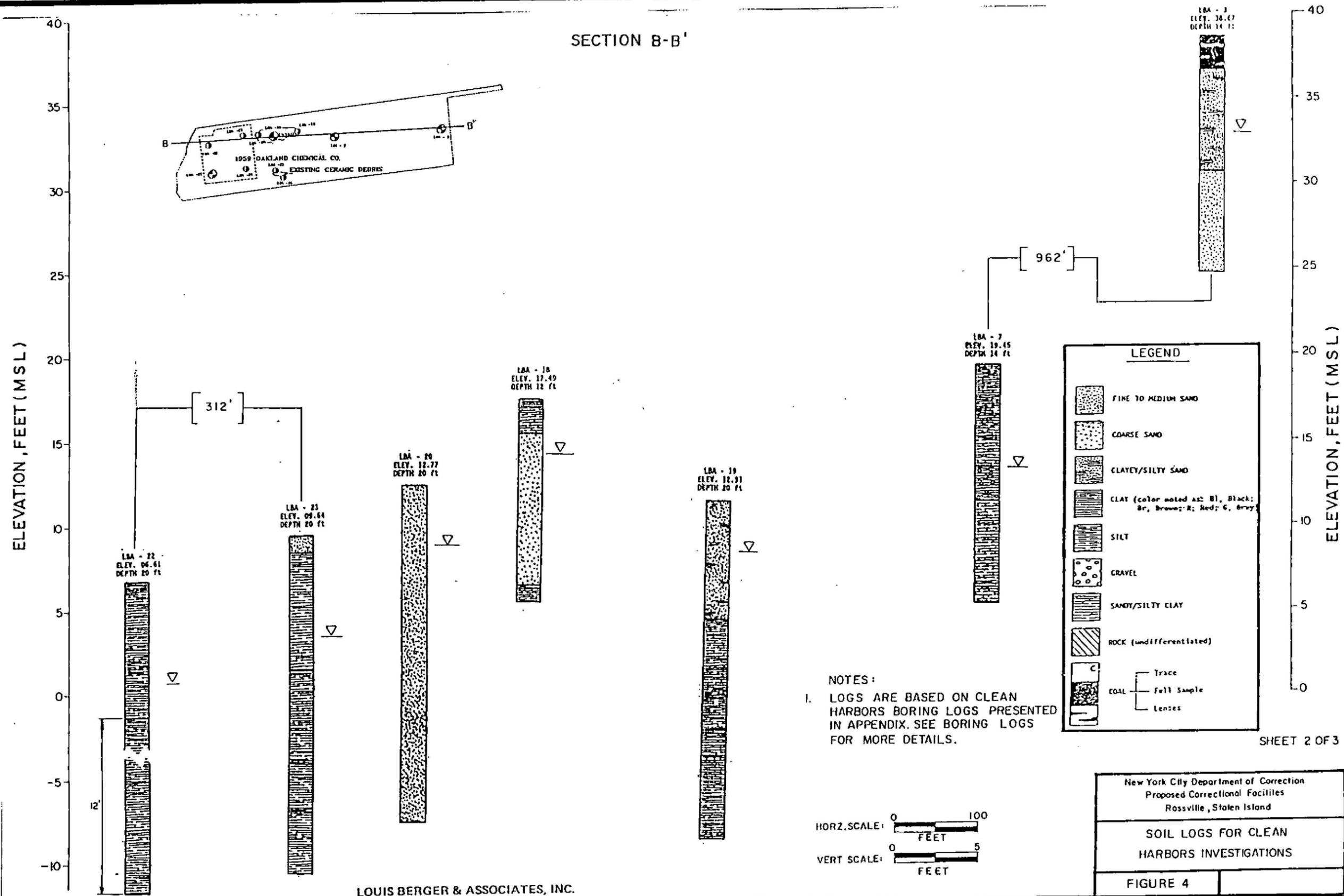


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SHEET 1 OF 3

New York City Department of Correction Proposed Correctional Facilities Rossville, Staten Island	
SOIL LOGS FOR CLEAN HARBORS INVESTIGATIONS	
FIGURE 4	

SECTION B-B'



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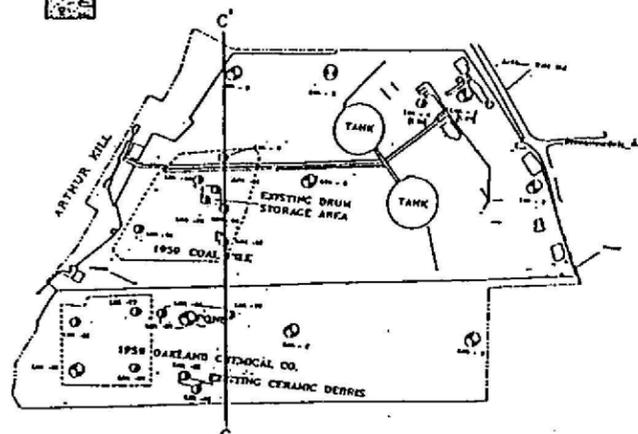
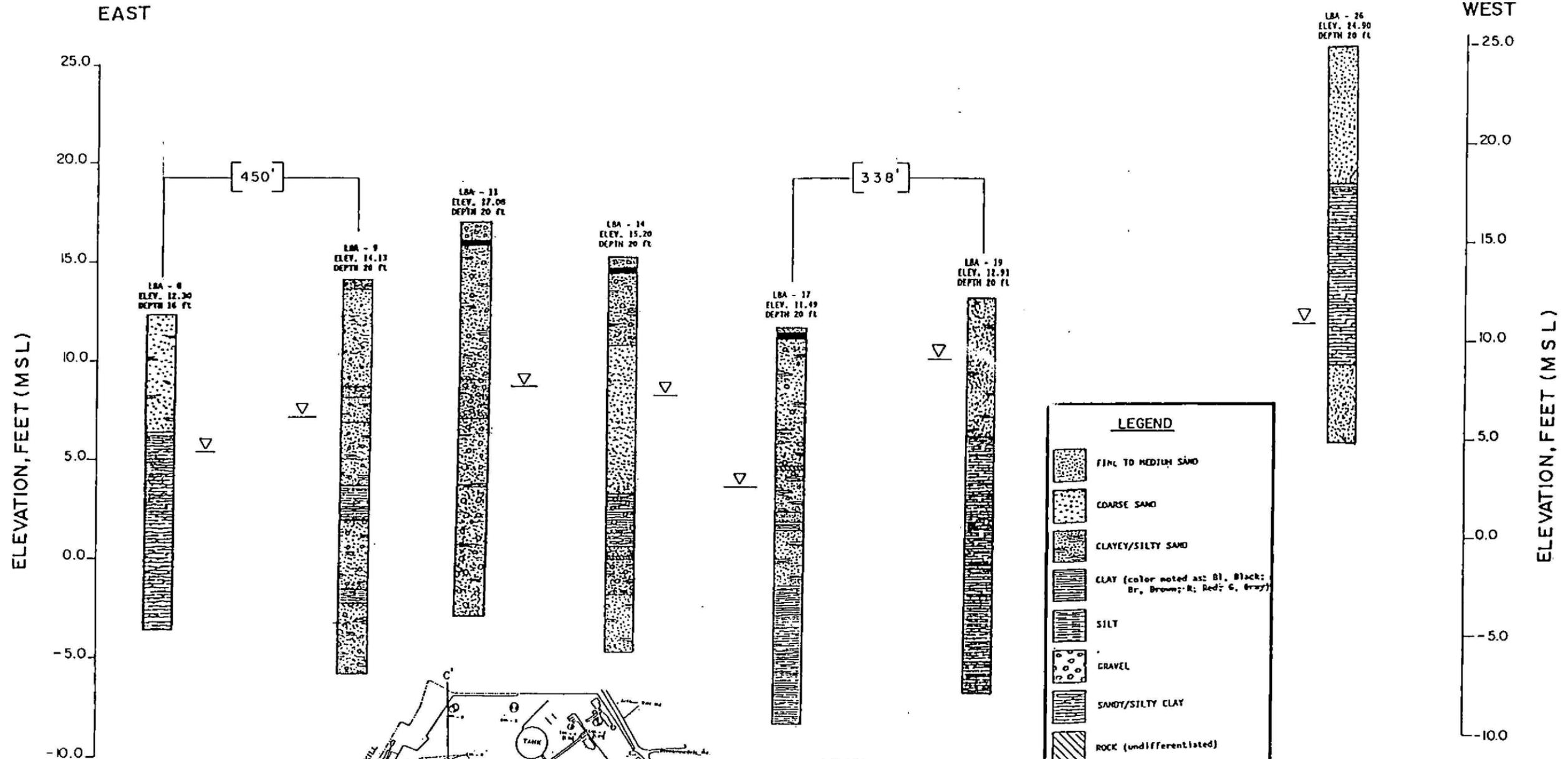
SHEET 2 OF 3

New York City Department of Correction  
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Rossville, Staten Island

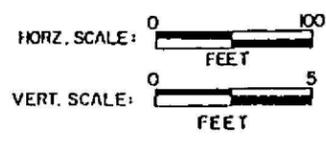
SOIL LOGS FOR CLEAN  
HARBORS INVESTIGATIONS

FIGURE 4

SECTION C-C'



NOTES:  
1. LOGS ARE BASED ON CLEAN HARBORS BORING LOGS PRESENTED IN APPENDIX. SEE BORING LOGS FOR MORE DETAILS.



SHEET 3 OF 3

New York City Department of Correction Proposed Correctional Facilities Rossville, Staten Island	
SOIL LOGS FOR CLEAN HARBORS INVESTIGATIONS	
FIGURE 4	

granular soils were generally encountered as the upper stratum underlain by granular soils in a clay or silt matrix with gravel. These explorations were not advanced to the depths of the Raamot borings and, as a result, the presence of the deeper strata encountered previously was not confirmed.

Overall, the logs of the soil borings recorded discontinuous horizons of fine to coarse sands, silts, clays, and organic material (i.e., plant and root material) within the upper strata. These sediments are characteristic of river deposits and are highly variable across the project area (see Figure 4). The specific fluvial agents of deposition include floodplain, overbank, bar, and deltaic forces. An additional depositional agent that is represented is erosion and colluvial transport from the uplands to the east.

Due to the multidepositional character of the project area, the variability found in the boring logs is not unusual. However, given the complex nature of these sediments, it is not possible to evaluate the potential of subsurface archaeological deposits based on the boring data alone. One of the complexities in evaluating the boring data is the variability between borings with respect to specific soil horizons within the general strata enumerated above. For the most part, this variability precludes an identification of the horizontal extent of different deposits. In other words, it is not possible to identify how the various strata from the different borings articulate with one another beyond a gross classification which is insufficient for archaeological interpretation.

One element that represents subsurface disturbance among the borings is the presence of subsurface coal deposits encountered in the upper strata (2.5 to 5 feet) within the former coal storage area (see Figure 3). This would indicate a very low potential for the presence of Late Archaic to historic period archaeological sites in this area, since the maximum depth at which cultural material was recovered at the nearby Smoking Point and Pottery Farm sites was between three and five feet below the present surface (Rubertone 1974; Silver 1984). Potential is also low for the rest of the project tract as a result of the extensive grading activities from the construction of the tank farm. In comparing the present topography (see Figure 2) with an 1890 topographic map (Figure 5) of the area, it is evident that as much as five feet has been graded off the surface. Therefore, it is unlikely that any cultural manifestations associated with the Late Archaic to historic periods would be present. However, given the depth (five feet) at which Late Archaic material was recovered, those undisturbed sediments beneath the coal horizons and grading activities may still contain earlier cultural material associated with the Paleo-Indian to Middle Archaic periods.

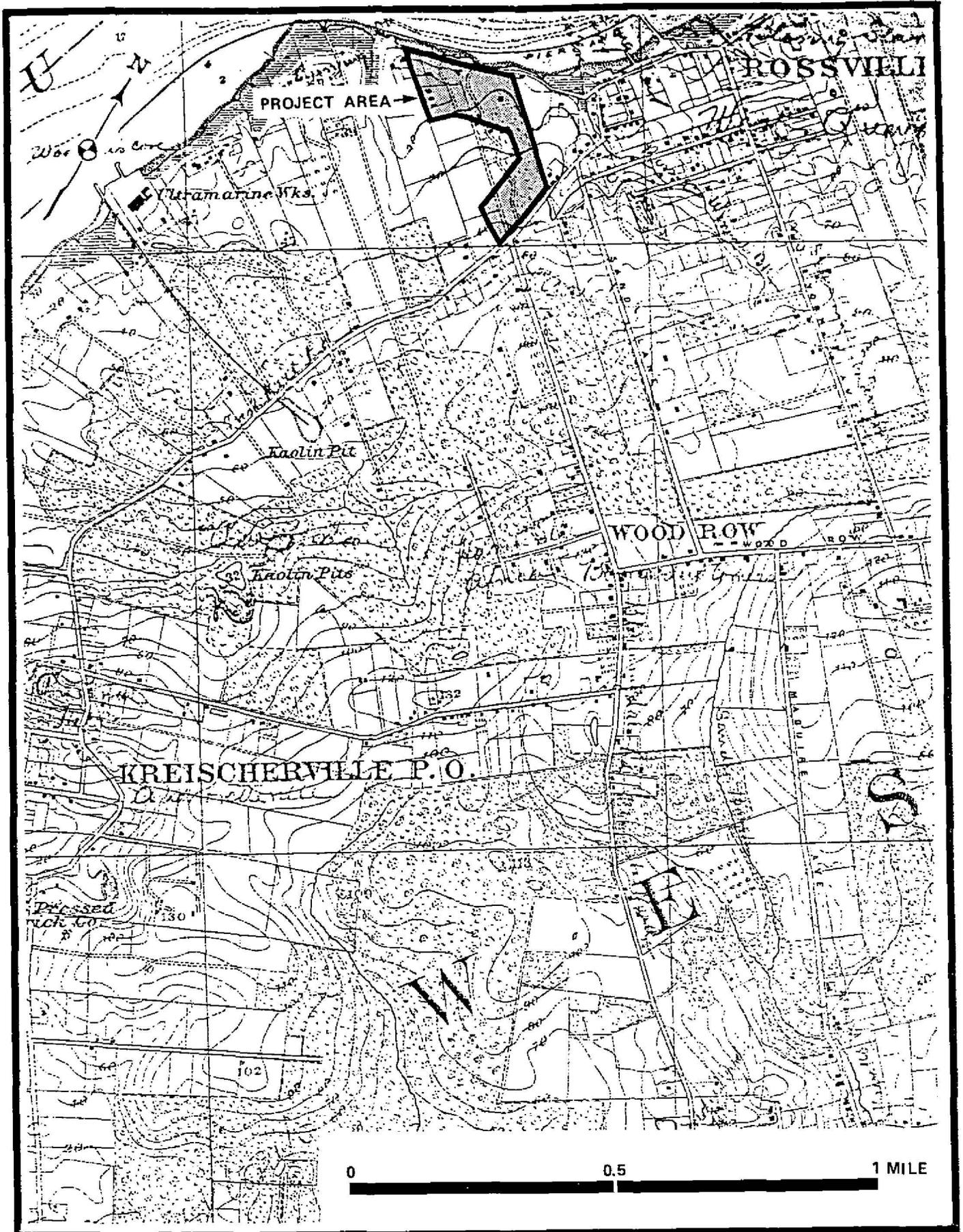


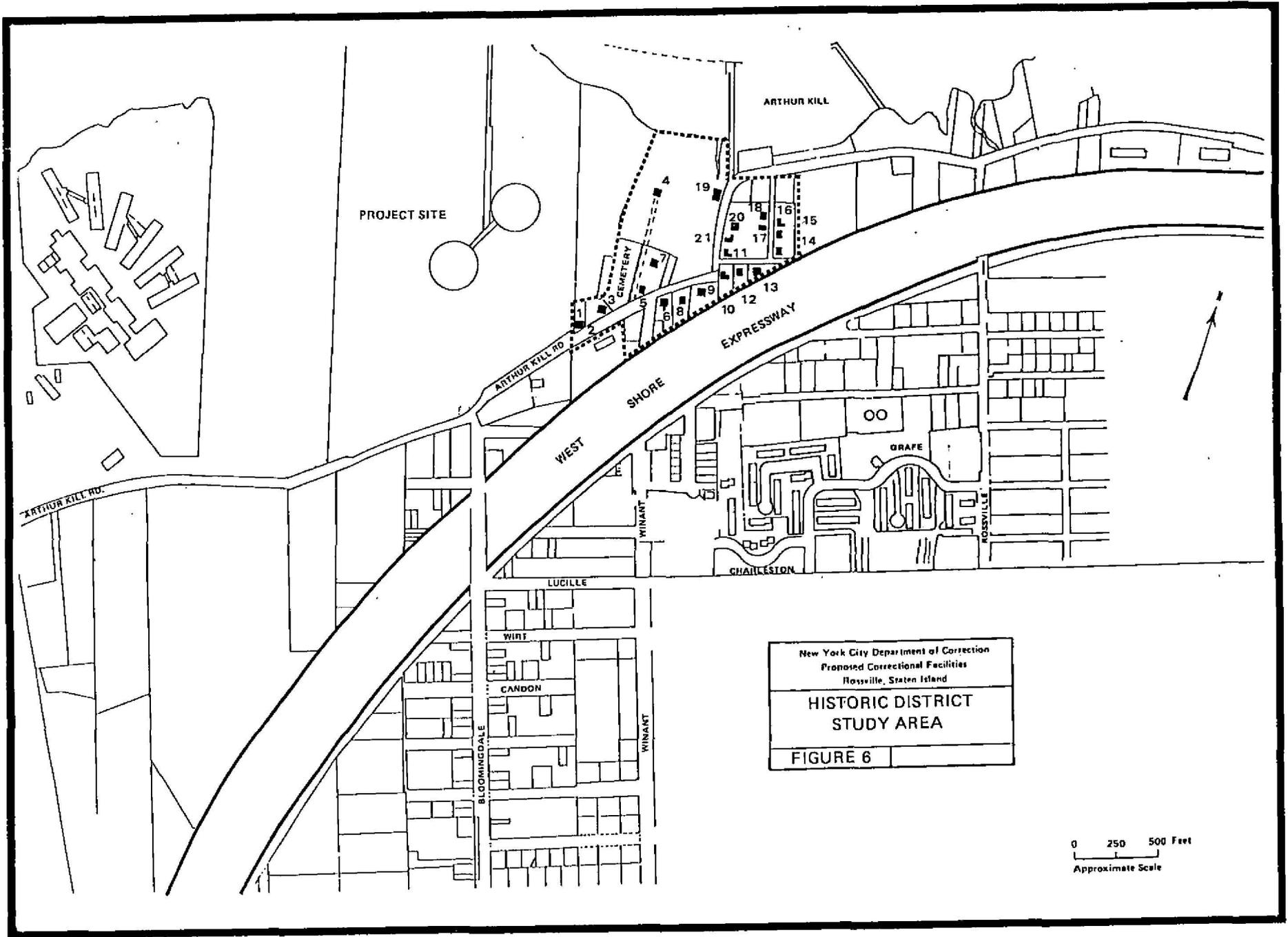
FIGURE 5: Topography of Project Area in 1890

SOURCE: Vermeule and Bien, 1890

## 2. Historic Architectural Investigations

The area immediately east of the project area has been identified by the New York City Landmarks Commission as a potential historic district "study area," consisting of 20 properties on Arthur Kill Road, Hervey Street, and St. Luke's Avenue in the western portion of the village of Rossville (Figure 6). According to the Landmarks Commission, "some or all of this area appears to be eligible for listing on the National and State Registers of Historic Places as an historic district, and the area is under active consideration for local designation as an historic district" (LPC Environmental Review Form, January 19, 1989). The properties include a cemetery, 17 present or former residences, a church, and a former parish house. The major concentration of these properties occurs near the curve in Arthur Kill Road, just east of Smoking Point, and in an enclave above the curve at St. Luke's Place. The following descriptions are listed in the order presented in A Walking Tour in 19th Century Rossville (Preservation League of Staten Island 1988). Historical information is taken from that document and from A Phase IA Cultural Resource Assessment of the Proposed Correctional Facility in Rossville, Staten Island, New York (Louis Berger & Associates 1988).

1. 2607 Arthur Kill Road (Photo 1). An early nineteenth-century frame dwelling, one-and-one-half stories, three bays with narrow eyebrow windows beneath the eaves; tall one-bay front-gable addition on the west end; tan shingle siding. One of three (see also #2 and #4) owned by oysterman John Cole in the mid-nineteenth century.
2. 2591 Arthur Kill Road (Photo 2). A two-story, three-bay, side-hall dwelling, two rooms deep, with modern projecting enclosed entry porch, lean-to addition on the west side, cedar shingle siding, and interior chimney at east gable end.
3. St. Luke's Cemetery (Photo 3). Originally Woglum family burying ground, acquired by St. Luke's Episcopal Church in 1849. Contains graves dating from the late eighteenth century to the mid-twentieth century, and is bordered on west and north by tall shrubs.
4. 2575 Arthur Kill Road (Photo 4). A two-story, five-bay, side-gable frame dwelling with center front and rear gables, interior gable-end chimneys, asphalt roll siding, and small one-room unit at the west end. Set well back from Arthur Kill Road and surrounded by a scrap yard. Residence of John Cole, according to the 1859 (Walling) map.
5. 2571 Arthur Kill Road (Photo 5). A one-and-one-half-story dwelling of four bays, with horizontal eyebrow windows illuminating the upper floor, interior gable-end chimneys, full-length veranda; a two-story square addition is present



on the east end; Greek Revival style main entrance and wooden clapboarding remain present. A portion of the one-and-one-half-story section is attributed to Mark Winant, carpenter, who purchased one-half acre from Cornelius Woglum in 1829. The two-story addition may date to the ownership in the later nineteenth century of Dr. Robert Golder.

6. 2556 Arthur Kill Road (demolished prior to this investigation, but included in Walking Tour).

7. 2547 Arthur Kill Road (Photo 6). A one-and-one-half-story side-gable dwelling, with the dormered west roof slope extended like a "spring eave" to tops of first-floor windows; exterior clad in drop siding; original character largely obscured by what appears to be an early twentieth-century remodeling effort. Original construction attributed to oysterman William Winant, who purchased one-half acre from John Woglum in 1818; Winant name associated with the property on the 1859 (Walling) and 1874 (Beers) maps.

8. 2546 Arthur Kill Road (Photo 7). A two-story, front-gable structure, three bays wide, originally a residence and recently remodeled for commercial purposes. Exterior now features brick veneer, stucco and false half-timbering, strip casement windows, and a pentroof.

9. 2542 Arthur Kill Road (Photo 8). A five-bay, two-story side-gable dwelling, encased in wide aluminum siding which completely covers original second-story windows and the original trim of the existing 6/6 windows at the first story. Above paired, centered main entrances is a small triangular gable. The Walking Tour indicates that this house was moved to this location.

10. 2522 Arthur Kill Road (Photo 9). A five-bay side-gable, single-pile dwelling on a raised brick basement, one and one-half stories high with nearly square eyebrow windows at upper story; interior gable-end chimneys, Greek Revival centered entrance, wide aluminum siding, full-length porch, and several one-story rear additions. Built in 1847 for William Winant, acquired in 1852 by Cornelius J. Winant.

11. 2512 Arthur Kill Road (Photo 10). A two-story, five-bay side-gable dwelling, double pile and center entrance with Greek Revival enframement; one original rear ell as well as a variety of more recent rear extensions. The main roof is extended in a sloping "swing eave" to create a portico with giant, fluted Doric columns. A modern terrace in front of the house features wood lattice fencing and posts surmounted by urns. The Walking Tour credits this house to Peter Cortelyou, a broker, in the 1850s.

12. 12 Hervey Street (Photo 11). A two-story, side-gable, single-pile dwelling with five-bay facade, center entry with sidelights, 6/6 second-story windows (8/8 on first story are modern replacements); exterior sheathed in aluminum siding; modern wood front porch on a concrete slab; early rear ell plus several one-story rear additions; carport attached at east end.

13. 18 Hervey Street (Photo 12). A two-story, side-gable side-hall dwelling with heavy dentil cornice, interior chimney at west gable end. At rear is a two-story, flat-roofed addition. Front porch is hipped-roofed, and fully enclosed with many windows. Exterior clad in cedar shingles; window sash are aluminum units.

14. 39 St. Luke's Avenue (Photo 13). A two-story, side-gable, double-pile dwelling, with five-bay facade, center entry with sidelights and dentil cornice, 6/6 double-hung sash, stuccoed interior gable-end chimneys. Asbestos shingle siding and wooden "frieze" are modern embellishments. Owned by S. Marshall on the 1874 (Beers) map.

15. 29 St. Luke's Avenue (Photo 14). A two-story, front-gable side-hall dwelling with double-leaf front door and very fine Eastlake porch detail, fishscale shingling in the front gable end, 2/2 double-hung sash, front windows with molded cornices. House built after 1874, on lot previously owned by S. Marshall.

16. 21 St. Luke's Avenue (Photo 15). An extensively altered two-story dwelling with shallow hipped roof, center entrance. Original fenestration and exterior treatments are not visible due to addition of a modern enclosed porch and extensive sheathing in asbestos shingle siding.

17. 22 St. Luke's Avenue (Photo 16). A two-story, side-gable side-hall dwelling, featuring a Greek Revival entry with sidelights and simple cornice, 2/2 double-hung sash. A one-and-one-half-story unit on the south end may be an enlargement of a smaller side wing. The front porch and wide shingle siding are also later elements. A residence is indicated on this location in 1874.

18. 10 St. Luke's Avenue (Photo 17). St. Luke's Parish House, so identified by a cornerstone which also bears the date 1909. Designed by a local resident, Walter Cutting. A one-story frame structure with steeply-pitched front gable; center entrance in a windowless, shed-roofed vestibule, narrow wooden clapboards. Original 2/2 double-hung sash are in process of replacement, as the building appears to be undergoing renovation.

19. 2477 Arthur Kill Road (Photo 18). A much-altered dwelling, two stories, with front-gable section at the south end. A Greek Revival-style entrance surround may be retained from earlier phases in the evolution of this house, the original character of which is not readily discernible. A residence is indicated at this location in 1850, then owned by John Cole, and by 1859 in the possession of Jacob Guyon.

20. St. John's Chapel (Methodist) (Photo 19). A simple front-gable frame building with gabled vestibule, paneled double-leaf door beneath a multilight transom, large 2/2 double-hung sash with arched heads, set in rectangular surrounds. Imitation stone roll siding obscures original cladding. Built in 1855.

21. 2504 Arthur Kill Road (Photo 20). A large two-story, side-gable, side-hall dwelling with two-story flat-roofed addition on north end. The front roof slope is flared and extended as a "spring eave" to create a porch featuring giant fluted Doric columns. Main entrance features a Greek Revival surround with sidelights and simple cornice. The exterior of the house is covered with wide composition shingling. Original construction attributed to John Williams, in 1843.

Although evidencing a range of alteration and varying degree of care and maintenance, these properties collectively constitute a notable concentration of architectural resources associated with the nineteenth-century history of Rossville, particularly from the decades prior to the Civil War, when the village was an active junction point for overland and maritime transportation (see Louis Berger & Associates 1988:9-11). Residential construction in this area appears to have been largely achieved by the 1850s, as suggested not only by historic maps but by the forms and (where surviving) Greek Revival details exhibited by many of the properties in the study area. Three major dwelling forms are represented, the examples comprising at least 11 of the 17 houses in the historic district study area. Possibly earliest is the one-and-one-half-story, single-pile, side-gable house, the diagnostic feature of which is the presence of small horizontal or square "eyebrow" windows illuminating the upper floor (see #1, 2607 Arthur Kill Road; #5, 2571 Arthur Kill Road; and #10, 2522 Arthur Kill Road). The second major house form is the larger, two-story dwelling, one or two rooms deep, with five-bay symmetrical facade and center entry (see #4, 2575 Arthur Kill Road; #11, 2512 Arthur Kill Road; #12, 12 Hervey Street; and #14, 39 St. Luke's Avenue). The third is the two-story, three-bay side-hall dwelling, two rooms deep (see #2, 2591 Arthur Kill Road; #13, 18 Hervey Street; #17, 22 St. Luke's Avenue; and #21, 2504 Arthur Kill Road). Other possible examples may have been #9 (2542 Arthur Kill Road) and #16 (21 St. Luke's Avenue), but their original characters have been substantially destroyed by relatively modern alterations.

When most of the houses in the historic district study area were built, the land to the west was occupied by river-front estates, the dwellings for which were set near the Arthur Kill at the end of long lanes extended off Arthur Kill Road. The transformation of the area to the west of the historic district study area began in the early 1850s, when the A. W. Reading Chemical Works was established in the midst of the line of shorefront estates, an "intrusion" soon followed by the White Lead Company and the International Ultramarine Works. Industrialization increased after 1900, with the remaining estates passing to Edison Electric Co. and Oakland Chemical Co. by 1917 (Louis Berger & Associates 1988:11). The facilities associated with these nineteenth- and early twentieth-century industries have since passed from the scene, replaced with gas tanks, the existing correctional facility, and the marine salvage yard.

Due to the transformation in land use, and thus in the physical character, of the area between the Arthur Kill and Arthur Kill Road west of Rossville, the only views from properties within the historic district study area that might be said to resemble their historic counterparts are those in which one or more houses are visible from another, for example, looking southeast from 2477 Arthur Kill Road toward the houses on the opposite side of that street, or looking across or along St. Luke's Avenue or Hervey Street. From those properties (primarily those on the east side of Arthur Kill Road at the curve), which in the mid-nineteenth century might have enjoyed views across the grounds of waterfront estates toward Arthur Kill, the present viewshed encompasses the pair of gas tanks set within an earthen berm and surrounded by vacant scrubland; the marine salvage yard, which occupies almost the entire area between the gas tanks and the site of the proposed correctional facility; and the vehicle lot of the sewerage concern in the lower bend of Arthur Kill Road opposite the foot of Hervey Street (Photos 21 to 25). From properties on the east side of St. Luke's Avenue, the westward view encompasses the rear elevations and appurtenant structures associated with properties on Arthur Kill Road with the gas tanks in the background (Photos 26 and 27). The four properties flanking St. Luke's Cemetery, on the west side of Arthur Kill Road, are oriented south, toward the road. Northwesterly views from these properties are dominated by the salvage yard (in the case of #7) and the gas tanks (in the case of #1, #2, and #5) (Photos 28-30). Most views of the cemetery from #5 and #7 are also dominated by the gas tanks (Photos 31 to 33). Property #4, also adjacent to the proposed project area, is situated in the midst of the salvage yard, which thus constitutes that property's immediate visual environment (Photo 34).

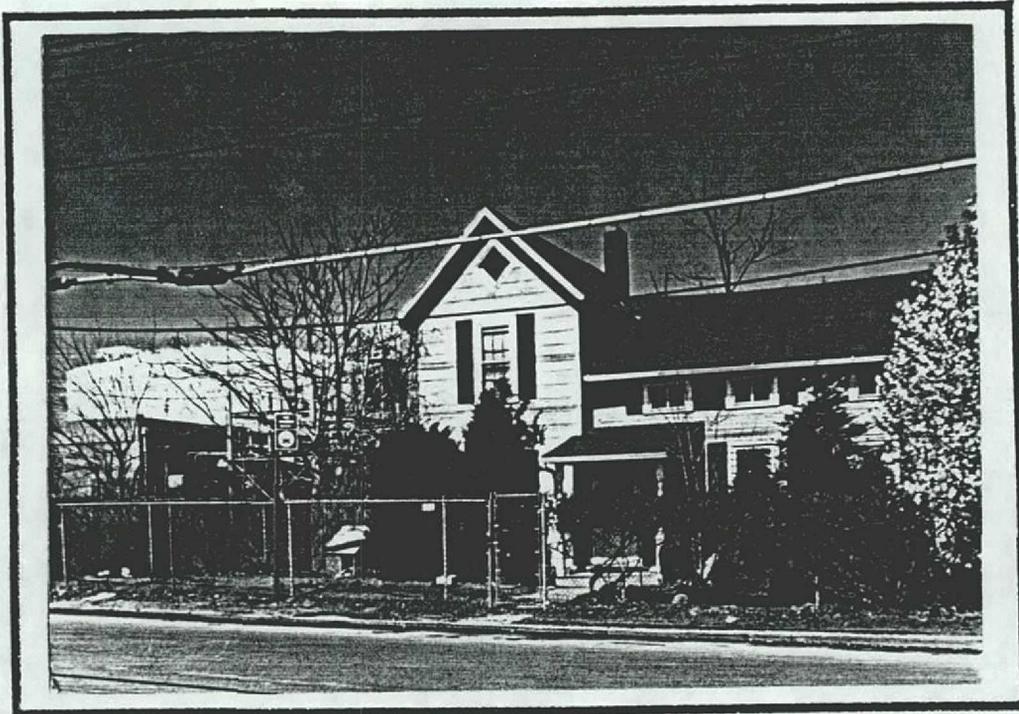


PHOTO 1: No. 2607 Arthur Kill Road. View Looking Northwest, Project Area in Background

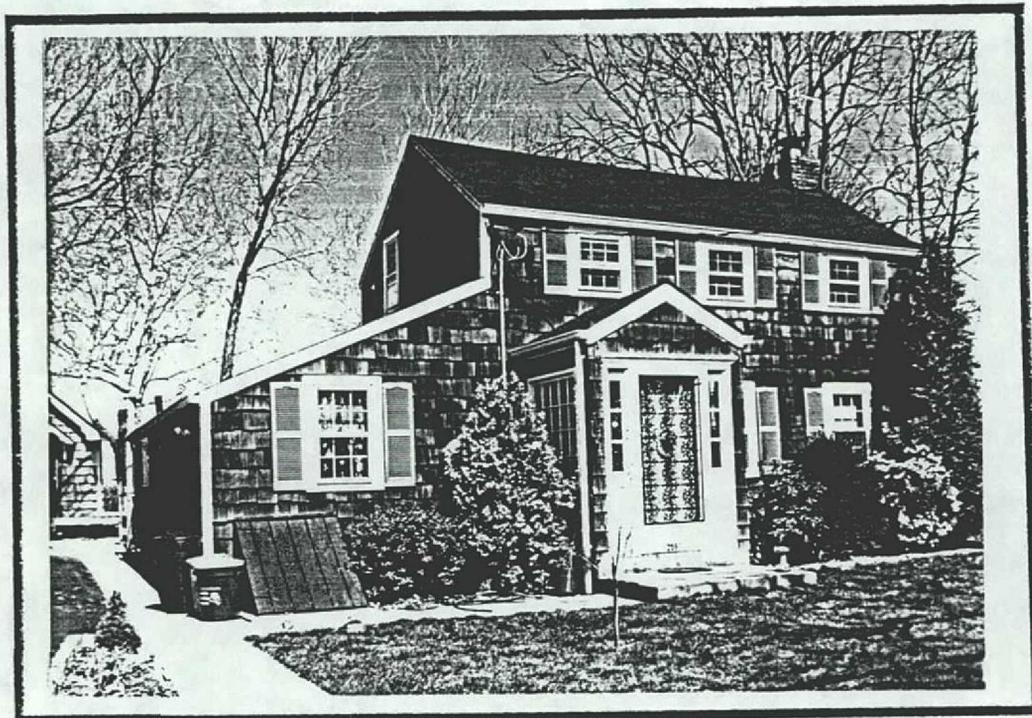


PHOTO 2: No. 2591 Arthur Kill Road. View Looking North



PHOTO 3: St. Luke's Cemetery. View Looking Northwest, Project Area in Background

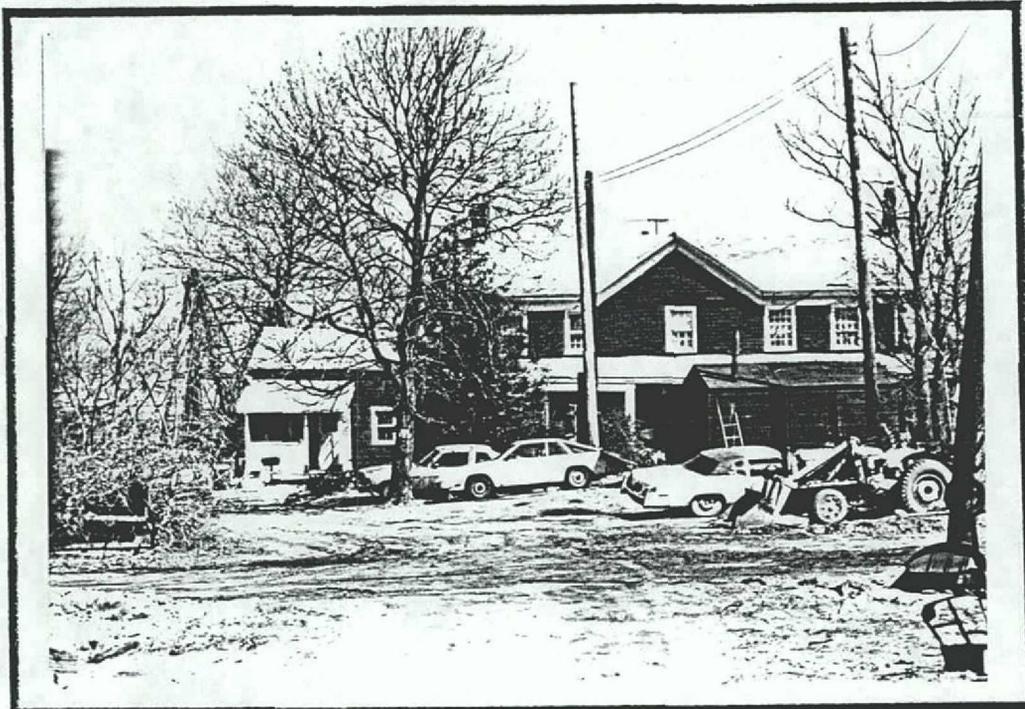


PHOTO 4: No. 2575 Arthur Kill Road. View Looking Northwest

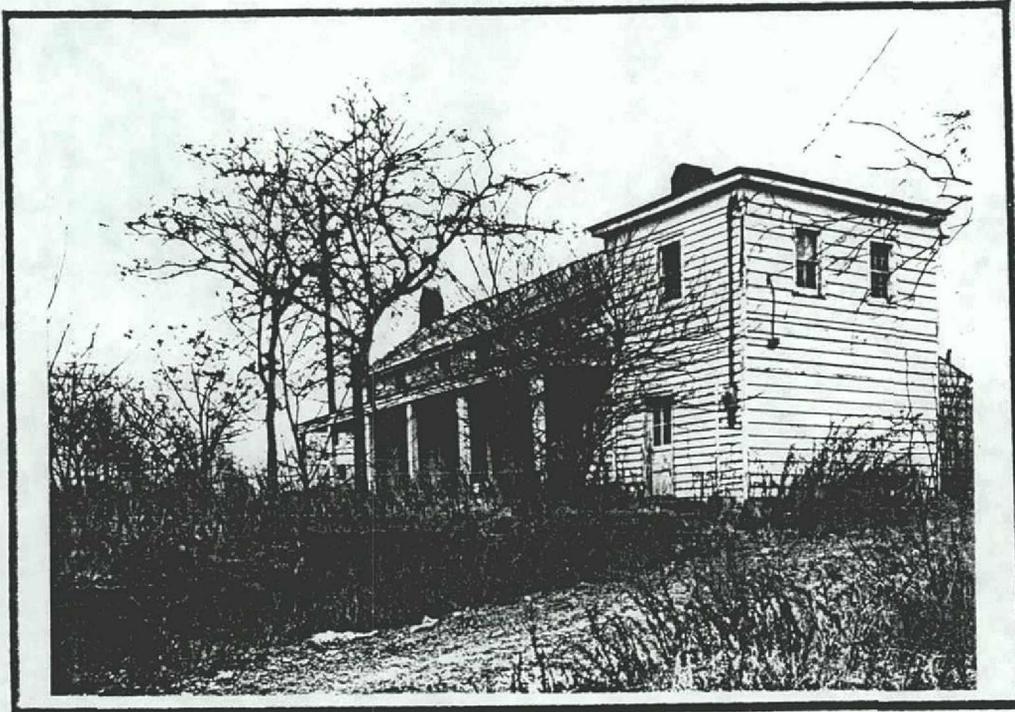


PHOTO 5: No. 2571 Arthur Kill Road. Project Area in Background

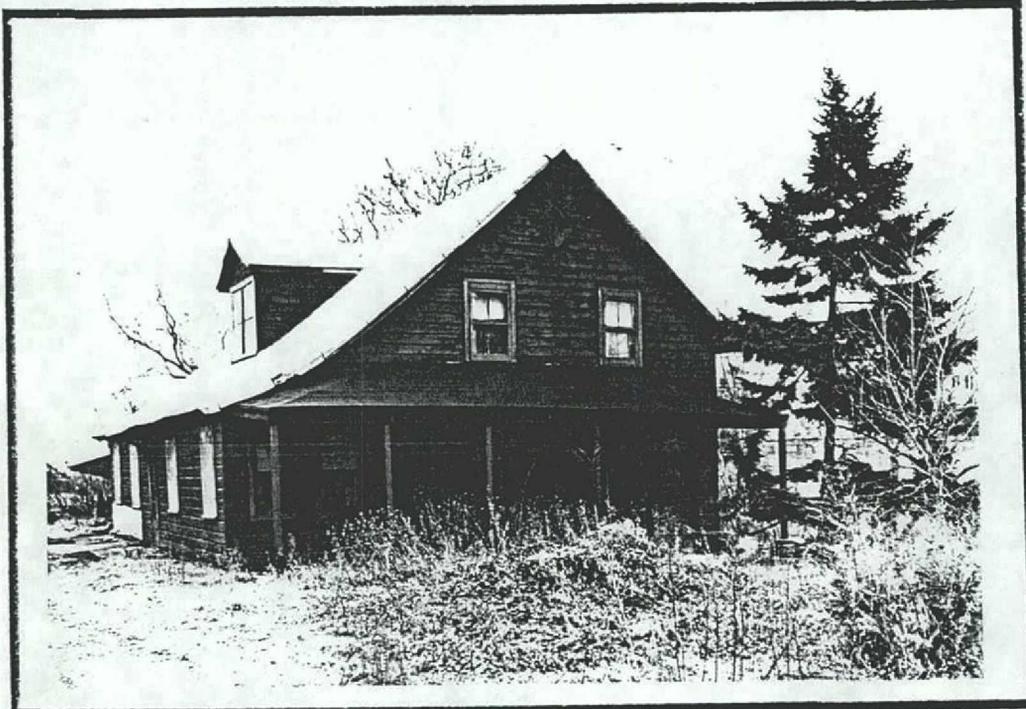


PHOTO 6: No. 2547 Arthur Kill Road

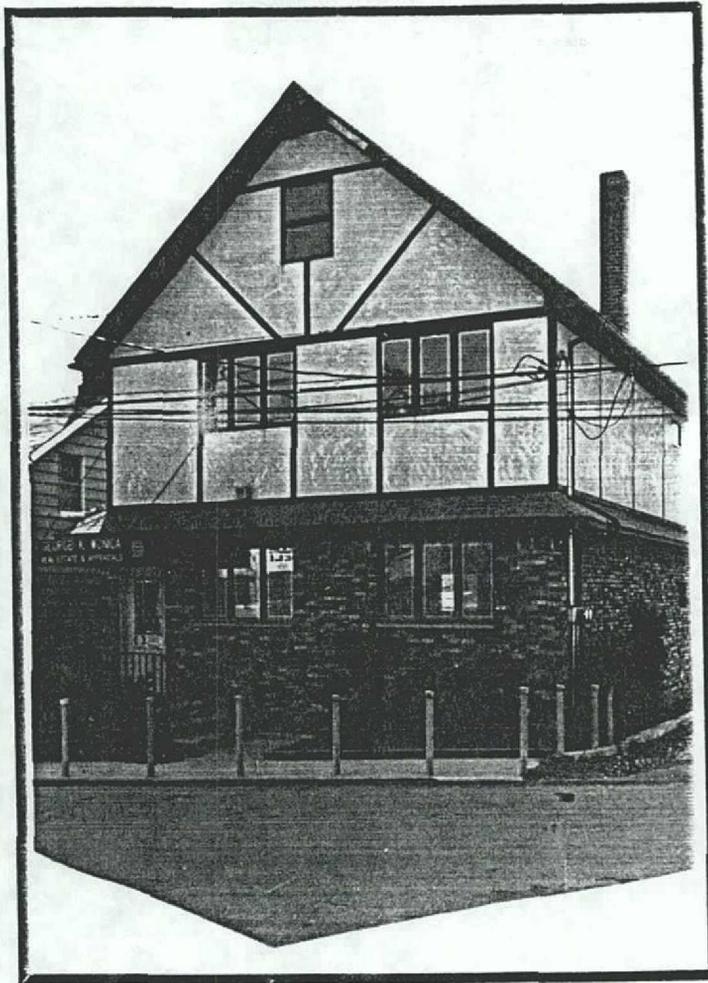


PHOTO 7: No. 2546 Arthur Kill Road.  
View Looking Southeast

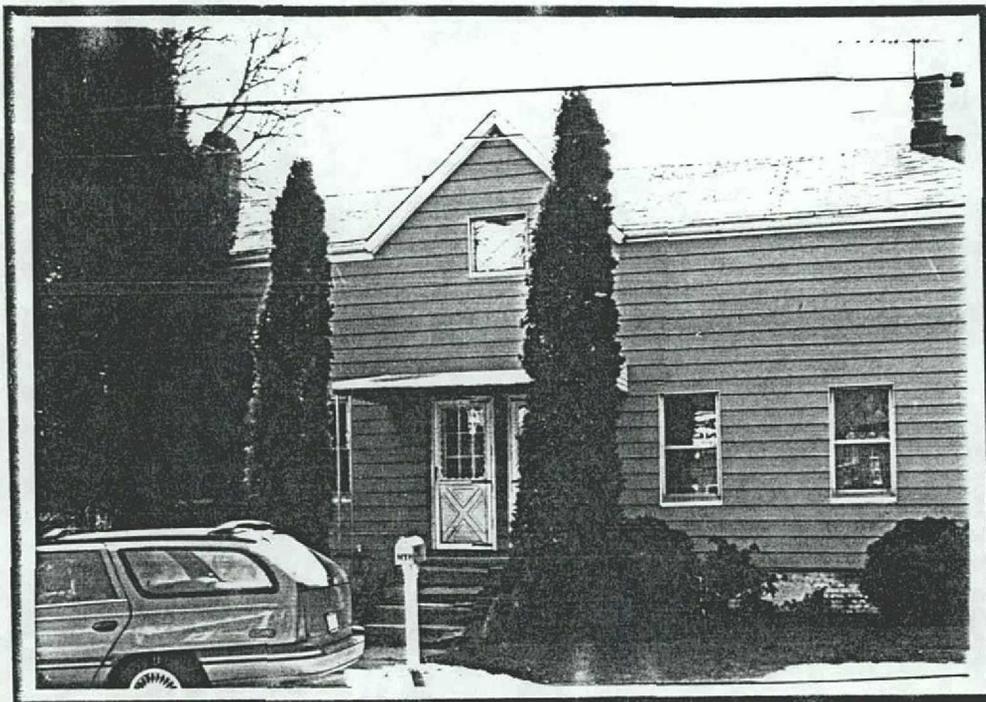


PHOTO 8: No. 2542 Arthur Kill Road. View Looking Southeast

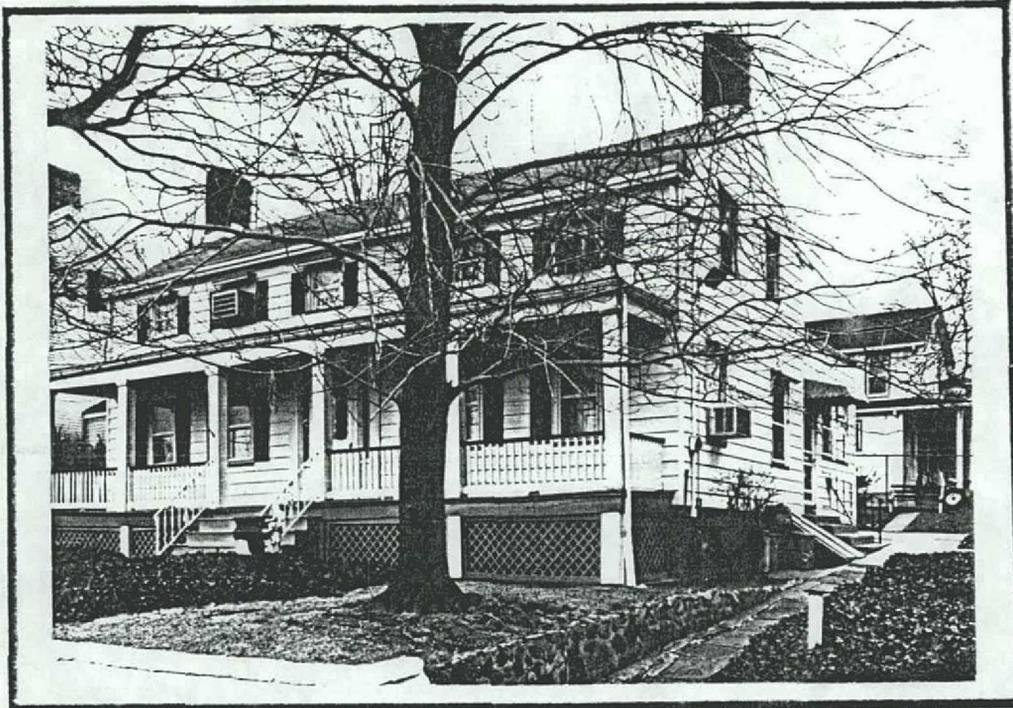


PHOTO 9: No. 2522 Arthur Kill Road



PHOTO 10: No. 2512 Arthur Kill Road. View Looking Southeast

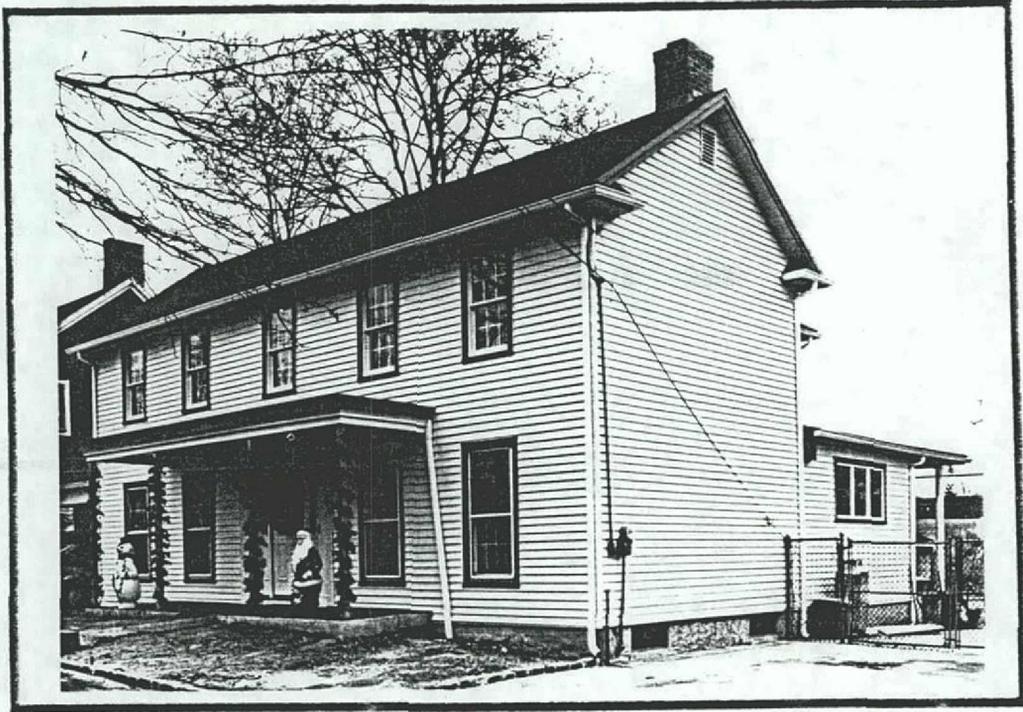


PHOTO 11: No. 12 Hervey Street

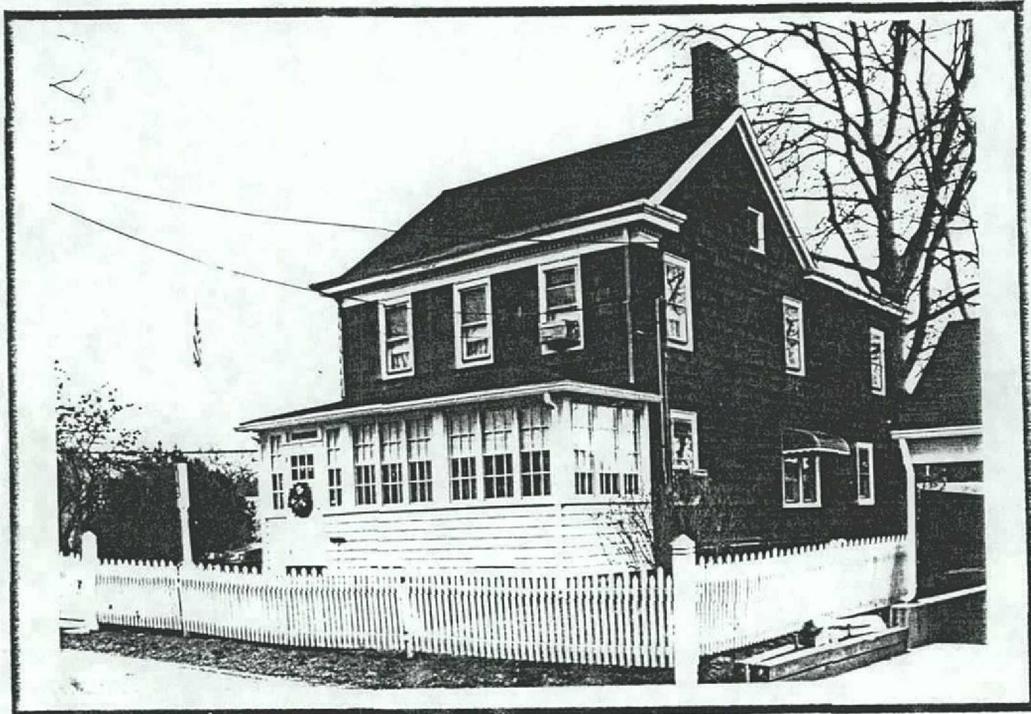


PHOTO 12: No. 18 Hervey Street

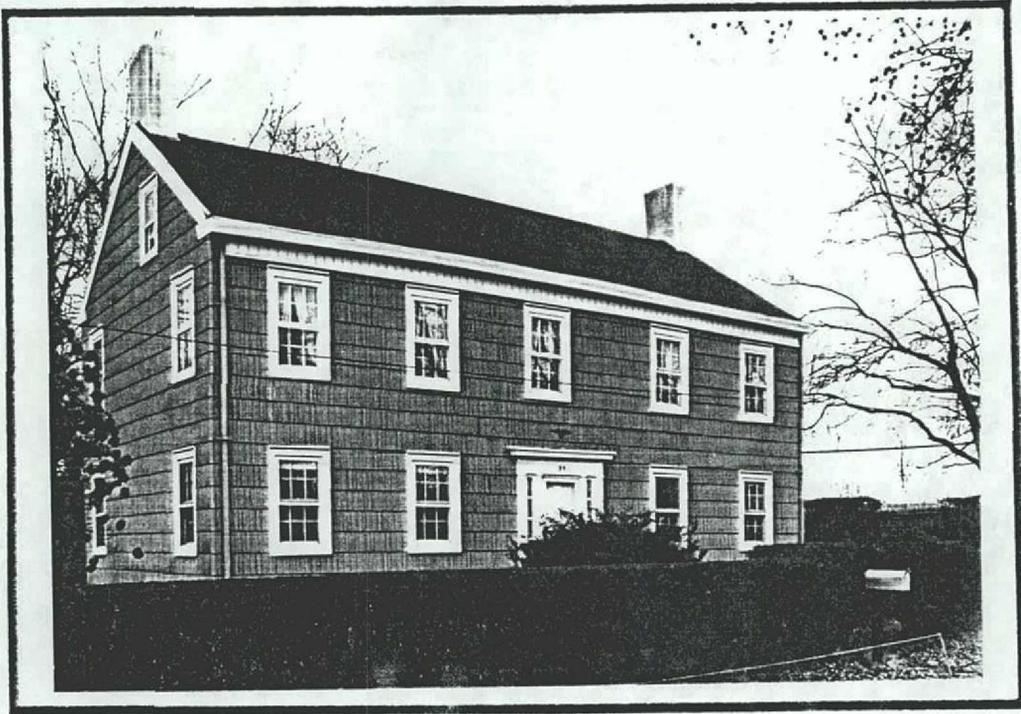


PHOTO 13: No. 39 St. Luke's Avenue

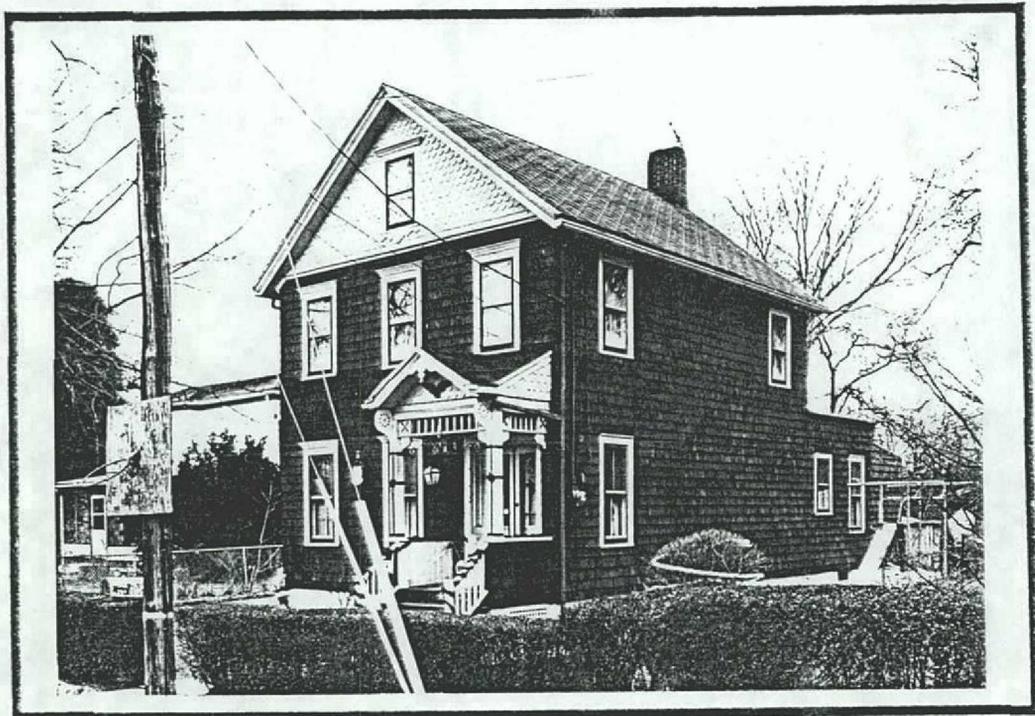


PHOTO 14: No. 29 St. Luke's Avenue

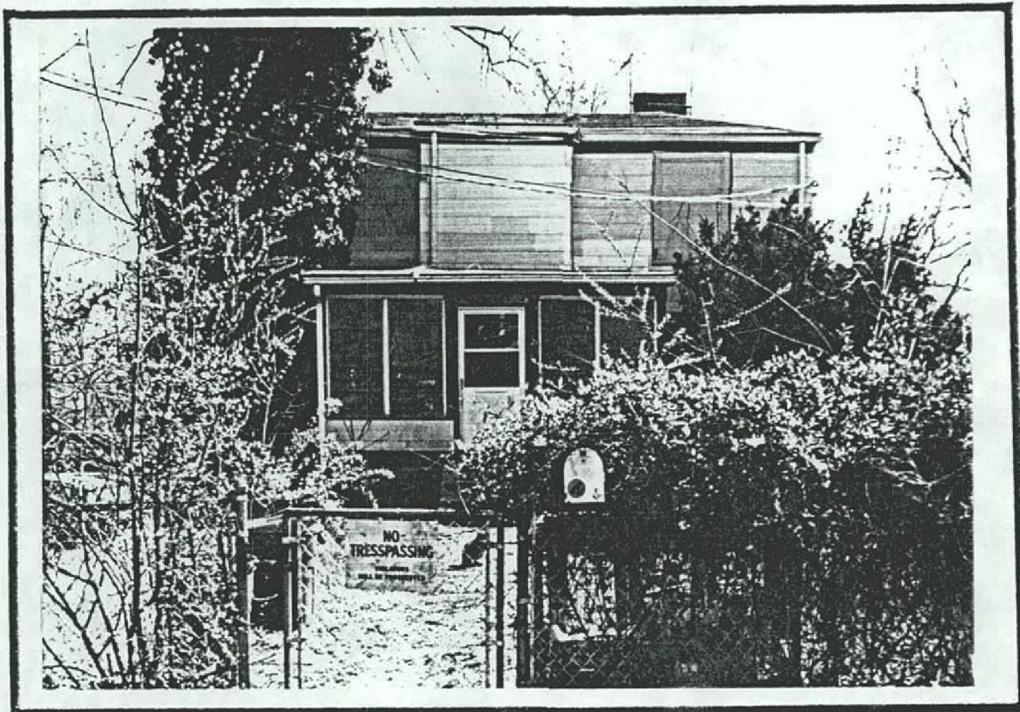


PHOTO 15: No. 21 St. Luke's Avenue. View Looking South

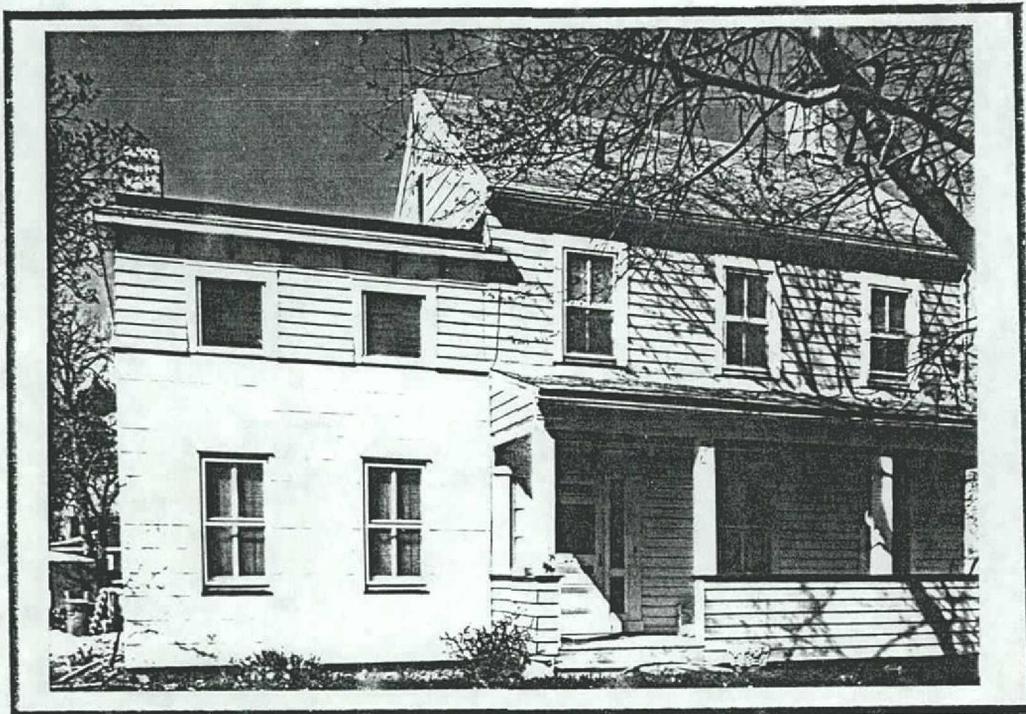


PHOTO 16: No. 22 St. Luke's Avenue. View Looking North

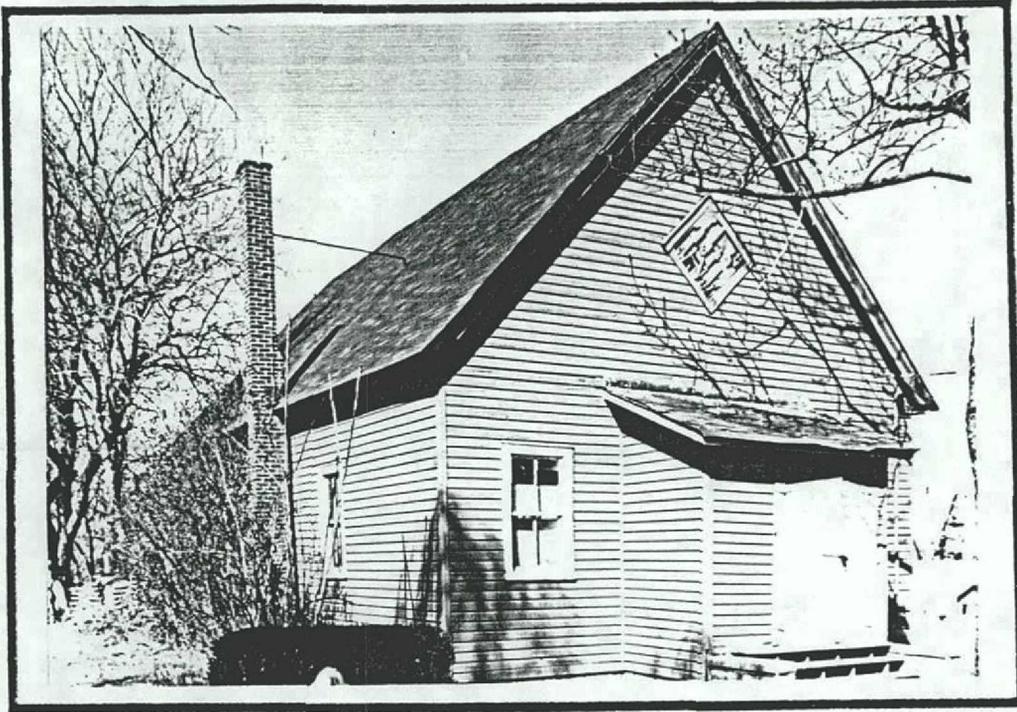


PHOTO 17: No. 10 St. Luke's Avenue. View Looking North

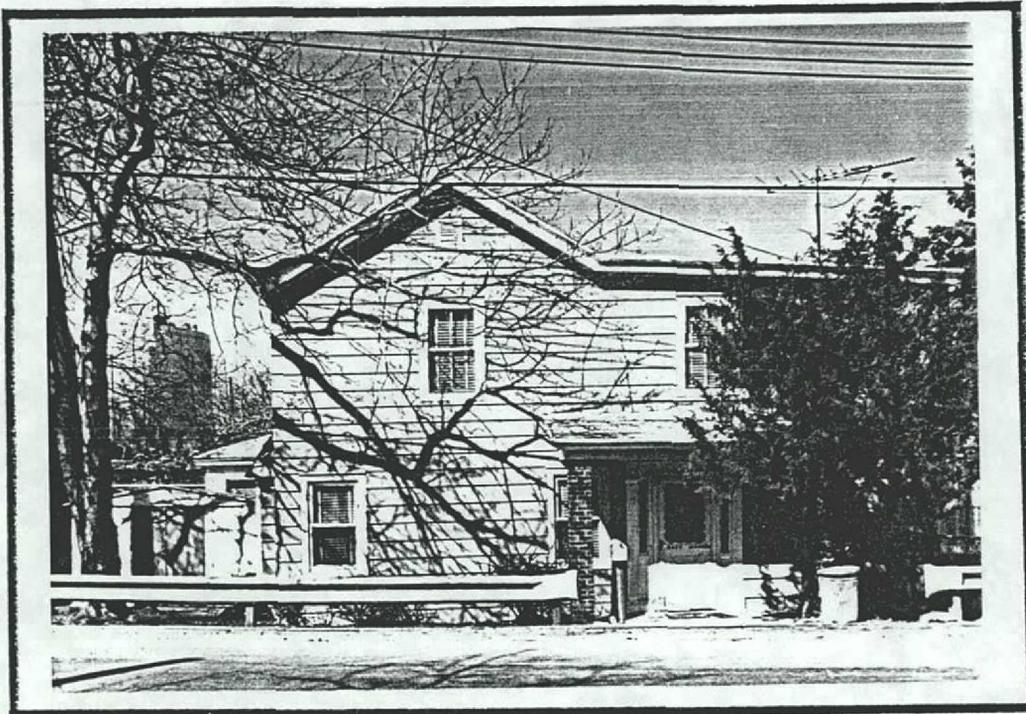


PHOTO 18: No. 2477 Arthur Kill Road. View Looking Northwest with Project Area in Background

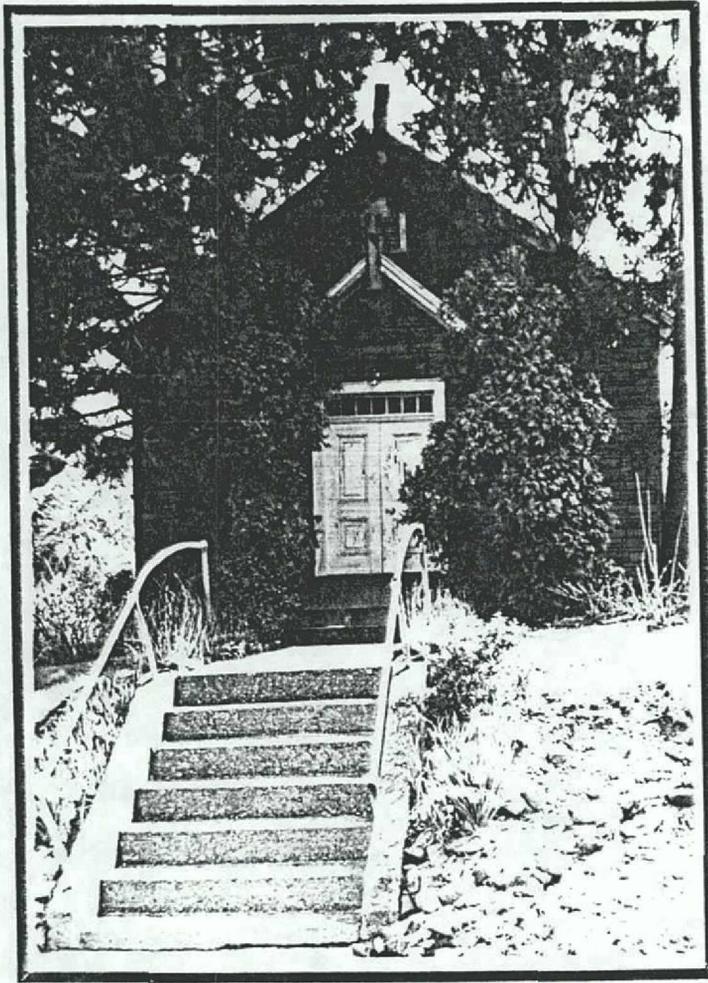


PHOTO 19: St. John's Chapel.  
View Looking East

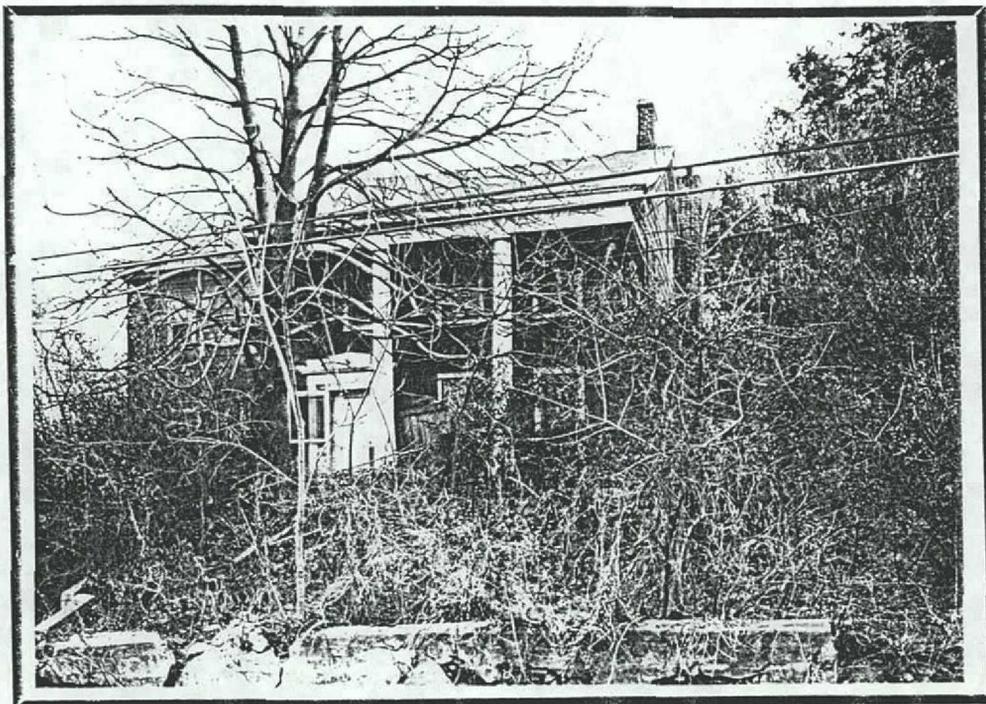


PHOTO 20: No. 2504 Arthur Kill Road

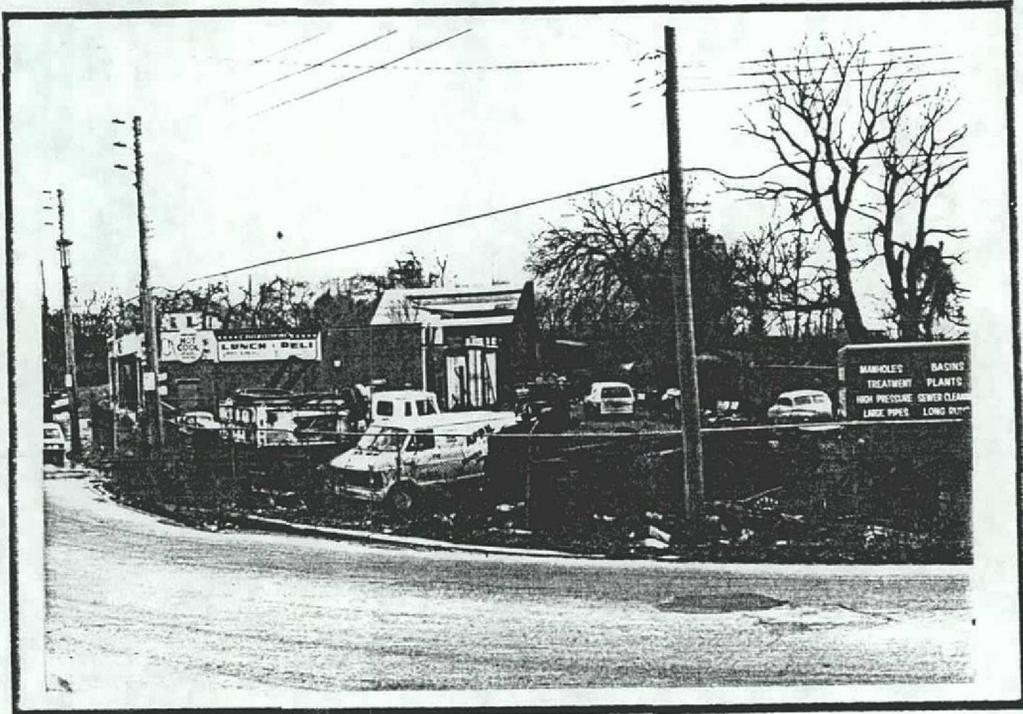


PHOTO 21: From No. 2522 Arthur Kill Road. View Looking West Southwest

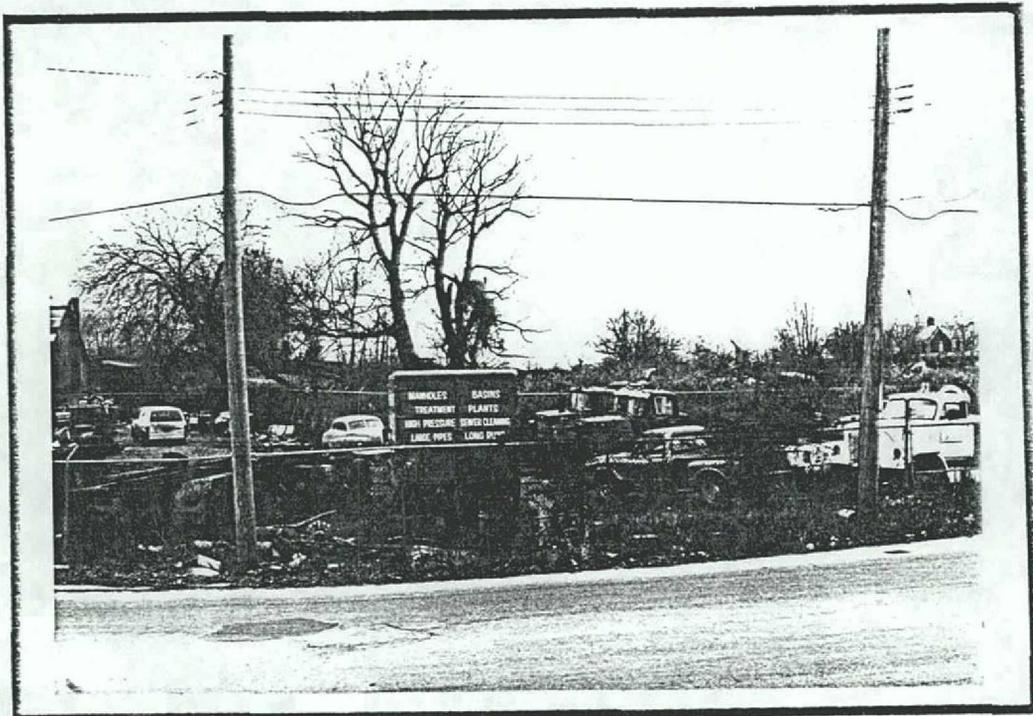


PHOTO 22: From No. 2522 Arthur Kill Road. View Looking West

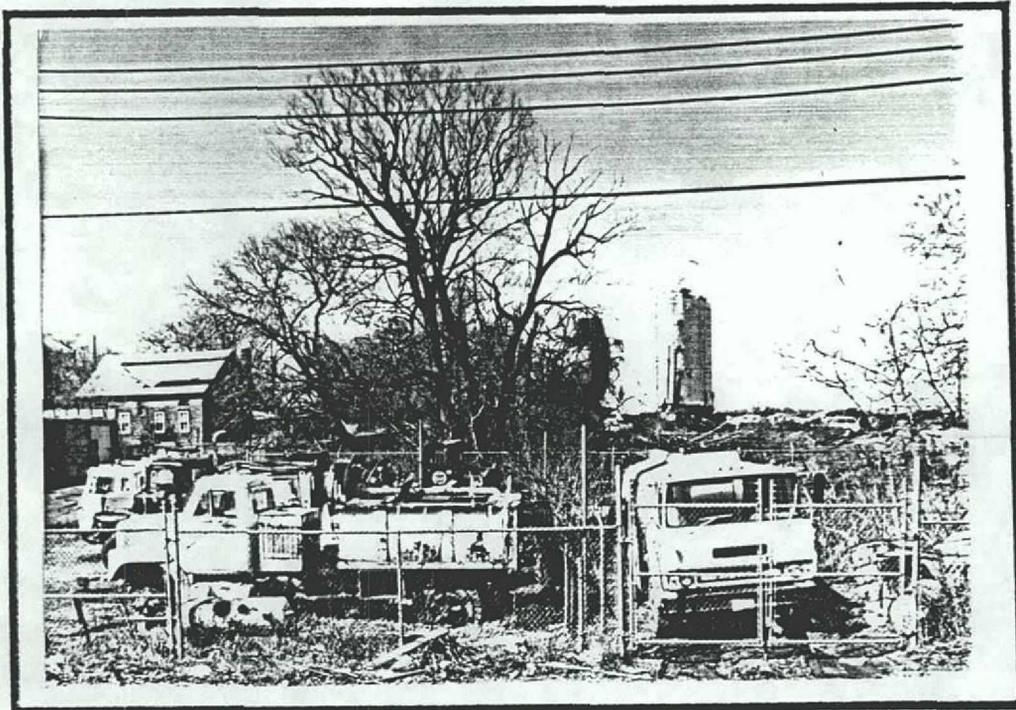


PHOTO 23: Project Area from No. 2512 Arthur Kill Road. View Looking Northwest

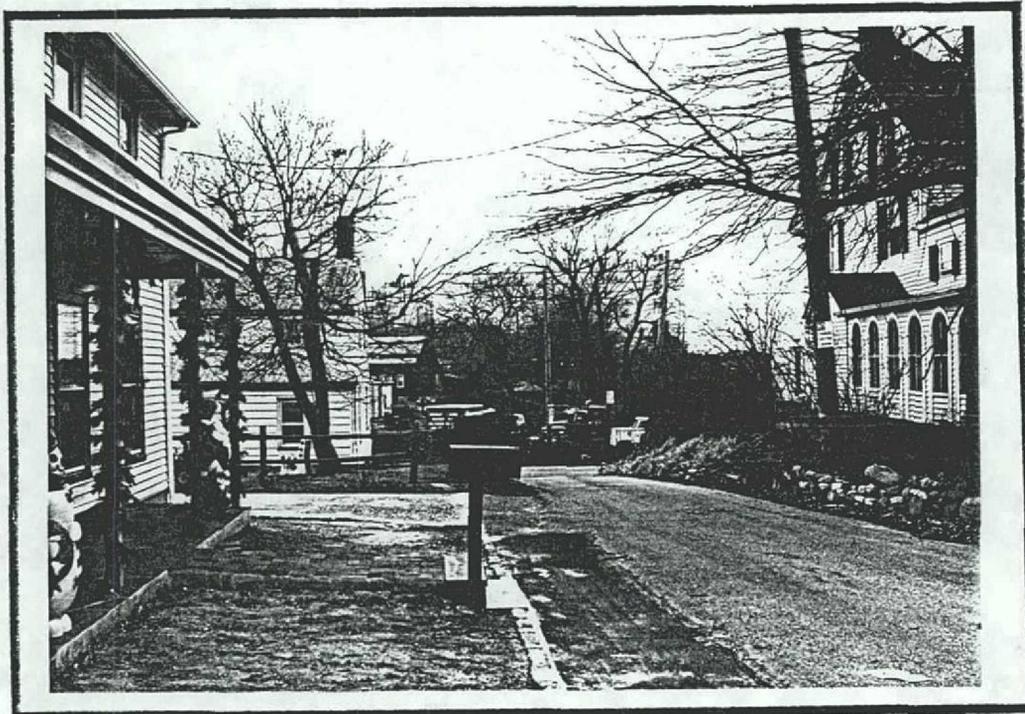


PHOTO 24: Looking West Down Hervey Street with No.12 on Left,  
No. 2522 Arthur Kill Road on Far Left

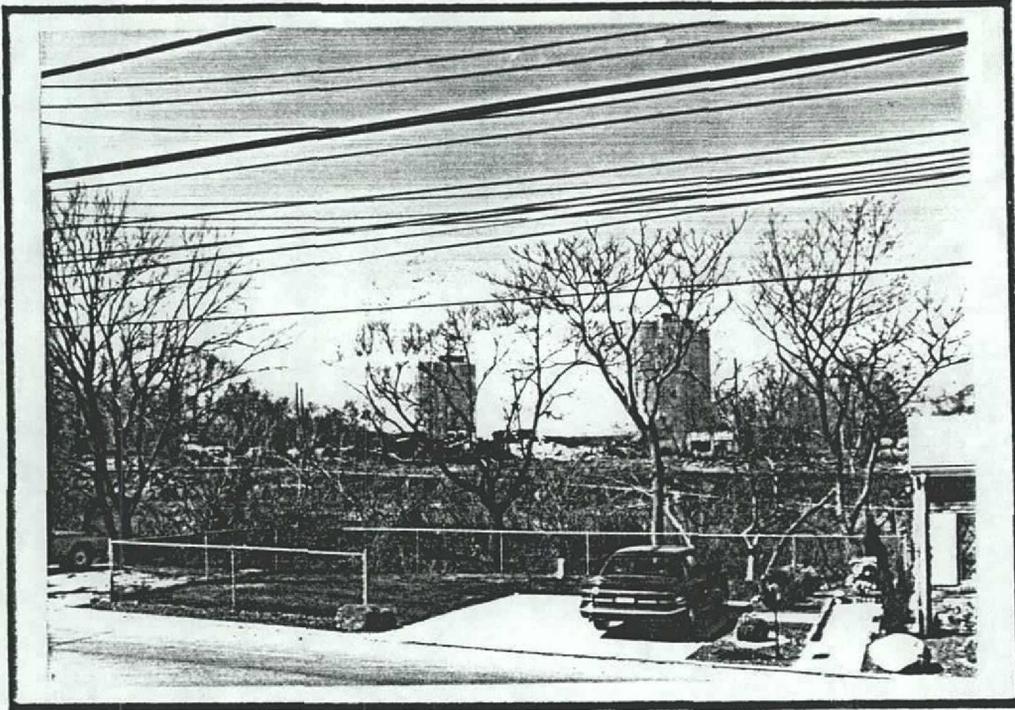


PHOTO 25: View Looking West into Project Area from St. John's Chapel

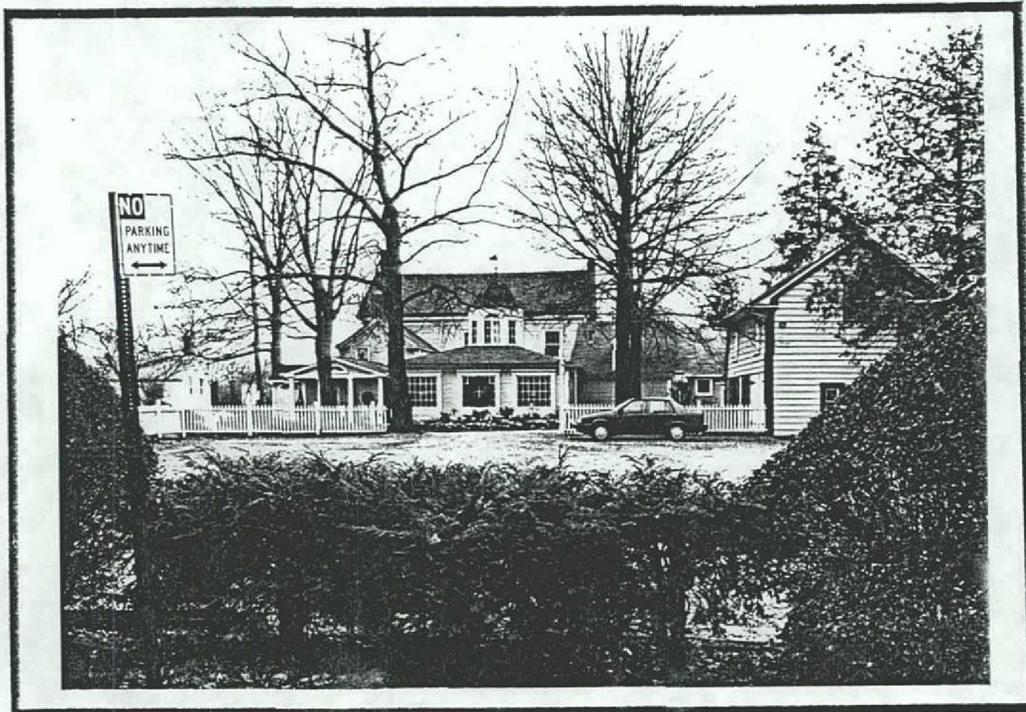


PHOTO 26: View Looking West from No. 39 St. Luke's Avenue

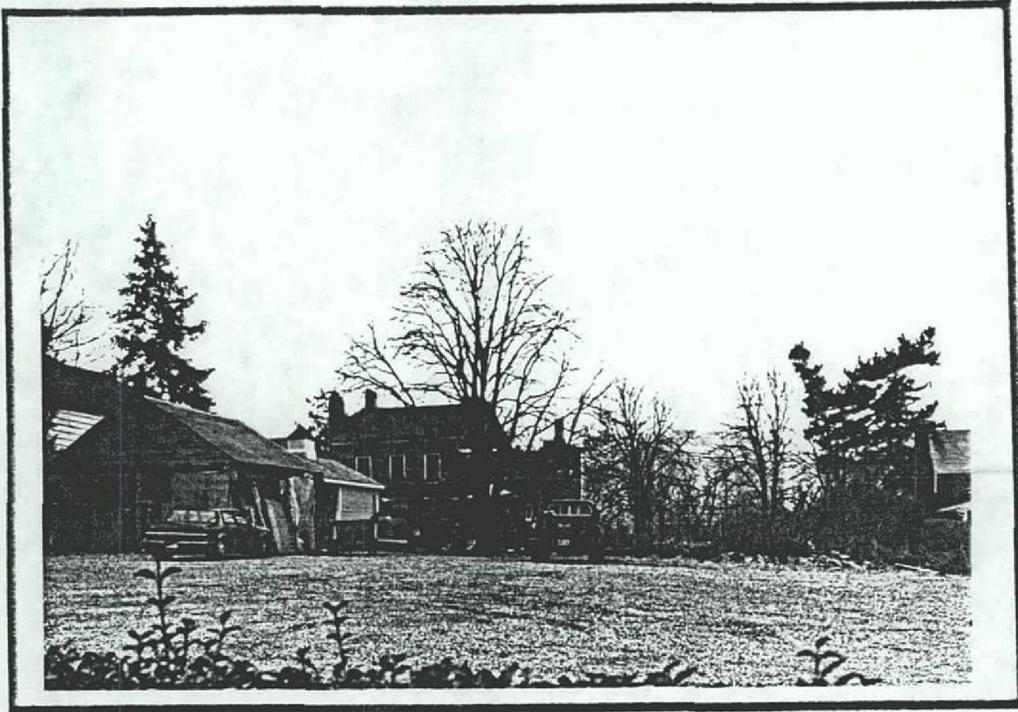


PHOTO 27: View Looking West from No. 29 St. Luke's Avenue

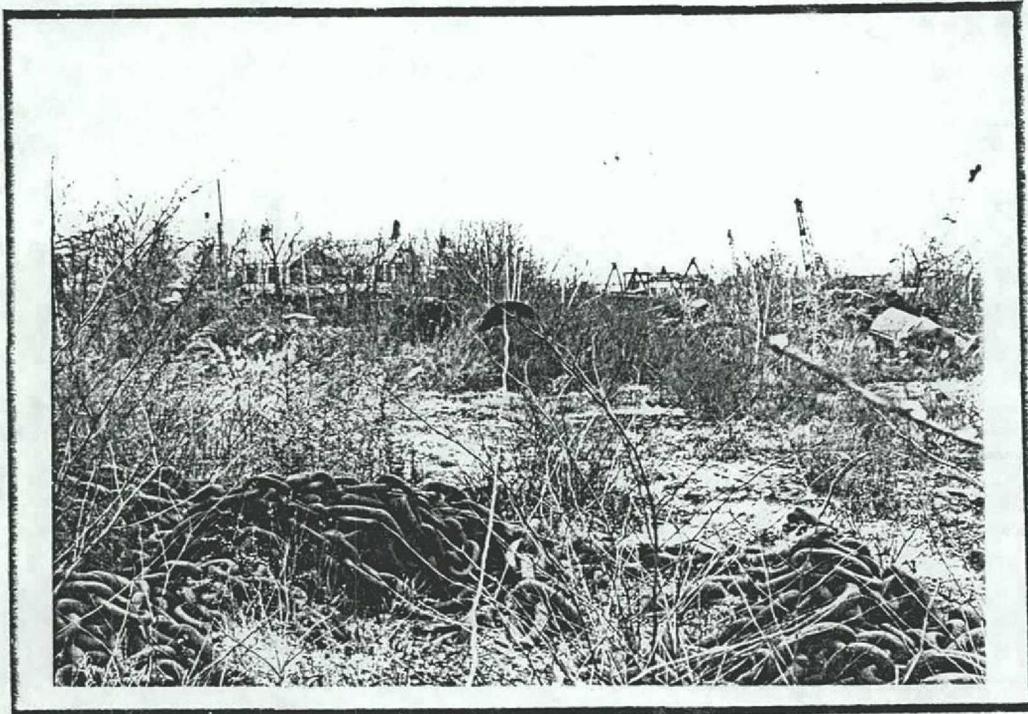


PHOTO 28: Project Area Behind No. 2547 Arthur Kill Road. View Looking Northwest

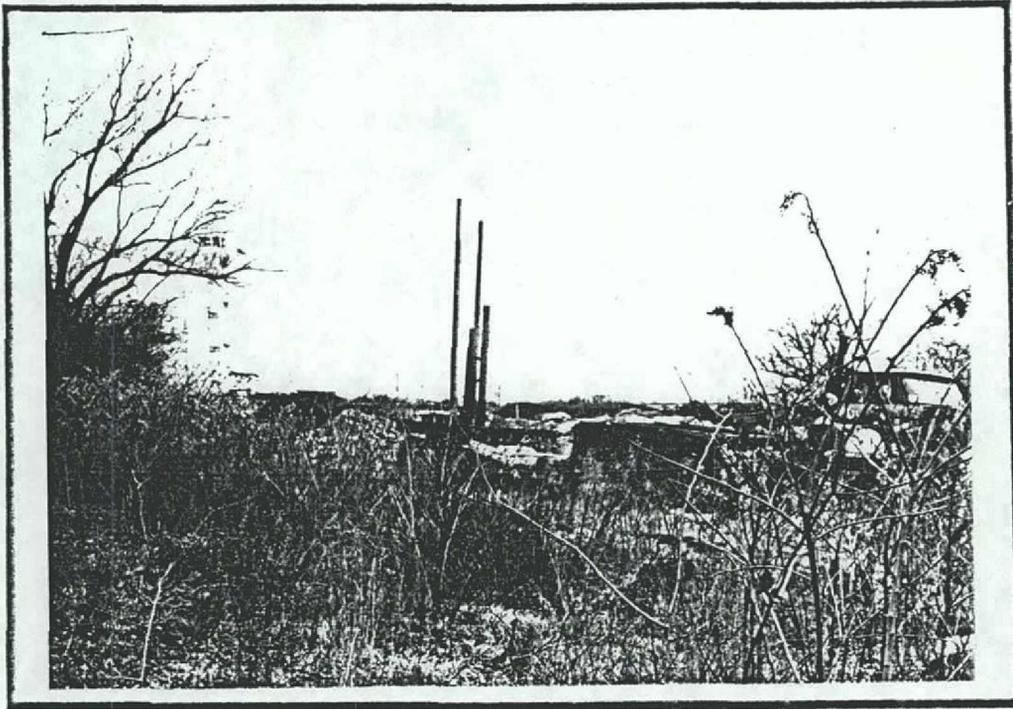


PHOTO 29: Project Area Behind No. 2547 Arthur Kill Road. View Looking Northwest

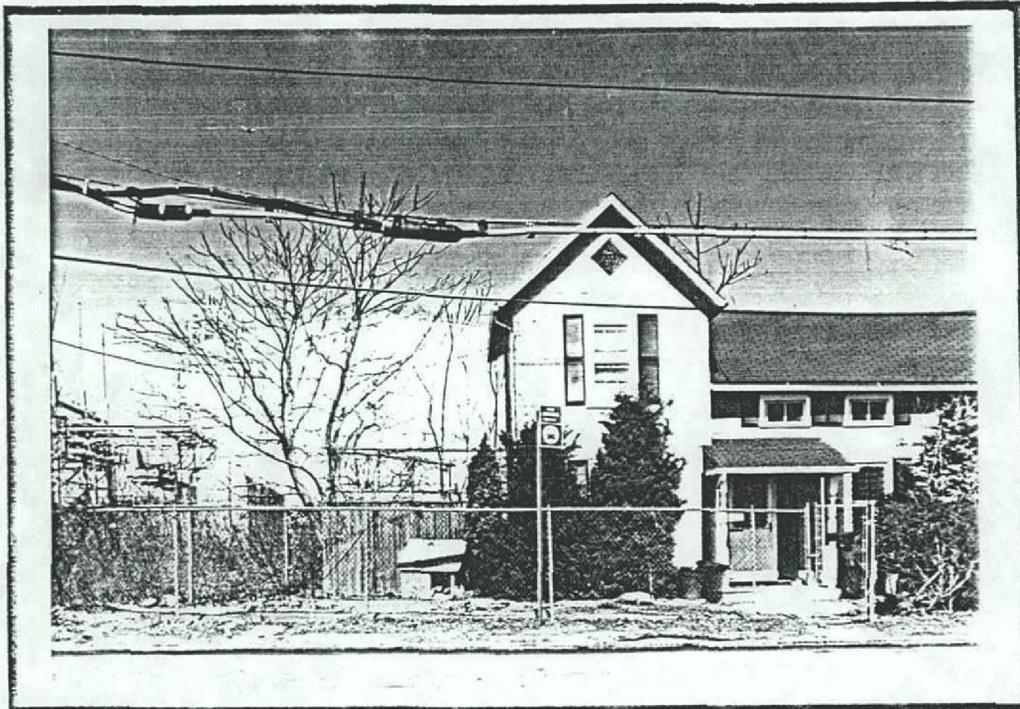


PHOTO 30: No. 2607 Arthur Kill Road. View Looking Northwest, Project Area in Background

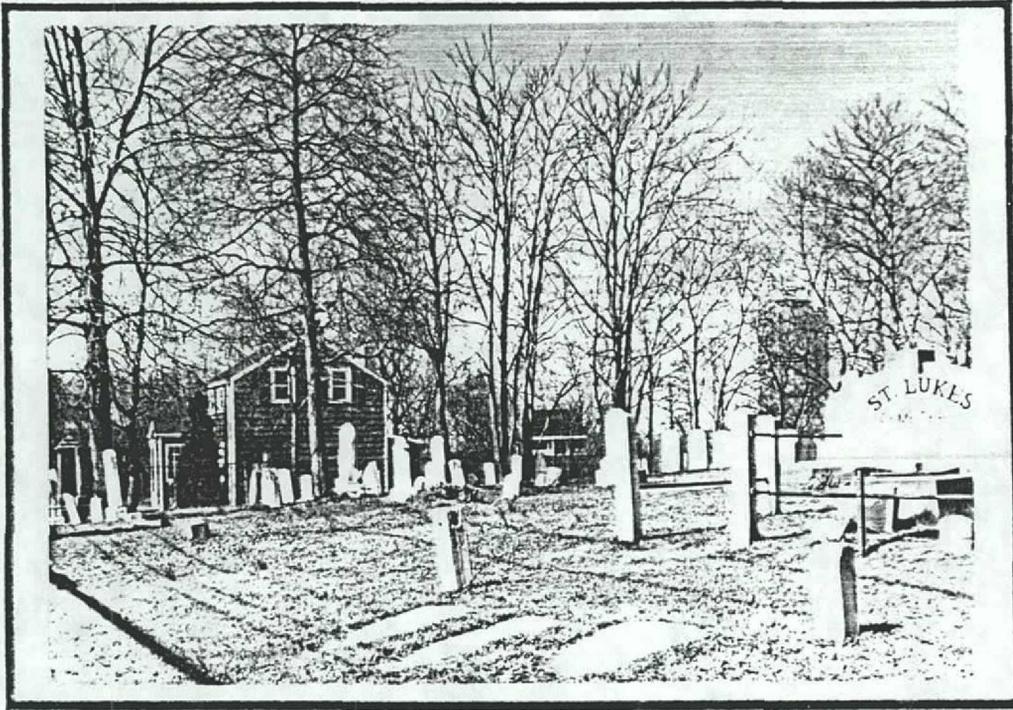


PHOTO 31: St. Luke's Cemetery with Project Area in Background. View Looking West

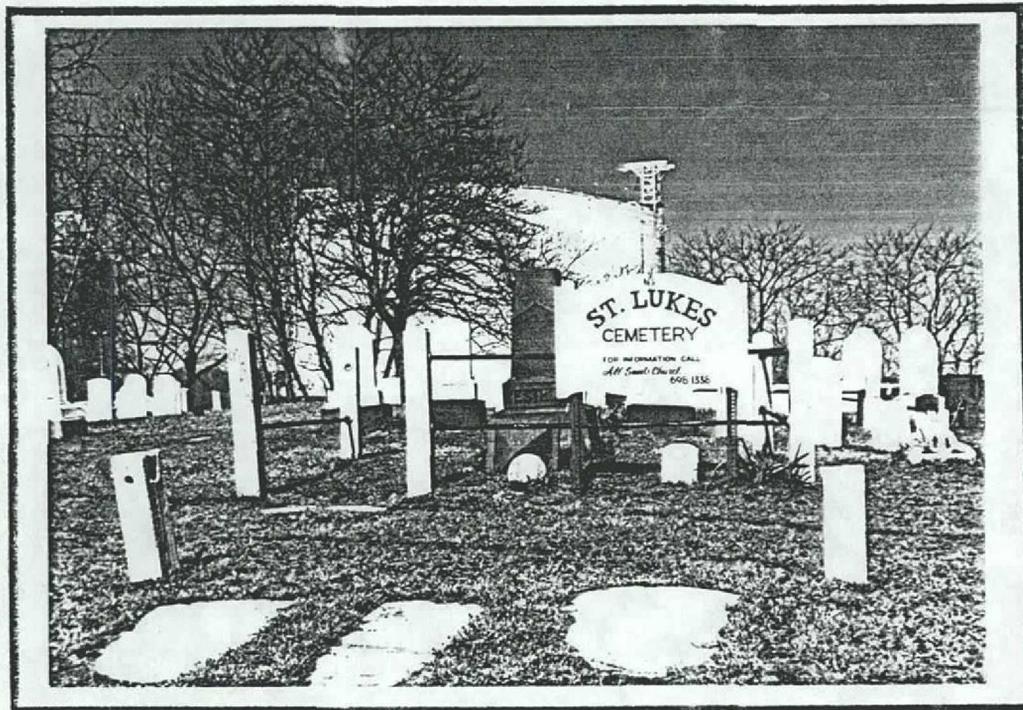


PHOTO 32: St. Luke's Cemetery with Project Area in Background. View Looking Northwest



PHOTO 33: View Looking Northwest Across Cemetery Next to No. 2571 Arthur Kill Road at Project Area

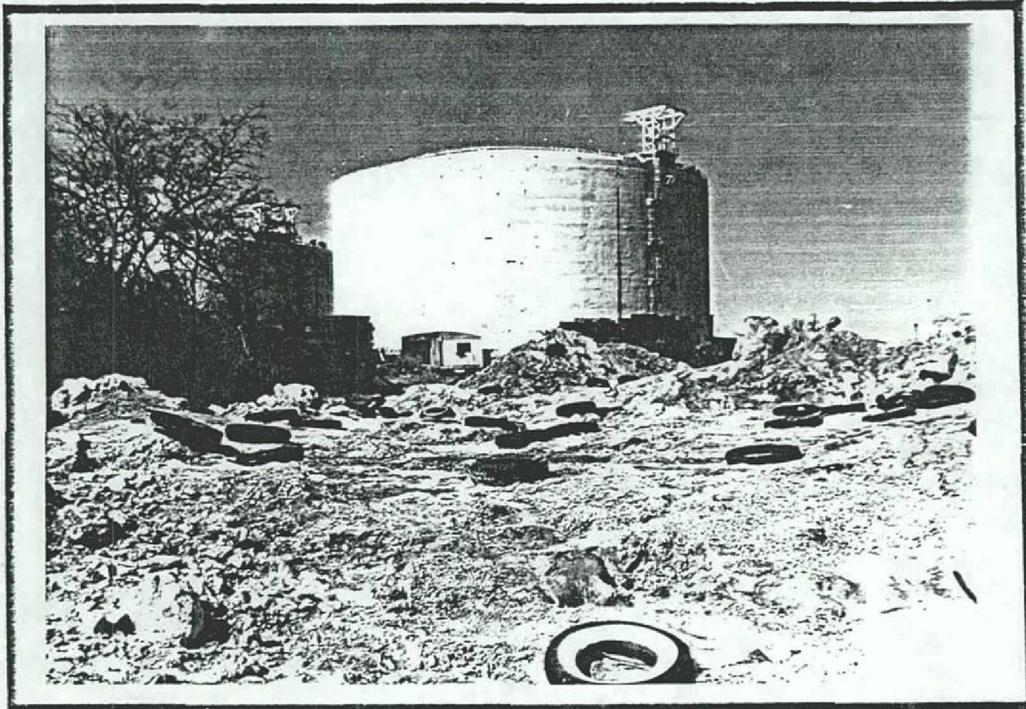


PHOTO 34: Project Area from No. 2575 Arthur Kill Road, View Looking Southwest

## D. CONCLUSIONS AND RECOMMENDATIONS

### 1. Prehistoric Investigations

Given the depositional contexts of the fluvial and erosional sediments encountered within the project area, this archaeological investigation has been insufficient to evaluate the potential for Paleo-Indian to Middle Archaic archaeological deposits below the coal deposits and graded areas. Another complicating factor for this exercise has to do with a comparative study that was to be made between the findings for this site and the Port Mobil Site, which also occurs beneath a nearby tank farm. LBA was tasked to compare the stratigraphic profiles of this project area against those for the Port Mobil Site; but because no data pertaining to the stratigraphy at Port Mobil have been published to date (Kraft 1989), this has not been possible. The data that have been published pertain only to collections that have been made by surface investigations (e.g., Kraft 1977; Eisenberg 1978).

Although this investigation has failed to conclusively determine the potential for buried Paleo-Indian to Middle Archaic archaeological deposits, it has ~~not~~ been ~~un~~successful in offering a preliminary evaluation of the strata that are present. In the interest of better evaluating the potential for archaeological deposits, a program of additional trenching is recommended within the project area. Such a program would expose the soil horizons within the lower strata in order to compare them with those recorded on the nearby Smoking Point and Pottery Farm sites. This comparison would then permit a thorough stratigraphic assessment with respect to their potential to contain archaeological materials.

### 2. Historic Architectural Investigations

The architectural portion of this study has concluded that there are no views toward the proposed project area from properties within the historic district study area that contribute materially to the historic qualities of the study area. Features that would have constituted such "historic" views are no longer present as a result of complete transformation by modern land use. Implementation of the proposed project would alter existing views to the project area by introducing new, aluminum-sheathed buildings in the currently vacant space to the north of the existing gas tanks, and by creating a parking lot in an area in front of the gas tanks now occupied by parking space, a gas facility administration building, and pipeline apparatus. However, since the existing views to the project tract do not contribute to the historic qualities of the historic district study area, alteration of those existing views will not affect the historic district study area.

As indicated by the Final Environmental Impact Statement (FEIS), the bulk of facility-generated traffic is expected to use the West Shore Expressway via Bloomingdale Road, which is directly opposite the proposed main entrance to the new facility (Louis Berger & Associates 1989:V-49). Thus, implementation of the proposed project is not expected to result in measurable increase of traffic along that portion of Arthur Kill Road lying within the historic district study area.

The FEIS has also recommended that amelioration of potential traffic problems at the intersection of Bloomingdale and Arthur Kill Roads includes widening of Arthur Kill Road to provide two 10-foot-wide approach lanes in each direction. The westbound approach would be 100 feet long, with an additional taper of 50 feet. The westernmost property in the historic district study area (#1, 2607 Arthur Kill Road) is situated approximately 600 feet east of Bloomingdale Road. The proposed widening of Arthur Kill Road would therefore occur 450 feet to the west of 2607 Arthur Kill Road and thus occur the same distance outside the historic district study area. No changes to Arthur Kill Road as it presently exists within the historic district study area will result from implementation of the proposed project.

The parking area and roadway for the proposed correctional facility will be located approximately 200 feet west of the property at 2607 Arthur Kill Road, the westernmost property in the historic district study area (Louis Berger & Associates 1989:V-49). The bulk of traffic into and out of the parking lot will utilize the main entrance to the facility, which is opposite Bloomingdale Avenue some 600 feet to the west of 2607 Arthur Kill Road. The majority of vehicles will be parked in this lot, as no major parking areas are to be contained in the facility's building complex proper. Given these factors, the presence of the parking lot and roadway is not expected to have an effect upon the property at 2607 Arthur Kill Road.

The FEIS (Louis Berger & Associates 1989:V-11) has concluded that there is the potential for increased business demand for goods and services generated by correctional facility staff and visitors, a demand that may foster commercial development in the vicinity of the facility. It should be noted, however, that the commercial activity now present in the vicinity of the existing facility does not appear to have been generated by the presence of that facility since it began operation in 1976. Of the 16 commercial establishments located on Arthur Kill Road between the existing facility and Hervey Street, four are automobile-related, six represent construction contracting or construction supply, two offer septic and sewer services, and one is a realtor. The remaining three include two restaurants and a delicatessen (Louis Berger & Associates 1989:III-17). The general character of commercial activity in the vicinity thus does not appear to reflect the presence of a correctional facility, nor to have been generated

by it. It is also noted that the area is zoned for manufacturing, with Arthur Kill Road and the historic district study area designated M2-1. These factors lead to the conclusion that future development adverse to residential use or to continued existence of buildings within the historic district study area cannot be specifically attributed either to the present facility or to that proposed.

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Vermeule & Bien

1890 A Topographic Map of Staten Island, Richmond County, New York. Vermuele & Bien.

Walling, H. F.

1859 Map of Staten Island, Richmond County, New York. D.A. Fox, New York.

APPENDIX  
SOIL BORING LOGS





CLEAN HARBORS ENVIRONMENTAL ENGINEERING CORPORATION  
 325 Wood Road, Braintree, MA 02184  
 (617)849-1200

Page: 1 of 1  
 Boring No. LBA 3  
 CHEE Job#: C 2585  
 Well Elevation:  
 Drill Forman: P. Thorsby  
 CHEE Geologist: Troy Charlton  
 Start Date: December 22, 1988  
 Date End: December 22, 1988

Project Name: Subsurface Investigation, Staten Island, NY  
 Client Name: New York Department of Correction  
 Boring Location:  
 Drilling Contractor: Marine Pollution Control  
 Drilling Method: Hollow Stem Auger Casing/Auger Size: 10.5 OD.

DEPTH	SAMPLE		Standard Penetration Test				Pen. Rec		Headspace OVA Reading	Strata Change Depth	Field Classification and Drilling Information	N O T E S	Well Diagram
	Type & No.	Range From To	Blows per 6" on split-spoon				(in)	(in)					
	SS 1	0 - 2	7	8	8	8	24	12		2'	Fine COAL Frag. with trace of medium to coarse SAND		
	SS 2	2 - 4	4	4	4	5	24	24			Brown loose fine to medium clayey SAND (SC)		
	SS 3	4 - 6	1	2	4	6	24	24					
	SS 4	6 - 8	2	3	4	7	24	24		8'			
	SS 5	8 - 10	2	4	6	9	24	24			Brown loose fine to medium SAND (SW)		
	SS 6	10 - 12	2	5	3	5	24	12					
	SS 7	12 - 14	4	3	4	1	24	12					

GRANULAR SOILS		COHESIVE SOILS	
Blows/Ft	Density	Blows/Ft	Density
0 - 4	v. loose	< 2	v. soft
4 - 10	loose	2 - 4	soft
10 - 30	m. dense	4 - 8	m. stiff
30 - 50	dense	8 - 15	stiff
> 50	v. dense	15 - 30	v. stiff
		> 30	hard

NOTES: Groundwater at - 5 1/2 feet

GROUNDWATER READINGS				
DATE	TIME	WATER AT	CASING AT	STABILIZATION

CHEE BORING NUMBER No. LBA 3

CHI ENVIRONMENTAL ENGINEERING CORPORATION  
 325 Wood Road, Braintree, MA 02184  
 (617)849-1200

Page: 1 of 1

Boring No. LBA-4  
 CHIEE Job#: E-2090

Project Name: Subsurface Investigation Staten Island  
 Client Name: New York Department of Correction

Well Elevation:  
 Drill Forman: W. Wyllie

Boring Location:

CHIEE Geologist: M. North

Drilling Contractor: CHEE

Start Date: 12/20/88

Drilling Method: Hollow Stem Auger Casing/Auger Size: 4 3/8"

Date End: 12/20/88

D E P T H	SAMPLE		Standard Penetration Test				Sampler:		Headspace OVA Reading	Strata Change Depth	Field Classification and Drilling Information	N O T E S	Well Diagram
	Type & No.	Range From   To	Blows per 6" on split-spoon				Unless noted, sampler consists of a 2" split-spoon driven using a 140 lb hammer falling 30 in.						
			Pen (in)	Rec (in)			Casing: Unless noted, casing driven using 300 lb hammer falling 24 in.						
	S/S	0'-2'	25	19	16	22	24	18					
	S/S	2'-4'	17	20	22	16	24	20		1'6"	Brown dense M-C SAND and Gravel, little silt		GWT
	S/S	4'-6'	19	21	17	22	24	19		7'4"	Brown dense M SAND trace silt		5'6"
	S/S	6'-8'	8	12	10	15	24	18			Orange Brown m. dense F-M SAND		
	S/S	8-10'	11	14	13	17	24	18		11'4"	Orange Reddish m. dense F-M SAND, little silt		
	S/S	10-12'	17	15	17	12	24	17					
	S/S	12-14'	10	7	14	19	24	16					
	S/S	16-18'	9	15	17	22	24	21					
	S/S	18-20'	25	21	27	25	24	23		20'	EOB		

GRANULAR SOILS		COHESIVE SOILS	
Blows/Ft	Density	Blows/Ft	Density
0 - 4	v. loose	< 2	v. soft
4 - 10	loose	2 - 4	soft
10 - 30	m. dense	4 - 8	m. stiff
30 - 50	dense	8 - 15	stiff
> 50	v. dense	15 - 30	v. stiff
		> 30	hard

NOTES:

GROUNDWATER READINGS					CHIEE BORING NUMBER
DATE	TIME	WATER AT	CASING AT	STABILIZATION	
12/20		5'6"			No. LBA-4

QA/QC CHECKED BY:



CLEAN HARBORS ENVIRONMENTAL ENGINEERING CORPORATION 325 Wood Road, Braintree, MA 02184 (617)849-1200										Page: 1 of 1																													
Project Name: Subsurface Investigation, Staten Island, NY										Boring No. LBA 6																													
Client Name: New York Department of Correction										CHEE Job#: C 2565																													
Boring Location: Marine Pollution Control										Well Elevation:																													
Drilling Method: Hollow Stem Auger										Drill Forman: P. Thorsby																													
Casing/Auger Size: 10.5" OD.										CHEE Geologist: Trpy Charlton																													
Drilling Contractor: Marine Pollution Control										Start Date: December 20, 1988																													
Date End: December 20, 1988																																							
D E P T H	SAMPLE		Standard Penetration Test				Sampler: Unless noted, sampler consists of a 2" split-spoon driven using a 140 lb hammer falling 30 in.				N O T E S	Well Diagram																											
	Type & No.	Range From   To	Blows per 6" on split-spoon				Casing: Unless noted, casing driven using 300 lb hammer falling 24 in.		Headspace OVA Reading	Strata Change Depth			Field Classification and Drilling Information																										
	SS 1	0 - 2	8	10	11	12	24	24																															
	SS 2	2 - 4	6	6	10	8	24	24		4'			Brown, medium stiff (CL), Sandy CLAY with trace of Coal Frag.																										
	SS 3	4 - 6	10	8	12	8	24	22		6'			Grey, loose medium to coarse (SC), Clayey SAND with trace of Coal Frag.																										
	SS 4	6 - 8	1	3	11	11	24	18		8'			Brown, very stiff (CL), Sandy CLAY with trace of Coal Frag.																										
	SS 5	8 - 10	2	12	17	12	24	4		10'			Grey, very stiff (CL) Sandy CLAY with trace of Coal Frag.																										
	SS 6	10 - 12	2	5	12	9	24	18					Brown, very stiff Sandy CLAY (CL)																										
	GRANULAR SOILS		COHESIVE SOILS				NOTES:																																
	Blows/Ft	Density	Blows/Ft	Density			Groundwater at = 4 feet																																
	0 - 4	v. loose	< 2	v. soft			<table border="1"> <thead> <tr> <th colspan="5">GROUNDWATER READINGS</th> </tr> <tr> <th>DATE</th> <th>TIME</th> <th>WATER AT</th> <th>CASING AT</th> <th>STABILIZATION</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>						GROUNDWATER READINGS					DATE	TIME	WATER AT	CASING AT	STABILIZATION																	
	GROUNDWATER READINGS																																						
	DATE	TIME	WATER AT	CASING AT	STABILIZATION																																		
4 - 10	loose	2 - 4	soft																																				
10 - 30	m. dense	4 - 8	m. stiff																																				
30 - 50	dense	8 - 15	stiff																																				
> 50	v. dense	15 - 30	v. stiff																																				
		> 30	hard																																				
QA/QC CHECKED BY:											CHEE BORING NUMBER No. LBA 6																												





CHI ENVIRONMENTAL ENGINEERING CORPORATION  
 325 Wood Road, Braintree, MA 02184  
 (617)849-1200

Page: 1 of 1  
 Boring No. LBA - 9  
 CHIEE Job#: E-2090  
 Well Elevation:  
 Drill Forman: W. Wyllie  
 CHIEE Geologist: M. North  
 Start Date: 12/20/88  
 Date End: 12/20/88

Project Name: Subsurface Investigation, Staten Island  
 Client Name: New York Department of Correction  
 Boring Location:  
 Drilling Contractor: CHEE  
 Drilling Method: Stem Auger Casing/Auger Size: 4 3/8"

DEPTH	SAMPLE		Standard Penetration Test				Pen. Rec		Headspace OVA Reading	Strata Change Depth	Field Classification and Drilling Information	N O T E S	Well Diagram
	Type & No.	Range From To	Blows per 6" on split-spoon				(in)	(in)					
	S/S	0'-2'	40	70	20	21	24	22		5"	Orange Brown very dense F-DAND, some gravel little silt		
	S/S	2'-4'	25	30	27	25	24	19		5'6"	Dark Brown very dense F-M SAND, some gravel		
										6'0"	Orange Brown dense F-M SAND		
	S/S	4'-6'	22	25	28	20	24	20		7'4"	Light Brown dense M SAND trace silt		
	S/S	6'-8'	19	22	24	27	24	18		10'6"	Orange Brown dense F-M SAND little silt, trace gravel.		
	S/S	8'-10'	15	18	22	19	24	20		12'3"	Orange Brown very stiff CLAY, trace silt, trace fine sand		
	S/S	10'-12'	22	19	24	21	24	21		15'10"	Orange Brown dense F-M SAND, little silt, little gravel		
	S/S	12-14'	11	14	20	19	24	19		16'4"	Orange Brown very stiff CLAY, trace fine silt trace fine sand		
	S/S	14-16'	22	18	16	23	24	24		20'	Orange Brown dense F-M SAND, little silt, trace gravel		
	S/S	16-18'	17	14	15	17	24	19			EOB		
	S/S	18-20'	15	17	21	17	24	20					

GRANULAR SOILS		COHESIVE SOILS	
Blows/Ft	Density	Blows/Ft	Density
0 - 4	v. loose	< 2	v. soft
4 - 10	loose	2 - 4	soft
10 - 30	m. dense	4 - 8	m. stiff
30 - 50	dense	8 - 15	stiff
> 50	v. dense	15 - 30	v. stiff
		> 30	hard

NOTES:

GROUNDWATER READINGS				
DATE	TIME	WATER AT	CASING AT	STABILIZATION
12/20		7'		

CHIEE BORING NUMBER  
LBA 9

QA/QC CHECKED BY:

CHI ENVIRONMENTAL ENGINEERING CORPORATION  
 325 Wood Road, Braintree, MA 02184  
 (617)849-1200

Page: 1 of 1  
 Boring No. LBA-10  
 CHIEE Job: E-2090

Project Name: Subsurface Investigation Staten Island

Well Elevation:  
 Drill Forman: W. Wyllie  
 CHIEE Geologist: M. North

Client Name:  
 Boring Location:

Start Date: 12/21/88  
 Date End: 12/21/88

Drilling Contractor: CHEE

Drilling Method: Hollow Stem Auger Casing/Auger Size: 4 3/8"

Sampler: Unless noted, sampler consists of a 2" split-spoon driven using a 140-lb hammer falling 30 in.

Casing: Unless noted, casing driven using 300 lb hammer falling 24 in.

DEPTH	SAMPLE		Standard Penetration Test				Pen (in)	Rec (in)	Headspace OVA Reading	Strata Change Depth	Field Classification and Drilling Information	N O T E S	Well Diagram
	Type & No.	Range From   To	Blows per 6" on split-spoon										
	S/S	0'-2'	20	17	13	10	24	22		7"	Dark Brown/Black dense F-DAND, little coal, trace silt, trace gravel		
	S/S	2'-4'	9	18	29	39	24	22		3'6"	Orange Brown dense F-C SAND, little silt, little gravel		
	S/S	4'-6'	6	16	24	27	24	17		4'	White/Yellow dense fractioned ROCK		
	S/S	6'-8'	5	14	22	12	24	16			Orange Brown dense F-C SAND, little gravel, little silt		
	S/S	8'-10'	4	7	8	8	24	21		10'7"	Orange Brown loose F-SAND and silt		
	S/S	10-12'	3	5	8	10	24	20		15'	Orange brown stiff CLAY and silt, trace F-sand		
	S/S	12-14'	2	6	11	11	24	14		17'	Light gray Weathered ROCK (F-Grained)		
	S/S	14-16'	4	5	14	21	24	17		17'3"	Orange Brown m. dense F-SAND and silt		
	S/S	16-18'	5	7	11	20	24	20		19'3"			
	S/S	18-20'	11	13	21	22	24	18		20'	EOB		

GRANULAR SOILS		COHESIVE SOILS	
Blows/Ft	Density	Blows/Ft	Density
0 - 4	v. loose	< 2	v. soft
4 - 10	loose	2 - 4	soft
10 - 30	m. dense	4 - 8	m. stiff
30 - 50	dense	8 - 15	stiff
> 50	v. dense	15 - 30	v. stiff
		> 30	hard

NOTES:

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION
12/21		8'4"		

CHIEE BORING NUMBER  
 No. LBA-10

QA/QC CHECKED BY:

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 325 Wood Road, Braintree, MA 02184  
 (617)849-1200

Page: 1 of 1  
 Boring No. LBA - 11  
 CHIEE Job#: E-2090  
 Well Elevation:  
 Drill Forman: W. WYLLIE  
 CHIEE Geologist: M. NORTH  
 Start Date: 12/22/88  
 Date End: 12/22/88

Project Name: Subsurface Investigation Staten Island  
 Client Name: New York Department of Correction  
 Boring Location:  
 Drilling Contractor: CHEE

Drilling Method: Hollow Stem Auger Casing/Auger Size: 4 3/8"

DEPTH	SAMPLE		Standard Penetration Test				Pen (in)	Rec (in)	Headspace OVA Reading	Strata Change Depth	Field Classification and Drilling Information	NOTES	Well Diagram
	Type & No.	Range From To	Blows per 6" on split-spoon										
	S/S	0'-2'	3	11	13	10	24	18		Light gray m. dense processed GRAVEL and m. sand, little silt.			
									10"				
	S/S	2'-4'	12	20	30	35	24	19		Black COAL, some m. sand			
									1"				
	S/S	6'-8'	12	23	17	15	24	21		Orange Brown dense F.M. SAND, trace silt, tr. Gravel			
									8'				
	S/S	8'-10'	4	5	7	8	24	23		Orange brown m. dense F-M SAND, some gravel, tr. silt			
									10'				
	S/S	10'-12'	5	8	8	10	24	20		Orange brown v. dnese F-M SAND, and silt.			
										Little gravel, trace clay			
	S/S	12'-14'	5	5	9	15	24	24					
									16'9"				
	S/S	14'-16'	5	8	10	8	24	20		EOB			
									20'				
	S/S	16'-18'	10	9	13	11	24	24					
	S/S	18'-20'	15	26	27	33	24	24					

GRANULAR SOILS		COHESIVE SOILS	
Blows/Ft	Density	Blows/Ft	Density
0 - 4	v. loose	< 2	v. soft
4 - 10	loose	2 - 4	soft
10 - 30	m. dense	4 - 8	m. stiff
30 - 50	dense	8 - 15	stiff
> 50	v. dense	15 - 30	v. stiff
		> 30	hard

NOTES: Boring Sealed Using Portland Cement/Bentonite Mix

GROUNDWATER READINGS				CHIEE BORING NUMBER
DATE	TIME	WATER AT	CASING AT	
12/22		8'4"		No. LBA-11

QA/QC CHECKED BY:

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 325 Wood Road, Braintree, MA 02184  
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Page: 1 of 1

Boring No. LBA-14  
 CHIEE Job#: E-2090

Well Elevation:  
 Drill Forman: W. Wyllie  
 CHIEE Geologist: M. North

Start Date: 12/20/88  
 Date End: 12/20/88

Project Name: Subsurface Investigation Staten Island

Client Name: New York Department of Correction

Boring Location:  
 Drilling Contractor: CHEE

Drilling Method: Hollow Stem Auger Casing/Auger Size:

Sampler: Unless noted, sampler consists of a 2" split-spoon driven using a 140 lb hammer falling 30 in.

Casing: Unless noted, casing driven using 300 lb hammer falling 24 in.

DEPTH	SAMPLE		Standard Penetration Test				Pen (in)	Rec (in)	Headspace OVA Reading	Strata Change Depth	Field Classification and Drilling Information	N O T E S	Well Diagram
	Type & No.	Range From To	Blows per 6" on split-spoon										
	S/S	0'-2'	12	14	12	14	24	18			Dark Brown m. dense M-SAND, trace vegetation		
									4"		Orange Brown m. dense F-M SAND, some gravel		
	S/S	2'-4'	12	10	12	12	24	20	6"		Black m. dense F-C Coal some m-SAND		
	S/S	4'-6'	5	8	9	8	24	19	8"		Orange Brown m. dense F SAND and silt, little gravel		
	S/S	6'-8'	6	8	9	11	24	21			Orange Brown m. dense F SAND and silt, little gravel		
	S/S	8'-10'	6	8	10	10	24	17	4'6"		Orange Brown m. dense M-C SAND		
	S/S	10-12'	3	6	8	14	24	20	12"		Orange Brown stiff CLAY trace F. silt		
	S/S	12-14'	6	8	6	9	24	16	12'4"		Orange Brown stiff CLAY and silt, trace gravel		
	S/S	14-16'	5	11	13	14	24	23	14'1"		Orange Brown stiff CLAY and silt, trace F-sand		
	S/S	16-18'	7	5	8	12	24	19	14'8"		Orange Brown m. dense F-SAND and silt, little clay		
									15'2"		Gray/Green weathered ROCK		
									15'3"		Orange Brown m. dense F M SAND, trace silt trace gravel		
	S/S	18-20'	6	7	12	16	24	20	17'2"		Light Gray m. dense F-SAND trace gray silt		
									20'				

GRANULAR SOILS		COHESIVE SOILS	
Blows/Ft	Density	Blows/Ft	Density
0 - 4	v. loose	< 2	v. soft
4 - 10	loose	2 - 4	soft
10 - 30	m. dense	4 - 8	m. stiff
30 - 50	dense	8 - 15	stiff
> 50	v. dense	15 - 30	v. stiff
		> 30	hard

NOTES:

GROUNDWATER READINGS					CHIEE BORING NUMBER
DATE	TIME	WATER AT	CASING AT	STABILIZATION	
12/20		7'5"			No. IBA-14

QA/QC CHECKED BY:

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 325 Wood Road, Braintree, MA 02184  
 (617)849-1200

Page: 1 of 1  
 Boring No. LBA-15  
 CHIEE Job#: E-2090  
 Well Elevation:  
 Drill Forman: W. WYLLIE  
 CHIEE Geologist: M. North  
 Start Date: 12/22/88  
 Date End: 12/22/88

Project Name: Subsurface Investigation Staten Island  
 Client Name: New York Department of Correction  
 Boring Location:  
 Drilling Contractor: CHIEE  
 Drilling Method: Hollow Stem Auger Casing/Auger Size: 4 3/8"

DEPTH	SAMPLE		Standard Penetration Test		Pen Rec		Headspace OVA Reading	Strata Change Depth	Field Classification and Drilling Information	N O T E S	Well Diagram
	Type & No.	Range From To	Blows per 6" on split-spoon		(In)	(In)					
	SS	0'-2'	7	17	17	14	24	19	4"	Light Brown m. dense F-M SAND, trace gravel	
									9"	Light Gray m. dense GRAVEL and F-M sand, trace silt	
									10"	Black m. dense COAL, some F sand	
									4'	Orange Brown m. dense F SAND and silt, little gravel, trace clay	
	SS	2'-4'	8	10	14	15	24	15		Orange Brown m. dense F-M SAND, trace gravel	
	SS	4'-6'	7	10	17	18	24	24	14'	trace silt, trace c-sand	
	SS	6'-8'	8	11	15	17	24	24		Orange Brown loose fine med. SAND, trace silt, trace c-sand	
	SS	8-10'	9	8	9	10	24	24	4ppm	16'9"	
	SS	10-12'	4	7	8	11	24	24	20ppm	17'4"	
	SS	12-14'	1	4	6	7	24	24		18'10"	
	SS	14-16'	1	4	5	5	24	24			
	SS	16-18'	7	9	5	10	24	24			
	SS	18-20'	4	5	12	15	24	18	15ppm	20'	EOB

GRANULAR SOILS		COHESIVE SOILS	
Blows/Ft	Density	Blows/Ft	Density
0 - 4	v. loose	< 2	v. soft
4 - 10	loose	2 - 4	soft
10 - 30	m. dense	4 - 8	m. stiff
30 - 50	dense	8 - 15	stiff
> 50	v. dense	15 - 30	v. stiff
		> 30	hard

NOTES:

GROUNDWATER READINGS					CHIEE BORING NUMBER
DATE	TIME	WATER AT	CASING AT	STABILIZATION	
12/22		8'			No. LBA-15

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Page: 1 of 1  
 Boring No. LBA-16  
 CHIEE Job#: E-2090  
 Well Elevation:  
 Drill Forman: W. Wyllie  
 CHIEE Geologist: M. North  
 Start Date: 12/22/88  
 Date End: 12/22/88

Project Name: Subsurface Investigation Staten Island  
 Client Name: New York Department of Corrections  
 Boring Location:

Drilling Contractor: CHEE  
 Drilling Method: Hollow Stem Auger Casing/Auger Size: 4 3/8"

DEPTH	SAMPLE		Standard Penetration Test				Pen Rec		Headspace OVA Reading	Strata Change Depth	Field Classification and Drilling Information	N O T E S	Well Diagram
	Type & No.	Range From To	Blows per 6" on split-spoon				(In)	(In)					
	SS	0'-2'	1	5	6	7	24	22					
									2"	Dark Brown loose M-SAND little sand, little gravel			
									11"	Brown/black loose m.SAND little silt, trace gravel lenses of black coal			
									1 1/2"	Black Coal			
	SS	2'-4'	6	36	24	17	24	18	2 7/8"	Orange Brown loose fine SAND and silt, little gravel, trace coal			
									2 10/16"	Black COAL			
	SS	4'-6'	15	8	9	10	24	20	5 1/4"	Orange Brown dense F-M SAND and silt, trace gravel, trace coal			
	SS	6'-8'	3	6	8	8	24	24	11 1/4"	Orange Brown m. dense F-M SAND, little silt			
	SS	8-10'	3	5	6	5	24	24	11 1/6"	Orange brown stiff CLAY and silt, trace F. sand			
	SS	10-12'	3	3	4	13	24	24	11 1/8"	Orange Brown m. dense F-M SAND, little silt			
									12 1/2"	Orange Brown m. stiff CLAY, trace F silt			
									14' 4"	Orange Brown m. dense F SAND and silt			
	SS	12-14'	4	14	19	16	24	22		Dark Gray v. stiff CLAY trace F silt, trace - gravel			

GWT 8'6"

GRANULAR SOILS		COHESIVE SOILS	
Blows/Ft	Density	Blows/Ft	Density
0 - 4	v. loose	< 2	v. soft
4 - 10	loose	2 - 4	soft
10 - 30	m. dense	4 - 8	m. stiff
30 - 50	dense	8 - 15	stiff
> 50	v. dense	15 - 30	v. stiff
		> 30	hard

NOTES: Boring Sealed Using Portland Cement/Bentonite Mix

GROUNDWATER READINGS					CHIEE BORING NUMBER
DATE	TIME	WATER AT	CASING AT	STABILIZATION	
12/22		8'6"			No. LBA-16

QA/QC CHECKED BY:



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325 Wood Road, Braintree, MA 02184  
(617)848-1200

Page: 1 of 1  
Boring No. LBA - 17  
CHIEE Jobs: E - 2090  
Well Elevation:  
Drill Forman: W. WYLLIE  
CHIEE Geologist: M. NORTH  
Start Date: 12/22/88  
Date End: 12/22/88

Project Name: Subsurface Investigation Staten Island

Client Name: New York Department of Correction

Boring Location:

Drilling Contractor: CHEE

Drilling Method: Hollow Stem Auger Casing/Auger Size:

DEPTH	SAMPLE		Standard Penetration Test		Pen Rec		Headspace OVA Reading	Strata Change Depth	Field Classification and Drilling Information	NO T E S	Well Diagram
	Type & No.	Range From   To	Blows per 6" on split-spoon		(In)	(In)					
	Sampler: Unless noted, sampler consists of a 2" split-spoon driven using a 140 lb hammer falling 30 in. Casing: Unless noted, casing driven using 300 lb hammer falling 24 in.										
	S/S	0'-2'	1	7	12	10	24	24	Dark brown loose F-M SAND and Peat, trace silt		
									2" Black loose COAL some black m. dense m. sand		
									5" Orange Brown m. dense F-M SAND, some silt trace gravel		
	S/S	2'-4'	6	7	8	17	24	20	6'11" Black dense fine grained ROCK		
	S/S	4'-6'	8	18	19	22	24	18	7' 1" Orange brown dense silt and F-SAND, trace clay, trace F gravel		
	S/S	6'-8'	11	19	25	19	24	20	9'-4" Orange brown dense m-SAND, trace silt		
									9'-7" Orange brown stiff clay trace F SAND, trace silt		
	S/S	8'-10'	17	25	12	14	24	14	10'2" Brown m. dense F-M SAND trace gray clay		
	S/S	10'-12'	7	11	12	10	24	20	13' Grey v. stiff CLAY trace F silt		
	S/S	12'-14'	4	5	10	17	24	21	20' EOB		
	S/S	14'-16'	24	23	11	15	24	18			
	S/S	16'-18'	6	10	15	20	24	19			
	S/S	18'-20'	5	9	12	16	24	24			

GRANULAR SOILS		COHESIVE SOILS	
Blows/Ft	Density	Blows/Ft	Density
0 - 4	v. loose	< 2	v. soft
4 - 10	loose	2 - 4	soft
10 - 30	m. dense	4 - 8	m. stiff
30 - 50	dense	8 - 15	stiff
> 50	v. dense	15 - 30	v. stiff
		> 30	hard

NOTES:

GROUNDWATER READINGS					CHIEE BORING NUMBER
DATE	TIME	WATER AT	CASING AT	STABILIZATION	
12/22		8' 2"			No. LBA-17

QA/QC CHECKED BY:

<b>CLEAN HARBORS ENVIRONMENTAL ENGINEERING CORPORATION</b> 325 Wood Road, Braintree, MA 02184 (617)849-1200						Page: 1 of 1																																
Project Name: Subsurface Investigation, Staten Island, NY						Boring No. LBA 18																																
Client Name: New York Department of Correction						CHEE Job#: C 2585																																
Boring Location:						Well Elevation:																																
Drilling Contractor: Marine Pollution Control						Drill Forman: P. Thorsby																																
Drilling Method: Hollow Stem Auger						CHEE Geologist: Troy Charlton																																
Casing/Auger Size: 10.5 OD.						Start Date: December 22, 1988																																
						Date End: December 22, 1988																																
D E P T H	SAMPLE		Standard Penetration Test			Sampler: Unless noted, sampler consists of a 2" split-spoon driven using a 140 lb hammer falling 30 in.			N O T E S	Well Diagram																												
	Type & No.	Range From   To	Blows per 6" on split-spoon			Pen (in)	Rec (in)	Headspace OVA Reading			Strata Change Depth	Field Classification and Drilling Information																										
	SS1	0 - 2	2	6	6	13	24	24	2"	Red, Medium stiff, Sandy CLAY (CL).																												
	SS2	2 - 4	2	3	5	11	24	24		Brown, loose fine to medium grained SAND (SW).																												
	SS3	4 - 6	1	2	8	12	24	24																														
	SS4	6 - 8	2	4	8	14	24	12																														
	SS5	8 - 10	2	2	4	6	24	24	11'																													
	SS6	10 - 12	1	1	4	8	24	24																														
											Grey, medium stiff Sandy CLAY (CL)																											
GRANULAR SOILS			COHESIVE SOILS			NOTES: Groundwater at = 3 feet  <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">Blows/Ft</td> <td style="text-align: center;">Density</td> <td style="text-align: center;">Blows/Ft</td> <td style="text-align: center;">Density</td> </tr> <tr> <td>0 - 4</td> <td>v. loose</td> <td>&lt; 2</td> <td>v. soft</td> </tr> <tr> <td>4 - 10</td> <td>loose</td> <td>2 - 4</td> <td>soft</td> </tr> <tr> <td>10 - 30</td> <td>m. dense</td> <td>4 - 8</td> <td>m. stiff</td> </tr> <tr> <td>30 - 50</td> <td>dense</td> <td>8 - 15</td> <td>stiff</td> </tr> <tr> <td>&gt; 50</td> <td>v. dense</td> <td>15 - 30</td> <td>v. stiff</td> </tr> <tr> <td></td> <td></td> <td>&gt; 30</td> <td>hard</td> </tr> </table>					Blows/Ft	Density	Blows/Ft	Density	0 - 4	v. loose	< 2	v. soft	4 - 10	loose	2 - 4	soft	10 - 30	m. dense	4 - 8	m. stiff	30 - 50	dense	8 - 15	stiff	> 50	v. dense	15 - 30	v. stiff			> 30	hard
Blows/Ft	Density	Blows/Ft	Density																																			
0 - 4	v. loose	< 2	v. soft																																			
4 - 10	loose	2 - 4	soft																																			
10 - 30	m. dense	4 - 8	m. stiff																																			
30 - 50	dense	8 - 15	stiff																																			
> 50	v. dense	15 - 30	v. stiff																																			
		> 30	hard																																			
					GROUNDWATER READINGS					CHEE BORING NUMBER No. LBA 18																												
					DATE	TIME	WATER AT	CASING AT	STABILIZATION																													
QA/QC CHECKED BY:																																						

<b>CLEAN HARBORS ENVIRONMENTAL ENGINEERING CORPORATION</b>										Page: 1 of 1				
325 Wood Road, Braintree, MA 02184 (617)849-1200										Boring No. LBA 19				
Project Name: Subsurface Investigation, Staten Island, N.Y.										CHEE Job#: C 2585				
Client Name: New York Department of Correction										Well Elevation:				
Boring Location:										Drill Forman: D. Klaus				
Drilling Contractor: Marine Pollution Control										CHEE Geologist: Troy Charlton				
Drilling Method: Hollow Stem Auger CASING/AUGER SIZE: .10.5' OD.										Start Date: December 28, 1988				
Date End: December 28, 1988														
D E P T H	SAMPLE		Standard Penetration Test				Sampler: Unless noted, sampler consists of a 2" split-spoon driven using a 140 lb hammer falling 30 in.				N O T E S	Well Diagram		
	Type & No.	Range From To	Blows per 6" on split-spoon				Pen (in)	Rec (in)	Headspace OVA Reading	Strata Change Depth			Field Classification and Drilling Information	
	SS1	0 - 2	3	3	4	5	24	22			Brown, loose medium to coarse Clayey/ Silty SAND (SM-SC)			
	SS2	2 - 4	2	5	9	11	24	12						
	SS3	4 - 6	2	7	8	12	24	22						
	SS4	6 - 8	3	3	6	15	24	18		7'				
	SS5	8 - 10	2	4	8	10	24	12					Red, medium stiff Sandy CLAY (CL)	
	SS6	10 - 12	3	6	8	8	24	18						
	SS7	12 - 14	3	3	5	7	24	24		13.5'				
	SS8	14 - 16	4	7	7	10	24	24					Grey, medium stiff Sandy CLAY (CL)	
	SS9	16 - 18	3	4	7	10	24	22						
	SS10	18 - 20	4	7	10	10	24	24						
GRANULAR SOILS			COHESIVE SOILS				NOTES: Groundwater at = 3 feet Boring sealed with bentonite/cement Grout							
Blows/Ft	Density	Blows/Ft	Density											
0 - 4	v. loose	< 2	v. soft											
4 - 10	loose	2 - 4	soft											
10 - 30	m. dense	4 - 8	m. stiff											
30 - 50	dense	8 - 15	stiff											
> 50	v. dense	15 - 30	v. stiff											
			> 30	hard										
QA/QC CHECKED BY:							GROUNDWATER READINGS					CHEE BORING NUMBER No. LBA 19		
							DATE	TIME	WATER AT	CASING AT	STABILIZATION			

CLEAN HARBORS ENVIRONMENTAL ENGINEERING CORPORATION 325 Wood Road, Braintree, MA 02184 (617)849-1200										Page: 1 of 1			
Project Name: Subsurface Investigation, Staten Island, N.Y.										Boring No. LBA 20			
Client Name: New York Department of Correction										CHEE Job#: C 2585			
Boring Location:										Well Elevation:			
Drilling Contractor: Marine Pollution Control										Drill Forman: D. Klaus			
Drilling Method: Hollow Stem Auger CASING/AUGER SIZE: 10.5' OD.										CHEE Geologist: Troy Charlton			
										Start Date: December 28, 1988			
										Date End: December 28, 1988			
D E P T H	SAMPLE		Standard Penetration Test				Sampler: Unless noted, sampler consists of a 2" split-spoon driven using a 140 lb hammer falling 30 in.		Casing: Unless noted, casing driven using 300 lb hammer falling 24 in.		N O T E S	Well Diagram	
	Type & No.	Range From To	Blows per 6" on split-spoon				Pen (in)	Rec (in)	Headspace OVA Reading	Strata Change Depth			Field Classification and Drilling Information
	SS1	0 - 2	1	2	4	6	24	24					
	SS2	2 - 4	2	4	4	6	24	24					
	SS3	4 - 6	4	9	8	10	24	24					
	SS4	6 - 8	4	6	6	7	24	24			Brown, loose medium to coarse SAND (SP)		
	SS5	8 - 10	3	4	8	10	24	18					
	SS6	10 - 12	2	3	6	10	24	18					
	SS7	12 - 14	5	5	5	6	24	24					
	SS8	14 - 16	2	8	12	15	24	12					
	SS9	16 - 18	2	4	7	9	24	12					
	SS10	18 - 20	6	8	10	11	24	12					
GRANULAR SOILS			COHESIVE SOILS				NOTES:						
Blows/Ft		Density	Blows/Ft		Density		Groundwater at ~ 3 1/2 feet						
0 - 4		v. loose	< 2		v. soft		Boring sealed with bentonite/cement Grout						
4 - 10		loose	2 - 4		soft								
10 - 30		m. dense	4 - 8		m. stiff								
30 - 50		dense	8 - 15		stiff								
> 50		v. dense	15 - 30		v. stiff								
			> 30				hard						
QA/QC CHECKED BY:							GROUNDWATER READINGS						
							DATE	TIME	WATER AT	CASING AT	STABILIZATION	CHEE BORING NUMBER	
												No. LBA 20	

CLEAN HARBORS ENVIRONMENTAL ENGINEERING CORPORATION 325 Wood Road, Braintree, MA 02184 (617)849-1200										Page: 1 of 1				
Project Name: Subsurface Investigation, Staten Island, N.Y.										Boring No. LBA 21				
Client Name: New York Department of Correction										CHEE Job#: C 2585				
Boring Location:										Well Elevation:				
Drilling Contractor: Marine Pollution Control										Drill Forman: P. Torsby				
Drilling Method: Hollow Stem Auger										CHEE Geologist: Troy Charlton				
CASING/AUGER SIZE: 10.5' OD.										Start Date: December 22, 1988				
										Date End: December 22, 1988				
D E P T H	SAMPLE		Standard Penetration Test				Pen Rec		Headspace OVA Reading	Strata Change Depth	Field Classification and Drilling Information	N O T E S	Well Diagram	
	Type & No.	Range From   To	Blows per 6" on split-spoon				(in)	(in)						
	SS 1	0 - 2	6	6	9	9	24	24		2'	Red, loose Clayey/Silty SAND (SM-SC).			
	SS 2	2 - 4	3	5	5	30	24	24		4'	Brown stiff Sandy/Silty CLAY (CL).			
	SS 3	4 - 6	5	9	10	13	24	24		6'	Red stiff Sandy/Silty CLAY (CL).			
	SS 4	6 - 8	4	8	14	20	24	24			Brown, medium dense Sandy/Clayey SILT (ML).			
	SS 5	8 - 10	1	6	10	15	24	24						
	SS 6	10 - 12	1	8	14	18	24	24						
	SS 7	12 - 14	1	6	12	20	24	24						
GRANULAR SOILS			COHESIVE SOILS				NOTES:							
Blows/Ft	Density	Blows/Ft	Density	Groundwater at = 6 feet										
0 - 4	v. loose	< 2	v. soft											
4 - 10	loose	2 - 4	soft											
10 - 30	m. dense	4 - 8	m. stiff											
30 - 50	dense	8 - 15	stiff											
> 50	v. dense	15 - 30	v. stiff											
		> 30	hard											
QA/QC CHECKED BY:										GROUNDWATER READINGS			CHEE BORING NUMBER No. LBA 21	
										DATE	TIME	WATER AT		CASING AT

<b>CLEAN HARBORS ENVIRONMENTAL ENGINEERING CORPORATION</b> 325 Wood Road, Braintree, MA 02184 (617)849-1200						Page: 1 of 1 Boring No. LBA 22 CHEE Job#: C 2585						
Project Name: Subsurface Investigation, Staten Island, N.Y. Client Name: New York Department of Correction Boring Location:				Well Elevation: Drill Forman: D. Klaus CHEE Geologist: Troy Charlton Start Date: December 29, 1988 Date End: December 29, 1988								
Drilling Contractor: Marine Pollution Control Drilling Method: Hollow Stem Auger		CASING/AUGER SIZE: 10.5' OD.										
D E P T H	<b>SAMPLE</b> Type & Range From To No.   To		<b>Standard Penetration Test</b> Blows per 6" on split-spoon			Sampler: Unless noted, sampler consists of a 2" split-spoon driven using a 140 lb hammer falling 30 in. Casing: Unless noted, casing driven using 300 lb hammer falling 24 in.		N O T E S	Well Diagram			
	SS1	0 - 2	1	4	9	15	24			24	Brown, stiff Silty CLAY (CL)	
	SS2	2 - 4	5	5	5	9	24			12	4'	Brown, medium stiff CLAY (CL)
	SS3	4 - 6	1	2	3	8	24			12	8'	Grey, stiff CLAY (CL)
	SS4	6 - 8	5	6	8	9	24			12		
	SS5	8 - 10	1	2	8	8	24			12		
SS6	10 - 12	2	3	6	9	24	12					
SS7	12 - 14	2	4	6	9	24	24					
SS8	14 - 16	3	4	8	8	24	24					
SS9	16 - 18	2	5	9	15	24	24					
SS10	18 - 20	3	6	8	12	24	24					
<b>GRANULAR SOILS</b>		<b>COHESIVE SOILS</b>		NOTES: Groundwater at = 6 feet Boring sealed with bentonite/cement Grout								
Blows/Ft	Density	Blows/Ft	Density									
0 - 4	v. loose	< 2	v. soft									
4 - 10	loose	2 - 4	soft									
10 - 30	m. dense	4 - 8	m. stiff									
30 - 50	dense	8 - 15	stiff									
> 50	v. dense	15 - 30	v. stiff									
		> 30	hard									
QA/QC CHECKED BY:				<b>GROUNDWATER READINGS</b>					CHEE BORING NUMBER No. LBA 22			
				DATE	TIME	WATER AT	CASING AT	STABILIZATION				

<b>CLEAN HARBORS ENVIRONMENTAL ENGINEERING CORPORATION</b> 325 Wood Road, Braintree, MA 02184 (617)849-1200										Page: 1 of 1 Boring No. LBA 23 CHEE Job#: C 2585	
Project Name: Subsurface Investigation, Staten Island, N.Y.					Well Elevation:						
Client Name: New York Department of Correction					Drill Forman: D. Klaus						
Boring Location:					CHEE Geologist: Troy Charlton						
Drilling Contractor: Marine Pollution Control					Start Date: December 29, 1988						
Drilling Method: Hollow Stem Auger					Date End: December 29, 1988						
					CASING/AUGER SIZE: 10.5' OD.						
D E P T H	SAMPLE		Standard Penetration Test			Sampler: Unless noted, sampler consists of a 2" split-spoon driven using a 140 lb hammer falling 30 in. Casing: Unless noted, casing driven using 300 lb hammer falling 24 in.				N O T E S	Well Diagram
	Type & No.	Range From   To	Blows per 6" on split-spoon			Pen (in)	Rec (in)	Headspace OVA Reading	Strata Change Depth		
	SS1	0 - 2	2	2	2	4	24	18	1'	Brown, very loose fine to medium SAND (SW)	
	SS2	2 - 4	2	3	3	6	24	17		Brown, medium stiff silty CLAY (CL)	
	SS3	4 - 6	3	5	9	13	24	18			
	SS4	6 - 8	2	6	6	9	24	18	8'		
	SS5	8 - 10	4	4	4	8	24	22		Grey, medium stiff CLAY (CL)	
	SS6	10 - 12	3	4	4	6	24	22			
	SS7	12 - 14	5	5	6	10	24	6			
	SS8	14 - 16	2	3	5	9	24	24			
	SS9	16 - 18	3	5	7	10	24	24			
	SS10	18 - 20	4	8	8	8	24	6			
GRANULAR SOILS			COHESIVE SOILS			NOTES: Groundwater at = 6 feet Boring sealed with bentonite/cement Grout					
Blows/Ft	Density	Blows/Ft	Density								
0 - 4	v. loose	< 2	v. soft								
4 - 10	loose	2 - 4	soft								
10 - 30	m. dense	4 - 8	m. stiff								
30 - 50	dense	8 - 15	stiff								
> 50	v. dense	15 - 30	v. stiff								
		> 30	hard								
QA/QC CHECKED BY:						GROUNDWATER READINGS					CHEE BORING NUMBER
						DATE	TIME	WATER AT	CASING AT	STABILIZATION	
											LBA 23

<b>CLEAN HARBORS ENVIRONMENTAL ENGINEERING CORPORATION</b> 325 Wood Road, Braintree, MA 02184 (617)849-1200						Page: 1 of 1 Boring No. LBA 24 CHEE Job#: C 2585						
Project Name: Subsurface Investigation, Staten Island, N.Y.						Well Elevation:						
Client Name: New York Department of Correction						Drill Forman: D. Klaus						
Boring Location:						CHEE Geologist: Troy Charlton						
Drilling Contractor: Marine Pollution Control						Start Date: December 29, 1988						
Drilling Method: Hollow Stem Auger						CASING/AUGER SIZE: 10.5" OD.						
D E P T H	SAMPLE		Standard Penetration Test			Sampler: Unless noted, sampler consists of a 2" split-spoon driven using a 140 lb hammer falling 30 in.		N O T E S	Well Diagram			
	Type & No.	Range From   To	Blows per 6" on split-spoon			Pen (in)	Rec (in)			Headspace OVA Reading	Strata Change Depth	Field Classification and Drilling Information
	SS1	0 - 2	5	7	7	8	24			24		Black, medium stiff Silty CLAY (OL)
	SS2	2 - 4	3	3	4	6	24			12	1'	
	SS3	4 - 6	4	2	2	4	24			24		
	SS4	6 - 8	4	6	7	9	24			12		Brown, loose medium to coarse SAND (SP)
	SS5	8 - 10	2	7	14	16	24			24		
	SS6	10 - 12	2	3	8	7	24			24		
	SS7	12 - 14	2	6	6	8	24			24		
	SS8	14 - 16	3	4	6	7	24			24		
	SS9	16 - 18	3	5	6	7	24			24		
SS10	18 - 20	3	6	8	9	24	24					
GRANULAR SOILS		COHESIVE SOILS			NOTES: Groundwater at = 4 feet Boring sealed with bentonite/cement Grout							
Blows/Ft	Density	Blows/Ft								Density		
0 - 4	v. loose	< 2								v. soft		
4 - 10	loose	2 - 4								soft		
10 - 30	m. dense	4 - 8								m. stiff		
30 - 50	dense	8 - 15			stiff							
> 50	v. dense	15 - 30			v. stiff							
		> 30			hard							
QA/QC CHECKED BY:						GROUNDWATER READINGS			CHEE BORING NUMBER No. LBA 24			
DATE	TIME	WATER AT	CASING AT	STABILIZATION								

<b>CLEAN HARBORS ENVIRONMENTAL ENGINEERING CORPORATION</b> 325 Wood Road, Braintree, MA 02194 (617)849-1200										Page: 1 of 1 Boring No. LBA 25 CHEE Job#: C 2585																
Project Name: Subsurface Investigation, Staten Island, N.Y.										Well Elevation:																
Client Name: New York Department of Correction										Drill Forman: D. Klaus																
Boring Location:										CHEE Geologist: Troy Charlton																
Drilling Contractor: Marine Pollution Control										Start Date: December 28, 1988																
Drilling Method: Hollow Stem Auger										Date End: December 28, 1988																
CASING/AUGER SIZE: 10.5' OD.																										
<b>D E P T H</b>	SAMPLE		Standard Penetration Test				Sampler: Unless noted, sampler consists of a 2" split-spoon driven using a 140 lb hammer falling 30 in. Casing: Unless noted, casing driven using 300 lb hammer falling 24 in.				<b>N O T E S</b>	<b>Well Diagram</b>														
	Type & No.	Range From To	Blows per 6" on split-spoon				Pen (in)	Rec (in)	Headspace OVA Reading	Strata Change Depth			Field Classification and Drilling Information													
	SS 1	0 - 2	2	4	5	6	24	18		2'			Brown, medium stiff, Sandy CLAY (CL)													
	SS 2	2 - 4	2	3	5	6	24	12					Brown, loose, medium to coarse Clayey SAND (SC)													
	SS 3	4 - 6	1	2	3	5	24	5		6'			Brown, medium stiff Sandy CLAY (CL)													
	SS 4	6 - 8	5	7	7	8	24	12					Brown, medium stiff Sandy CLAY (CL)													
	SS 5	8 - 10	2	6	7	7	24	12		10'			Brown, loose Silty SAND (SM)													
	SS 6	10 - 12	2	7	7	8	24	12																		
	SS 7	12 - 14	3	9	9	11	24	18																		
	SS 8	14 - 16	2	7	10	15	24	12																		
	SS 9	16 - 18	3	4	4	8	24	12																		
SS 10	18 - 20	2	3	5	9	24	12																			
GRANULAR SOILS			COHESIVE SOILS				NOTES: Groundwater at ≈ 7.5 feet Boring sealed with bentonite/cement Grout																			
Blows/Ft	Density	Blows/Ft	Density																							
0 - 4	v. loose	< 2	v. soft																							
4 - 10	loose	2 - 4	soft																							
10 - 30	m. dense	4 - 8	m. stiff																							
30 - 50	dense	8 - 15	stiff																							
> 50	v. dense	15 - 30	v. stiff																							
			> 30	hard																						
QA/QC CHECKED BY:										GROUNDWATER READINGS <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th>DATE</th> <th>TIME</th> <th>WATER AT</th> <th>CASING AT</th> <th>STABILIZATION</th> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </table>		DATE	TIME	WATER AT	CASING AT	STABILIZATION										
DATE	TIME	WATER AT	CASING AT	STABILIZATION																						
										CHEE BORING NUMBER No. LBA 25																

CLEAN HARBORS ENVIRONMENTAL ENGINEERING CORPORATION  
 325 Wood Road, Braintree, MA 02184  
 (617)849-1200

Page: 1 of 1  
 Boring No. LBA 26  
 CHEE Job#: C 2585  
 Well Elevation:  
 Drill Forman: P. Thorsby  
 CHEE Geologist: Troy Charlton  
 Start Date: December 23, 1988  
 Date End: December 23, 1988

Project Name: Subsurface Investigation, Staten Island, N.Y.  
 Client Name: New York Department of Correction  
 Boring Location:

Drilling Contractor: Marine Pollution Control  
 Drilling Method: Hollow Stem Auger CASING/AUGER SIZE: 10.5' OD.

DEPTH	SAMPLE		Standard Penetration Test				SAMPLER: Unless noted, sampler consists of a 2" split-spoon driven using a 140 lb hammer falling 30 in.		Headspace OVA Reading	Strata Change Depth	Field Classification and Drilling Information	NO TESTS	Well Diagram	
	Type & No.	Range From To	Blows per 6" on split-spoon				Pen (in)	Rec (in)						
	SS 1	0 - 2	1	3	4	6	24	24			Brown, medium to coarse loose SAND (SW)			
	SS 2	2 - 4	3	4	6	9	24	24						
	SS 3	4 - 6	1	2	5	4	24	24						
	SS 4	6 - 8	2	2	4	10	24	24						
	SS 5	8 - 10	2	2	4	17	24	24					Red, stiff Sandy/Silty CLAY (CL)	
	SS 6	10 - 12	1	4	5	14	24	24						
	SS 7	12 - 14	1	3	4	5	24	24						
	SS 8	14 - 16	2	4	6	16	24	24						
	SS 9	16 - 18	1	4	5	20	24	12			Brown loose, medium to coarse SAND (SP)			
	SS 10	18 - 20	5	4	4	9	24	12						

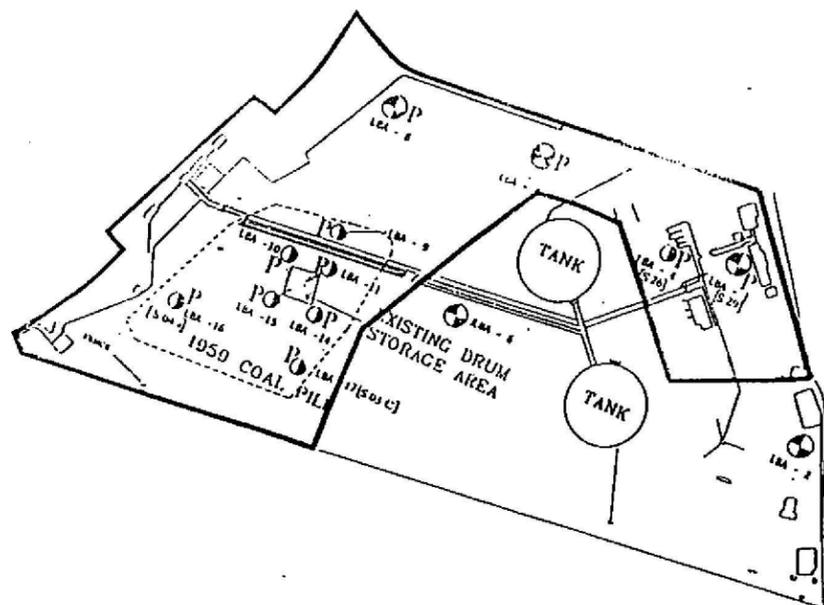
GRANULAR SOILS		COHESIVE SOILS	
Blows/Ft	Density	Blows/Ft	Density
0 - 4	v. loose	< 2	v. soft
4 - 10	loose	2 - 4	soft
10 - 30	m. dense	4 - 8	m. stiff
30 - 50	dense	8 - 15	stiff
> 50	v. dense	15 - 30	v. stiff
		> 30	hard

NOTES:  
 Groundwater at - 14 feet  
 Boring sealed with bentonite/cement Grout

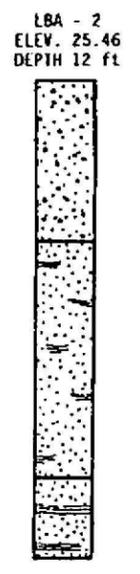
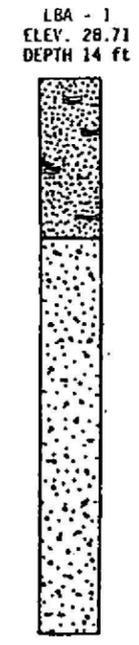
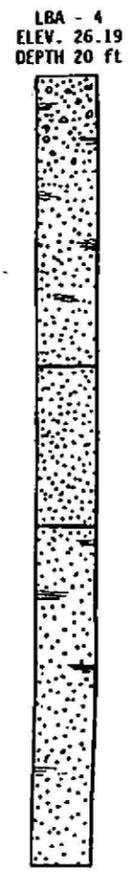
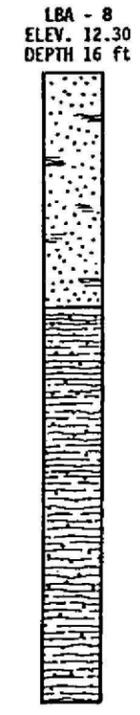
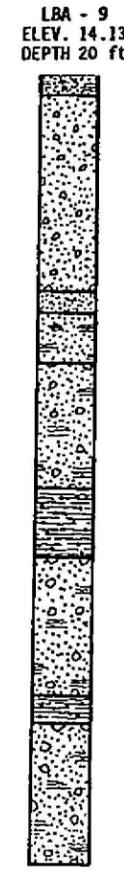
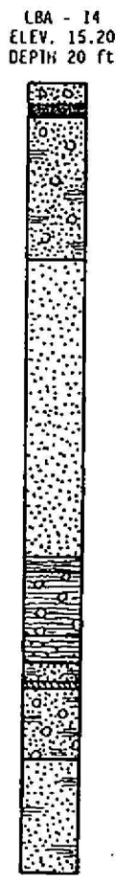
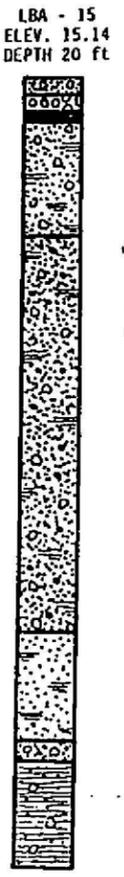
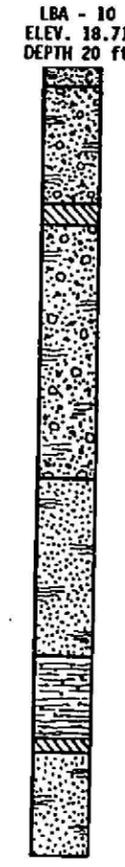
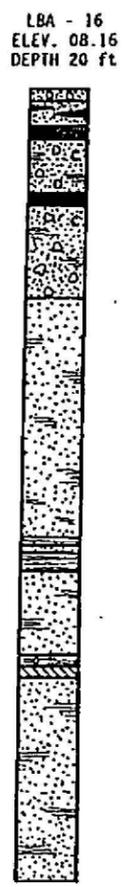
GROUNDWATER READINGS				
DATE	TIME	WATER AT	CASING AT	STABILIZATION

CHEE BORING NUMBER  
 No. LBA 26

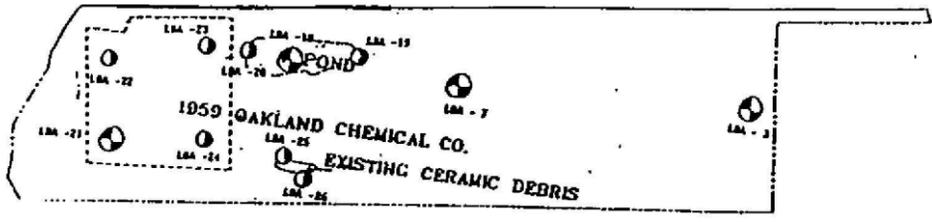
QA/QC CHECKED BY:



-  FINE TO MEDIUM SAND
-  COARSE SAND
-  CLAYEY/SILTY SAND
-  CLAY (color noted as: B1, Black; Br, Brown; R, Red; G, Gray)
-  SILT
-  GRAVEL
-  SANDY/SILTY CLAY
-  ROCK (undifferentiated)
-  COAL
  - Trace
  - Full Sample
  - Lenses



LBA - 7  
ELEV. 38.67  
DEPTH 14 ft



-  FINE TO MEDIUM SAND
-  COARSE SAND
-  CLAYEY/SILTY SAND
-  CLAY (color noted as: B1, Black; Br, Brown; R, Red; G, Gray)
-  SILT
-  GRAVEL
-  SANDY/SILTY CLAY
-  ROCK (undifferentiated)
-  COAL
  - Trace
  - Full Sample
  - Lenses

LBA - 22  
ELEV. 06.61  
DEPTH 20 ft

LBA - 23  
ELEV. 09.64  
DEPTH 20 ft

LBA - 20  
ELEV. 12.77  
DEPTH 20 ft

LBA - 18  
ELEV. 17.49  
DEPTH 12 ft

LBA - 19  
ELEV. 12.91  
DEPTH 20 ft

LBA - 7  
ELEV. 19.45  
DEPTH 14 ft

