

USF
4819K

PART ONE OF A PHASED
STAGE IB CULTURAL RESOURCES SURVEY
FOR THE PROPOSED
SLUDGE FORCE MAIN ROUTE
CONEY ISLAND WATER POLLUTION CONTROL PROJECT
BOROUGH OF BROOKLYN, NEW YORK

By

Michael N. Gimigliano, Ph.D.

of

HISTORIC CONSERVATION AND INTERPRETATION, INC.
Box 111, RD 3, Newton, N.J. 07860

For

MALCOLM PIRNIE, INC. and MICHAEL BAKER, JR. OF NEW YORK, INC.
White Plains and New York City

APRIL 1983

1154

RECEIVED

MAY 3 1983

**CULTURAL RESOURCE
SECTION**

TABLE OF CONTENTS

	Page
I. INTRODUCTION	1
A. Purpose and Background	1
B. The Project	2
C. The Research Task	4
D. Summary of Findings and Recommendations	4
II. REVIEW OF CULTURAL RESOURCES SENSITIVITY	6
III. THE BELT PARKWAY	9
A. General Background	9
B. Fresh Creek Basin Crossing	9
C. Paerdegat Basin Crossing	12
D. Mill Basin Crossing	12
E. Gerritsen's Creek Crossing	15
F. Construction Impact Summary	20
IV. INFIELD ARCHEOLOGICAL TESTING STRATEGY	21
A. General Overview	21
B. Fresh Creek Basin Crossing	21
C. Paerdegat Basin Crossing	22
D. Mill Basin Crossing	23
E. Gerritsen's Creek Crossing	23
F. Conclusion	25
V. SUMMARY OF RECOMMENDATIONS	26
A. Infield Testing	26
B. Further Responsibilities	27
BIBLIOGRAPHY	28
APPENDIX A	29

LIST OF FIGURES

		Page
Figure 1.	Project Area	3
Figure 2.	Project Area in 1902	7
Figure 3.	Proposed Bridge at Fresh Creek Basin, 1939	10
Figure 4.	Proposed Bridge at Paerdegat Basin, 1939	13
Figure 5.	Proposed Bridge at Mill Creek Basin, 1939	14
Figure 6.	Plan of Gerritsen's Creek Vicinity, 1938	16
Figure 7.	Dredging and Filling, Gerritsen's Creek Vicinity	17
Figure 8.	Fill Profile, Gerritsen's Creek Bridge, 1939	18
Figure 9.	Profile of Fill on Plumb Island	19

PART ONE OF A STAGE IB
CULTURAL RESOURCES SURVEY FOR THE
PROPOSED SLUDGE FORCE MAIN ROUTE
CONEY ISLAND WATER POLLUTION CONTROL PROJECT
BOROUGH OF BROOKLYN, NEW YORK

I. INTRODUCTION

A. Purpose and Background

This report presents the results of Part One of a Phased Stage IB Cultural Resources Survey for the Proposed Sludge Force Main Route of the Coney Island Water Pollution Control Project. The purpose of a Stage IB Survey is to verify, through subsurface archeological testing, the presence or absence of cultural remains in any area where ground-disturbing activities are to occur and to recommend further cultural resources surveys, as necessary.

Background documentary research for this project was completed in several steps as various alternatives were explored. Church (1979) and Gimigliano (1980, 1981) established that the project area was potentially sensitive for prehistoric cultural remains. As a final project alignment was selected, a Stage IB Survey was requested by the United States Environmental Protection Agency, Region II and the New York State Department of Environmental Conservation. The investigations reported here follow guidelines established by representatives of the two

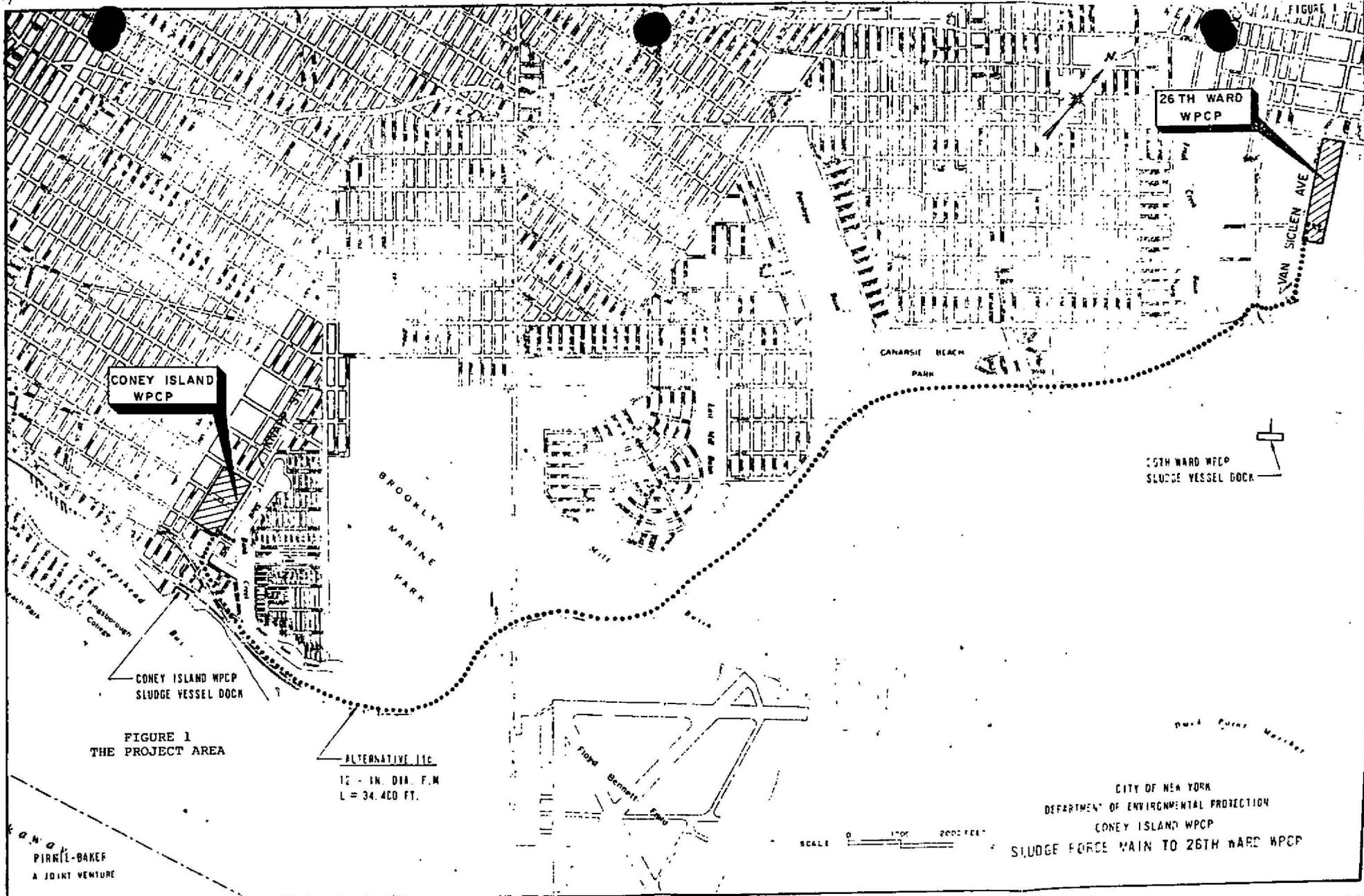
agencies in consultation with archeologists from Historic Conservation and Interpretation, Inc. (Appendix A).

Because the final alignment (see following section) was selected after most research was completed, it was decided that some additional background research as well as infield archeological evaluation was necessary. The archeological evaluation agreed upon was analysis of soil borings and machine-assisted trenches, where possible, in potentially sensitive areas. Normally these tasks of research and infield testing would be completed sequentially and reported in one volume. However, the schedule for soil borings and the need for a statement of exact infield strategy overlapped to the extent that the statement of exact infield strategy had to be presented prior to actual infield evaluations. Therefore, at the request of Malcolm Pirnie, Inc., project engineers, this Stage IB report is phased into two separate report submissions.

This report presents the analysis of documentary evidence and an infield archeological testing strategy. As that strategy is implemented, results will be reported in a subsequent report, thereby completing all phases of the Stage IB Survey requirements.

B. The Project

The facility studied here is a sludge force main connecting the Coney Island WPCP and the 26th Ward WPCP in Brooklyn, New York (Figure 1--this location has been delineated in previous reports on appropriate USGS maps). The force main will follow the Shore or Belt



CONEY ISLAND WPCP

26TH WARD WPCP

CONEY ISLAND WPCP
SLUDGE VESSEL DOCK

55TH WARD WPCP
SLUDGE VESSEL DOCK

FIGURE 1
THE PROJECT AREA

ALTERNATIVE 11C
12 - IN. DIA. F.M
L = 34,400 FT.

SCALE 0 1000 2000 FEET

PIRREL-BAKER
A JOINT VENTURE

CITY OF NEW YORK
DEPARTMENT OF ENVIRONMENTAL PROTECTION
CONEY ISLAND WPCP
SLUDGE FORCE MAIN TO 26TH WARD WPCP

Parkway for most of its length, crossing four drainage features. Owing to the possibility that the force main will be deep enough to disturb original soil layers, potentially containing prehistoric cultural remains, this survey was required to verify the presence or absence of such remains.

C. The Research Task

The cultural resources surveys cited above established that the area traversed by the Parkway was once available for human exploitation and occupancy in early stages of the world-wide eustatic rise in sea level. The research task was to evaluate what impact the construction of the Parkway had on natural conditions in the project corridor.

Research consisted of locating and evaluating the construction plans for the highway and developing an infield testing strategy. Research was conducted at the New York City Department of Parks and Recreation Map File Unit, Corona, Queens.

D. Summary of Findings and Recommendations

Of the four drainage crossings of concern to this project, the original shores of three drainages appear to be under deep fill and tidal marsh mud, well below any potential impact from construction. Analysis of soil borings to be made in the areas will verify the conditions. The fourth area, formerly Plumb Island just west of Gerritsen's Creek, may have an original surface associated with early

occupance as close as eight feet below the surface. Soil borings here will be analyzed, and, if necessary, machine-excavated trenches will be made so that material from this surface can be examined.

Close coordination among project engineers, boring contractors, and the archeologists is recommended to insure a timely completion of remaining portions of this Stage IB Survey.

II. REVIEW OF CULTURAL RESOURCES SENSITIVITY

The reports by Church (1979) and Gimigliano (1980) identified several sites associated with prehistoric occupation of the project vicinity. These sites are located adjacent to present-day watercourses identified on Figure 1 as Fresh Creek Basin, Paerdegat Basin, Mill Basin, and Brooklyn Marine Park.* All, if they remain intact, are located under a mantle of fill of indeterminate depth.

The sites referenced represent part of a long-term exploitation of coastal resources in this district of Long Island. Although much is known about this exploitation and its associated human occupation patterns, the dynamic nature of the coast has prohibited thorough archeological survey. There are two reasons for this situation. First, it is known that sea level has risen significantly since the time of likely first human occupation, leading to the conclusion that many sites associated with Paleo-Indian and Archaic periods are now underwater. Second, massive landfill operations have covered many likely locations which might otherwise be surveyed.

Examination of Figure 2 reveals that the proposed route of the sludge force main crosses an area that in 1901 was characterized by marshy tidal flats, a deranged drainage pattern, and some higher islands. This setting, prior to the steady, but uneven, advance of sea level and historic period filling, would have been ideal for prehistoric exploitation. Nearby sites, none of which is in the direct path of

* The watercourse just south of Brooklyn Marine Park on Figure 1 is referred to herein as Gerritsen's Creek crossing.



NOTE: Figure is originally from Gimigliano et al., 1980: Fig 3.

FIGURE 2. Portion of Brooklyn Quadrangle, 1901. USGS Brooklyn Quadrangle. 15 minute series. Scale 1:62,500' = Approx. Project Area

proposed construction of any alternative, testify to such exploitation. Therefore, it is concluded that there is a probability of undiscovered sites, perhaps from a period of prehistoric occupation not widely represented on the present-day coast, in all of the project vicinity.

The four estuaries which the proposed sewer will cross can be predicted to be the most sensitive areas along this route. Force main river crossings are to be placed in a trench beneath each tidal stream's bottom, where construction may impact on shell middens of the prehistoric period or on remains of tidal mills, wharves, etc. of historic times.

III. THE BELT PARKWAY

A. General Background

The Belt Parkway, also known by its initial name, Shore Parkway, was constructed as part of the parkway movement so well represented in the New York City area as well as nation-wide. It was constructed for the City of New York Department of Parks as part of the Public Works Administration Program. Robert Moses, whose vision was responsible for so much of the parkway movement, was Parks Commissioner. Madigan-Hyland was the consulting engineering firm. Design was accomplished in 1938-39 and construction followed.

In the project corridor, both hydraulic dredging and filling occurred and bridges were built over tidal basins or channels. It is these crossings and other potentially sensitive areas which are of concern here.

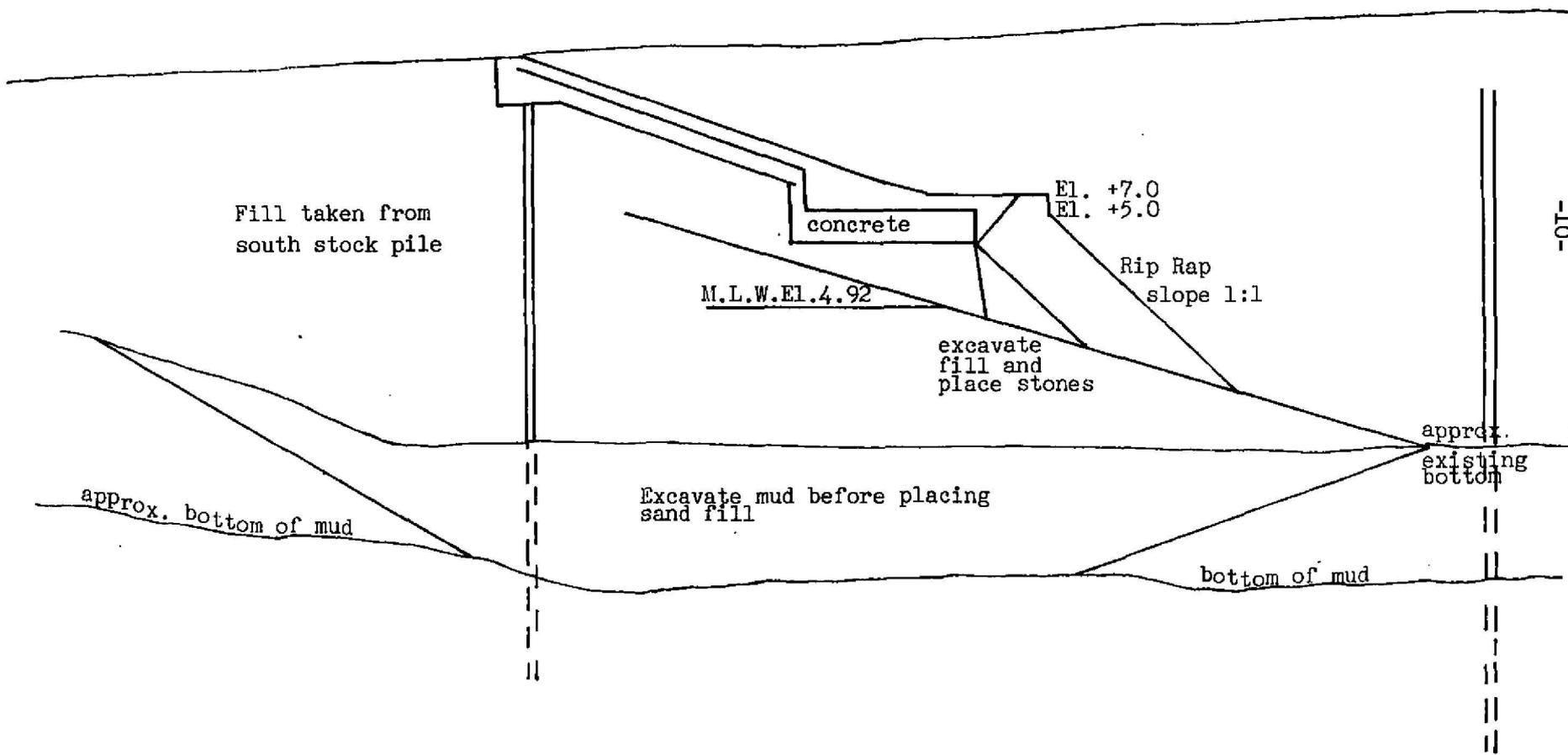
B. Fresh Creek Basin Crossing

The eastern-most crossing of the project corridor is the Fresh Creek Basin (refer to Figure 1). Examination of design drawings reveals that a deep mantle of fill obscures any natural former shoreline here (Figure 3).

Figure 3 provides several important pieces of information regarding this location. The approximate existing bottom in 1939 is labeled on

FIGURE 3
PROPOSED BRIDGE AT FRESH CREEK BASIN, 1939

Contract No. MS39-14
Scale: 1/16" = 1'



the right-hand side of the drawing. Fourteen feet below that is a level identified as the bottom of mud. Below the mud, not shown on this drawing but visible on Figure 5, is a gradation of mixed mud and sand, to sand.

The mud is interpreted as deposition that has occurred in association with the tidal marsh created by the rising sea level. While not described as to texture and composition, it appears to represent typical tidal marsh sedimentation. Consequently, any surface suitable for human occupation in the past can be expected to be below this layer.

The slope of the bottom and of the mud, upward away from the channel, is evident on the left side of the drawing. At a location just off the drawing, and unfortunately not shown on any available drawings, may have been an early shoreline associated with the drainage feature. This location is estimated to be, at a minimum, from 75 to 100 feet from the bridge abutment.

At this location is 16 to 20 feet of hydraulic fill over the 14 or more feet of tidal marsh mud. Below these two layers, and possibly even deeper, would be the surfaces of interest for archeological investigations.

Finally, the drawing reveals that the mud near the bridge was removed and replaced with clean sand as a base. This dredging activity would have caused enough disturbance to make any concern for cultural remains at the bridge unnecessary.

C. Paerdegat Basin Crossing

Figure 4 displays the conditions at the Paerdegat Basin Crossing. Here, what is designated as the approximated original surface is covered by 28 to 30 feet of fill. Although no description of this "original" surface is given, by extending the Mean High Water mark over this surface, it is apparent that it was inundated, at least at high tide. Logically, the represented approximate original surface is the top of the tidal marsh sediments of indeterminate depth which cover the surfaces available to early occupants.

D. Mill Basin Crossing

Figure 5 shows more fully the generalized stratigraphy beneath the Parkway. Here again any surfaces of archeological interest are deeply buried. Dredging and the substitution of fill material near the ends of the bridge probably disturbed any areas of interest.

The most likely locations for identifying early exposed surfaces are approximately 120 to 150 feet beyond the ends of the bridge. Extrapolation of natural slope lines and the surface of the bridge to this point indicates that nearly 20 feet of fill cover strata of interest. These would be the mud and sand mixture and the sand layer.

FIGURE 4
PROPOSED BRIDGE AT PAERDEGAT BASIN, 1939

Contract No. MS39-3
East Elevation
Scale: 1" = 50'

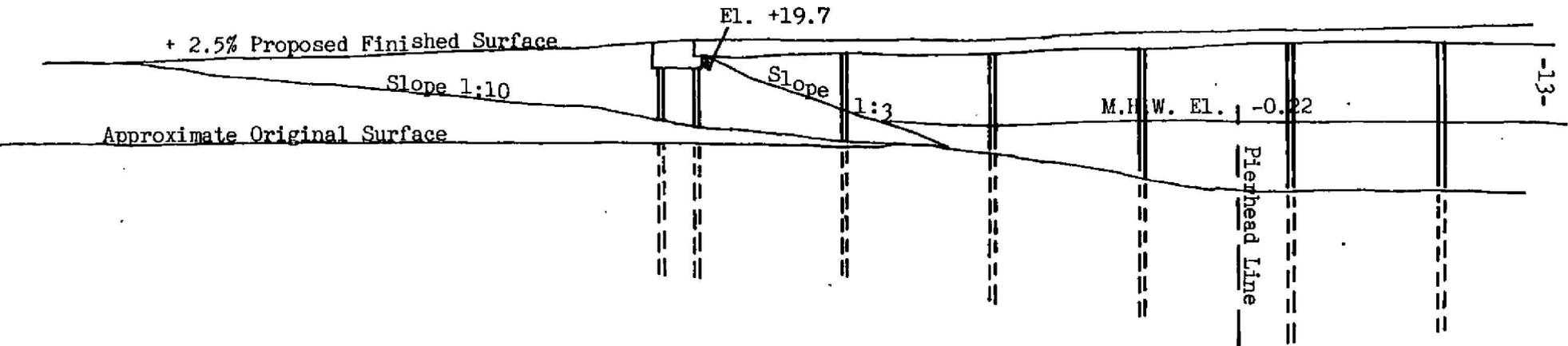
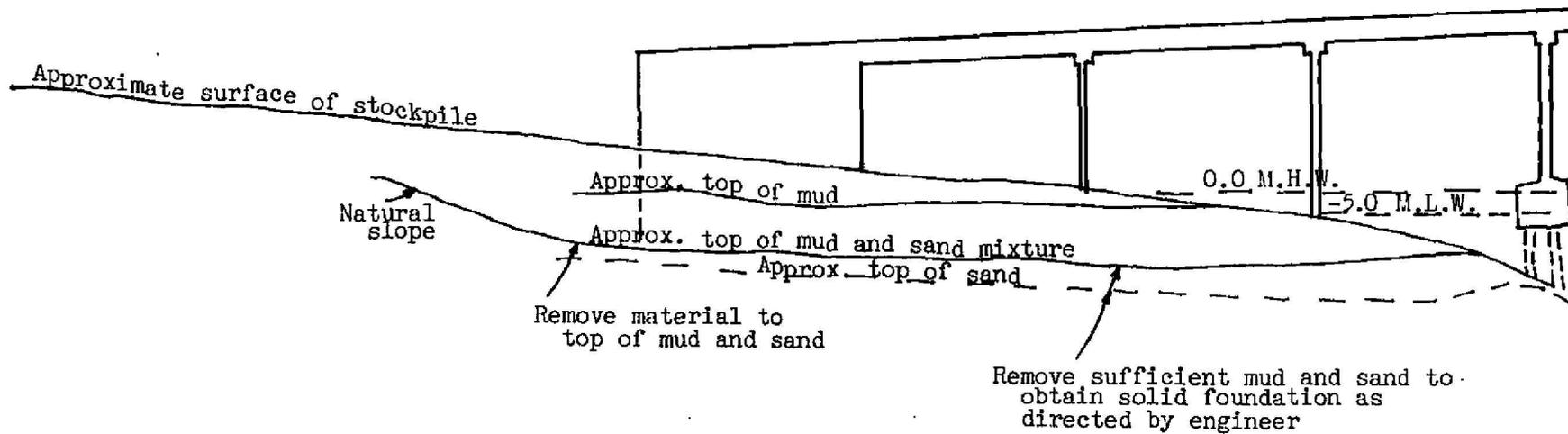


FIGURE 5
PROPOSED BRIDGE AT MILL CREEK BASIN, 1939

Contract No. MS39-3A
Scale: 1" = 40'



E. Gerritsen's Creek Crossing

The final, or westernmost crossing occurs at what is generally called Gerritsen's Creek (at the Brooklyn Marine Park, Figure 1). Here the situation is far more complex than at the other crossings. In actuality, there were originally two drainage outlets here--the Plumb Beach Channel (Shell Bank Creek) and Gerritsen's Creek. As Figure 6 shows, these two were originally separated by Willets Hassock Island.

To build the Parkway, the Plumb Beach Channel was dredged and the Gerritsen's Creek Channel was filled (Figure 7). The present bridge was built over the dredged channel.

The three areas of archeological concern are Willets Hassock Island, Plumb Island, and any original shoreline east and north of Willets Hassock. Both the islands were dry areas in 1939, so they may have been either islands or knolls overlooking the shore during periods of prehistoric occupation. Such locations are highly sensitive for cultural remains associated with this occupation.

Examination of Figure 8 reveals that Willets Hassock Island presently is beneath 20 to 40 feet of fill. The end of Plumb Island likewise is beneath this deep fill. However, as the force main follows the Parkway generally westward away from this bridge and toward Knapp Street and the Coney Island WPCP, it traverses Plumb Island, which is beneath 7.5 to 8 feet of hydraulic fill (Figure 9).

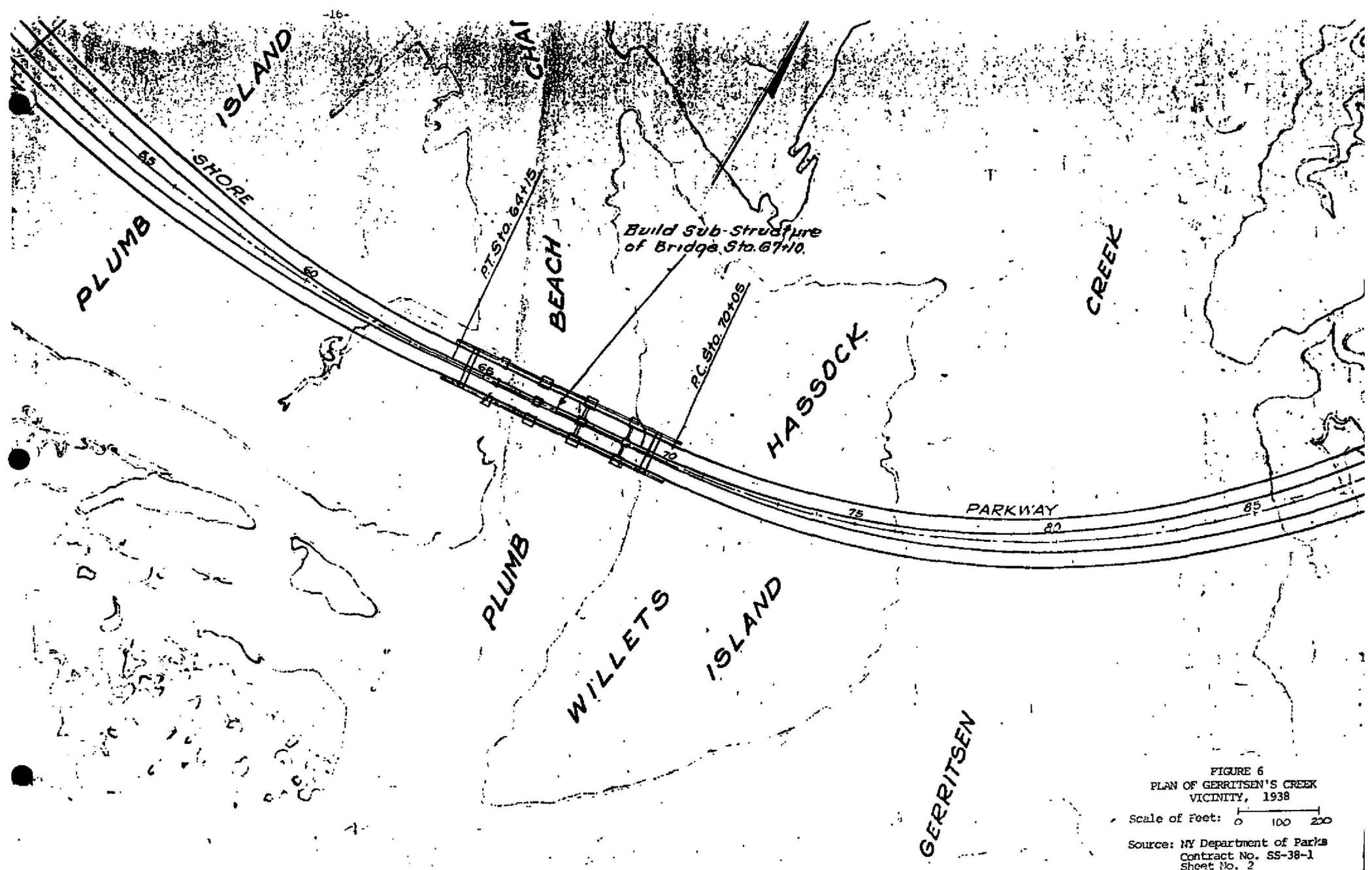


FIGURE 6
 PLAN OF GERRITSEN'S CREEK
 VICINITY, 1938

Scale of Feet: 0 100 200

Source: NY Department of Parks
 Contract No. SS-38-1
 Sheet No. 2

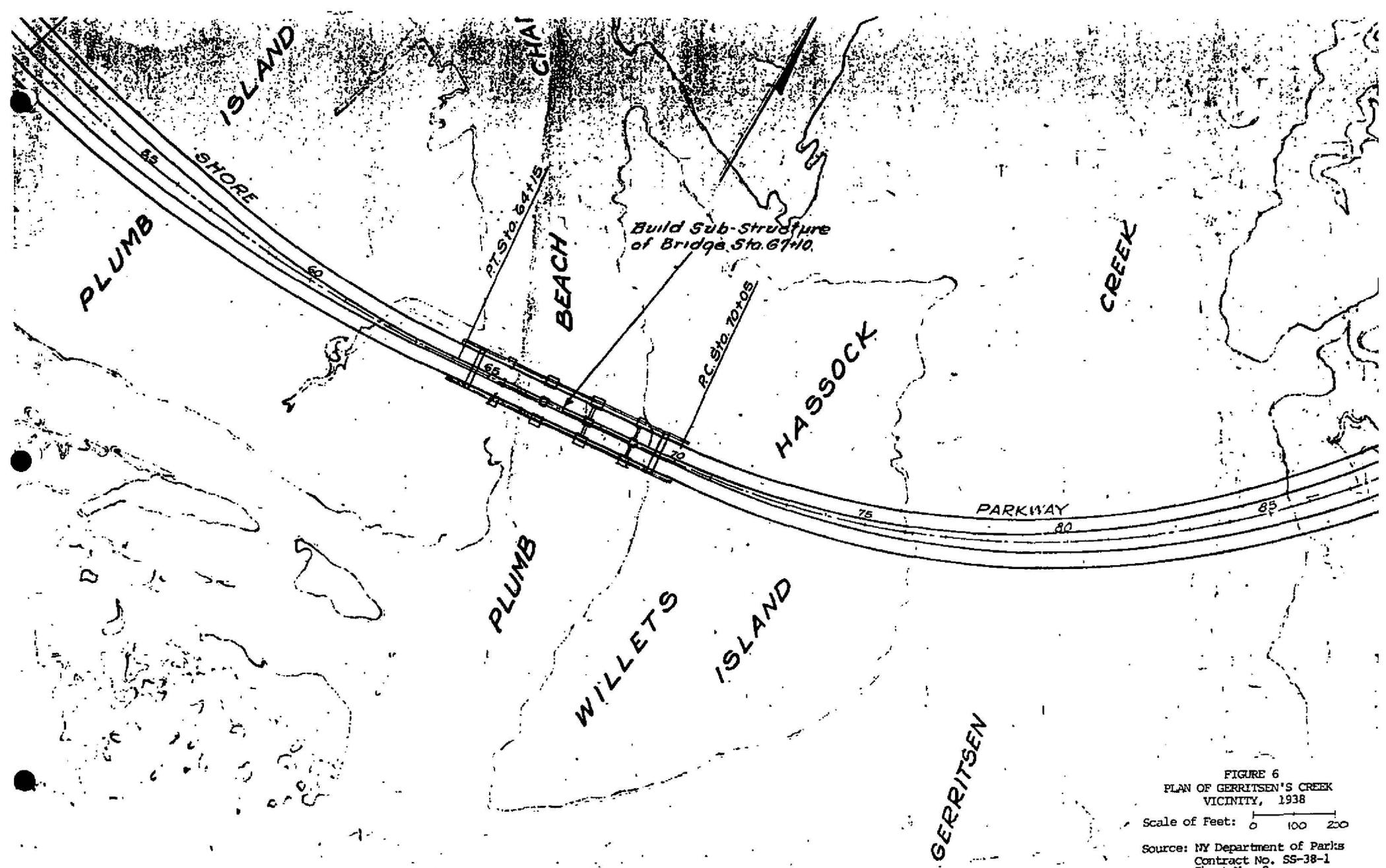
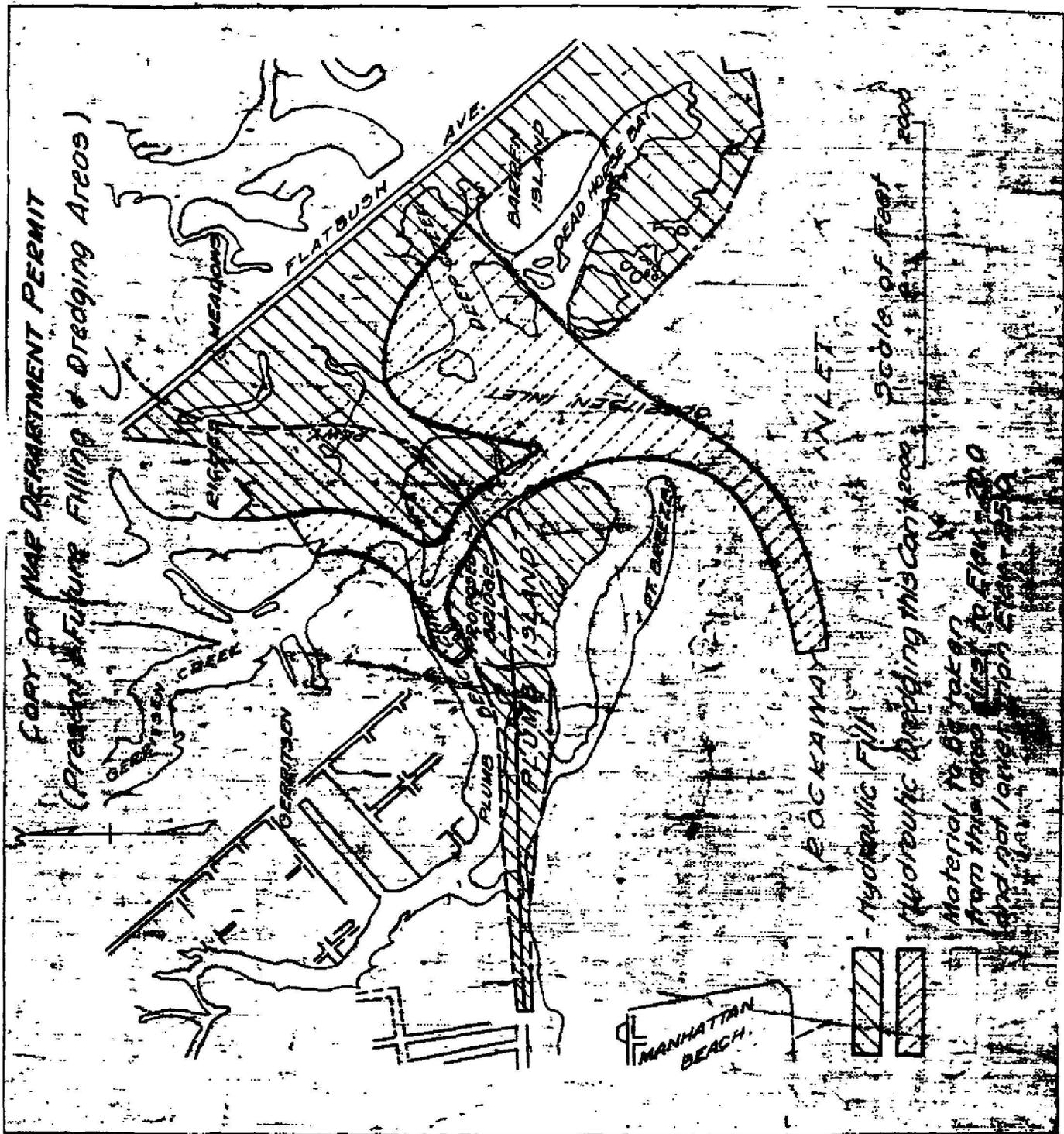


FIGURE 6
PLAN OF GERRITSEN'S CREEK
VICINITY, 1938

Scale of Feet: 0 100 200

Source: NY Department of Parks
Contract No. SS-38-1
Sheet No. 2

FIGURE 7



DREDGING AND FILLING, GERRITSEN'S CREEK VICINITY

Source: NY Department of Parks
Contract No. SS-38-1
Sheet No. 3

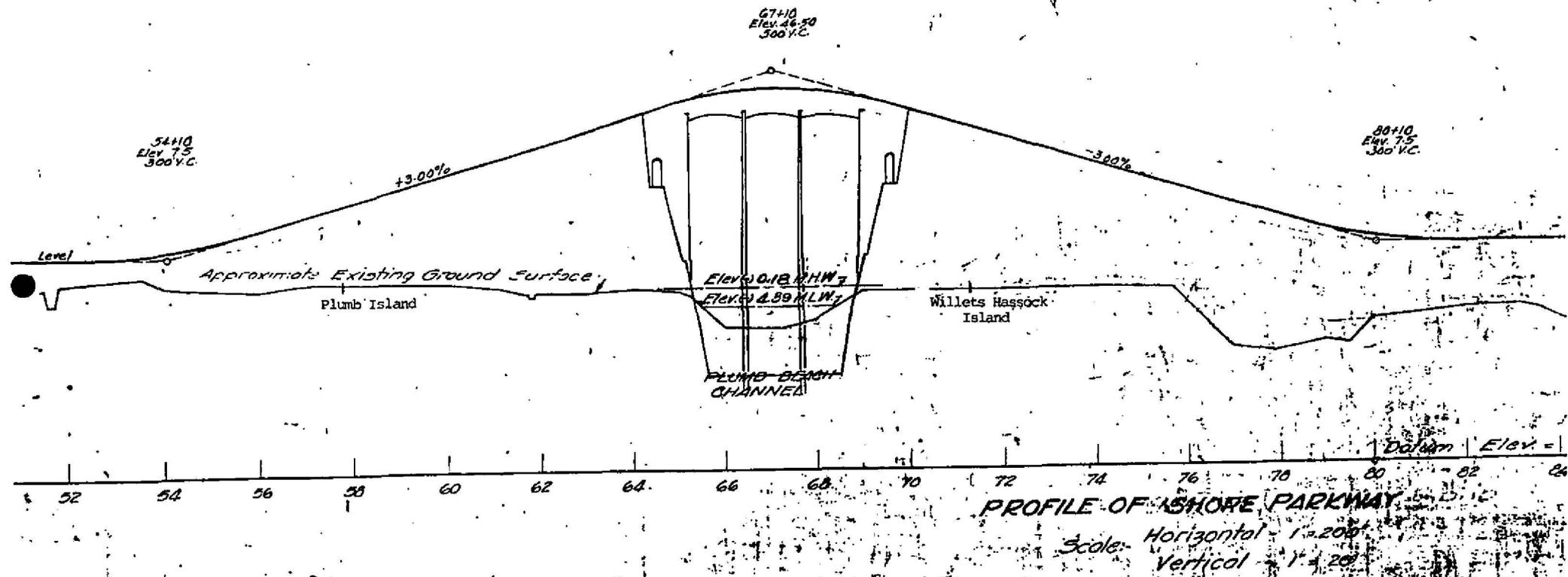
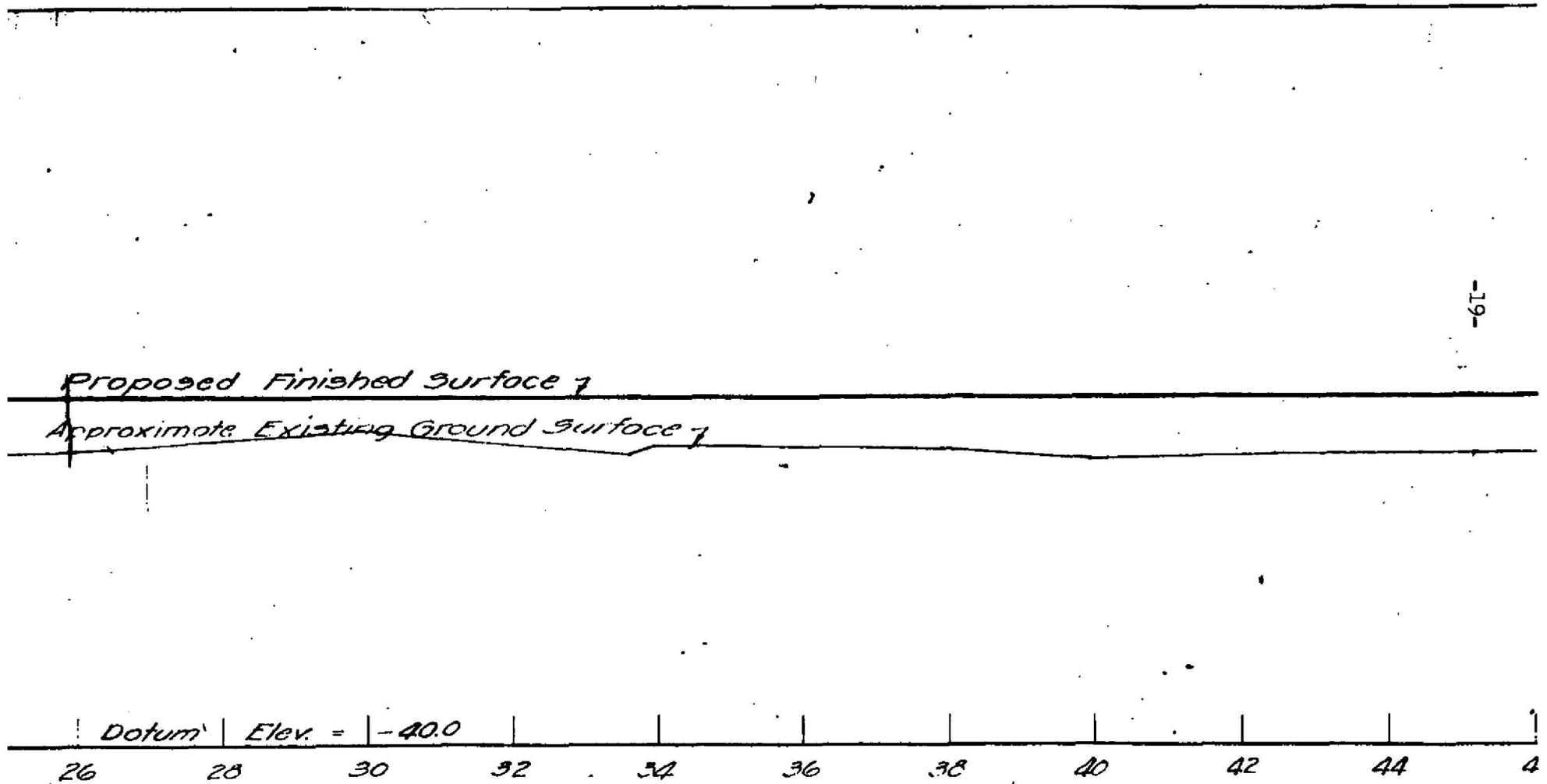


FIGURE 8
FILL PROFILE,
GERRITSEN'S CREEK BRIDGE, 1939

Source: NY Department of Parks
Contract No. SS-38-1
Sheet No. 3

FIGURE 9
PROFILE OF FILL ON PLUMB ISLAND



-19-

Horizontal - 1" = 200'
Vertical 1" = 20'

Source: NY Department of Parks
Contract No. SS-38-1
Sheet No. 3

Although this is not a stream crossing, the mandated area of study is an elevated location immediately adjacent to Shell Bank Creek which is a known location of prehistoric sites, and therefore extremely sensitive for other such sites.

The third area of concern in this vicinity is any original shoreline to the east of the filled Gerritsen's Creek Channel. The deranged drainage pattern shown on construction plans indicates that this was a tidal marsh in the 1930s. Thus, beneath the approximately eight feet of parkway fill it can be anticipated that there would be over 14 feet of the normal tidal marsh mud deposition before any original surface can be expected.

F. Construction Impact Summary

At the Fresh Creek, Paerdegat, and Mill basins crossings, deep fill and deep tidal marsh deposits cover any surfaces previously available for prehistoric resource exploitation or occupation. At the westernmost end of the project corridor, fill ranging from approximately 8 to 40 feet covers Plumb Island, Willets Haddock Island, and the former periphery of filled-in Gerritsen's Creek.

A strategy for archeological exploration of these varying environments must take into account the depths at which surfaces of interest may occur, the depth at which the force main is to be located, and the physical methods economically feasible and available for exploring these surfaces at those locations where force main construction will potentially disturb them.

IV. INFIELD ARCHEOLOGICAL TESTING STRATEGY

A. General Overview

The review of construction plans for the Shore Parkway reveals the general nature of the fill and stratigraphy where the proposed sludge force main is to be located. While additional filling or erosion in the 40 years since the construction of the parkway may have occurred, a comparison of the conditions reported in 1938-39 with current plans for the force main allows for the development of an infield archeological testing program.

Analysis of the plans reveals that not all areas need be of direct concern for this project. Each of the four areas, with recommendations, is addressed below, in the order presented in the preceding section.

B. Fresh Creek Basin Crossing

Force main construction plans indicate that the proposed pipe at this crossing will be from seven to ten feet below the existing grade. For most of its route, the pipe is located within 40 feet south of the eastbound or southernmost lane of the parkway. However, as it approaches these drainage crossings it swings further south to about 140 feet from the actual roadbed.

While this location is approximately ten feet lower than the road, it is anticipated that enough hydraulic fill is present, and may well be covering tidal marsh deposits of considerable depth, that the proposed force main will not encounter any original, habitable surfaces. However, given the available generalized evidence, this assertion cannot be verified.

RECOMMENDED INFIELD STRATEGY

1. Test borings to be made in this vicinity should be examined by the archeologists. If only hydraulically pumped sands and/or tidal mud are encountered to ten feet, no further concern will be necessary.
2. If the borings indicate a surface of potential, of either cultural material or concentrations of shell, then consideration will be given to limited testing with a backhoe. With the evidence available, this option does not seem likely to be implemented.

C. Paerdegat Basin Crossing

The force main at this crossing also swings south away from the bridge, but stays within 100 feet of the bridge. The general depth of the pipe is to be seven to ten feet beneath the existing grade, except where much deeper fill is evident on the banks of the basin.

Although the generalized evidence is again somewhat inconclusive, it appears that the force main will be entirely in the hydraulic fill until it enters the deep tidal marsh mud adjacent to Paerdegat Basin.

RECOMMENDED INFIELD STRATEGY

Test borings made in the vicinity to be examined by the archeologists. Only sand fill or tidal marsh mud is expected. Examination of the borings should provide verification. If this is not the case, infield judgments as to other options will be made by the field team.

D. Mill Basin Crossing

At the Mill Basin Crossing, the force main will be from five to ten feet below present grade. As at the previous locations, the pipe should be well within the hydraulic fill and far above any potential early occupation level. This conclusion is based on the generalized evidence available and will be verified by boring data.

RECOMMENDED INFIELD STRATEGY

Test borings made in the vicinity to be examined by the archeologists. Only hydraulic fill and tidal marsh mud are expected. Anomalies will be evaluated and appropriate action taken as necessary.

E. Gerritsen's Creek Crossing

This vicinity appears to have the greatest potential for yielding recoverable cultural remains, particularly along the former Plumb Island. In general, the proposed force main will be six to ten feet below present grade in this entire area.

Three areas are identified in Section III, above, as potentially sensitive. These are Willets Hassock Island, just east of the crossing,

any former shoreline associated with the filled previous outlet of Gerritsen's Creek, and Plumb Island. Of these, Willets Hassock Island and the area east of there are under deep fill, well below any impact from force main construction. Plumb Island, however, is apparently beneath approximately seven to eight feet of fill, within the proposed construction zone.

Plumb Island is shown as Plumb Beach on the 1902 quadrangle (Figure 2). To what extent this is a wholly natural feature or a partially or wholly man-made feature is unknown. If it is natural, or a slightly enlarged natural high area, then it is necessary to verify the presence or absence of cultural remains. A two-step approach is recommended.

RECOMMENDED INFIELD STRATEGY

1. Borings to be made in this entire vicinity to be examined by the archeologists. Two distinct sets of findings are important. First, borings on Willets Hassock Island and the area to the east, if available, will verify the deep fill and yield information about the island and its environs. Although no impacts on sensitive areas are predicted, the boring results from beneath the fill will be of future archeological value. Second, borings on Plumb Island will provide clues to the nature of the island and to its potential for yielding cultural materials.
2. If borings indicate a surface within reach of a conventional backhoe, and if this surface is judged to be of archeological interest, a backhoe will be used to open trenches for investigation. It is assumed that the sands from dredging will be unstable, necessitating opening wide trenches. Because it is

not economically feasible to open trenches up to 30 feet wide or to shore the excavations for safety at 7 or more feet, materials retrieved by the backhoe will be piled by stratum as distinctly as possible, and backdirt from critical strata will be screened for artifacts. A sample, based on field judgment, will be taken to verify the presence or absence of cultural remains.

F. Conclusion

Shore Parkway construction plans provide general guidance to the conditions to be encountered in the construction of the sludge force main. Correlating those plans with construction plans involves some estimation of fill depths and conditions as the pipe swings away from the actual highway. While it appears that the only area for concern is Plumb Island, just west of the Gerritsen's Creek Bridge, analysis of soil borings will assist in verifying conditions in all areas of concern.

V. SUMMARY OF RECOMMENDATIONS

A. Infield Testing

The following infield archeological testing program is recommended to verify the presence or absence of cultural remains.

1. Fresh Creek Basin

Analysis of soil borings by archeologists. Fill and tidal marsh mud should be deep enough here to preclude any further work.

2. Paerdegat Basin

Analysis of soil borings by archeologists. The force main is not expected to reach sensitive levels here.

3. Mill Creek Basin

Analysis of soil borings by archeologists. The force main is not expected to reach sensitive levels here.

4. Gerritsen's Creek

Analysis of soil borings from throughout this vicinity by archeologists. Of particular concern is Plumb Island, west of the present bridge. If in the judgment of the archeologists sufficient evidence is found here to indicate an accessible surface sensitive for cultural remains, a backhoe will be used to open trenches. Because this surface

may be located seven to eight feet down in unstable sand, screening of the stratum of interest will occur after it is removed by the backhoe.

The archeological team will make judgments concerning any modifications of this strategy as the physical evidence from the borings becomes available. At the maximum, this will mean one or two additional backhoe trenches in locations not presently deemed sensitive.

B. Further Responsibilities

To insure a timely and economical conclusion to the Stage IB Survey, the archeologists will engage in the following activities:

1. Consult fully with the project engineers to insure that maximum data can be obtained from the boring contractors.
2. Provide the project engineers with information on which borings are of interest and arrange schedules for maximum efficiency.
3. Prepare a report on all findings from the infield archeological survey.

BIBLIOGRAPHY

Church, David, *et al.*

- 1979 A Stage IA Cultural Resources Survey of the Proposed Sewage Treatment Plant Site of the Facility Plan for WP-238, Coney Island Water Pollution Control Project, Borough of Brooklyn, N.Y. For Malcolm Pirnie and Michael Baker, Jr.

Gimigliano, Michael N., *et al.*

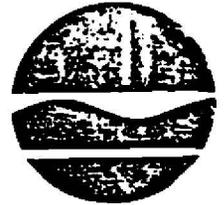
- 1980 A Stage IA Cultural Resources Survey of Three Sludge Force Main Alternative Routes for the Facility Plan, Coney Island Water Pollution Control Project, Borough of Brooklyn, N.Y. For Malcolm Pirnie, Inc. and Michael Baker, Jr.

Gimigliano, Michael N.

- 1981 An Expanded Stage IA Cultural Resources Survey for the Proposed Sludge Force Main Route, Coney Island Water Pollution Control Project, Borough of Brooklyn, N.Y. For Malcolm Pirnie, Inc. and Michael Baker, Jr.

APPENDIX A

New York State Department of Environmental Conservation
50 Wolf Road, Albany, New York 12233



Robert F. Flacke
Commissioner

JOB No. 13945
DA
H.P.L.
MA
Historic Linsen. ✓
C/F
FILE

January 29, 1982

Mr. Joseph T. Miller, P.E.
Assistant Commissioner
Director, Bureau of Plants
Dept. of Environmental Protection
40 Worth Street/Room 1317
New York, New York 10013

Re: Coney Island
C-36-396-03 & C-36-396-02-1

Dear Mr. Miller:

DEC Cultural Resource Section has reviewed the Stage IA cultural resource survey reports prepared by Historic Conservation and Interpretation Inc. for the Coney Island Water Pollution Control Project (C-36-396-03, C-36-396-02-1). On the basis of these reports, the effects of proposed construction were evaluated and recommendations for appropriate action were formulated. The review results are outlined below.

Water Treatment Plant (C-36-396-03): The proposed upgrading of wastewater treatment facilities at the Coney Island WPCP plant will have no effect on cultural resources on or eligible for listing on the National Register of Historic Places.

Sludge Force Main (C-36-396-02-1): A Stage Ib field intensive survey is required along the proposed force main route of the selected alternative (2c). The current design of this alternative calls for 30 centimeter (12 inch) diameter pipeline, 10,400 meters (34,400 feet) in length constructed along Knapp Street, the Belt Parkway, Border Avenue, Seaview Avenue and Van Siclen Avenue. The proposed routing requires crossing four tidal basins: Gerritsen Creek and Mill, Paerdegat and Fresh Creek Basins.

The scope of study for Stage IB field investigations along Alternate 2c should be based on the outline presented on pages 1-13 and 14 of 201 Facilities Plan (Environmental Assessment, Addendum No. 1; June 1981). The Stage Ib survey should include the following

RECEIVED

FEB - 5 1982

MICHAEL BAUER IR of NY DEC

Page 2

components: a detailed review of the construction plans and specifications for the Belt Parkway, an analysis of soil borings along proposed route for indication of cultural material and the machine-assisted excavation of archeological tests when economically feasible. The use of power equipment will be limited to areas where the proposed pipe is below existing fill and where existing water courses are in close proximity.

Two copies of the Stage Ib survey proposal including a detailed scope of study and estimated costs should be forwarded to NYSDEC for review and comment prior to initiating the work.

If you have any questions, please contact Louise Basa or Karen McCann at (457-3887).

Sincerely,



Alan S. Rockmore, Chief
New York City Project Section

cc: USEPA Region 2 - Mr. Forger
NYSDEC Region 2 - Mr. Newman
NYCDEP - Mr. Novick/Mr. Ilijic
Pirnie/Baker - Mr. Zondorak ✓
