ASSESSMENT OF ARCHAEOLOGICAL POTENTIAL NEW YORK CITY CORRECTIONAL FACILITY, STATEN ISLAND CEQR No. 88-071R

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by

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I. INTRODUCTION

A. Background

In 1988, a report was submitted to the New York City Department of Corrections presenting the results of a Stage Ia cultural resource assessment of the proposed New York City Correctional Facility site on Staten Island (Berger 1988). The site borders the Arthur Kill in the Rossville area (Figure 1). At that time the project site encompassed an area of 105 acres. The correctional facility parcel was subsequently reduced to its present size of 33 acres and a version of the cultural resources report, modified to reflect the revised site boundaries, was incorporated into the Final Environmental Impact Statement for the project (Berger 1989).

The report concluded that "there is the possibility that deeply buried PaleoIndian and early Archaic deposits may be extant below the project site" (Berger 1989:III-50). Based on these conclusions the New York City Landmarks Preservation Commission requested that additional research be undertaken to assess "the potential (or lack of potential) for recovery of early Native American material bases (sic) on grading and disturbance within the 33-acre parcel" (Berger 1989:ES-4).

B. Objective and Procedures

The objective of the present study is to assess the liklihood that intact archaeological deposits are present on the site. The study involved a review of the research contained in the Berger (1988, 1989) reports, as well as the results of other archaeological research previously conducted in southwestern Staten Island; evaluation of previous and current topographic maps of the site; an assessment of the logs of soil borings; and a pedestrian reconnaissance of the site.

II. RESEARCH AND ANALYSIS

A. Prehistoric Archaeological Sites in the Project Vicinity - An Assessment of Site Stratigraphy and Location

The reports submitted by Berger Associates demonstrate the archaeological sensitivity of the area in which the project site is situated. These reports list seventeen prehistoric sites within two miles of the project, and there are additional sites in this area which are not listed by Berger (e.g. Cotz et al. 1985; Yamin and Pickman 1986a, 1986b). According to Berger (1989:III-46) a camp site located within "the eastern portion of the project tract" was recorded by Arthur C. Parker in the 1920's and is included in the New York State Museum site files. A more precise description of its location is not given, however.

To assess the archaeological potential of the project site, it is first necessary to consider the stratigraphy encountered at the previously reported sites as well as the topographic and physiographic characteristics of the site locations.

The nearest site to the project, and among the best documented, is the Smoking Point site, located only some 750 feet west of the northwestern portion of the project site (see Figure 6a). Excavations on the site were conducted in the 1960's by Bert Salwen of New York University and reported by Silver (1984). The N.Y.U excavations were conducted in two portions of the site, a lower-lying "beach area" (Excavation Unit I) and a "knoll" located to the south (Excavation Unit II). The map provided by Silver (1984:4 - see Figure 2) indicates that both excavation units were located between the 10 and 20 foot contours. However, Rubertone (1974 - see Figure 3) shows a slightly different position for the excavations, with Excavation Unit I lying below the 10 foot contour. This would appear to be more consistent with the characterization of this excavation unit's location as a "beach area." A map drawn by Salwen (1967 - see Figure 4) prior to the N.Y.U. excavations also indicates that the prehistoric deposits extended below the 10 foot contour.

Stratigraphic profiles from Silver's (1984) report are included here as Figure 5. In Excavation Unit I, on the "beach area", 3 - 14 inches of historic period soil and fill overlay a prehistoric shell midden which was apparently deposited during the transitional period (ca. 1000 B.C.). In Excavation Unit II, located on the higher ground, up to ca. 32 inches of historic period deposits overlay the shell midden. Underlying the shell midden in all portions of the site was a stratum of tan sand. The uppermost foot of this sand deposit yielded Late Archaic material (ca. 2000 - 1500 B.C.). After the upper foot of the tan sand stratum, a there was a "zone of relatively low artifact density" (Silver 1984:21). In Excavation Unit II this zone was followed, at a depth of ca. 30-42 inches below the top of the tan sand stratum, by another deposit of prehistoric artifacts. While none

of the material recovered was temporally diagnostic, "some of the flakes and chunks that are used as scrapers resemble the stereotypical Paleo-Indian side/endscraper" (Silver 1984:22). If the depth of sand is added to that of the historic period overburden reported by Silver, the early prehistoric artifacts were recovered as much as ca. six feet below the ground surface.

In Excavation Unit I the tan sand stratum was described as 48+ inches thick "with gravel at its base...the water-table was reached at depths of 12-to-48 inches into the tan sand stratum" (Silver 1984:11). Thus, the tan sand stratum apparently reached a depth of some 4-5 feet below the surface in this area. It should be noted that Salwen (1967 - see Figure 4) described the color of the sand stratum underlying the the midden as "red", rather than the tan color reported by Silver.

As shown on the 1913 Borough of Richmond topographic map (see Figure 6a) the Smoking Point site was located at the edge of an area of salt marsh bordering the Arthur Kill. Salt marsh was also present in an inlet immediately west of the site. The presence of the marsh areas would presumably have made the site attractive to prehistoric inhabitants since they would have increased the diversity of available food resources. Fresh water would have been available to the site occupants from a fresh water stream shown on the 1913 map some 600 feet east of the site.

The Berger report mentions the recovery of Paleoindian material from the Port Mobil area "in a tank farm two miles south of the project site" (1989:III-50). It should be noted that Port Mobil site actually represents three separate loci of finds. The northernmost of these (termed by Kraft (1977) the "North Beach" site), was not within the Port Mobil tank farm but actually in the vicinity of Smoking Point (Kraft 1977:7). While Kraft (1977) reported the Port Mobil sites, the material was actually recovered by Staten Island avocational archaeologists. Kraft does not specifically state if any excavations were conducted but it appears as if all or most of the artifacts represent surface finds. Therefore, there is little information on the stratigraphy at these sites. Test excavations were conducted at the southernmost of the three site areas, at Charleston beach, by Salwen (Salwen 1968, Kraft 1977). Non-diagnostic artifacts were recovered beneath peat deposits in a back-beach marsh area. It is unclear whether this material was deposited in situ or whether it was washed downward from a bluff-top site prior to the formation of the marsh deposits.

Another site excavated in this portion of Staten Island during the 1960's is the Wort Farm site. This was an inland site, located east of Bloomingdale Road approximately one mile south of the project area. The site is located near the head of Sandy Brook, which flows southward and eventually empties into Prince's Bay on the south shore of Staten Island. A report on the Wort farm site by Williams (1968) indicates that the stratigraphy at this site consisted of a 7-10 inch plow zone which was followed, in one portion of the site, by 25 - 35 inches of unstratified

yellow sand. The latter stratum was underlain by layers of red clay and yellow and white mottled sandy gravel. Woodland period artifacts were recovered from the plow zone and the uppermost portion of the yellow sand. Late Archaic material was recovered from the yellow sand between 17 and 22 inches below the surface. In a second portion of the site, the yellow sand underlying the plow zone continued below a depth of 50" below the surface. However, this portion of the site yielded only Woodland period material (above a depth of 19" below the surface). The Archaic component was not encountered here.

The sand stratum which yielded prehistoric material at the Smoking Point and Wort Farm sites appears to be widespread over the southwestern portion of Staten Island. Prehistoric artifacts have been recovered from this stratum in excavations and shovel tests at a number of sites (see Pickman and Yamin 1984; Pickman 1988).

It is clear from the above descriptions that the artifact-yielding sand stratum must have accumulated during the post-glacial period. At the Smoking Point and Wort Farm sites, at least, there appear to have been distinct artifact-bearing levels within this deposit. Accumulation of the sand stratum would have begun prior to the deposition of artifact-bearing levels and continued afterwards. Apparently, any darker organic materials which would have marked occupation surfaces on which artifacts accumulated has leached out of the sandy soils. These sands, which overlay glacial deposits, were apparently wind-deposited during the Holocene. The sand deposits were described as early as 1902.

> Wind blown sand is common along the west side of Staten Island but its thickness is slight and its distribution so irregular that it forms but a discontinuous layer over the area which it covers. Thickness rarely exceeds ten feet and is often less than half this amount (Salisbury 1902:15).

As noted above, artifacts have been recovered at a depth of 3 - 4 feet below the surface of this sand stratum and it is possible that artifacts could be present at greater depths in some locations.

B. Prehistoric Period Archaeological Sensitivity of the Project Site

The 1913 Borough of Staten Island topographic map (Figures 6a and 6b) show the topographic and physiographic characteristics of the site prior to 20th century land modifications. Particularly sensitive portions of the site can be identified by comparing these characteristics with those of the prehistoric sites noted above and others which have been reported in the western portion of Staten Island.

The map shows that the northwestern portion of the project site

has characteristics similar to those of the Smoking Point site, located some 750 feet further to the west. This portion of the site, which is considered to be a likely location of prehistoric archaeological deposits, is indicated on Figures 6a and 7 as "Area A."

As was the case with Smoking Point, this portion of the site contained a low "bluff-like" area which descended from the ca. 10 foot elevation to the adjacent marshes. The northwesternmost point of land may have consituted a "beach-like" environment such as the location of Excavation Unit I at the Smoking Point site. A marshy inlet similar to that at the Smoking Point site adjoined area A on the west. While the strip of marsh bordering the Arthur Kill was thinner at the project site than at Smoking Point, the inlet area was more extensive. At both sites there were higher knolls further back from the shoreline. At the project site such knolls were located in areas A1 and A2 as shown on Figures 6a and 7.

The same stream which would have served as a source of fresh water for the occupants of the Smoking Point site would have entered the inlet immediately west of the project site. The proximity of fresh water many have made this site an even more attractive location for prehistoric occupation than the Smoking Point site.

Two other portions of the site, although less sensitive, may have represented advantageous campsite locations for prehistoric inhabitants of the area. The contours shown on Figure 6a indicate that the head of a gully was located in the northeastern portion of the site. The gully extended to the north, entering the Arthur Kill just northeast of the site. In 1913, there were ponds and a marsh area at the base of this gully. The maps show two knolls to the west of the gully which may have been advantageous prehistoric camp site locations. The westernmost knoll (at the ca. 18 foot elevation), which would have overlooked the Arthur Kill, is referenced here as "Area B". The second knoll, closer to the gully (at the ca. 22 foot elevation), is south of the project site boundary.

A number of sites in southwestern Staten Island (such as the Wort Farm site discussed above) were apparently oriented toward the exploitation of resources associated with inland streams (see e.g. Pickman 1990 for discussion of other sites). The 1913 topographic map (Figure 6b) shows a fresh water stream which originated east of Bloomingdale Road. The stream flowed northward from its source, turning to the east immediately south of Arthur Kill Road. The southeastern corner of the project site would have been only some 150 feet from the stream. This area is referenced on the map as "Area C1." The other portions of the site immediately north of Arthur Kill road would have been somewhat further (up to ca. 450 feet) from the stream, but the ground elevations at these locations are higher than the area closer to the stream. The highest elevations in this area would have been in the western portion, referenced on the map as "Area C2".

C. Historic Period Archaeological Sensitivity of the Project Site

The Berger reports (Berger 1988,1989) mention only one mid-19th century structure, the "Mason Mansion," within the project site. However, examination of the mid-late 19th century maps included in the 1988 report clearly shows that there were three other structures located within the present 33 acre project site in addition to the Mason mansion. Two of these structures were labeled J.J. Winant on maps dating to 1859 and 1887 with the third labelled I. Oakley or J. Oakley. Furthermore, the late 18th century map included in the Berger report also shows two structures labelled R. Wynant. These are most likely the same structures shown on the later maps.

Examination of the 1913 topographic map (Figure 6a) indicates that all four of the structures were still standing at that time. The Oakley house, a 2 1/2 story frame structure, was located on top of the bluff in Area A1, which is also considered to be the most sensitive location for prehistoric sites. The two Winant houses, one a three-story and the other a two-story frame structure, were located east of the Oakley house in areas referenced as A1 and A2 which are also within the area of prehistoric archaeological sensitivity. The three-story brick Mason mansion is shown in the northeastern portion of the site, at the location designated Area B. This area is also considered to have a potential for containing prehistoric camp sites. The 1913 map shows a number of outbuildings associated with each of the four structures.

The vicinity of the four structural sites would most likely have contained historic period archaeological deposits within sub-surface features (cisterns, privies, wells etc.) and/or in the form of surficial middens.

D. Assessment of Disturbance

The project FEIS (Berger 1989:III-50) states that "in general, the...project site appears to be highly disturbed...Construction of the LNG tanks involved massive grading of almost the entire property."

Visual observation indicates that surface conditions in nearly the entire tract have been altered, most likely in connection with the construction of the LNG tanks. However, it should be noted that while construction activities may have resulted in downcutting in some areas, it is also possible that soil may have been spread over other portions of the area, resulting in preservation of underlying surfaces. Large mounds of earth have been deposited in several areas, with the largest being located in the northwestern portion of the site. It is assumed that these mounds consist of material excavated for the foundations of the tanks. It is possible that the former ground surfaces are

preserved beneath them.

In the north-central portion of the site, there is an earthen embankment adjacent to the remains of a concrete construction which apparently contained a pipeline and pumps to convey the LNG from ships to the tanks (see Plate 1). Construction may have destroyed any deposits underlying this structure.

To futher assess disturbance we have compared the contours as shown on the 1913 topographic map (Figures 6a and 6b) with those shown on the current site plan (see Figures 7 and 8a-f), focusing on the areas considered to be the most archaeologically sensitive.

The maps indicate that in 1913 the Arthur Kill shoreline would have been at the approximate location of the access road which now extends across the northern part of the site. A narrow strip of land north of the road and the former marshy inlet in the extreme northwestern portion of the site have been filled-in.

In general, observation of the elevations shown on the maps suggests that deep cutting has not occurred in the archaeologically sensitive areas. A more detailed discussion of each of these areas follows.

It should be noted that the presence of historic period structures within the project site suggests the possiblity that prehistoric deposits could have been disturbed and/or preserved beneath fill by activities which occurred prior to the early 20th century. At least some of the overburden covering the prehistoric shell midden at the Smoking Point site was apparently associated with the construction and/or occupation of nearby nineteenth century structures (Silver 1984). Any topographical changes resulting from the 18th-19th century occupation of the project site would already be reflected in the contours shown on the 1913 map.

1. Area A1

The present contours at the top of the bank (ca. 10-12 feet) in the northwestern portion of the site above the filled-in Arthur Kill shoreline and the marshy cove area appear to be similar to those shown on the 1913 map. One of the large spoil mounds is located at the top of the bank, approximately 30 - 50 feet from its edge (see Plates 2 and 3). The maps indicate that the major portion of the 19th century Oakley house site is beneath this pile. There is a gap of some 15-60 feet between this earthen mound and a larger one located immediately to the south. A portion of the house foundation may be located within this gap. Features to the rear of the house would most likely be beneath the larger mound.

Since the maps indicate that little, if any downcutting has occurred in this area, it is possible that almost all of the

original stratigraphy is present. Thus, remaining sites could include those dating to the Middle Archaic - Woodland Periods, such as those located in the upper portion of the sand stratum at the Smoking Point site, as well as possible Paleoindian and Early Archaic deposits, such as those which were buried deeper in the sand stratum at Smoking Point.

The ground surface immediately northwest of the bank in Area A1 is now at an elevation of ca. 8 - 9 feet (see Figure 8a). This area was at an elevation of ca. 2 - 6 feet in 1913 (Figure 6a). Any former beach area at this location, similar to the one which contained prehistoric deposits at Smoking Point, would now be underneath as much as ca. 7 feet of fill.

2. Area A2

The sensitive area for prehistoric occupation continues eastward from Area A1 to area A2, which includes a knoll representing a local height-of-land. Again, the present contours in much of this area, with the exception of the portions of the area covered by spoil mounds are close to those shown on the 1913 map. The western portion of the top of this knoll, at the 18 foot elevation, is still present immediately west of the concrete construction. The eastern portion of the knoll top, however, would have probably have been severly disturbed by this construction. The westernmost of the two ca. 18th - 19th century Winant houses was located north of the top of the knoll in an area which is now immediately west of the earthen embankment and concrete construction and north of the fenced-in area shown on the site plan (Figures 7 and 8b).

3. Area A3

The easternmost of the two Winant houses was located in this area. It also represents the northeastern portion of the area of prehistoric sensitivity. The site overlooked the Arthur Kill, with the land also sloping downward to the east. Again, the present contours in the area, with the exception of the site of the concrete construction and the adjacent embankment appear to be nearly identical with those shown in 1913. The location of the Winant house would appear to be immediately east of the concrete construction near the 14 foot contour line.

4. Area B

Area B was the site of the 19th century Mason mansion, as well as being advantageously situated for utilization by prehistoric peoples. The house site is shown on the 1913 map as located above the 18 foot contour. Maximum elevation in this area as shown on the site plan is now 17.7 feet. The maps indicate that there has been slight downcutting in the area, probably not exceeding ca. one foot. The Berger report (1989:III-50) states that "grading

and pond excavation would have destroyed any remnants of the Mason Mansion". It should be noted that there are no ponds shown on the site plan in the vicinity of the Mason mansion site and none was noted at this location during the reconnaissance. Examination of the area did not indicate the presence of a foundation. However, a portion of the surface was obscured by high grass (see Plate 4). In addition, it is likely that soil was spread over the area during the construction of the LNG facility, obscuring any surface indications of the foundation.

5. Area C

The Berger report (1989:III-50) notes the presence of two small areas in the southeastern portion of the site which "appear to represent original ground surface". These areas contain moderate size trees and would appear not to have been affected by construction of the LNG tanks, although earlier disturbance is a possibility.

The area in the extreme southeastern portion of the site (Area C1 - see Plate 5), closest to the stream as discussed above, contains dense stands of briar. The map contours suggest that some slight downcutting, probably less than one foot, may have occurred in this area. The second area (Area C2 - see Plate 6), near the Bloomingdale Road entrance, is more open. However, a concrete slab was noted in the western portion of the area during the pedestrian reconnaissance. The contours shown on the 1913 and current maps suggest that some raising of the grade (ca. 1 - 2 feet) has occurred in most of this area.

Most of the ground between areas C1 and C2 has apparently been substantially disturbed by the construction of the buildings which stand in this area.

E. Analysis of Boring Logs

As part of the analysis, we examined the logs of 99 borings taken on the site by the City of New York. The boring locations are shown on Figures 9a and 9b. It should be noted that no borings were taken in the archaeologically sensitive areas designated above as A1, C1 or C2.

In general, analysis of boring logs can be useful in archaeological analyses where possible artifact-bearing strata may be present beneath deep deposits of fill and/or accumulations of peat or organic silt. With the exceptions noted below, these conditions do not exist on the project site.

The procedure followed in taking the borings involved sampling at five-foot intervals with 1 1/2 feet of the stratigraphic column being included in each sample. The first sample in each boring was taken at a depth of five feet. Thus the first five feet of the stratigraphy were not sampled although in some cases material

above this depth was noted as fill, apparently based on drilled material or that washed out of the casing. Since the procedures used resulted in sampling of only 30% of the stratigraphic column, there is a good chance that relatively thin strata, such as buried ground surfaces, would not be noted in the boring logs.

Since sea levels were much lower during much of the prehistoric period than at present, archaeological deposits can be found beneath peat deposits, as at the Charleston Beach site discussed above. Archaeological sensitivity of such areas can be assessed by reconstruction of pre-innundation topography and physiography based on data from borings. Peat deposits underlying fill should be present in the northwestern portion of the project site, north of the road along the Arthur Kill shoreline and also in the former inlet area. However, no borings were taken in these areas.

Material designated as "fill" is noted in the uppermost 1 - 2 feet in 15 of the boring logs. This apparently represents material deposited during the construction of the LNG tanks. Logs of nine other borings (#79 - #81 and #86 - #91) indicate the presence of ca. 5 1/2 - 8 feet of fill. Cinders are noted in this stratum in the logs of most of these borings, while two note the presence of "asphalt". These borings are located south of the access roadway in an area which is north of the two historic period Winant house sites. Comparison of the 1913 topographic map with the site plan indicates that the grade at the locations of these borings (as shown on Figure 9a) has not been raised by the amount repesented by the depths of fill indicated in the logs. It is possible, however, that this area was filled prior to 1913, during the occupation of the Winant houses. Although the boring logs do not indicate the presence of other cultural materials in the samples, this "fill" could contain refuse associated with occupation of these houses.

The boring logs indicate that the uppermost stratum encountered in most of the borings beneath any overlying fill was reddish brown in color with the predominant soil texture being sand in approximately half of the borings and silt in the remaining half. In a few borings, the sands at the top of the stratigraphic column were noted as being other than reddish brown in color. Orange/brown fine sand (ca 6 feet thick) was noted below overlying fill in boring #89. Ca. 8 feet of gray sand containing vegetation and organic material was noted in boring 96, and ca. 4-5 feet of brown sand (beneath overlying fill) were noted in borings 79 and 80. Brown sand (ca. 13 feet) was noted as the uppermost stratum in boring 8.

In some of the logs the uppermost silt or sand deposit is specifically characterized as "till." Salisbury (1902: 13) characterized the till comprising the glacial moraine on Staten Island as primarly consisting of clayey soils which have a reddish color due to incorporation of red triassic shale and sandstone found in the northern part of the island.

The data provided by the boring logs are not sufficiently

detailed to indicate whether or not the artifact-bearing sand deposit noted on western Staten Island archaeological sites is present on the project site. Such deposits most likely consist of wind-blown sands, probably of glacial origin, re-deposited from other locations. The sand deposits noted in the borings could include aeolian material overlying in-situ glacial deposits. The boring logs would not necessarily distinguish between the two types of deposition. It is, however, unlikely that the aeolian sand stratum would have been present at the Smoking Point site, ca. 750 feet to the west, but completely absent at the project site.

III. CONCLUSIONS AND RECOMMENDATIONS

Analysis indicates that portions of the proposed New York City Correctional Facility site are highly sensitive for the presence of prehistoric and/or historic period archaeological deposits. These sensitive areas are indicated on Figures 7 and 8a-f and discussed in the text. Comparison of topographic maps dating to the early 20th century with the current site plan suggests that any disturbance of the sensitive areas resulting from the construction of the adjacent LNG tanks would have been restricted to the near-surface portion of the previous stratigraphic sequence, and that portions of the previous ground surface may remain intact beneath overburden, including several large spoil mounds.

The results of excavations of near-by prehistoric sites indicate that archaeological deposits, possibly dating to the early prehistoric period, can be found in this portion of Staten Island at depths in excess of four feet below the surface. Any such deposits should remain intact in most portions of the project site. Later prehistoric deposits, found closer to the surface, could also remain intact in many areas.

Four historic period house sites were located within the project site boundaries. Two (located in Areas A1 and B) apparently date to the mid-19th century while two others (in Areas A2 and A3) could date to the 18th century. Analysis of the topographic maps suggest that all or part of the foundations of these structures could be intact, as well as sub-surface features (cisterns, privies, wells, etc.) in the vicinity of the structures. Surficial deposits (refuse middens) are less likely to remain intact, but could be buried in some areas beneath overburden. In addition, the logs of borings taken north of two of the house sites suggest the possibility that fill deposited during the occupation of these structures could be present at the boring locations. The only portions of the historic period sites which may have been completely destroyed would be at the location of a concrete construction associated with the LNG tank complex.

The sensitivity of the site, combined with the liklihood of preservation of deposits in at least some areas indicates that a program of archaeological testing should be undertaken in the sensitive areas labelled A, B and C on Figure 7. The first step in such a program is to determine if archaeological deposits do, in fact, remain intact on the site. The significance of such deposits would then be determined so that a decision can made on the need and the steps necessary for the mitigation of any adverse impacts of the planned project.

Archaeological testing at the project site would probably require the use of power equipment in combination with manual testing techniques. Manual testing can take the form of small shovel tests (ca. 18' diameter) which can be used to assess stratigraphy

and the presence of artifacts. Shovel testing, however, may not be an effective means of testing in most portions of the project site because of the depth at which prehistoric deposits could be found and because of the likely presence in at least some areas of overburden containing cobbles, larger boulders or other debris. Manual testing to reach the depths at which artifacts were recovered at the Smoking Point site could be carried out in some areas by means of excavation of a number of test squares. Such squares would also be large enough to enable the removal of cobbles or other debris. This type of testing could be used in areas C1 and C2 and in portions of area A1. Howver, other portions of area A1, including the site of a mid-19th century house, are buried under large spoil mounds.

Manual testing at the other historic period house sites (Areas A2, A3 and B) could detect any surficial middens beneath overburden. However, since it is difficult to determine the exact location of buried foundations or features, manual testing would probably not be the most effective means to test for the presence of such remains. After limited manual testing is used to assess the stratigraphy in these areas, a backhoe or other earth moving equipment could be used to strip the overburden in order to expose buried foundations and features which could then be manually tested. The backhoe could also be used to remove earth near the edges of the spoil mounds and fill from the possible beach area in Area A1 so that manual testing could be conducted at these locations. Backhoe trenching, combined with manual testing, could also be used to determine the compostion of the fill deposits north of the Winant house sites.

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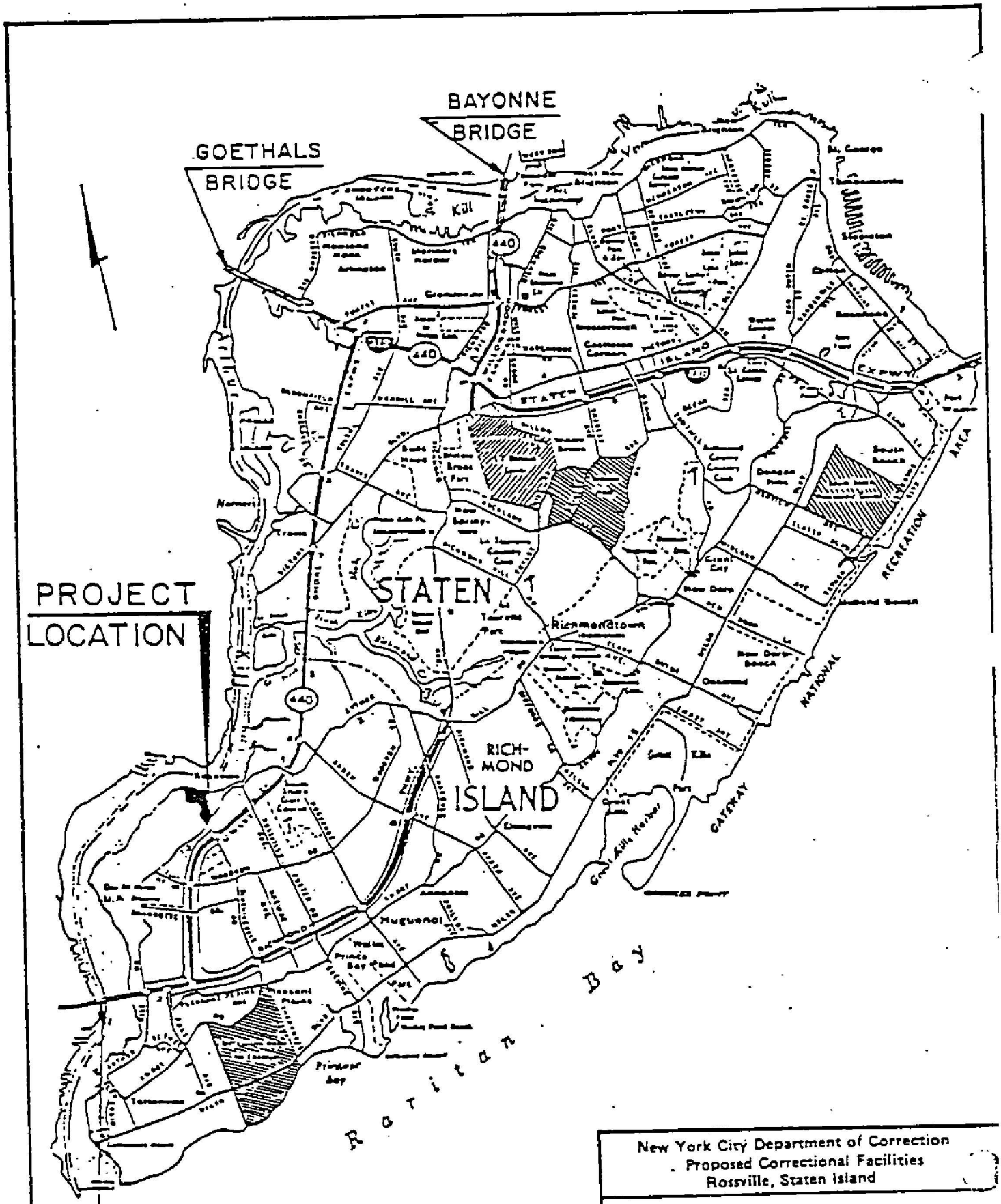
FIGURES



New York City Department of Correction
Proposed Correctional Facilities
Rossville, Staten Island

Figure 1
Project Location
Source: Berger (1989:I-2)

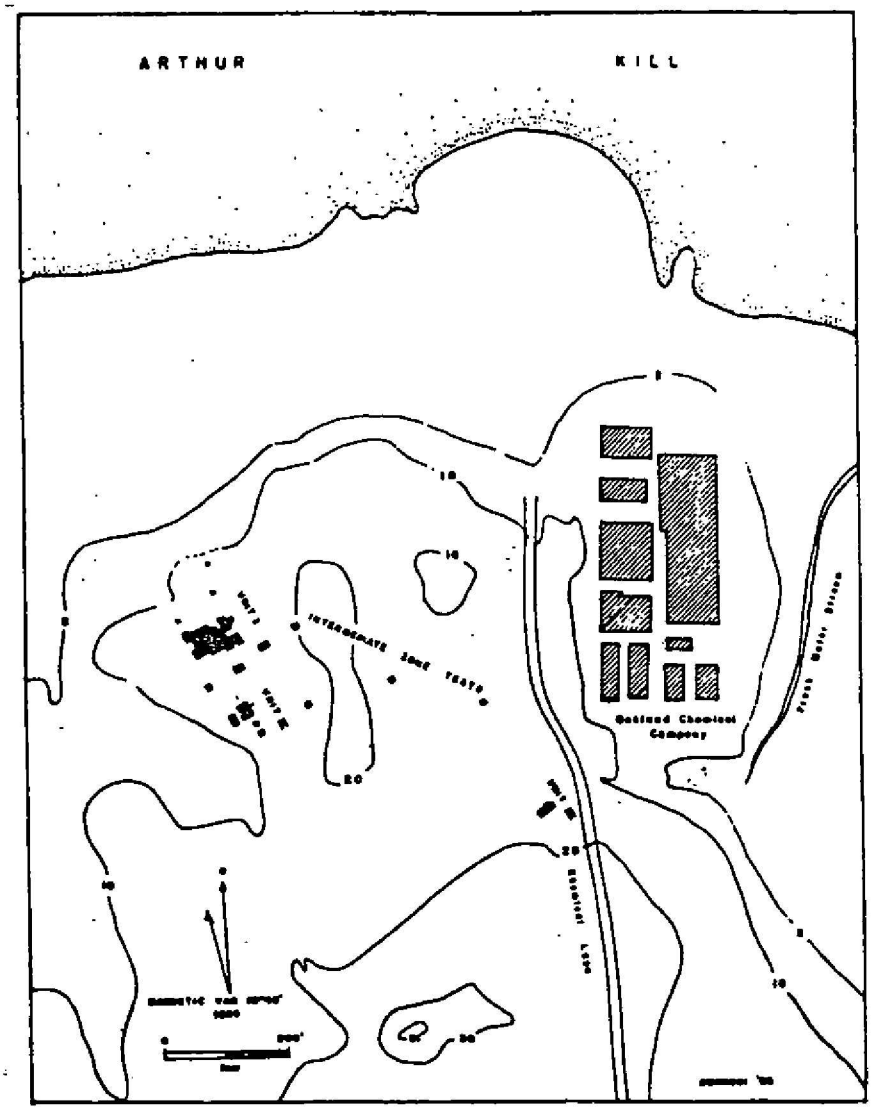


Figure 2. Smoking Point (Std 14-5), Unit Locations. Background map from Ruberton (1974) and U.S. Coast and Geodetic Survey *New York Harbor* (1959). Grid location on map base is approximate.

Figure 2
Smoking Point Site
Source: Silver (1984:4)

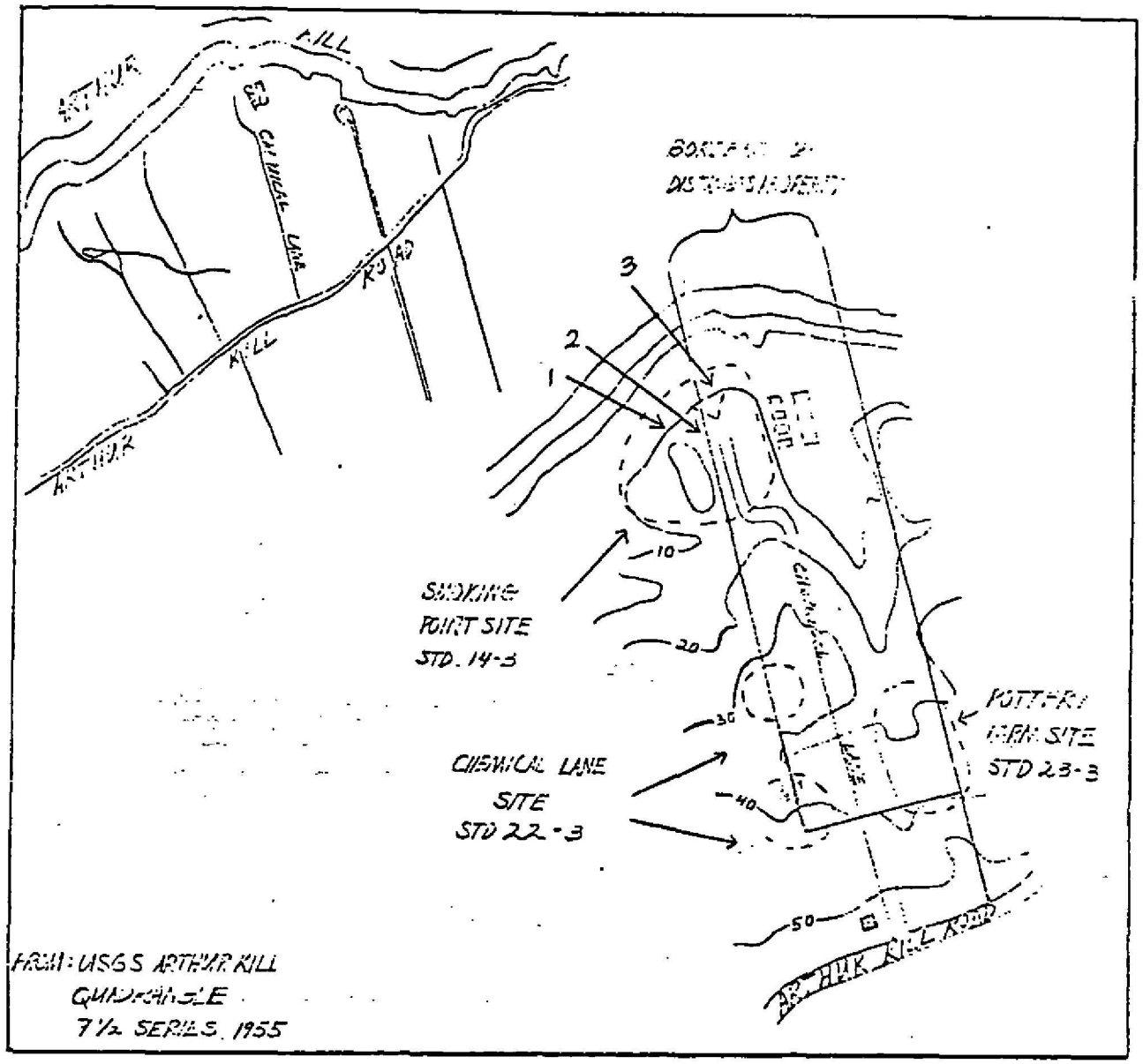


Figure 3
Map Showing the Smoking Point Site
Source: (Rubertone 1974:Figure 3)

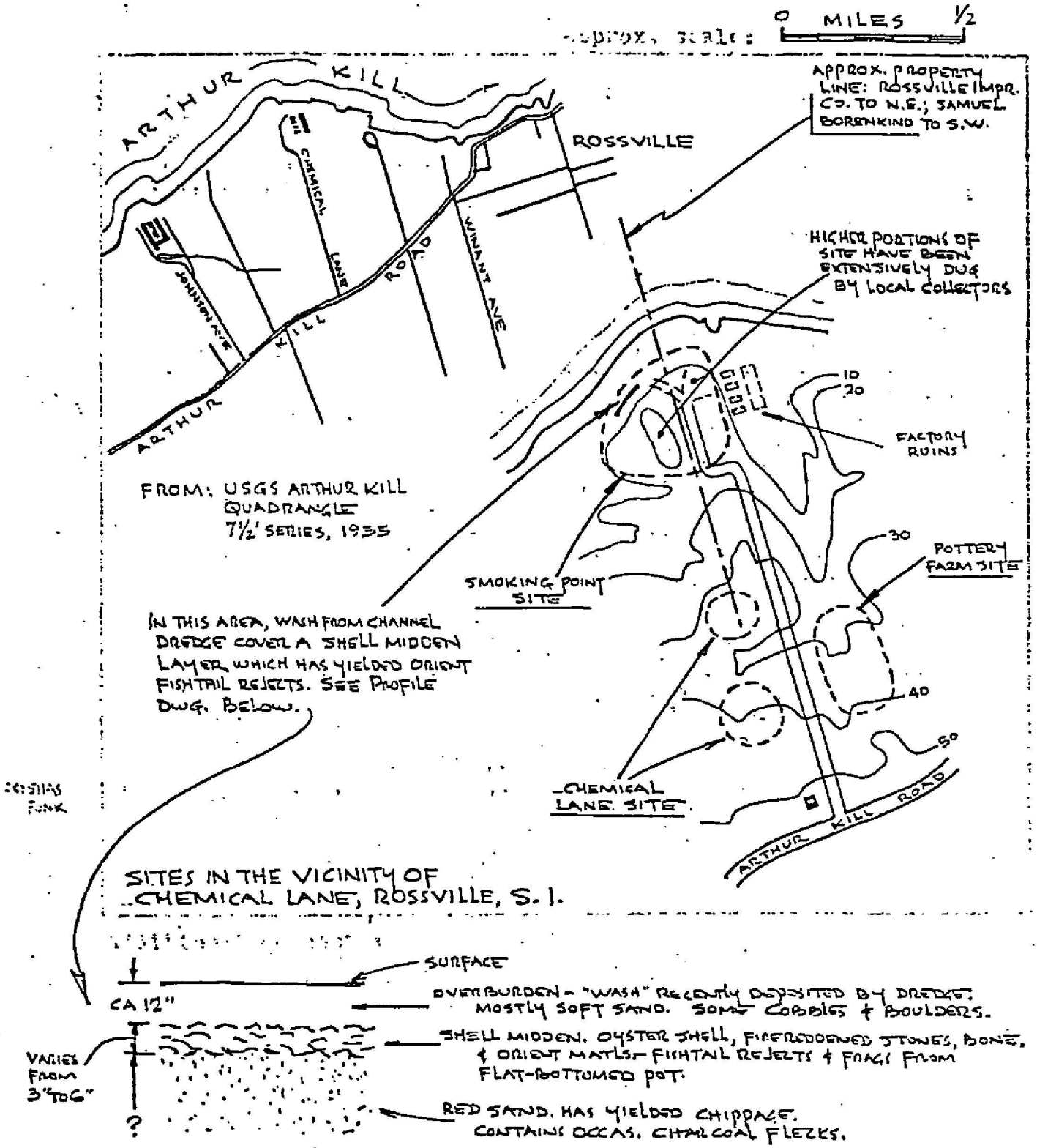


Figure 4
Map Showing the Smoking Point Site
Source: (Salwen 1967)

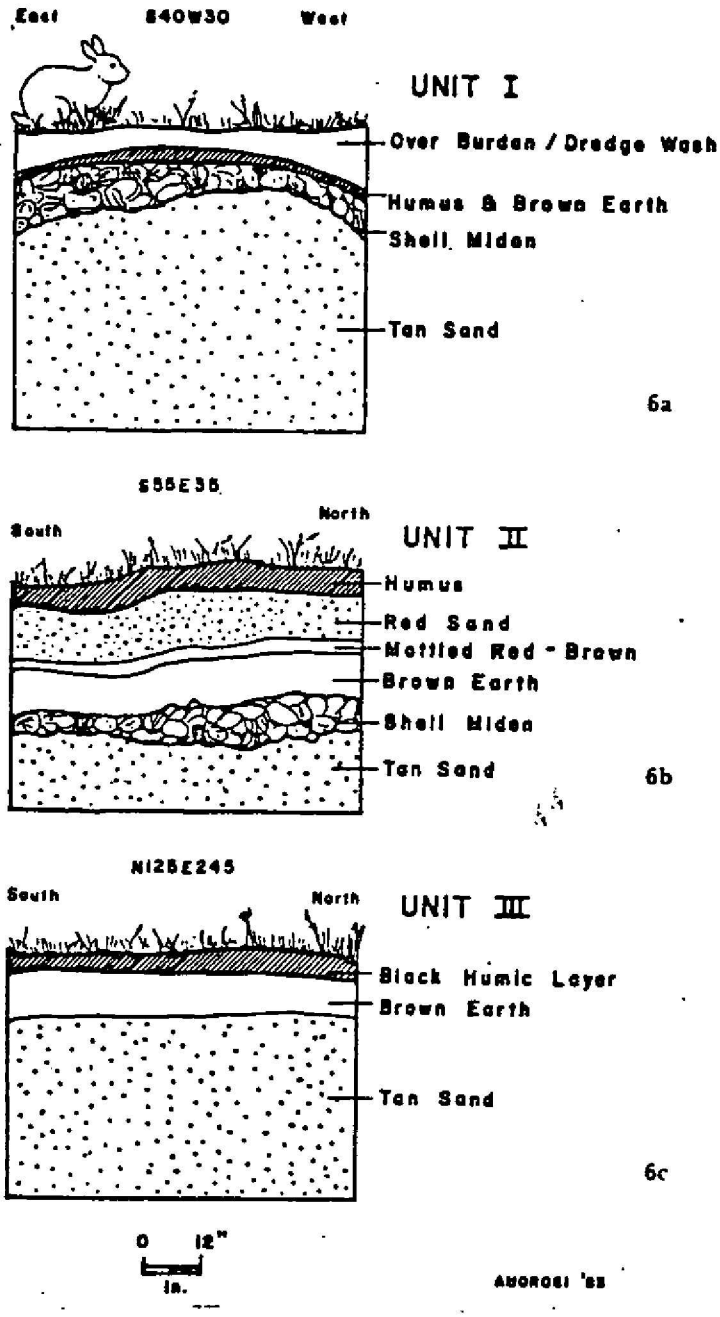


Figure 5
The Smoking Point Site
Representative Stratigraphic Profiles
Source: Silver (1984:12)

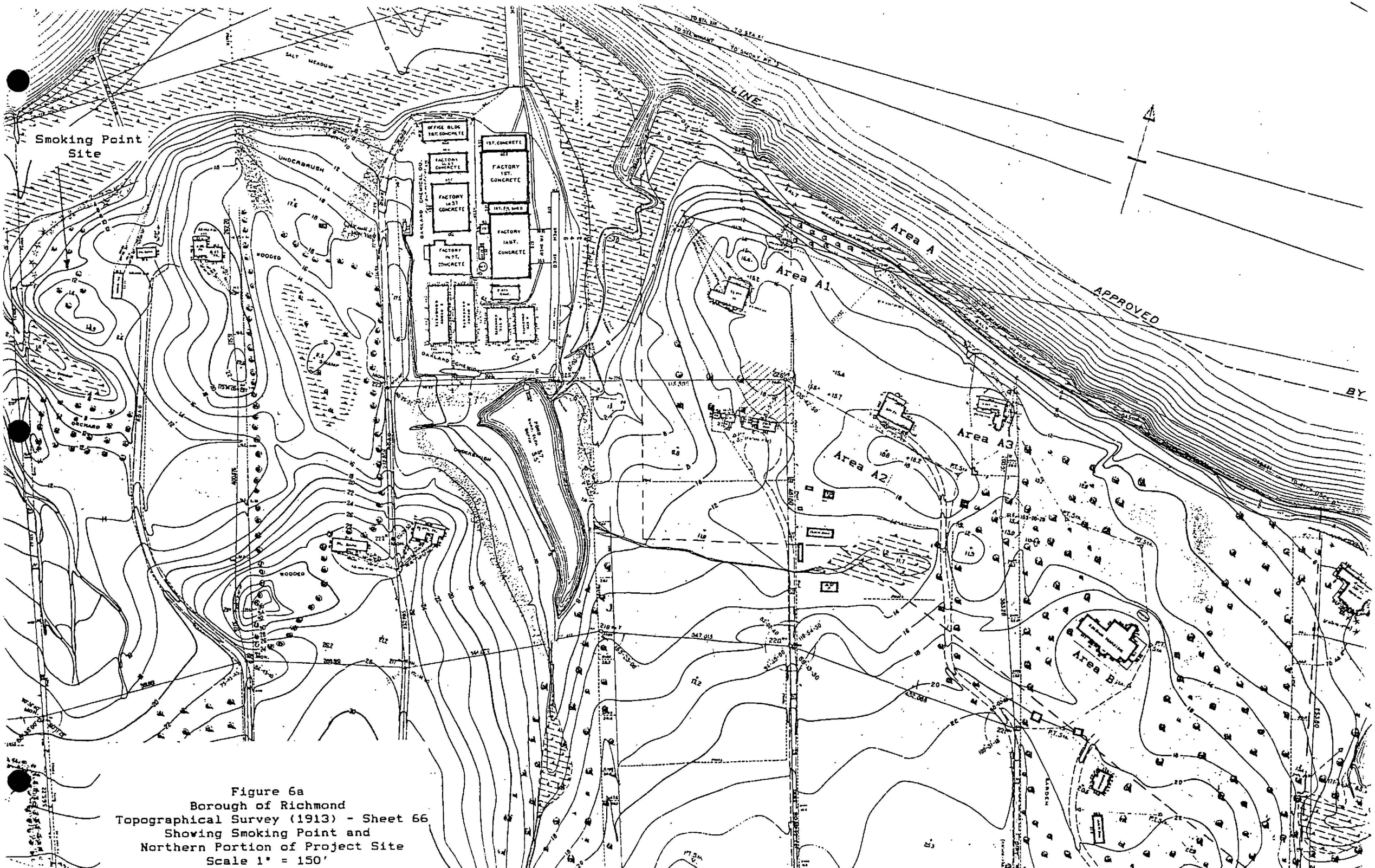


Figure 6a
Borough of Richmond
Topographical Survey (1913) - Sheet 66
Showing Smoking Point and
Northern Portion of Project Site
Scale 1" = 150'
Contour Interval = 2'

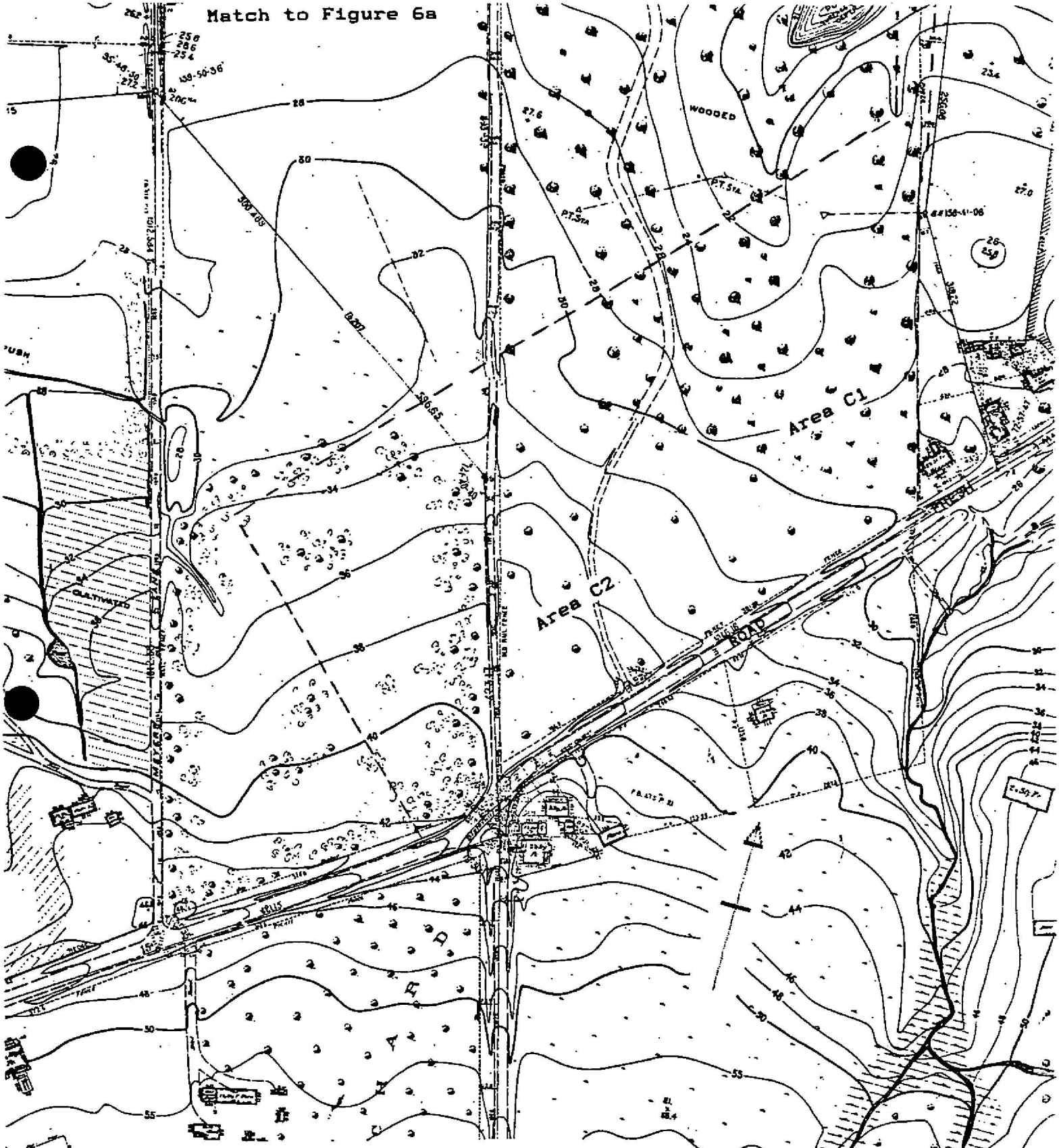


Figure 6b
Borough of Richmond
Topographical Survey (1913)
Sheets 66 and 74
Showing Southern Portion of Project Site
Scale 1" = 150'
Contour Interval = 2'

----- Approximate Project Boundaries

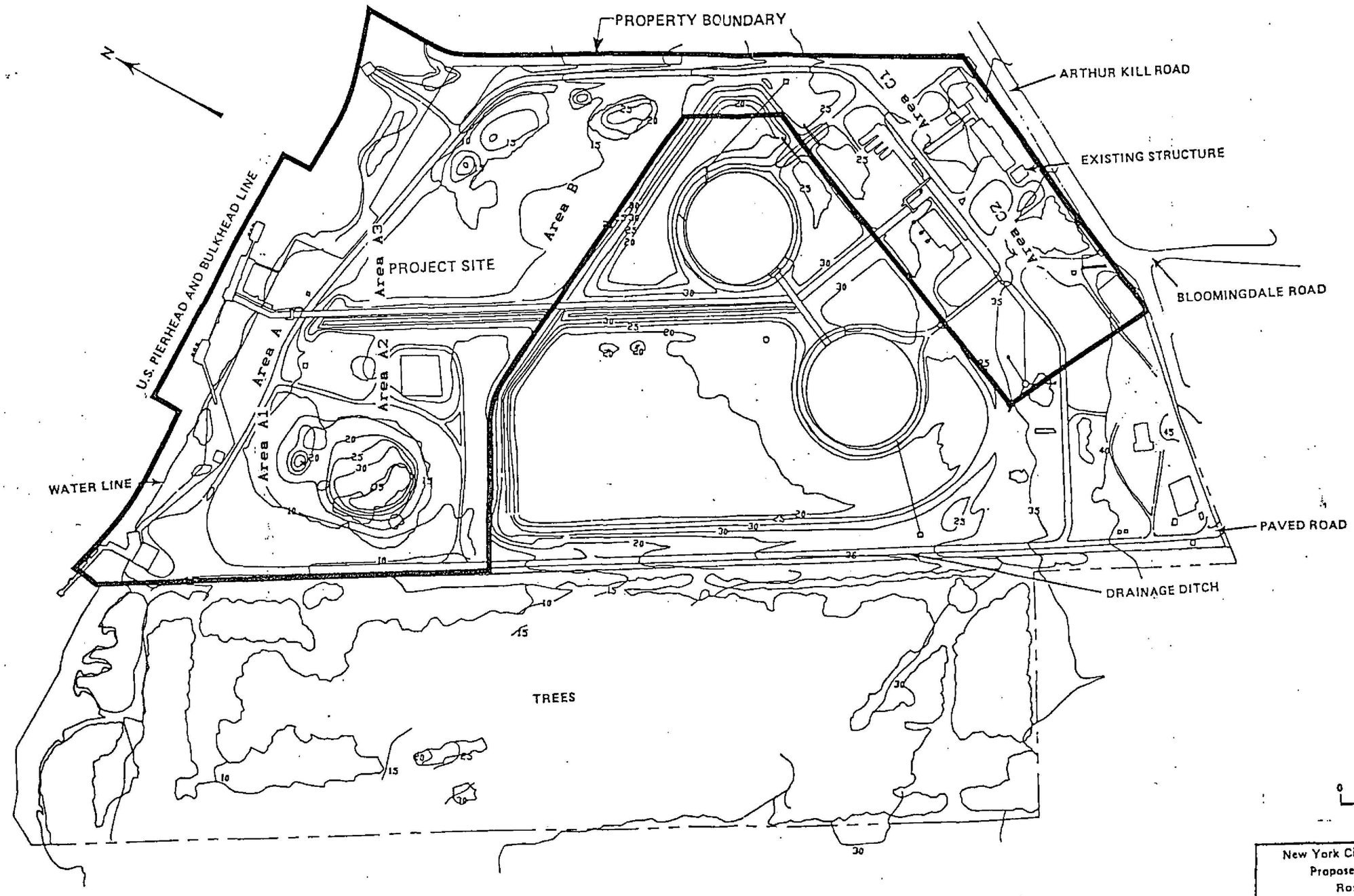


Figure 7
Site Topographical Map
Showing Archaeologically
Sensitive Areas
Source: Berger 1989 (III-75)

New York City Department of Correction
Proposed Correctional Facilities
Rossville, Staten Island

TOPOGRAPHY OF THE PROJECT SITE
AND ADJACENT AREA

Figure III-19

Note: Drawing based on aerial photography taken 9-10-87 and [illegible] and O'Mara dated 12-14-87.

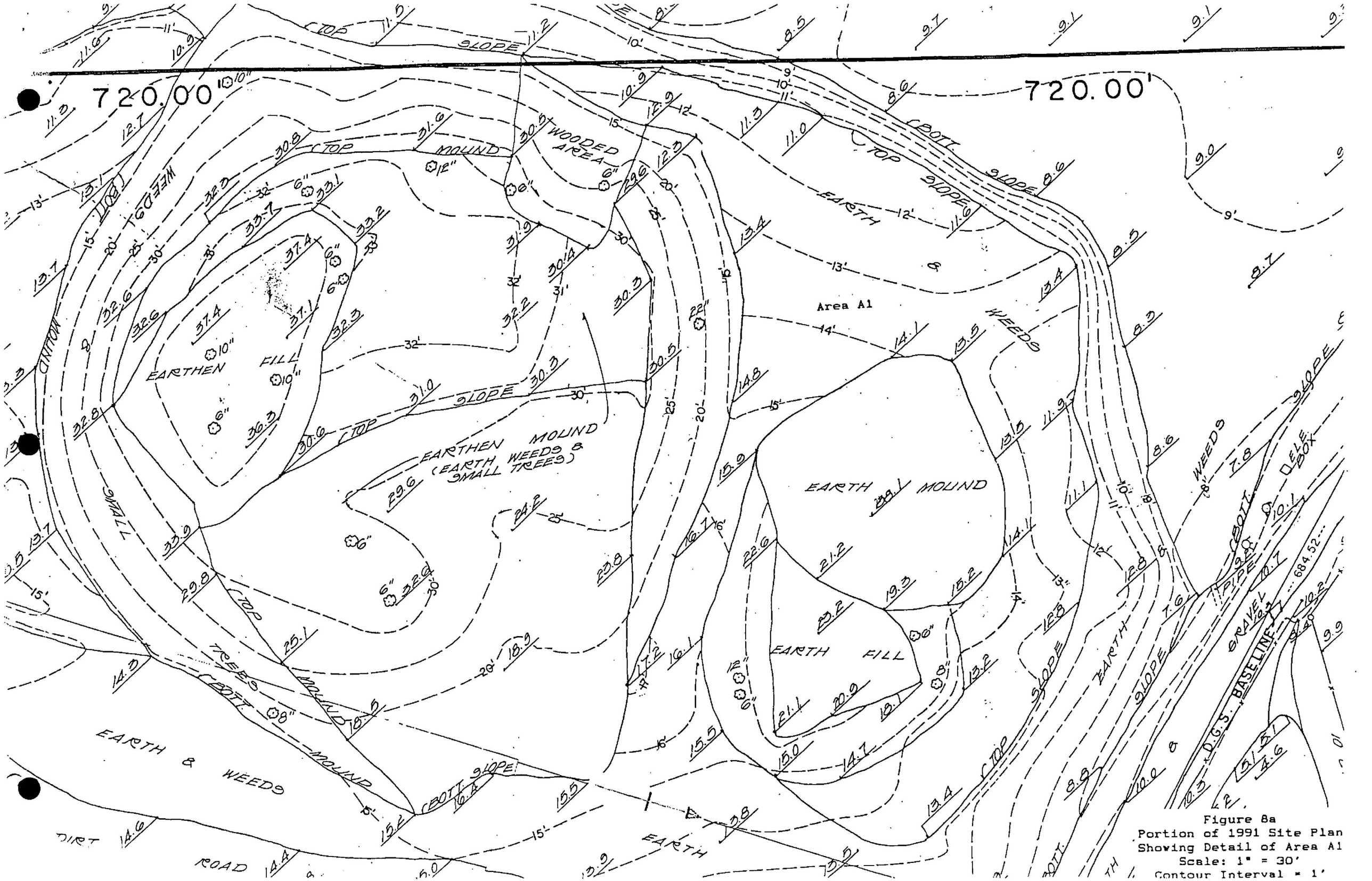


Figure 8a
Portion of 1991 Site Plan
Showing Detail of Area A1
Scale: 1" = 30'
Contour Interval = 1'

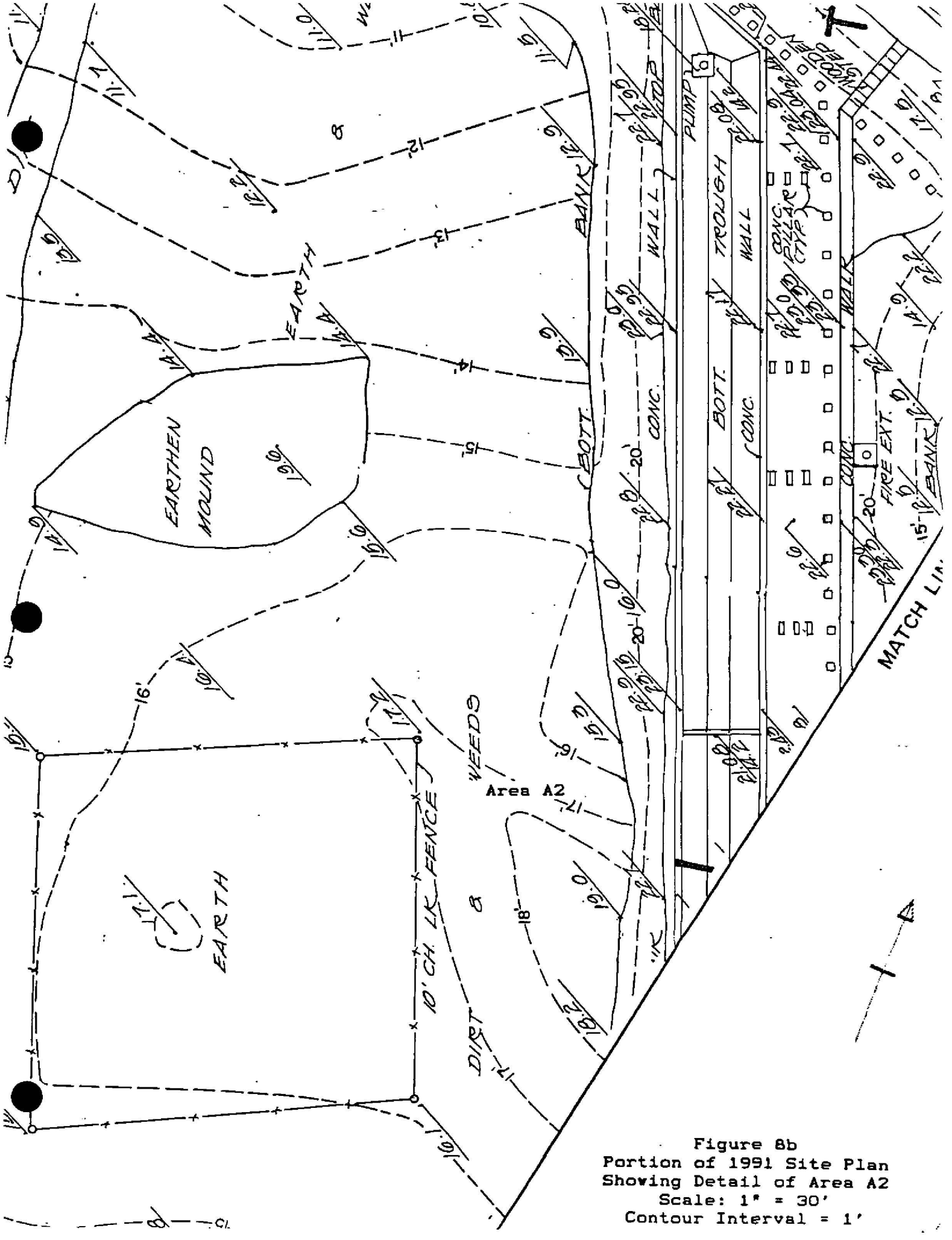
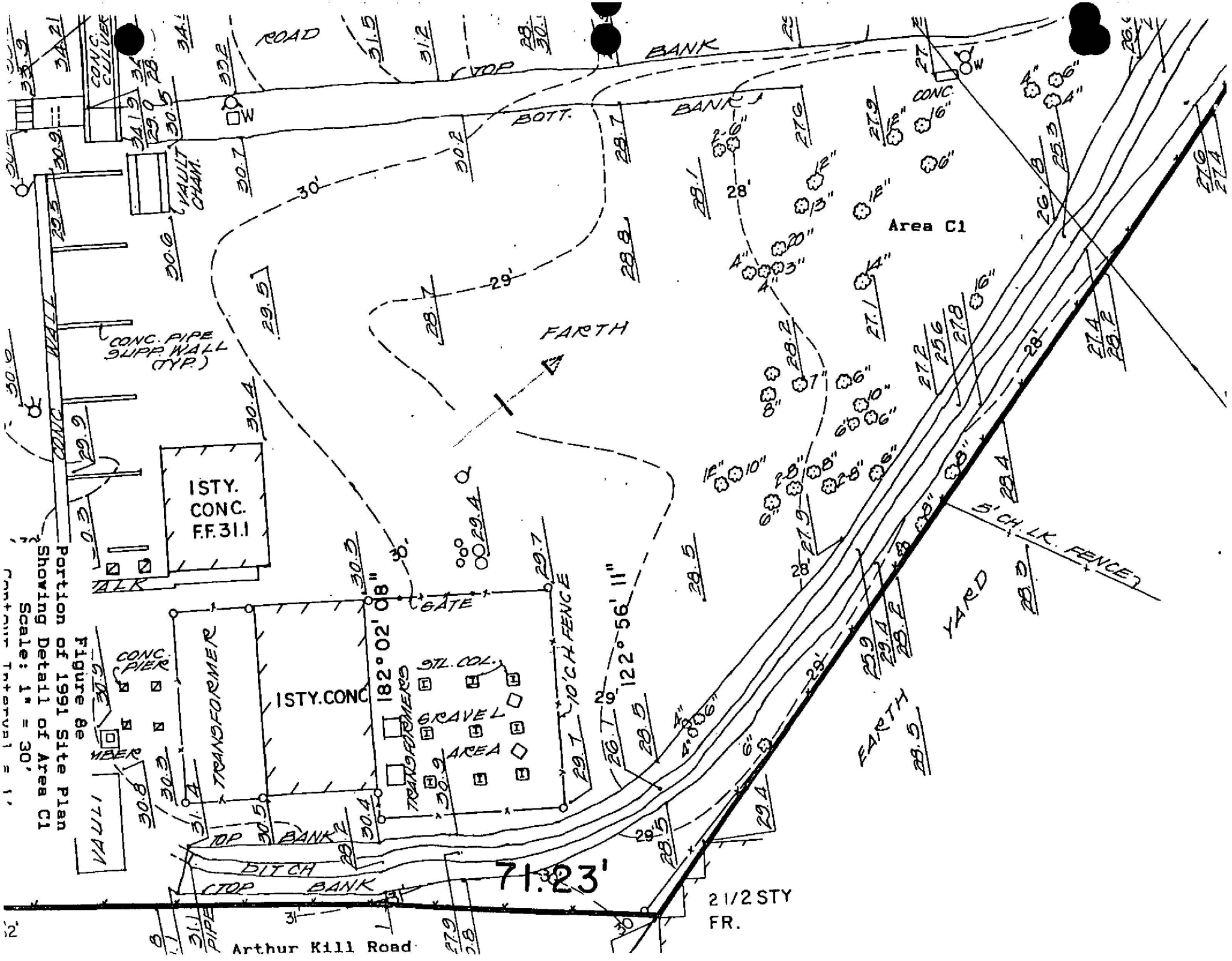


Figure 8b
Portion of 1991 Site Plan
Showing Detail of Area A2
Scale: 1" = 30'
Contour Interval = 1'

Figure 8c
Portion of 1991 Site Plan
Showing Detail of Area A3
Scale: 1" = 30'
Contour Interval = 1'

Figure 8d
Portion of 1991 Site Plan
Showing Detail of Area B
Scale: 1" = 30'
Contour Interval = 1'


ROAD
CONC. CULVERT
TOP BANK
BOTT.
BANK
VAULT CHAM.
CONC. PIPE SUPP. WALL (TYP.)
CONC. WALL
EARTH
Area C1
1 STY. CONC. F.F. 31.1
WALK
GATE
182° 02' 08"
122° 56' 11"
10' CH. LK. FENCE
5' CH. LK. FENCE
YARD
CONC. PIER
TRANSFORMER
1 STY. CONC.
STL. COL.
GRAVEL AREA
TRANSFORMERS
VAULT
TOP BANK
DITCH
TOP BANK
71.23'
2 1/2 STY FR.
Arthur Kill Road
Portion of 1991 Site Plan
Showing Detail of Area C1
Scale: 1" = 30'
Figure 8e
Contour Interval = 1'

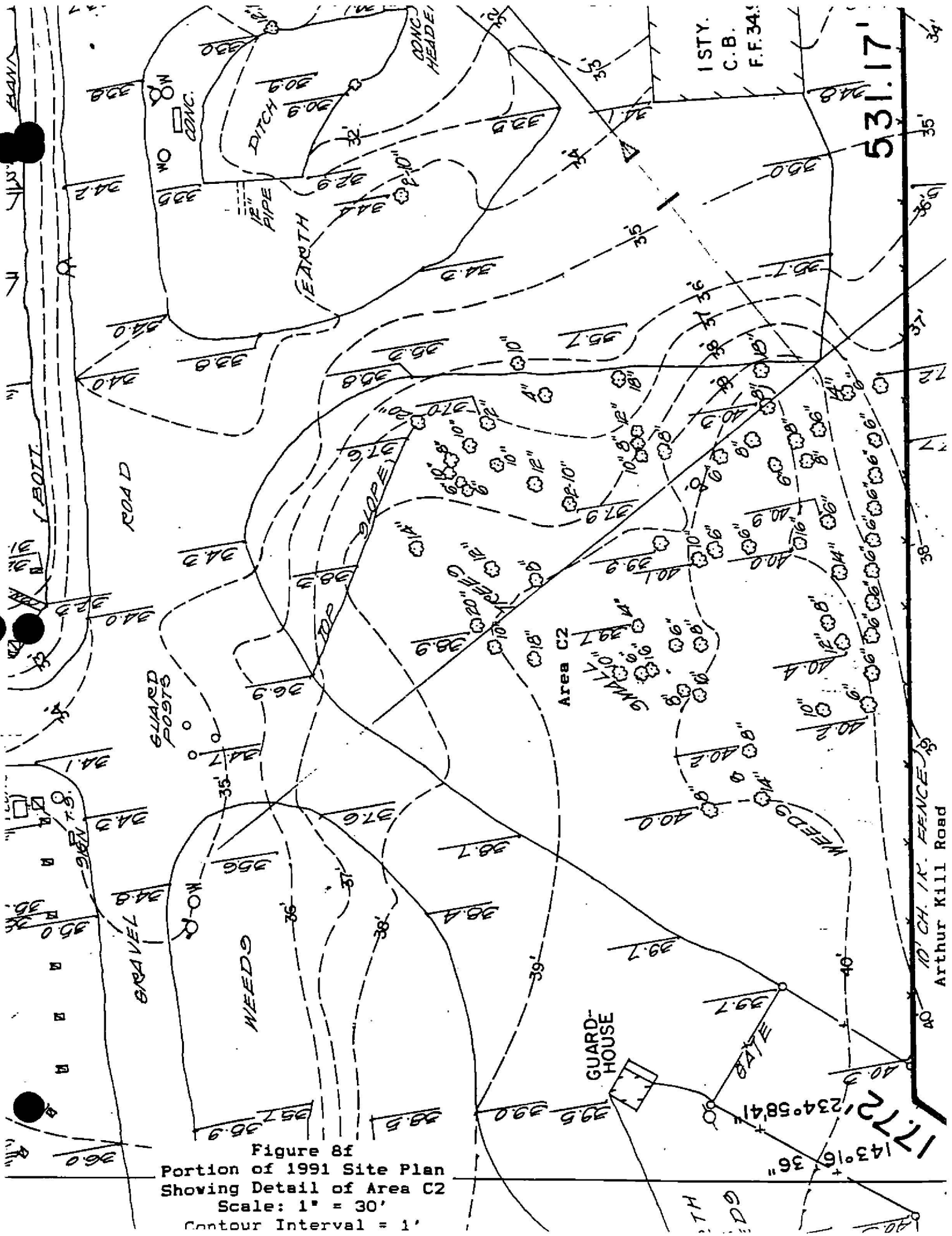


Figure 8f
Portion of 1991 Site Plan
Showing Detail of Area C2
Scale: 1" = 30'
Contour Interval = 1'

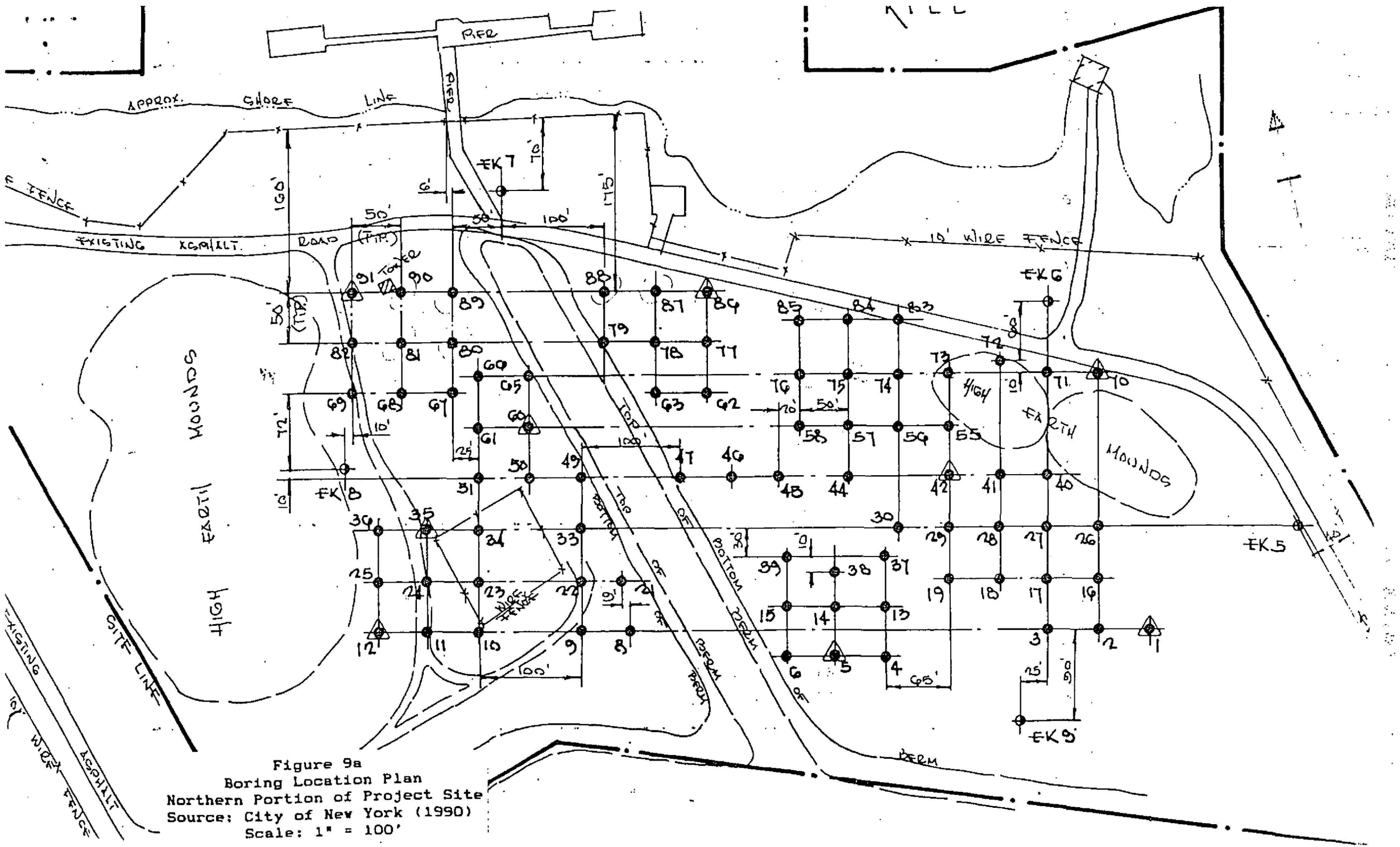


Figure 9a
Boring Location Plan
Northern Portion of Project Site
Source: City of New York (1990)
Scale: 1" = 100'

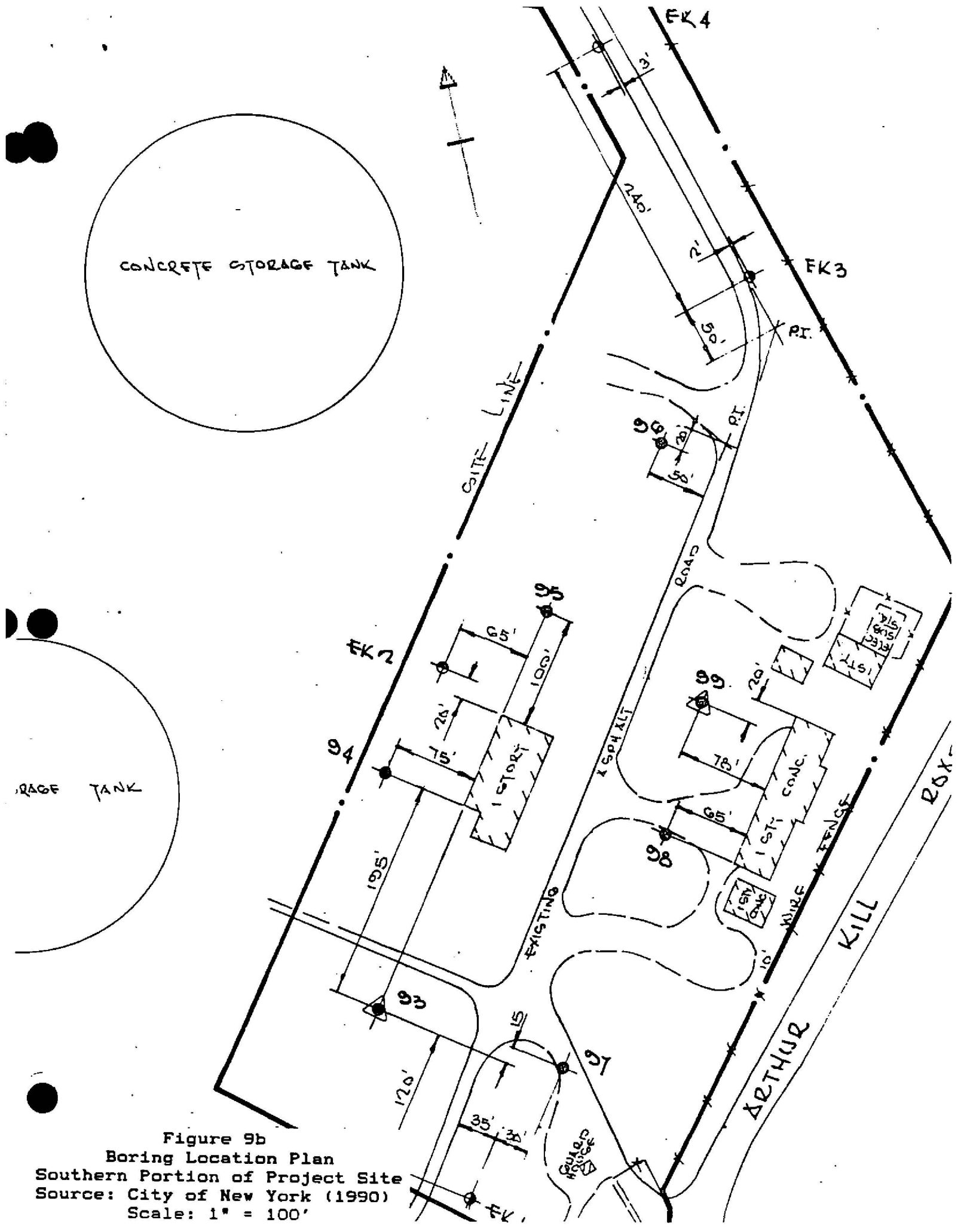


Figure 9b
Boring Location Plan
Southern Portion of Project Site
Source: City of New York (1990)
Scale: 1" = 100'

PLATES

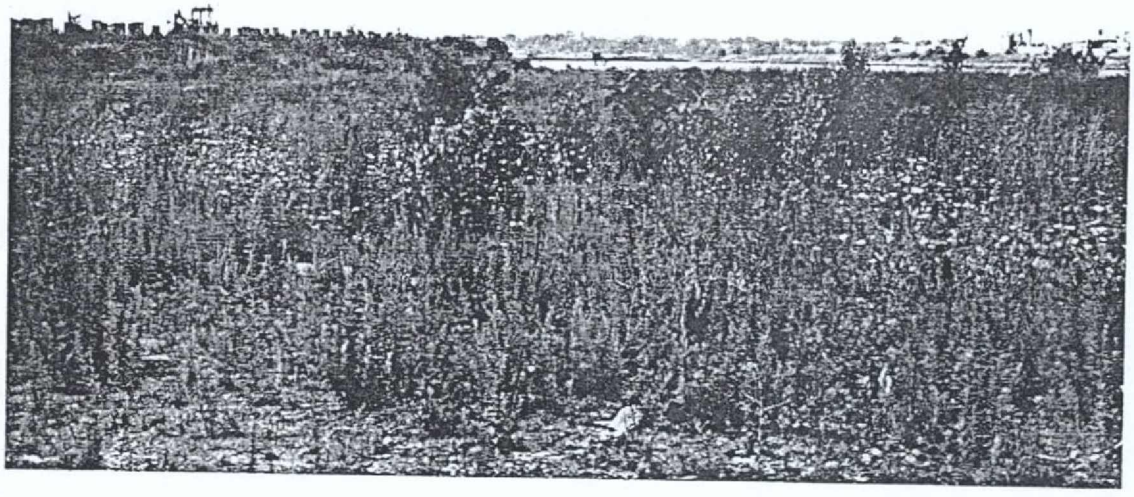


Plate 1
Embankment and Remains of Concrete Construction
(Left-center of Photograph)
View northwest from Vicinity of Area B

Plate 2
Area A1 - View Southeast from Area of Filled-In Inlet
Top of Bank in Center of Photo; Spoil Mounds in Background

Plate 3
Area A1 - View Northwest from Spoil Mound
Filled-In Former Inlet and Arthur Kill in Background

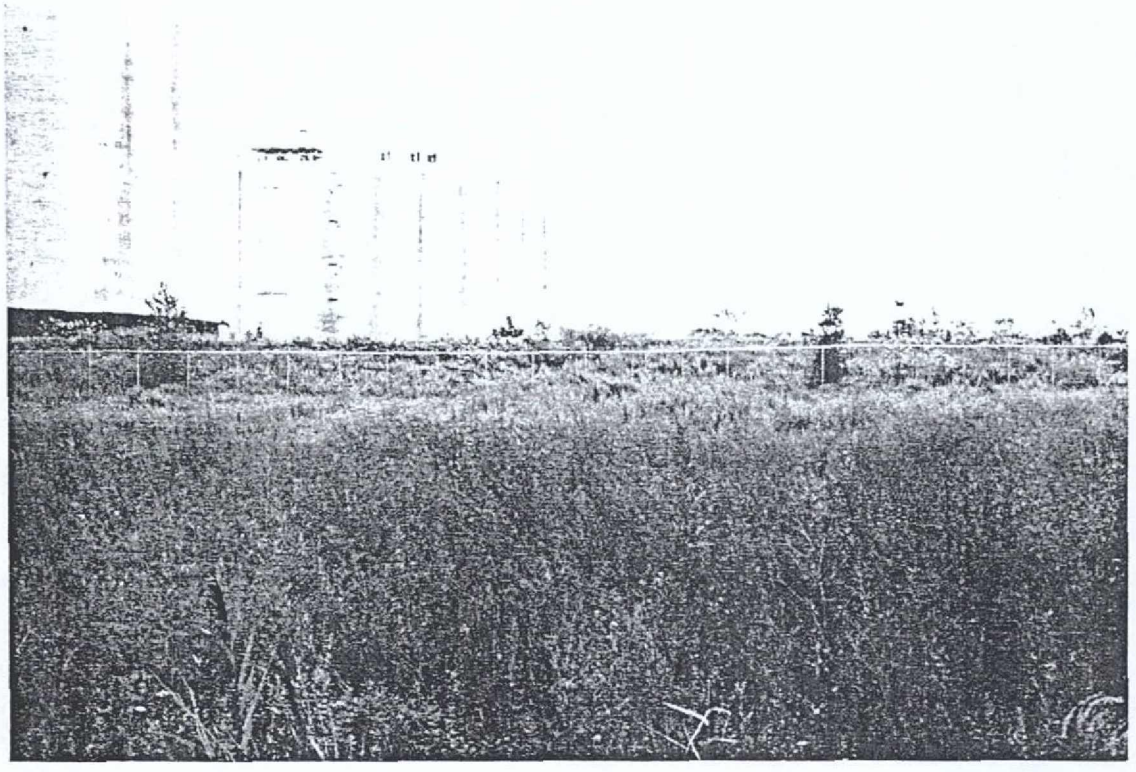


Plate 4
Area B - View South

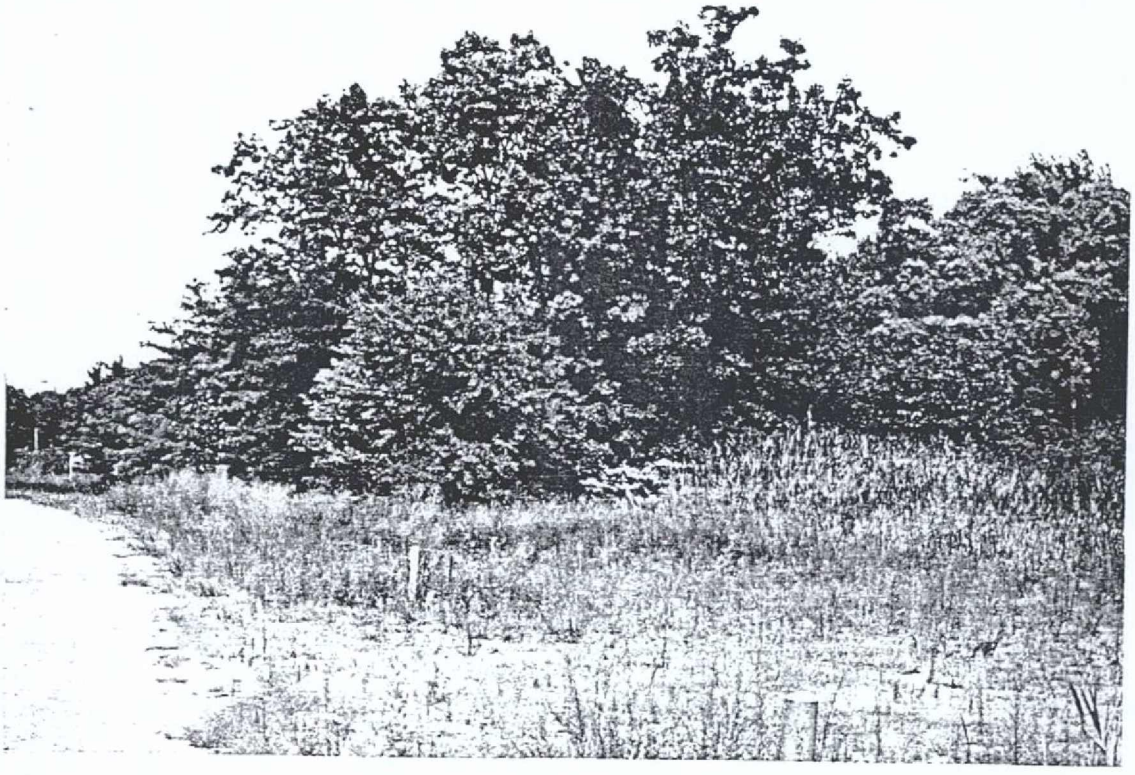


Plate 5
Area C1 - View East

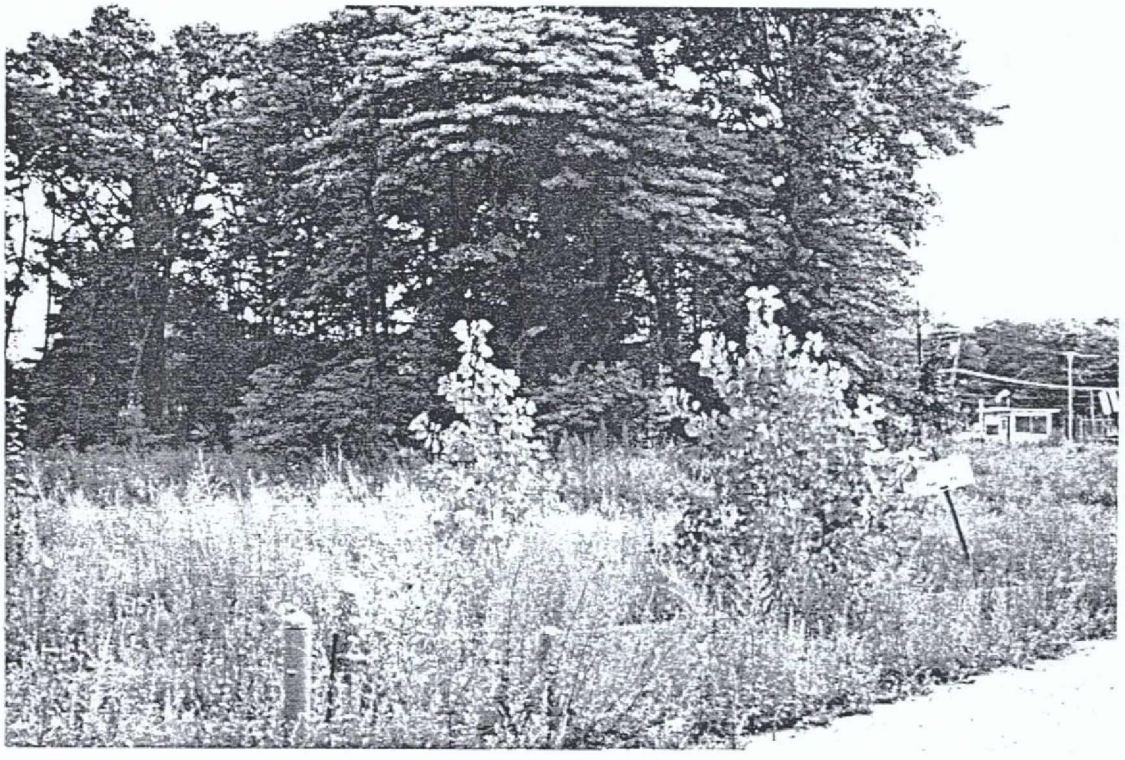


Plate 6
Area C2 - View Southwest