

HISTORICAL PERSPECTIVES INC.



November 2009

**Memorandum: Phase IA Cultural Resources Sensitivity Evaluation Addendum and Phase IB Archaeological Investigation of BMP LC-16 and LC-17
New York City Department of Environmental Protection
South Richmond Drainage Storm Water and Sanitary Drainage Plan
Lemon Creek Drainage Area, Staten Island, New York
Knox Street, BMP LC-16, BMP LC-17, BMP LC-18, and BMP LC-19**

PHASE IA CULTURAL RESOURCES SENSITIVITY EVALUATION ADDENDUM

INTRODUCTION

The New York City Department of Environmental Protection (DEP) has developed a drainage plan for the sanitary collection and storm water management of the Lemon Creek Watershed drainage area in Staten Island, New York. The storm water management plan includes the construction and installation of Best Management Practices (BMPs). A Phase IA documentary study of the Lemon Creek Drainage Area was completed by Historical Perspectives, Inc. (HPI) in 1997/Amended 1998. This report concluded that specific BMP areas within the Lemon Creek Watershed (LC), possessed sensitivity for precontact, or Native American, resources. The HPI study became part of a 2001 Environmental Impact Statement (EIS) for the South Richmond Drainage, Staten Island (CEQR No. 01DEP004R).

Five currently proposed BMP installation locations, focused on a section of Seguine Avenue, were not included in any of the earlier archaeological surveys. As noted in these evaluations of low, medium, and high sensitivity, due to the archaeologically sensitivity area, project impacts based on project re-design or unforeseen construction processes that extend beyond the limits of the evaluated Area of Potential Effect (APE) will require an archaeological evaluation. This memorandum presents the results of the visual archaeological inspection and sensitivity evaluation by HPI of the five locations, known as Knox Street, BMP LC-16, BMP LC-17, BMP LC-18, and BMP LC-19 construction impact footprints (Figures 1-6).

AREA OF POTENTIAL EFFECT (APE)

The Area of Potential Effect (APE) is defined as "...the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist" (36 CFR 800.16). The archaeological APE is the project's potential area of ground disturbance (i.e., the footprint of construction and any associated site work). The APE for each area is described below.

Knox Street

The APE for Knox Street is located on the south side of the street, approximate 200 feet northeast of Seguine Avenue, at the site where a small creek, which empties into Wolfe's Pond to the east, meets the road. It includes an existing 15-inch storm sewer drain, associated concrete walls and a timber weir wall, and a catch basin. The APE boundary is the area that will be enclosed by silt fencing, as shown on Figure 2.

BMP LC-16

The APE for BMP LC-16 is located on the south side of Oswald Place, opposite Elizabeth Place. A 12-foot wide temporary construction easement is located on the east side of the Block 6712, Lot 84 property. The remainder of the APE is on NYSDEC property to the south of this property, and includes a small terrace and sloped area overlooking a branch of Lemon Creek, as shown on Figure 3.

BMP LC-17

The APE for BMP LC-17 is located on the west side of Seguine Avenue, just north of the intersection with Knox Street. A 12-foot wide temporary construction easement is located on the north side of the Block 6712, Lot 125 property. The remainder of the APE is on NYSDEC property behind the residential properties on Seguine Avenue, and includes a small terrace and sloped areas overlooking a branch of Lemon Creek. There is an existing storm sewer pipe and headwall at the end of the creek outlet. The APE is shown on Figure 4.

BMP LC-18

The APE for BMP LC-18 is located at the western terminus of Drenzo Court and the northern terminus of Trenton Court. The APE extends to the northwest of this projected intersection as well, including a slightly sloped area, as shown on Figure 5.

BMP LC-19

The APE for BMP LC-19 is located on the south side of Hylan Boulevard, at the projected intersection of Trenton Court. It includes a mostly level area immediately south of Hylan Boulevard, and a heavily sloped area overlooking a creek to the southwest of the terrace, as shown on Figure 6.

RESEARCH METHODOLOGY

The present study included the following steps:

- Historic maps were reviewed at the Map Division of the New York Public Library and using various online websites. These maps provided an overview of the topography and a chronology of land usage for the study site.
- Previous archaeological sites were reviewed using data from the New York State Office of Parks, Recreation, and Historic Preservation (NYSOPRHP) and the New York City Landmarks Preservation Commission (LPC).
- Last, a site visit was conducted on September 25, 2009, to assess any obvious or unrecorded subsurface disturbance (Photographs 1–6).

CURRENT CONDITIONS, TOPOGRAPHY AND HYDROLOGY

The five APEs are associated with the Lemon Creek Watershed, but are isolated geographically from each other. All of the areas are undeveloped wooded areas situated next to suburban developments.

Specific details of each location are described below, and selected views are illustrated with photographs.

Knox Street

The APE for Knox Street includes a strip of land included in the roadway easement that has been disturbed from installation of utilities, including a subsurface gas line and a catch basin, and from earthmoving associated with road construction and construction of the existing storm sewer drain here (Photographs 1 and 2). To the south of the road easement is wooded land that also has been disturbed from construction of the storm sewer drain, the associated concrete walls and the timber weir wall. The APE ranges from 17-19 feet in elevation. In 1910, this area was mapped as 16 feet in elevation, suggesting there has been a slight rise in elevation here, presumably for creating Knox Street. The small creek that is located within the APE (and channeled via the storm sewer drain) discharges into Wolfe's Pond to the southeast.

BMP LC-16

The APE for BMP LC-16 includes a temporary 12-foot wide construction easement along an existing 30-foot wide easement on the east side of the Block 6712, Lot 84 property, and a wooded area to the south of the residential

property (Photograph 3). The easement area is a generally level area covered with an asphalt driveway, and the wooded area consists of a generally level terrace behind the residence and a sloped area south of the terrace. The terrace and slope are covered with dense understory and there has been some dumping and mounding in these areas, perhaps including leaf composting. The easement and the terrace both range from 16-20 feet in elevation and the sloped area ranges from 7-18 feet in elevation. Comparison with the 1910 topographic map for this area shows little to no change in elevation over time. A branch of Lemon Creek runs just south of the APE, at the base of the sloped area.

BMP LC-17

The APE for BMP LC-17 includes a temporary 12-foot wide construction easement along an existing 25-foot wide easement on the north side of the Block 6712, Lot 125, and a wooded area west of the easement. The easement is located within a residential driveway and yard, which is enclosed by a chain link fence (Photograph 4). The yard is nearly level. The area behind the residences contains both a level terrace and sloped areas on either side of the branch of Lemon Creek that runs through the APE (Photographs 5 and 6). As noted above, there is an existing storm sewer pipe and headwall at the end of the creek outlet. The APE ranges from 16-20 feet in elevation on the easement, 15-16 feet in elevation on the terrace, and 11-15 feet in elevation on the sloped sections. Comparison with the 1910 topographic map shows little change in elevation over time, although clearly there has been some grading and filling associated with both construction of the storm sewer pipe and headwall, and with driveways for the residences.

BMP LC-18

The APE for BMP LC-18 includes the area where Direnzo Court and Trenton Court, if extended, would meet, as well as a slightly sloped area to the northwest of this projected intersection. The entire APE is heavily overgrown, with both woods and dense understory. The area where the two street easements meet is highly disturbed from earthmoving and dumping, likely associated with construction of the two adjoining streets and the residences along them. There were large chunks of concrete and other debris mixed in with the soil here and visible through the understory. The APE ranges from 16-22 feet in elevation, with the intersection area undulating but otherwise relatively level, and the area northwest of the intersection slightly sloped. Comparison with the 1910 topographic map indicates that there may have been some grading in this location, as elevations then were about 22-26 feet. A branch of Lemon Creek is located just west of the APE.

BMP LC-19

The APE for BMP LC-19 includes a strip of land included in the Hylan Boulevard roadway easement that has been disturbed from installation of subsurface utilities, and from earthmoving associated with road construction. South of this strip is a heavily sloped area overlooking a creek to the southwest. The APE ranges from 22-24 feet in elevation south of Hylan Boulevard, and 8-22 feet in elevation along the sloped areas. Comparison with the 1910 topographic map shows little change in elevation over time.

SOILS

The USDA soil survey for New York City indicates that the 5 APEs fall within areas mapped as “Wethersfield-Ludlow-Wilbraham complex, 0 to 8 percent slopes,” described as

Nearly level to gently sloping areas of till plains, relatively undisturbed and mostly wooded; a mixture of well drained, moderately well drained, and poorly drained soils developed in red till; located in Staten Island (USDA 2005:20).

or “Wethersfield-Forest Hills-Pavement & buildings complex, 0 to 8 percent slopes,” described as:

Nearly level to gently sloping areas of till plains and hills that have been partially filled for cemeteries and residential use; a mixture of red till soils and anthropogenic soils, with 15 to 49 percent of the surface covered by impervious pavement and buildings; located in Staten Island (USDA 2005:20).

The following table summarizes the general profiles for the major soil groups in these mapping units.

Name	Soil Horizon Depth	Color	Texture	Slope %	Drainage	Landform
Wethersfield series	A: 0-3 in Bw1: 3-13 in Bw2: 13-27 in Cd: 27-65 in	DkBrn RdBrn DkRdBrn RdBrn	Lo Lo GrLo GrLo	0-8	Well	Till plains, hills, and moraines
Ludlow series	Ap: 0-8 in Bw1: 8-20 in Bw2: 20-26 in Cd: 26-65 in	DkBrn RdBrn DkRdBrn DkRdBrn	SiLo SiLo SiLo GrLo	0-8	Moderately well	Till plains, hills, and moraines
Wilbraham series	A: 0-4 in Bw1: 4-8 in Bw2: 8-20 in Cd: 20-65 in	VDkGry DkRdBrn RdBrn DkRdBrn	Lo SaLo SaLo	0-8	Poor	Low positions on till plains, hills, and moraines
Foresthills series	A: 0-2 in Bw: 2-15 in Ab: 15-17 in BAb: 17-28 in BwB: 28-42 in Cd: 42-60 in	VDkGryBrn Brn/YIRd/Bk Bk Brn RdBrn YIRd	Lo SiLo Lo Lo Lo Lo	0-8	Well	Anthropogenic urban fill plains

Key: Color V-Very, Dk-Dark, Brn-Brown, Rd-Red, Gry-Gray, YI-Yellow, Bk-Black
Soils: Lo-Loam, Si-Silt, Grl-Gravelly

No soil borings have been completed for any of the BMPs.

SUMMARY HISTORY OF THE PROJECT SITE

Precontact Occupation

For this report, the word precontact is used to describe the period prior to the use of formal written records. In the Western Hemisphere, the precontact period also refers to the time before European exploration and settlement of the New World. Archaeologists and historians gain their knowledge and understanding of precontact Native Americans in the lower Hudson Valley area from three sources: ethnographic reports, Native American artifact collections, and archaeological investigations.

Based on data from these sources, a precontact cultural chronology has been devised for the New York City area. Scholars generally divide the precontact era into three main periods, the Paleo-Indian (ca. 14,000-9,500 years ago), the Archaic (ca. 9,500-3,000 years ago), and the Woodland (ca. 3,000-500 years ago). The Archaic and Woodland periods are further divided into Early, Middle, and Late substages. The Woodland was followed by the Contact Period (ca. 500-300 years ago). Artifacts, settlement, subsistence, and cultural systems changed through time with each of these stages. A full summary of the precontact period for Staten Island is included in the original archaeological report for the Lemon Creek project area (HPI 1997/1998).

Scholars often characterize precontact sites by their close proximity to a water source, fresh game, and exploitable natural resources (i.e., plants, raw materials for stone tools, clay veins, etc.). These sites are often separated into three categories: primary (campsites or villages), secondary (tool manufacturing, food processing), and isolated finds (a single or very few artifacts either lost or discarded). Primary sites are often situated in locales that are easily defended against both nature (weather) and enemies. Secondary sites are often found in the location of exploitable resources (e.g., shell fish, lithic raw materials).

Records on file at the NYSOPRHP, the NYSM, and the LPC (Boesch 1994) indicate that there are nine precontact archaeological sites within one mile of the project site. These sites are summarized in the table, below.

Site #, Name	Distance from APE	Time Period	Site Type
Boesch 54, Arbutus Lake	0.9 mile east	Unknown precontact	Unknown
Boesch 57, Arbutus Lake	0.9 mile east	Unknown precontact	Lithic scatter
Boesch 59, Wolfe's Park	0.3 mile east	Unknown precontact	Lithic scatter
Boesch 81, Seguine Point	0.5 mile south	Woodland	Shell midden
Boesch 91, Ultramarine	0.8 mile northwest	Woodland	Lithic scatter with ceramics and charcoal
Boesch 92, unnamed	0.9 mile northwest	Unknown precontact	Unknown
Boesch 93, unnamed	0.9 mile east	Unknown precontact	Unknown
Boesch D, Prince's Bay	0.7 mile east	Unknown precontact	Unknown
Boesch E, Bunker Hill	0.8 mile east	Unknown precontact	Unknown

In addition to the above sites, Archaeologist/Historian Robert S. Grumet (1981) notes the presence of a Native American trail following the route of Seguine Avenue.

Last, the NYSOPRHP GIS indicates that all 5 APEs are within areas of high archaeological sensitivity, and Boesch (1994) indicates that all 5 APEs are within or adjacent to areas of high or moderate archaeological sensitivity.

Construction History of the Project Site

Historic maps made during the late eighteenth through the end of the nineteenth century indicate that despite the presence of Seguine Avenue, which as noted above had been in use since the precontact era, the 5 APEs were never developed during this period, and were not located in proximity to developed areas (Taylor Skinner 1781; U.S.C.S. 1844, 1856; Beers 1874). By the first decades of the twentieth century, more development had begun along Seguine Avenue and side streets such as Oswald Place (Borough of Richmond 1910a, 1910b, Sanborn 1917). Additional streets had been opened off Seguine Avenue, and Hylan Boulevard had been laid out, by issuance of the 1937 Sanborn map. However, many of the residences in the project area were not built until the mid-twentieth century (Sanborn 1951).

PHASE IA CONCLUSIONS

Disturbance Record

The field observations indicated that the APEs for Knox Street, BMP LC-18, and BMP LC-19 have been significantly disturbed from prior earthmoving, as described above. However, the small terraces of BMP LC-16 and BMP LC-17 may be relatively undisturbed, other than from dumping on the ground surface.

Precontact Sensitivity

From what is known of precontact period settlement patterns on Staten Island, most habitation and processing sites are found in sheltered, elevated sites close to wetland features, major waterways, and with nearby sources of fresh water. All of the APEs are located in very close proximity to tributaries of Lemon Creek. Most have well drained soils. Although the soil survey for Staten Island maps all of the APEs as having 0-8 % slopes, portions of BMP LC-16, BMP LC-17, and BMP LC-18 contain areas that have steeper slopes, because they include banks leading down to the drainages. These sloped areas have a low precontact sensitivity because of their landform. Additional areas at APEs for Knox Street, BMP LC-16, BMP LC-17, BMP LC-18, and BMP LC-19 also have a low precontact sensitivity because they appear to be disturbed from prior earthmoving, and it is assumed that potential precontact resources have been destroyed.

There are two areas, at BMP LC-16 and BMP LC-17, where there are level terraces overlooking the creek, and which appear to be relatively undisturbed. These two areas, shown on Figures 3 and 4, have a high precontact sensitivity.

Historical Sensitivity

Historic maps indicate that none of the 5 APEs were ever developed. The exceptions are the two construction easements for LC-16 and LC-17 that run through twentieth century residential properties. Thus historical archaeological sensitivity for the 5 APEs is low, and further research and study concerning historic period archaeological resources is not recommended.

PHASE IA RECOMMENDATIONS

Based on the above conclusions, HPI recommends a limited program of Phase IB archaeological testing on the terrace areas of BMP LC-16 and BMP LC-17, as shown on Figures 3 and 4. No further archaeological investigations are recommended for the Knox Street, BMP LC-18, or BMP LC-19 APEs.

PHASE IB ARCHAEOLOGICAL INVESTIGATION

INTRODUCTION

HPI concluded that the APEs for Knox Street, BMP LC-18, and BMP LC-19 have been significantly disturbed from prior earthmoving, and they were not recommended for further investigation. However, the small terraces of BMP LC-16 and BMP LC-17 may be relatively undisturbed, other than from dumping on the ground surface (Figures 3 and 4). These two areas were evaluated as having a high sensitivity for precontact archaeological resources, and were recommended for Phase IB archeological testing.

FIELD INVESTIGATION METHODOLOGY

The Phase IB fieldwork consisted of the excavation of a series of 40 cm x 40 cm (16" x 16") shovel tests (STs) to investigate the site for artifacts and/or features, which may exist beneath the surface. Phase IA research identified the potential for precontact cultural resources to exist at BMP LC-16 and BMP LC-17. Portions of the APE with standing water or extensive disturbance were not subjected to field investigations.

Each soil stratum encountered during field testing was explored and documented and the cultural materials in each level were noted in order to determine their context and integrity as well as to further ascertain whether or not any potential *in situ* cultural resources or features were extant. During testing, all of the STs were hand excavated and soil was sifted through ¼-inch screen. Recovered modern material was noted on the field forms, but not collected, especially from locations that were in proximity to occupied dwellings on the parcels. Appropriate field notations, drawings, and photographs were made during field testing and the results of each ST were documented (see below).

FIELD RESULTS AND ARTIFACT ANALYSES

Archaeological fieldwork for the Lemon Creek Drainage Area BMP LC-16 and BMP LC-17 took place on November 12, 2009. Fieldwork was completed by William Sandy, MA, RPA, and Patricia Condell. Robert Brauman of NYC DEC worked as on-site coordination.

- **BMP LC-16**

The APE for BMP LC-16 is located behind garages of the Oswald Place property. The terrace landform of the APE is about 39m (115 ft) long (east/west) by 6 (20 ft) to 14m (45 ft) wide (Figure 7). The northeast end is comprised of grassy lawn, while the remainder is covered with trees and brush. Some dumped debris is present, as is a block fireplace. Three STs were excavated at this BMP, along an approximate transect through the central axis of the terrace landform. No STs were excavated along the steep slope that comprises the remainder of the APE.

Shovel Test 1 (ST1) was located at the end of the driveway on the east end of the property (Photograph 7). The profile had a developed root mat and humus over an A Horizon that was 28cm thick. Most of the artifacts came from this level; some came from the top of Level 3. All were modern materials.

ST 1

#	Depth (cm)	Soil Type	Color	Artifacts	Interpretations
1	0-5	loam	10YR3/3	NCM	Ao
2	5-33	loamy sand	10YR3/4 w/ 7.5YR4/6	nail, coal, glass	A
3	33-66	loamy sand	7.5YR4/6	coal, plastic	B

Note: NCM=No Cultural Material

ST2 was placed in the center of the APE for BMP LC-16. The A Horizon was much thinner here, only 9cm thick. It contained glass and coal. The B Horizon was strong brown loamy sand (Figure 7, Photographs 8 and 9). It produced a tested chert pebble, 3 chert flakes, and a thermally altered cobble. The C Horizon was brown gravelly sandy clay loam and contained no artifacts.

ST 2

#	Depth (cm)	Soil Type	Color	Artifacts	Interpretations
1	0-9	loamy sand	10YR3/2	glass, coal	A
2	9-48	loamy sand	7.5YR4/6	tested pebble, 3 flakes, fire-cracked cobble	B
3	48-60	gravelly sandy clay loam	7.5YR4/4	NCM	C

ST3 was located 12m (40ft) southwest of ST2, near the edge of the APE. A variety of modern material was recovered from the A Horizon. No precontact artifacts were found.

ST 3

#	Depth (cm)	Soil Type	Color	Artifacts	Interpretations
1	0-17	loam	10YR3/2	glass, ceramics, plastic bag*, coal ash*, toy soldier	A
2	17-47	loamy sand	7.5YR4/6	NCM	B
3	47-65	gravelly loamy sand	7.5YR4/6	NCM	C

Note: NCM=No Cultural Material *=-discarded

ARTIFACT INVENTORY BMP LC-16

ST	Level	Description
1	2A	1 nail fragment 1 coal 2 container glass, clear
1	3B	1 coal 1 container base, clear plastic, embossed "10"
2	1A	3 container glass, clear 1 glass, mint 1 coal
2	2B	1 tested pebble, brown jasper 2 flakes, green chert 1 flake, black chert 1 cobble, quartzite, thermally altered
3	1A	1 toy soldier, plastic, green 1 plastic, blue 1 wrapper, SN"(ICKERS) 1 brick 1 whiteware

ST	Level	Description
		2 yellowware 2 glass, green 2 glass, mint 2 glass, container, dk blue 7 glass, container, clear

- **BMP LC-17**

The APE for BMP LC-17 includes areas adjacent to Lemon Creek. Access from Seguire Avenue will be through an existing driveway. This drive is built of fill, and is about 0.6m (2 ft) above the adjacent driveway to the north. Because it is built of fill and will not be impacted, the driveway was not tested. Three STs were completed within the area previously recommended for testing (Figures 4 and 8). The tables, below, indicate the ST results. Each of the STs contained modern artifacts in fill layers, but none of the STs contained any precontact resources.

ST 4

#	Depth (cm)	Soil Type	Color	Artifacts	Interpretations
1	0-4	loam	10YR3/2	glass, plastic, shingle*	Fill 1
2	4-10	sand	10YR5/6	ceramic, coal ash**, plastic**, glass	Fill 2
3	10-29	loam	10YR3/2	glass, plastic**	Fill 3
4	29-43	clay & sand	5BG5/1 & 7.5YR4/6	NCM	Fill 4
5	43-75	sand	7.5YR4/6	NCM	C (Water @ 65)

ST 5

#	Depth (cm)	Soil Type	Color	Artifacts	Interpretations
1	0-31	loam	10YR3/2 w/ 7.5YR4/4	glass, plastic*, ceramic, nails, electric cable*	Fill 1
2	31-46	loam	7.5YR4/4 w/ 10YR3/2	nails, shell, plastic, glass, coal ash**	Fill 2
3	46-61	clay loam	7.5YR5/6	plastic, nail, foam rubber	Fill 3
4	61-73	sand	10YR7/4	NCM	C

ST 6

#	Depth (cm)	Soil Type	Color	Artifacts	Interpretations
1	0-17	loam	10YR3/2	glass, ceramic, brick**, foam rubber	A
2	17-47	loamy sand	7.5YR4/6	NCM	B

Note: NCM=No Cultural Material * =discarded ** = sampled

As reported above, STs 5 and 6 had disturbed soils that appeared to be fill levels from the surface down to the buried C horizon, where water was present in ST5. Mixed modern and historic artifacts were found throughout all fill levels. Furthermore, none of the STs produced precontact material, and no intact historical deposits were encountered. An inventory of recovered material is presented below.

ARTIFACT INVENTORY BMP LC-17

ST	Level	Description
4	1 Fill	1 whiteware, base 4 whiteware 2 glass, container, clear 1 glass, container, olive 1 plastic, green, w/ floral pattern
4	2 Fill	1 coal ash 3 plastic, white 1 glass, light green

ST	Level	Description
4	3 Fill	1 glass, container, clear 1 plastic, white
5	1 Fill	3 nail frags. 1 glass, green 1 glass, brown 12 glass, clear 2 glass, light green 2 redware, flower pot 1 whiteware 1 plastic, white, hard 1 plastic wrap, brwn & red
5	2 Fill	2 nail frags., wire 1 nail frag., cut 1 shell, oyster 1 redware, flower pot, base 1 glass, clear, lighting 1 milk glass
5	3 Fill	1 foam rubber 1 rubber
6	1A	1 glass, clear, lighting 1 glass, container, clear 1 foam rubber 1 redware, flower pot

PHASE IB CONCLUSIONS AND RECOMMENDATIONS

Phase IB archaeological testing has been completed at the two BMP areas previously recommended for testing, BMP LC-16 and BMP LC-17. Precontact archaeological material consisting of chert flakes, a tested jasper pebble, and a thermally altered quartzite cobble were recovered from one ST in BMP LC-16. This precontact material was found in an undisturbed context in ST 2. Therefore, additional archaeological testing is recommended. The next level of field testing should be designed to establish the age, extent, integrity, and potential National Register-eligibility of any precontact remains. The non-precontact era artifacts from this BMP are modern in nature and have no archaeological significance.

No intact archaeological deposits were identified at the BMP LC-17 location. Much of this area has been disturbed and covered with fill. Only modern materials were found in the fill soil here. One test reached the water table. Therefore, no further archaeological investigations of BMP LC-17 are recommended.

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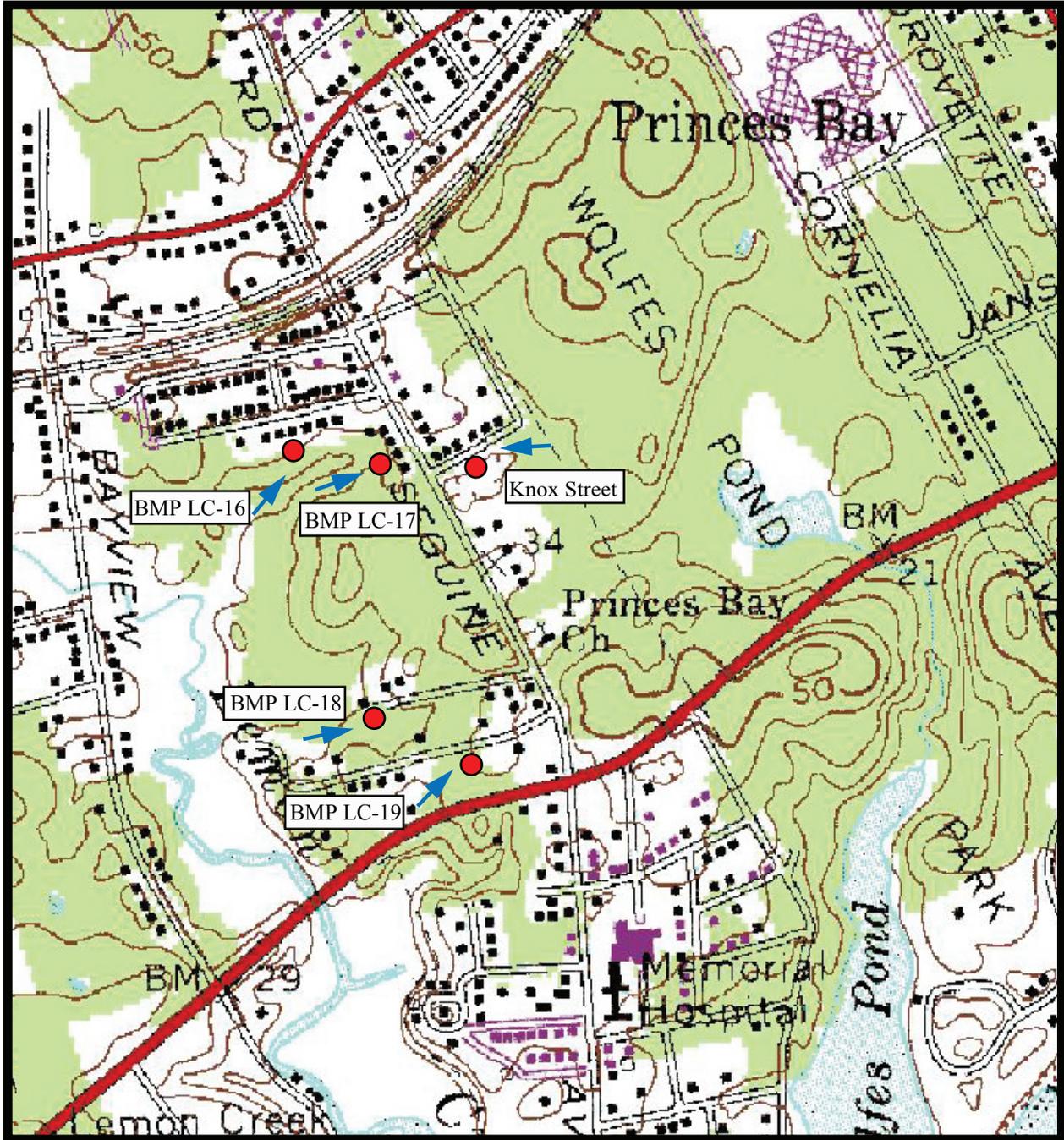
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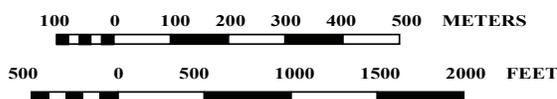
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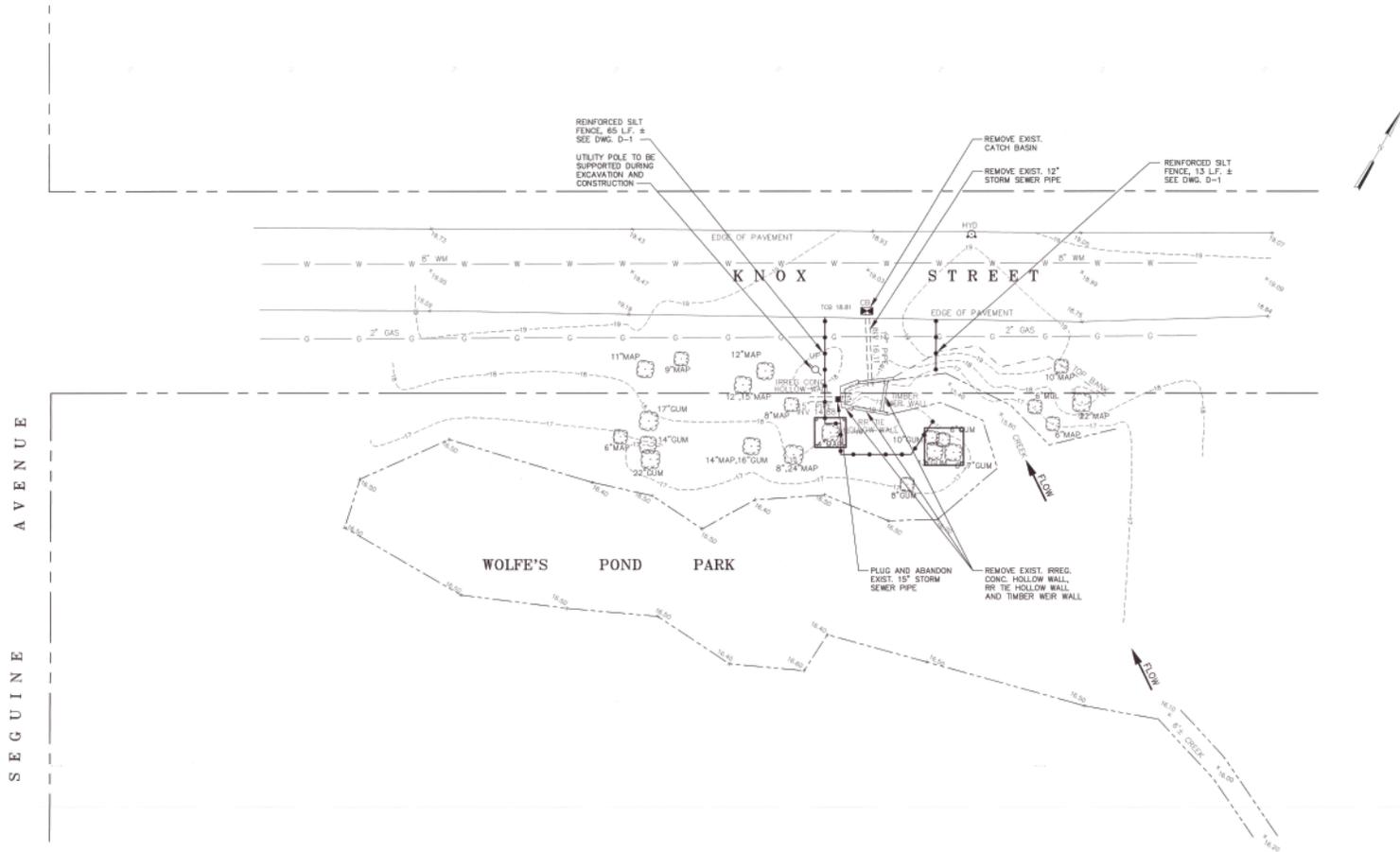


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Figure 1: Project Area Locations (U.S.G.S. 1976).



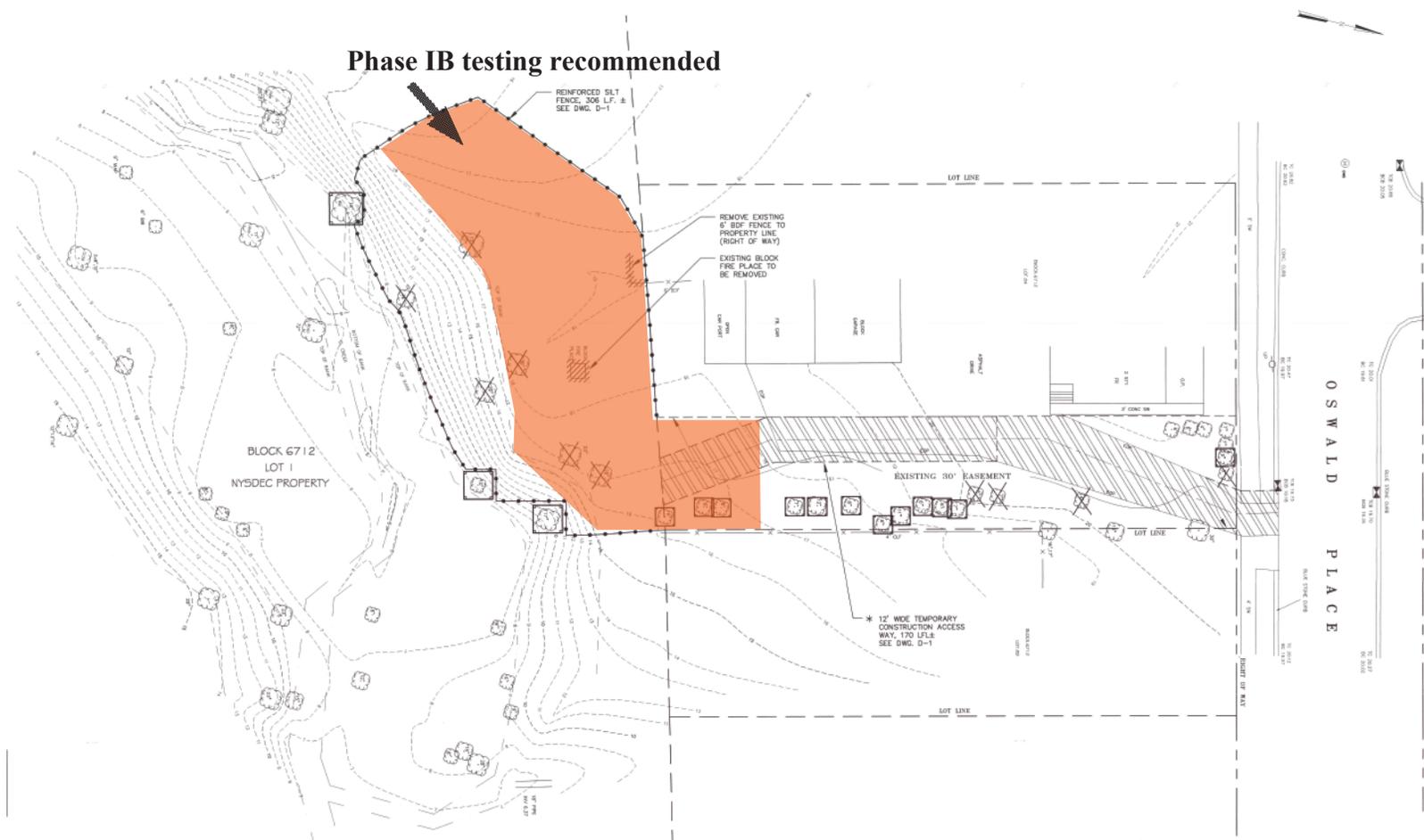


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LEGEND
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 = TREE TO BE SAVED W/ TREE GUARD

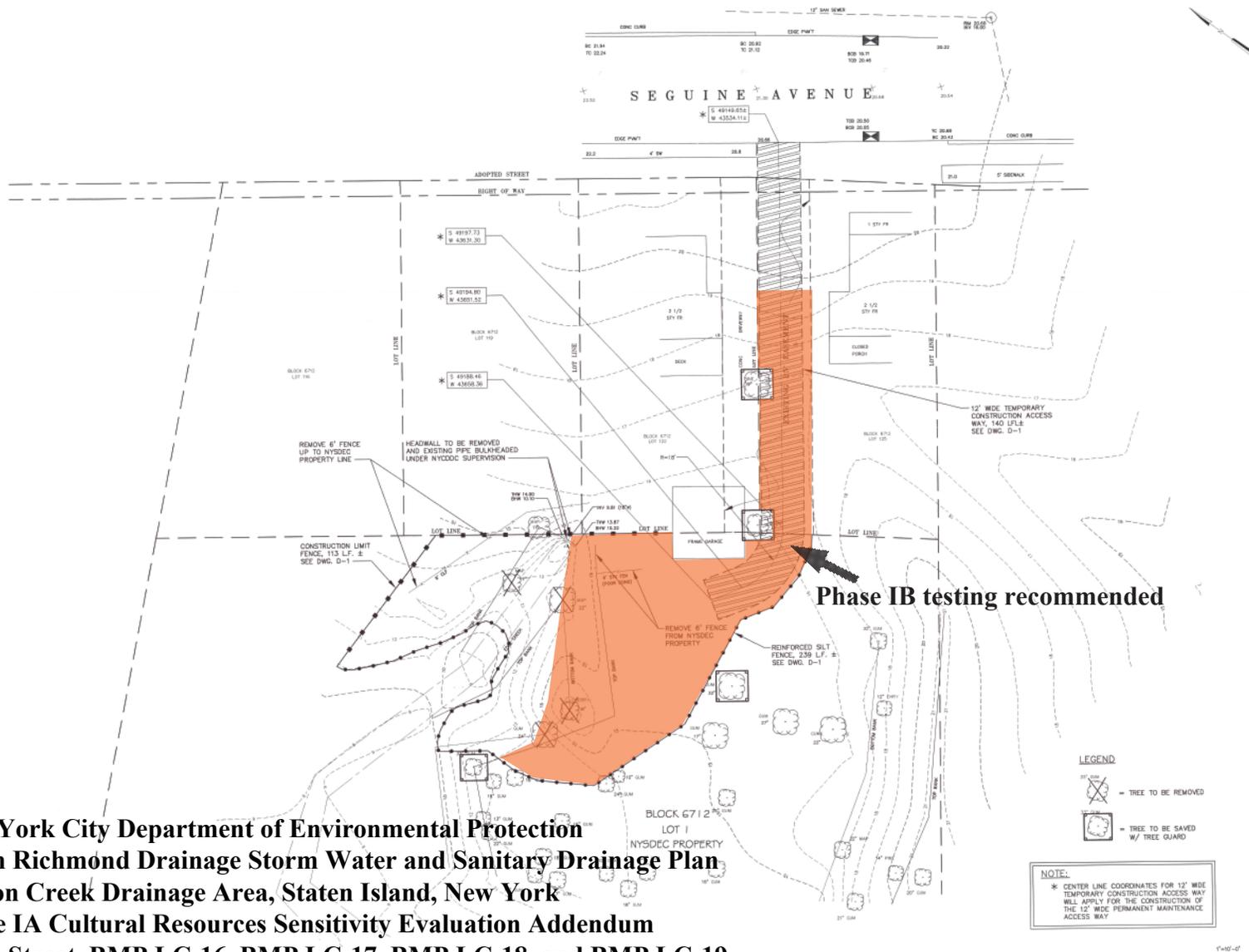


Figure 2: Knox Street APE



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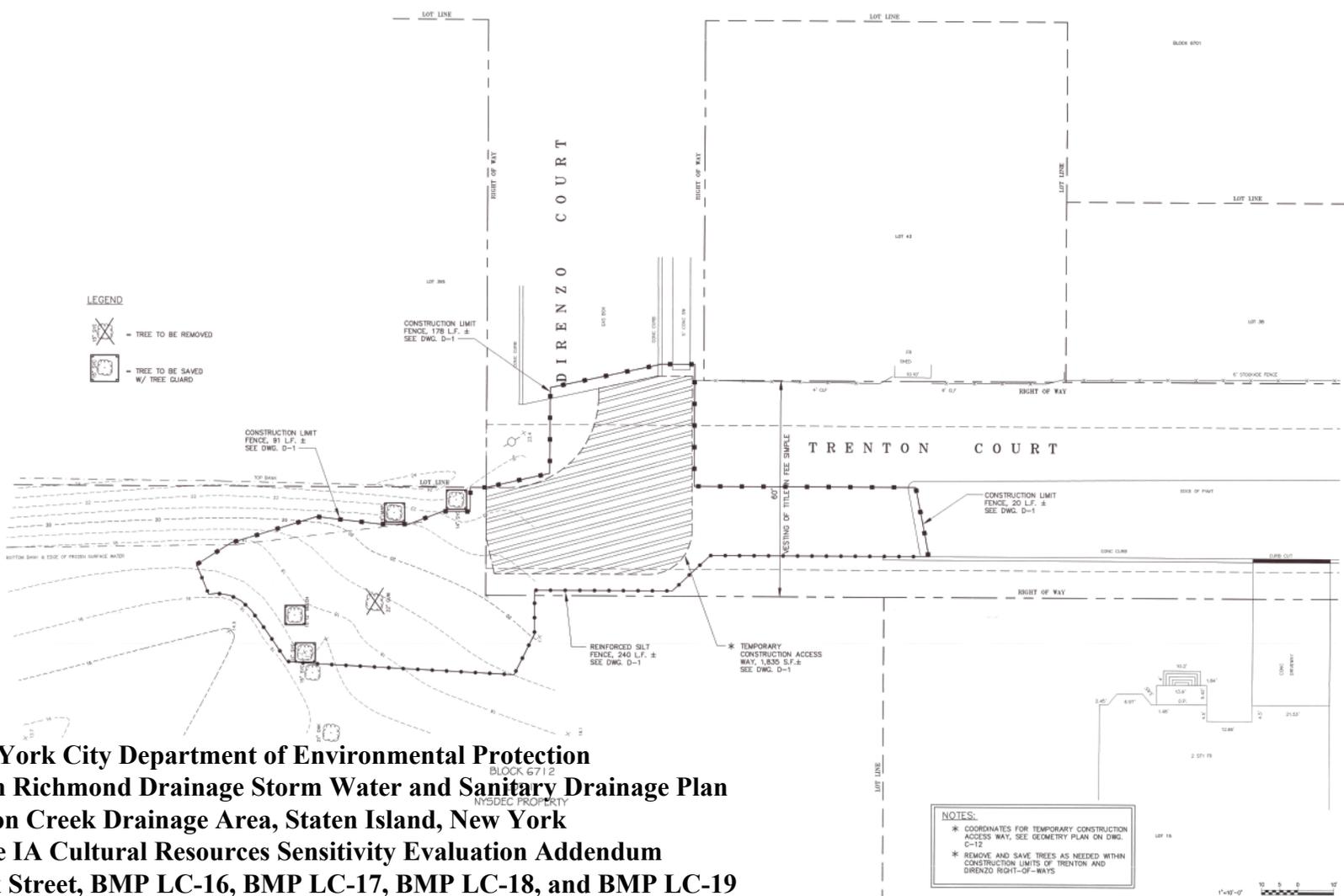
Figure 3: BMP LC-16 APE



Phase IB testing recommended

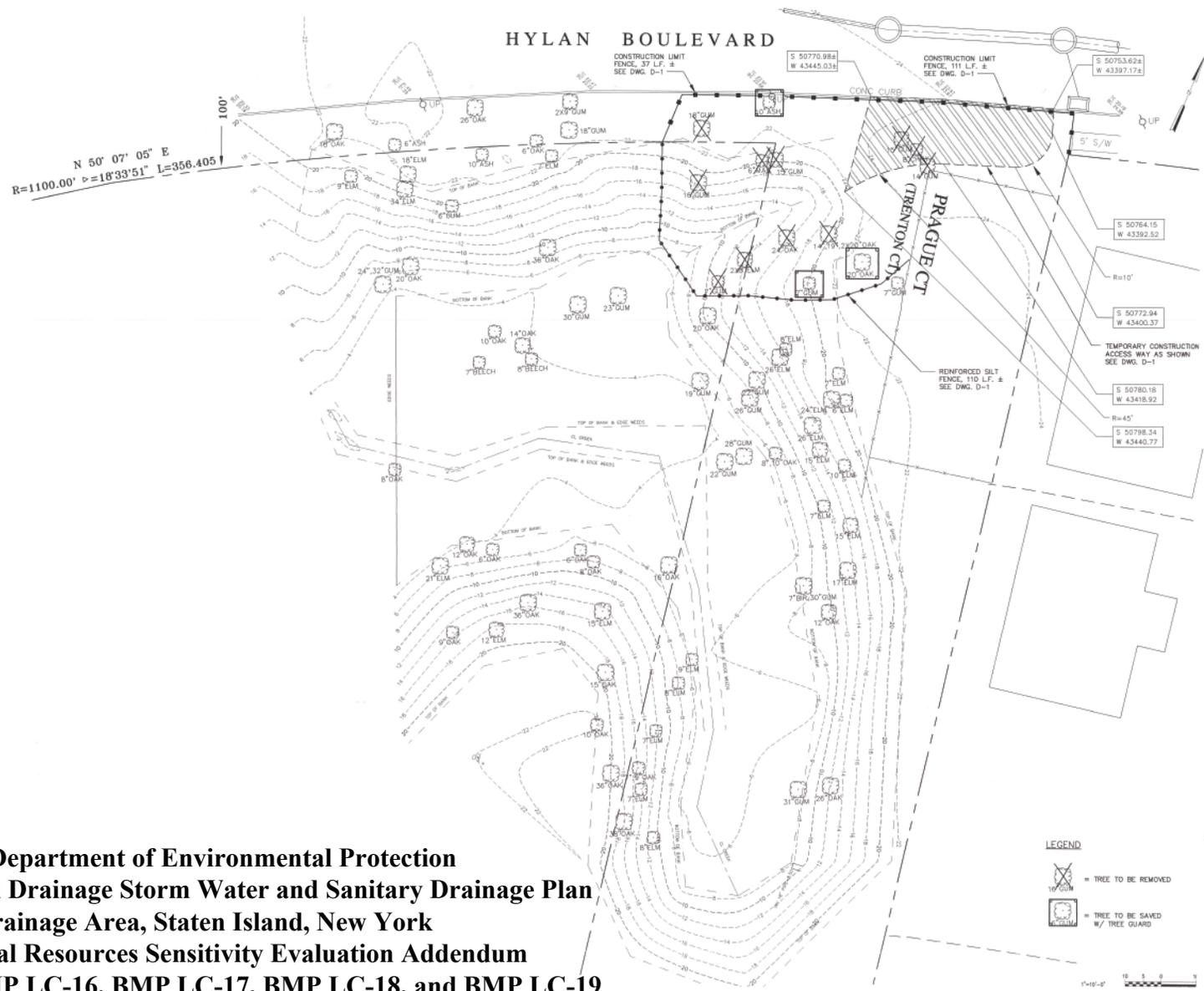
New York City Department of Environmental Protection
 South Richmond Drainage Storm Water and Sanitary Drainage Plan
 Lemon Creek Drainage Area, Staten Island, New York
 Phase IA Cultural Resources Sensitivity Evaluation Addendum
 Knox Street, BMP LC-16, BMP LC-17, BMP LC-18, and BMP LC-19

Figure 4: BMP LC-17 APE



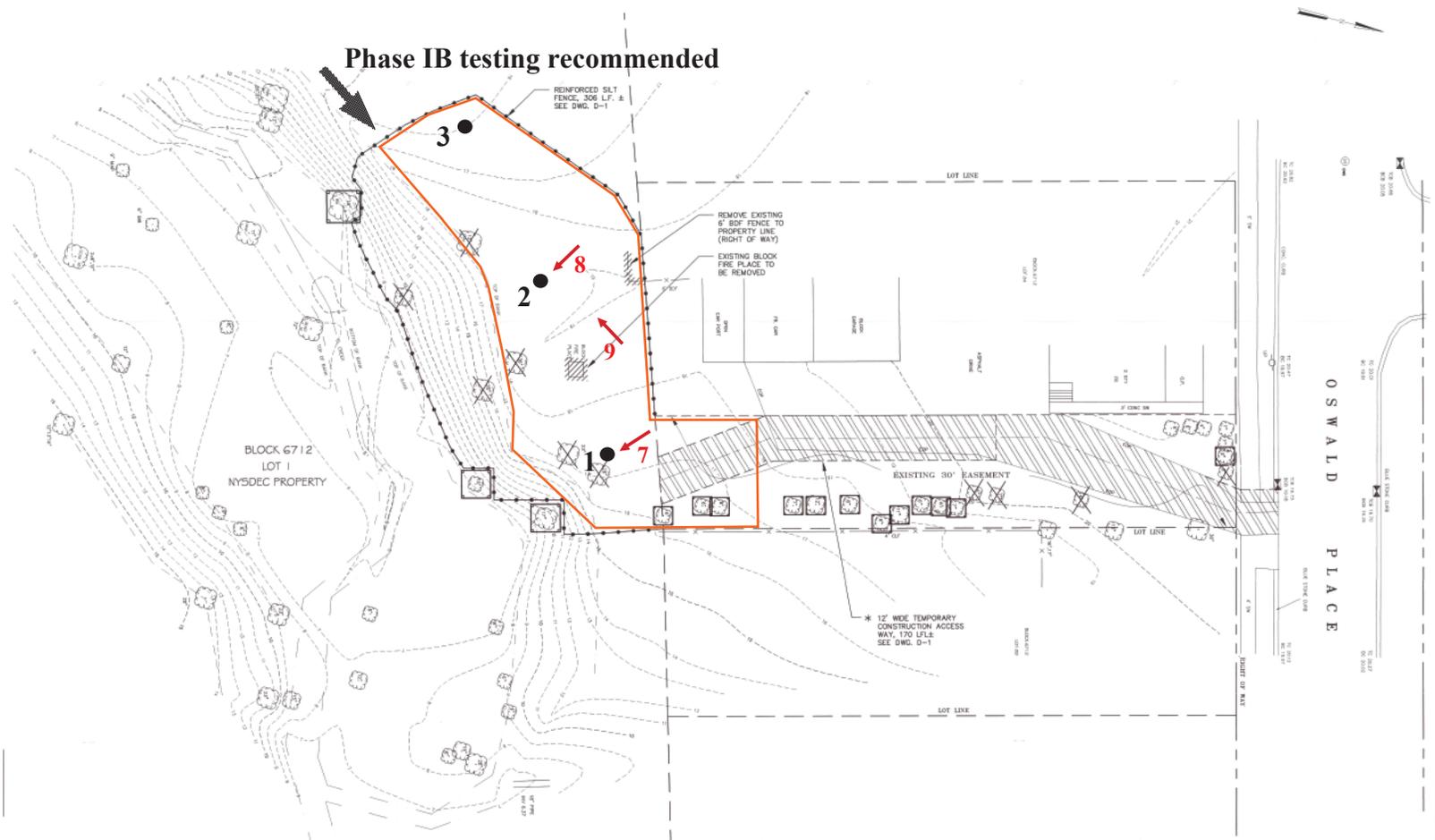
New York City Department of Environmental Protection
South Richmond Drainage Storm Water and Sanitary Drainage Plan
Lemon Creek Drainage Area, Staten Island, New York
Phase IA Cultural Resources Sensitivity Evaluation Addendum
Knox Street, BMP LC-16, BMP LC-17, BMP LC-18, and BMP LC-19

Figure 5: BMP LC-18 APE



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Figure 6: BMP LC-19 APE



**New York City Department of Environmental Protection
 South Richmond Drainage Storm Water and Sanitary Drainage Plan
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 Phase IB Archaeological Investigation**

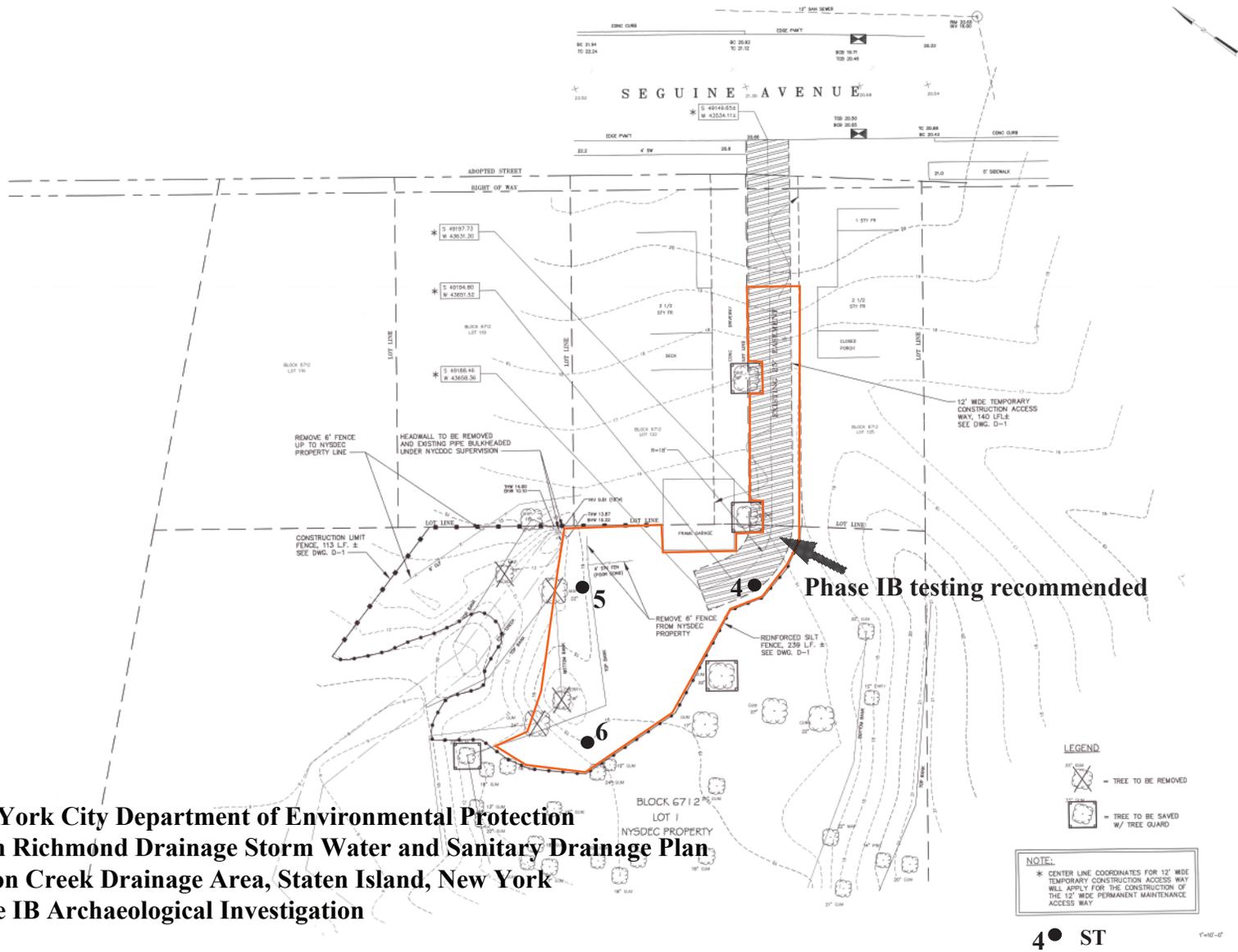
- LEGEND**
- = TREE TO BE REMOVED
 - = TREE TO BE SAVED W/ TREE GUARD

NOTE:
 * CENTER LINE COORDINATES FOR 12' WIDE TEMPORARY CONSTRUCTION ACCESS WAY SEE GEOMETRY PLAN ON DWG. C-2

- 1 ● ST**
- 7 Photograph**



Figure 7: BMP LC-16 APE with Shovel Test and Photograph Locations



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Figure 8: BMP LC-17 APE with Shovel Test Locations



Photograph 1: Knox Street APE, showing a strip of land included in the roadway easement that has been disturbed from installation of utilities, including a subsurface gas line and a catch basin. View looking southeast from Knox Street.



Photograph 2: Knox Street APE, showing the existing storm sewer drain, the associated concrete walls and the timber weir wall. View looking northeast.



Photograph 3: BMP LC-16 APE showing construction easement through residential driveway, with terrace in background. View looking south.



Photograph 4: BMP LC-17 APE showing construction easement through residential yard, on west side of house. View looking northeast.



Photograph 5: BMP LC-17 APE showing level terrace. View looking southeast.



Photograph 6: BMP LC-17 APE showing sloped areas on either side of the branch of Lemon Creek that runs through the APE. View looking northwest.



Photograph 7: View looking east at ST1 in BMP LC-16.



Photograph 8: Profile photo of ST2 looking east in BMP LC-16.



Photograph 9: View looking south at ST2 in BMP LC-16