

A. INTRODUCTION AND METHODOLOGY

This chapter assesses the potential effects of the proposed Second Avenue Subway on archaeological resources. It assesses each area where the project would require ground disturbance—for example, from cut-and-cover construction or building underpinning—and then considers whether archaeological resources could conceivably be buried within each of those areas. The chapter then considers whether the alternatives have the potential to affect any resources that may be present. Appendix H, “Archaeological Resources,” provides additional information on the archaeological assessment process, including a description of the assessment methodology.

Section 106 of the National Preservation Act of 1966 and the New York State Historic Preservation Act of 1980 require federal and state agencies, respectively, to consider the effects of their actions on any properties listed on or determined eligible for the National and State Registers of Historic Places. Properties listed on or determined eligible for the State and National Registers of Historic Places (S/NR) can include archaeological resources as well as historic resources (see Appendix G, “Historic Resources”). The National Environmental Policy Act (NEPA) also requires such consideration, and the review and public outreach requirements under Section 106 can be conducted in coordination with analyses and the public outreach process conducted for NEPA. In addition, archaeological resources that are listed on or eligible for the National Register and that warrant preservation in place are protected from adverse effects by Section 4(f) of the Department of Transportation Act of 1966 (see the Section 4(f) Evaluation included at the end of the main volume of this document and Appendix G for more information on Section 4(f) in relation to this project).

Consistent with these regulations, the analysis of the Second Avenue Subway project’s effects on archaeological resources is being conducted in coordination with the New York State Historic Preservation Office (SHPO). Consultation has also been undertaken with the New York City Landmarks Preservation Commission (LPC). A meeting to discuss the analysis was held with representatives of the SHPO and MTA New York City Transit on December 17, 2001, and additional meetings were held with the SHPO, MTA NYCT, and the LPC in September and October 2002. Copies of correspondence from the SHPO and LPC are included in Appendix G.2 of this FEIS. As described in Chapter 4, “Public Outreach and Review Process,” NYCT has also identified and begun meeting with descendant groups associated with areas potentially sensitive for human remains. In addition, the FTA has also initiated contact with federally and state-recognized Native American tribes and groups as described later in this chapter.

TYPES OF ARCHAEOLOGICAL RESOURCES

Archaeological resources are physical remains, usually buried, of past activities on a site. They can include remains from Native American people who used or occupied a site—including tools, refuse from tool-making activities, habitation sites, etc. These resources are also referred to as

“precontact,” since they were deposited before Native Americans’ contact with European settlers. Archaeological resources can also include remains from activities that occurred during the historic period (beginning with European colonization of the New York area), such as battle sites, foundations, wells, and privies. Cemeteries are also considered archaeological resources.

PRECONTACT RESOURCES

Before Europeans arrived in New York and continuing into the 18th century, Native Americans lived throughout the region. Native American sites that have been identified in the New York City region are typically located on high ground near freshwater ponds, streams, and tidal inlets and coves. Throughout the New York metropolitan region, the limited number of precontact archaeological resources that have been found have typically been shallowly buried, usually within 3 or 4 feet of the pre-development surface. As a result, these sites are vulnerable to disturbance by later activities on the site, and few such sites have survived. Because Native American archaeological sites in the New York City area are extremely rare, any surviving site would be considered extremely valuable and would most likely be eligible for inclusion on the State and National Registers.

HISTORIC-PERIOD RESOURCES

Buried remains from the historic period can also be important, because of the new, undocumented information they can provide about the daily lives of previous inhabitants or about important historical events. In the New York City area, historic-period archaeological resources can include early Dutch colonial artifacts (17th century), Revolutionary War-period objects, 19th century residential artifacts, and 17th to 19th century burials. Industrial remains can also be important. Types of historic archaeological resources that may be present in the New York City region include artifacts relating to dwellings, workplaces, and schools, which can be preserved in former buildings, yards, and old privies, cisterns, or wells. In use before municipal sewer and water services were available, privies, cisterns, and wells were located in backyards. They were typically shafts of up to 8 feet deep, and were sometimes used for refuse disposal. These shafts can serve as a “time capsule,” filled with artifacts from the time of their use. They can remain preserved beneath later construction on a site, often protected by fill levels or later buildings. Historic-period archaeological resources may be considered significant, and therefore eligible for the State and National Registers, if they have the potential to provide valuable new information about the past. Consequently, historic-period archaeological resources are typically most valuable when they are older and, usually, if relating to shaft features, when they predate installation of municipal sewer and water services.

CEMETERIES

The Second Avenue Subway alignment would not pass through any existing cemeteries. However, human remains from former cemeteries or burial grounds may exist beneath portions of roadways or other properties where subway construction may occur. Given their sensitive nature, all human remains buried below ground are considered archaeological resources likely to meet eligibility requirements for the State and National Registers. In the analyses that follow, any cemeteries or burial grounds discussed in connection with the Second Avenue Subway date to the historic period (i.e., the period following European contact).

FACTORS AFFECTING SURVIVAL OF RESOURCES

On sites where later development occurred, archaeological resources may have been disturbed or destroyed by later grading, excavation, installation of utilities, construction of subway lines, and other development activities. However, some resources do survive in an urban environment, sometimes protected by paving or later buildings with shallow foundations.

At places where cemeteries or other burial grounds were once located, graves were sometimes moved when cemeteries were closed, usually before roadways or other features were constructed within the areas, and the locations to which the graves were relocated were recorded. However, it is possible that unmarked burials or interments may have been missed during such moves; if so, the remains may still be present without anyone's knowledge. Similarly, if any unmarked burials occurred outside of the boundaries of the officially designated cemeteries, the remains may also be present beneath sidewalks or other similar street features.

EVALUATION METHODOLOGY

As set forth by Section 106, the analysis of archaeological resources involves defining an area of potential effect (APE), which is the study area for analysis, and then identifying whether that APE is likely to contain any archaeological resources (such as burials or other resources) that are listed on or eligible for the S/NR, and evaluating the project's effects on any such resources. However, unlike historic resources, most archaeological resources are unknown—they are buried beneath the surface—and until research and/or subsurface investigations are undertaken, archaeologists cannot determine whether or not any resources are actually present. Moreover, because they are not currently visible, the resources' possible significance (and therefore potential to be eligible for the Register) are also not yet known. For this reason, a Programmatic Agreement is often developed in accordance with Section 106 to establish the required procedures guiding the ongoing archaeological research process. The Programmatic Agreement prepared for the Second Avenue Subway is included at the end of this FEIS.

Archaeological resources are typically evaluated through a three-step process. The first step, Stage 1, consists of documentary research into the development history of the site to determine the likelihood that archaeological resources may be present within the APE. Often, this step is divided into two phases: Stage 1A, which requires identifying areas that may contain archaeological resources, and Stage 1B, which involves subsurface testing to try to determine whether any resources are actually present. The second step, Stage 2, consists of more extensive subsurface investigations (if Stage 1B testing indicated that resources are present) and additional research to establish the age, integrity and research potential of the resources, and whether they may be eligible for the Registers. The third step, Stage 3, is considered the mitigation phase; mitigation may consist of either avoidance of the resource or data recovery in the form of a full-scale excavation and documentation.

For the Second Avenue Subway, documentary research was undertaken by professional archaeologists to determine the project's potential to affect archaeological resources. The research was conducted as part of the *Second Avenue Subway Stage 1A Archaeological Assessment*, prepared by Historical Perspectives, Inc., March 12, 2003; *Second Avenue Subway Preliminary Archaeological Assessment, Train Storage Yards*, prepared by Historical Perspectives, Inc., June 6, 2002; and addenda prepared March 12, 2003 and June 27, 2003 to accompany those reports.

The conclusions of these reports were accepted by SHPO and LPC in correspondence dated July 2002, and April and July 2003; copies of relevant correspondence are included in Appendix G.2.

The evaluations are summarized in this chapter. As detailed below, the archaeological study conducted to date encompassed five steps:

- **Definition of the Area of Potential Effect (APE).** This is the area where project activities could disturb the ground to the extent that if any archaeological resources are present, they could be affected. The APE is the study area for archaeological resources. To develop a comprehensive assessment of areas that may contain archaeological resources, and to account for the lack of definition and/or potential for change of some project elements, the APE for archaeological resources was defined for the full alignment of the Second Avenue Subway in Manhattan. An APE was also defined for the potential train storage yard site at the 36th-38th Street Yard in the Sunset Park section of Brooklyn.¹ No APEs were defined for the Concourse Yard or 207th Street Yard, since any proposed construction work would occur in an area already disturbed by the same type of activity. No APEs were defined for any of the station entrances, vents, or other ancillary facilities because the locations of these facilities have not been confirmed. As described below and in the Programmatic Agreement, additional research will be conducted for all such areas prior to any construction.
- **Preliminary identification of the possibility of archaeological resources being present within the APE.** Documentary research was conducted to identify areas where important precontact or historic-period activities may have occurred that might have left archaeological evidence behind in the soils. Research regarding the locations of former cemeteries or burial grounds was also conducted. This involved extensive documentary research and review of historic maps to identify already known archaeological sites and areas that have the potential to contain archaeological resources, based on original topography (for precontact resources) or site development history (for historic-period resources).

For precontact resources, to help ensure that no possible sites were missed, any project locations that had appropriate topographical features before development and any locations noted in historic sources as former sites of Native American camps, villages, middens (refuse piles, such as shell heaps), etc., were considered potential prehistoric sites unless later activities disturbed them. For historic-period resources, extensive cartographic research was used to compile a development history, to determine the likelihood that archaeological resources from historic-period uses could have been deposited within each APE.

- **Documentation of disturbance and identification of potential undisturbed resources.** For each area where research indicated that Native American or historic-period activities might have left archaeological resources, research was undertaken to determine original site topography and any subsequent alterations through filling, grading, development, or other activities. Where available, boring logs were reviewed to understand grading and filling activities that may have occurred, and topographic maps were compared to current elevations to determine what changes to the landscape have occurred through grading and/or filling. The objective of this assessment was to identify locations where any archaeological resources, if originally present, may have survived later disturbances.

Areas that may have archaeological resources are considered to be archaeologically “sensitive.” These sites are those that once had topography that would have been conducive to prehistoric use, or those that once had historic-period uses that could have resulted in

¹ An APE was also defined for the originally proposed Coney Island Yard expansion site in Coney Island, Brooklyn; however, work at this site is no longer under consideration for the project.

significant archaeological resources, at which later development activities may not have disturbed those resources. Archaeological resources at these “sensitive” sites are “potential” resources, or archaeologically sensitive areas, since it is not yet known whether any resources are actually present.

- **Assessment of effect.** The project’s effects on the potential archaeological resources identified were then assessed. For purposes of analysis, an effect was determined to occur if construction or operation of the subway would disturb the soil in the area where the potential resource could be located. For each area that was identified as archaeologically sensitive, the project’s potential for significant adverse effects to those possible archaeological resources was assessed. Some components of the proposed project are not expected to cause effects to any potential archaeological resources; for example, no effects would occur where construction would occur within existing tunnels (since any resources that might have once existed there have already been disturbed) nor would effects occur within areas where the new tunnels would be dug through bedrock via tunnel boring machines (TBMs) and mining. (No archaeological resources are located within rock.)
- **Additional evaluation for archaeologically sensitive areas.** At all locations where there is a potential for significant adverse effects to occur, professional archaeologists outlined a process describing the additional documentary research, field testing, and/or mitigation measures that would be undertaken prior to any construction, to avoid significant adverse effects from project construction or operation. The Programmatic Agreement at the end of this FEIS describes the required steps in detail. Generally, the steps consist first of undertaking additional research and field testing to identify whether any archaeological resources are actually present on the sites, and if so, whether the resources are eligible for the State and National Registers. Then, for any such resources, a range of possible mitigation measures was identified, including avoidance, data recovery, and curation.

Each of these steps is described in more detail in Appendix H.

B. EXISTING CONDITIONS

The archaeological resources analysis conducted for the project identified numerous locations along the project alignment with the potential to contain archaeological resources (see Figures 10-1 through 10-6). As noted above, these areas were found to be sensitive because they once had topography conducive to Native American development or because they once had historic-period features including cemeteries or burial areas that would be of archaeological interest today, and a review of later development activities (based on historic maps and other sources) indicates that the land with that topography or those historic features may have survived undisturbed. The potential archaeological resources identified by the study may be buried beneath the existing streetbed, utilities, and other structures present in the APE. Additional research will be required to determine whether those resources are actually present and whether they are intact enough and significant enough to be eligible for listing on the State and National Registers of Historic Places. The research process will consist of both additional documentary research and field testing and is described in the Programmatic Agreement.

Approximately 600 potential archaeological resources have been identified within the APE for the Second Avenue Subway based on the research conducted to date. As described above, further research will be implemented prior to any construction to refine this list and eliminate resources that are determined not to exist based on prior disturbance at the sites. The

Programmatic Agreement provides more information on this process. Types of resources that may be present in the APE are as follows:

- **Areas of precontact sensitivity:** These include areas near previously recorded camp and villages or other areas of Native American occupation and use, such as trails and roads. They also include areas that may have been conducive for habitation or food procurement and other subsistence activities due to past favorable geographic conditions. As described above, these may include areas that were elevated and dry, and thus suitable for Native American living, or areas that provided a habitat of faunal and floral resources, such as areas along the shoreline and marshes.
- **Areas of historic-period sensitivity related to historic residential use.** The majority of the potential historic-period resources identified in the APE relate to historic residential occupation. These include possible late 17th to early 19th century foundation remains for farms and houses prior to the establishment of the street grid in 1811, as well as “shaft” features associated with farms and houses. Shaft features such as privies, wells, and cisterns (used prior to the installation of utilities such as water and sewers), can contain “time capsules” of archaeological resources.
- **Areas of historic-period sensitivity related to commercial use.** These include the locations of past commercial and industrial enterprises, including markets, rope manufacturers, and foundries. Foundations and associated shaft features may be present.
- **Revolutionary War fortifications.** Potential archaeological resources from the historic era also include the remains of Revolutionary War fortifications, such as identified in the Grand Street area south of Houston Street and on Pearl Street near Fulton Street.
- **Historic landfill.** In Lower Manhattan, potential historic-period resources include 17th to 19th century fill (made land), which may contain buried waterfront structures including piers, docks, and wharves, when the APE was formerly submerged by the East River. The landfill, made up of soil brought from construction sites elsewhere in the city as well as refuse, may also be sensitive for fill retaining devices such as cribbing and sunken ships.
- **Human burials/cemeteries.** South of 2nd Street, the APE is sensitive for potential burials from the historic period because graveyards once existed in this area. Although records indicate that marked graves from these cemeteries were moved when the cemeteries were closed (before the existing roads or parks were constructed across the area), it is possible that unmarked interments or burials were missed during the moving process; if so, they would still be present in their original locations. At other cemeteries, it is possible that burials may have extended outside of their established boundaries, into areas that are now sidewalks. The SDEIS identified six potential burial locations in the APE:
 - West sidewalk on Second Avenue between 1st and 2nd Streets: circa 1805-1851 Methodist Episcopal Church burials.
 - Northern two-thirds of the block formerly bounded by Houston, Stanton, Chrystie, and Forsyth Streets, now occupied by Sara Delano Roosevelt Park, and under the sidewalks on the south side of Houston Street, east side of Chrystie Street, and west side of Forsyth Street bordering the potentially sensitive area of Sara Delano Roosevelt Park: circa 1803-1865 Presbyterian Cemetery burials.

- The northern half of the east sidewalk on Forsyth Street between Houston and Stanton Streets: circa 1799-1866 German Evangelical Mission Cemetery burials.
- West sidewalk of Chrystie Street between Stanton and Rivington Streets: circa 1795-1852 African Burying Ground/St. Philip's Cemetery burials.
- St. James Place between Oliver and James Streets: circa 1656-1831 Shearith Israel Graveyard burials.
- Former southeast corner of Chrystie and Broome Streets and adjacent east Chrystie Street sidewalk and roadbed: early 19th century St. Stephen's Episcopal Church burials.

Subsequent to the SDEIS, intensive documentary research was undertaken for four of the potential burial areas that may be adversely affected by the proposed project.¹ The research was undertaken to try to further document cemetery boundaries and establish interments and disinterments. The Topic Intensive Study Reports for the four burial areas—Methodist Episcopal Church, African Burying Ground/St. Philip's Cemetery, Shearith Israel Graveyard, and St. Stephen's Episcopal Church burials—were submitted to SHPO and LPC for review and accepted by SHPO and LPC in comments dated January 29, 2004; January 14, 2004; and September 16, 2003. The conclusions of these reports revised the locations of potential sensitivity identified in the SDEIS for three of the potential burial locations as follows:

- Methodist Episcopal Church: the area of sensitivity has been revised to encompass the west Second Avenue sidewalk and western 25 feet of Second Avenue from the southwest corner of Second Avenue and First Street to a point midway between 1st and 2nd Streets. In addition, the time period for which sensitivity has been identified has been revised to 1805-1817.
- African Burying Ground/St. Philip's Episcopal Church: the area of sensitivity has been revised to include only the portion of the west sidewalk on Chrystie Street along the 50-foot frontage of the former cemetery. In addition, the time period for which sensitivity has been identified has been revised to 1795-1809.
- Shearith Israel Graveyard: the area of sensitivity has been reduced to include only the northern half of St. James Place between Oliver and James Streets.

Furthermore, three additional areas sensitive for human remains have been identified since publication of the SDEIS as follows:

- Areas within the block bounded by Second and First Avenues, Houston and 1st Streets (Block 442): circa 1815-1851 First Baptist Church and Cemetery and early 19th century St. Stephen's Church Cemetery burials.
- Northeast corner of Chrystie and Delancey Streets and adjacent east Chrystie Street sidewalk and roadbed: circa 1819-1856 Bethel Baptist Church Cemetery burials.

¹ The African Burying Ground/St. Philip's Episcopal Church Cemetery would only have been affected under the Shallow Chrystie Option, which is no longer under consideration. However, research was already undertaken for this cemetery prior to the alignment being eliminated, so the information is provided herein.

- Former north side of Stanton Street within Sara D. Roosevelt Park: circa 1836-1881 Stanton Street Baptist Church burials.
- **Other resources.** In addition, there are locations in the APE that are the former location of 19th century trolley routes. Some trolley features have the potential to address meaningful research issues, including support structures for the earliest electrified trolleys, original power conduits, and early (circa mid-19th century) tracks. However, due to the extensive documentation regarding the routes, technology, and construction of Manhattan's trolleys, these former trolley line features do not in themselves constitute potentially significant archaeological resources. However, if encountered during testing or project construction, they may warrant some degree of documentation.

The APE also contains a potential below-grade railroad structure in East Harlem. The railroad tracks of the New York Central and Hudson River Railroad once ran in a cut on Park Avenue, which was constructed as part of the Park Avenue Improvement project in 1874. When the present viaduct was built some 20 years later, the cut was filled in and the viaduct built above. It is possible that the architectural features of the cut, such as its retaining walls, remain in place beneath the street at the intersection with 125th Street. If such structures are encountered during testing or project construction and would require removal, they would be documented via photographs.

The APE may also contain the footings that supported elevated trains, such as the Second Avenue Elevated. These are not considered potentially significant, given the extensive documentation, and the limited information they can provide about the structures they supported. In addition, there is the possibility that old utility pipes could be present in the APE. These may include the original Consolidated Edison First District cables in Lower Manhattan. However, these electrical conduits were likely upgraded and/or replaced through time, and the archaeological resource potential for such features would not be considered significant. Therefore, for the purposes of this analysis, these types of resources are not considered as potential historic-period resources that could meet eligibility criteria for listing on the S/NR.

Historic-period resources may be buried within the roadbed, if the road was constructed or widened over areas that were previously developed with buildings. For example, Second Avenue was constructed over earlier farms, and St. James Place and Chrystie, Forsyth Street, and Water Streets were widened to extend over former city blocks that had been developed with buildings. They may also be buried in other such places, such as in Sara D. Roosevelt Park (which was formerly composed of four developed city blocks prior to the construction of the park in the 1930s).

The depth at which potential archaeological resources may be encountered in the APE varies depending on resource type; the depths shown in Tables 10-1 and 10-2 (included later in this chapter as part of Section D, "Construction Effects of the Project Alternatives") were estimated based on known or projected subsurface conditions. Subsurface conditions differ in each APE based on naturally occurring geology, such as the depths of the water table and bedrock, as well as the historic mechanical manipulation of land through grading and leveling activities. Precontact resources are estimated to be buried beneath any fill layers, since the assumption is that any Native American resources were deposited prior to the historic European manipulation of the land. Some historic-period resources are also expected beneath fill layers, if they were potentially deposited prior to land manipulation, while other historic-period resources may be buried within fill layers if they were deposited after filling episodes. These latter resources may include 19th century privies and wells, which may have been dug into previously filled areas.

No potential precontact or historic-period resources were identified in the 207th Street Yard in Manhattan, since proposed work in this extensively disturbed area would have no potential effects on archaeological resources. The APEs within the Concourse Yard in the Bronx and 36th-38th Street Yard in Brooklyn were determined to have no potential for precontact or historic-period resources, since either precontact and historic-period potential was not identified within the APEs, or subsequent construction that has occurred within the APEs has eliminated precontact and historic-period potential. Therefore, the sites of the proposed storage yards were determined not sensitive for archaeological resources.

C. FUTURE CONDITIONS COMMON TO ALL ALTERNATIVES

In the future without the proposed project, any archaeological resources buried in the APEs will most likely remain in place, though disturbance could occur from activities not related to the project.

D. CONSTRUCTION IMPACTS OF THE PROJECT ALTERNATIVES

NO BUILD ALTERNATIVE

Under the No Build Alternative, the Second Avenue Subway would not be built, so no adverse effects to archaeological resources would occur.

SECOND AVENUE SUBWAY

PRELIMINARY ANALYSIS OF ADVERSE EFFECTS

For analysis purposes, an adverse archaeological effect was defined as any disturbance or damage to a potential archaeological resource. Such an effect could occur if a resource were located in soil (no resources are located in portions of the alignment that would be constructed through bedrock) *and* if construction were to disturb the soil at the same depth where that resource was present. In contrast, no impact would occur if the resource were located above or below the area where construction would take place. Similarly, in areas where no archaeological resources were identified, no effects would occur.

The analysis conducted for the project's APE conservatively identifies the full range of effects to archaeological resources that could occur as a result of project construction, including underpinning and other protective measures. In most locations, the areas beneath building foundations have already been disturbed by construction of the foundations, so no archaeological resources are likely to remain. Similarly, at former burial grounds where historical documents indicate that graves were previously relocated, it is likely that few, if any, graves still exist in these areas. However, to be conservative, until the ongoing research fully described in the Programmatic Agreement can determine whether or not the resources identified during the Stage 1A assessment and subsequent archaeological analyses are still present, adverse effects were assumed to occur at all locations where construction could occur at the same depth as a resource. For example, it is possible that in certain locations, archaeological resources could have been buried beneath layers of fill, on top of which the buildings were constructed, so that resources could remain beneath the existing buildings. If so, those resources would be adversely affected by building underpinning. This would result in significant adverse effects. Old cemeteries could also be buried in this way beneath existing buildings. Archaeologically sensitive areas and the

potential for construction effects within each APE are listed in Tables 10-1 and 10-2, and shown in Figures 10-1 through 10-6. To be conservative, the entire area occupied by Sara D. Roosevelt Park, including the Delancey and Grand Streets rights-of-way between Chrystie and Forsyth Streets, was assessed for sensitivity; however, as described elsewhere in this FEIS, the Shallow Chrystie and Forsyth Street options are no longer under consideration. (An assessment of potential project effects that would have occurred under the Shallow Chrystie and Forsyth Street Options is presented in Appendix H). Table 10-2 summarizes the information specific to areas potentially sensitive for human remains. For each area of the APE where the potential for archaeological resources were identified, the tables show the location, type of resource, and depth of resource on the left, and the possible effects and reasons for the effects on the right.

As described in Chapter 3, “Description of Construction Methods and Activities,” since completion of the SDEIS, a phasing plan has now been identified that would allow the new Second Avenue Subway to be built incrementally, in four phases. As with the other impact analyses provided in this FEIS, for archaeological resources, the only time at which adverse effects could occur is during construction of the particular phase in which a given resource is located.

ONGOING AND FUTURE ANALYSES AND CONSULTATION

Tables 10-1 and 10-2 outline the potential effects expected to possible archaeological resources from construction activities that have been identified at this stage in the project’s engineering. As described in the Programmatic Agreement, additional archaeological research will continue to be undertaken subsequent to the FEIS for any new project elements that would involve subsurface construction and for which the effects of such construction have not yet been analyzed as part of the EIS process. These include a refinement to the curve at 125th Street (including the approach to the curve along Second Avenue between 124th and approximately 122nd Streets), a new tunnel for train storage on 125th Street west of Fifth Avenue, a subterranean pedestrian connection on 42nd Street between Third and Lexington Avenues to connect to the 7 train, a refinement to the tunnel alignment near Canal Street, and a portion of the proposed tail tracks for train storage south of Hanover Square Station. (A segment of the tail tracks area has already been assessed, including the associated vent shaft, with the results identified in Table 10-1). In addition, it is possible that as additional refinements to project designs are made as engineering continues, other locations will be identified with the potential to have effects to archaeological resources. If those areas are in the APE already evaluated, the effects can be understood using the research done to date. If they are in new areas outside the project’s APE, additional research might be required to identify whether any resources may be present. These include specific locations for station entrances and ancillary facilities (such as ventilation structures and cooling towers) that may be outside the APE analyzed for this EIS. In addition, underpinning and other protective measures beneath existing structures and utility relocations may also require work outside the APE.

In order to develop a more refined understanding of how the project could affect archaeological resources, ongoing consultation mandated by Section 106 will continue with the SHPO and, as appropriate, with the Advisory Council on Historic Preservation, to investigate further the presence of significant resources and to develop appropriate mitigation measures. Such planning will continue through Preliminary Engineering and into Final Design and eventually construction.

**Table 10-1
Areas of Potential Archaeological Sensitivity and Potential Project Effects
for APEs Between the Harlem River and Peter Minuit Plaza**

Location of Potential Resource	Type of Potential Resource	Depth of Potential Resource	Potential for Effects from Construction Disturbance?		
			No	Yes	Why
EAST HARLEM, HARLEM RIVER TO 125TH STREET (Corresponds To Figure 10-1)					
<u>Train storage area on Second Ave, Harlem River to 125th St</u>	Precontact	<u>12-25</u> feet		✓	C&C
Second Ave, 127th to 126th St	Mid-19th century farm-related features and outbuildings	0-15 feet		✓	C&C
125th St, Fifth to Second Aves, <u>north side</u>	Precontact	3-15 feet		✓	C&C
<u>125th St, Fifth to Second Aves, south side</u>	<u>Precontact</u>	<u>14-23</u> feet		<u>✓</u>	<u>C&C</u>
SECOND AVE, 125TH TO 96TH ST (Corresponds to Figure 10-1)					
Block west of Second Ave between 125th and 124th Sts (Block 1789)	Precontact	5-15 feet		✓	BU
	Late 17th/early 19th century residential features (specific lots only)	0-15 feet		✓	BU
124th St west of Second Ave	Precontact	5-15 feet	✓		TB
	Late 17th century/early 19th century residential features	0-15 feet	✓		TB
Southwest corner of Second Ave and 124th St (Block 1788, Lot 28)	Precontact	5-15 feet		✓	BU
	Late 17th century/early 19th century residential features	0-15 feet		✓	BU
Second Ave, 124th to 121st Sts	Precontact	12-17 feet		✓	C&C
	Early to mid-19th century residential features (only 124 to 122 Sts)	0-18 feet		✓	C&C
Second Ave, 120th to 118th Sts (outside existing subway tunnel)	Precontact	13-18 feet	✓		EST
Second Ave, 118th to 116th Sts (outside existing subway tunnel), <u>excluding 118th St</u>	Precontact	13-18 feet		✓	C&C
Second Ave, 116th to 111th Sts (outside existing subway tunnel)	Precontact	<u>13-23</u> feet	✓		EST
Second Ave, 112th to 111th Sts (east side)	Early 19th century residential features	0-12 or 0-30 feet	✓		EST
Second Ave, 110th to 109th Sts	Precontact	18-23 feet	✓		EST
Second Ave, 106th to 105th Sts	Precontact	0-22 feet		✓	C&C
Second Ave, 105th to 99th Sts	Precontact	0-22 feet	✓		EST
Second Ave, 99th to 96th Sts	Precontact	0-22 feet		✓	C&C
UPPER EAST SIDE, 96TH TO 59TH STREET (Corresponds to Figure 10-2)					
Second Ave, 96th to 95th Sts	Precontact	0-22 feet		✓	C&C
<u>Second Ave, 95th to 94th Sts</u>	<u>Precontact</u>	<u>10-15</u> feet		<u>✓</u>	<u>C&C</u>
Second Ave, 79th to 77th Sts, <u>excluding 79th Street</u>	Precontact	<u>12-20</u> feet	✓		TB
Shaft/staging area on 66th St west of Second Ave	Mid-19th century residential features and railroad depot blacksmith shop	0-17 feet		✓	C&C
Second Ave, 65th to 64th Sts and west side of Second Ave, 64th to 63rd Sts	Precontact	2-17 feet	✓		TB

Table 10-1(cont'd)

**Areas of Potential Archaeological Sensitivity and Potential Project Effects
for APEs Between the Harlem River and Peter Minuit Plaza**

Location of Potential Resource	Type of Potential Resource	Depth of Potential Resource	Potential for Effects from Construction Disturbance?		
			No	Yes	Why
UPPER EAST SIDE, 96TH TO 59TH STREET (Corresponds to Figure 10-2) cont'd					
<u>63rd St curve, Block 1419*</u>	<u>Precontact</u>	<u>5-17 feet</u>	<u>✓</u>		<u>TB</u>
<u>63rd St curve, 64th St*</u>	<u>Precontact</u>	<u>5-10 feet</u>	<u>✓</u>		<u>TB</u>
<u>63rd St curve, Block 1418*</u>	<u>Precontact</u>	<u>5-18 feet</u>	<u>✓</u>		<u>TB</u>
	<u>18th century farm property features</u>	<u>0-unknown depth</u>	<u>✓</u>		<u>TB</u>
<u>63rd St curve, 63rd St and Third Ave¹</u>	<u>Precontact</u>	<u>0-13 feet</u>		<u>✓</u>	<u>C&C</u>
	<u>18th century farm property features</u>	<u>0-18 feet</u>		<u>✓</u>	<u>C&C</u>
<u>63rd St curve, 63rd St between Second and First Aves¹</u>	<u>Precontact</u>	<u>4-9 feet</u>	<u>✓</u>		<u>TB</u>
<u>63rd St curve, Block 1437¹</u>	<u>Precontact</u>	<u>4-15 feet</u>	<u>✓</u>		<u>TB</u>
	<u>Mid-19th century residential property features</u>	<u>0-20 feet</u>	<u>✓</u>		<u>TB</u>
	<u>Mid-19th century industrial features (rope manufacturer), Lots 7, 12, 15, 17, 18</u>	<u>0-6.5 feet</u>	<u>✓</u>		<u>TB</u>
<u>63rd St curve, 62nd St¹</u>	<u>Precontact</u>	<u>4-24 feet</u>	<u>✓</u>		<u>TB</u>
<u>63rd St curve, Block 1436¹</u>	<u>Precontact</u>	<u>4-19 feet</u>	<u>✓</u>		<u>TB</u>
	<u>Mid-19th century residential property features</u>	<u>0-20 feet</u>	<u>✓</u>		<u>TB</u>
<u>63rd St curve, 61st St¹</u>	<u>Precontact</u>	<u>5-10 feet</u>	<u>✓</u>		<u>TB</u>
Second Ave, 62nd to 61st Sts	Precontact	14-19 feet	<u>✓</u>		<u>TB</u>
	Early 19th century residential property features	0-19 feet	<u>✓</u>		<u>TB</u>
Second Ave 61st to 60th Sts	Precontact	5-10 feet	<u>✓</u>		<u>TB</u>
	Early 19th century residential property features	0-19 feet	<u>✓</u>		<u>TB</u>
Second Ave 60th to 59th Sts	Precontact	15-20 feet	✓		TB
	Early 19th century residential property features	0-19 feet	✓		TB
Second Ave at 59th St	Precontact	0-5 feet	✓		TB
	Early 19th century residential property features	0-19 feet	✓		TB
Pedestrian connection on 53rd St, Second Ave to approximately 550 feet west of Second Ave	Precontact	7-12 feet		✓	C&C
EAST MIDTOWN, 59TH TO 34TH STREET (Corresponds to Figure 10-3)					
Second Ave, 45th to 44th Sts	Early 19th century farm residential features	0-16 feet		✓	C&C
Second Ave at 42nd St	Precontact	2-6 feet		✓	C&C
Pedestrian connection on 42nd St, Third Ave roadbed and approximately 260 feet east of Third Ave on 42nd St	Precontact	5-7 feet		✓	C&C

Table 10-1(cont'd)
Areas of Potential Archaeological Sensitivity and Potential Project Effects
for APEs Between the Harlem River and Peter Minuit Plaza

Location of Potential Resource	Type of Potential Resource	Depth of Potential Resource	Potential for Effects from Construction Disturbance?		
			No	Yes	Why
EAST MIDTOWN, 59TH TO 34TH STREET (Corresponds to Figure 10-3) cont'd					
Second Ave, 39th to 38th Sts	Early 19th century farm residential features	0-12 feet	✓		TB
Second Ave, 36th and 35th Sts	Early 19th century residential features	0-18 feet		✓	C&C
Shaft/staging area at St. Vartan Park	Precontact	7-20 feet		✓	C&C
	Late 17th/mid19th century residential features	0-20 feet		✓	SGA, C&C
GRAMERCY PARK/UNION SQUARE, 34TH TO 10TH STREET (Corresponds to Figure 10-4)					
Shaft/staging area at 33rd St	Precontact	6-23 feet		✓	C&C
	Early 19th century farm residential features				
Second Ave, 31st to 29th Sts	Early 19th century farm residential features	0-18 feet	✓		TB
Second Ave, 23rd to 21st Sts, <u>excluding west side of avenue between 23rd and 22nd Streets</u>	Precontact	4-10 feet	✓		TB
Second Ave, 21st to 20th Sts	Precontact	19-25 feet	✓		TB
Second Ave at 19th St	Precontact	9-32 feet	✓		TB
Second Ave, 16th to 15th Sts	Precontact	12-17 feet	✓		TB
Pedestrian Connection on 14th St, Second Ave to approximately 330 feet west of Second Av, sidewalks only	Precontact	5-18 feet		✓	C&C
Second Ave, 14th to 13th Sts	Early 19th century farm residential features	0-15 feet		✓	TB
Second Ave, 11th to 10th Sts	Early 18th century St. Mark's Church features	0-11 feet	✓		TB
EAST VILLAGE/LOWER EAST SIDE/CHINATOWN—10TH STREET TO BROOKLYN BRIDGE (corresponds to Figures 10-5 and 10-6)					
10 St to Houston St					
Second Ave, 9th to 6th Sts	Precontact	2-23 feet	✓		TB
Second Ave, 6th to 1st Sts	Precontact	2-23 feet		✓	C&C
Second Ave, 2nd to 1st St (west sidewalk and western portion of Second Ave)	Potential Methodist Cemetery burials	0-13 feet		✓	C&C
Shaft site at northeast corner of Second Ave and 1st St	Mid-19th century residential features	0-71 feet		✓	C&C
<u>Second Aves, 1st to Houston Sts, center of Second Ave only</u>	<u>Precontact</u>	<u>24-29 feet</u>		<u>✓</u>	<u>C&C</u>
<u>Block 442, Lot 6 (potential vent plant site on east side of Second Ave between 1st and Houston Sts)^{1,2}</u>	<u>First Baptist Church and burials</u>	<u>0-36 feet</u>		<u>✓</u>	<u>C&C</u>
<u>Block 442, south side of 1st St (Lots 12-15)¹</u>	<u>St. Stephen's Cemetery</u>	<u>0-36 feet</u>	<u>✓</u>		<u>TW</u>
<u>Block 442, north side of Houston St (former Lots 53-59)¹</u>	<u>First Baptist Cemetery</u>	<u>0-36 feet</u>		<u>✓²</u>	<u>C&C</u>

Table 10-1(cont'd)

**Areas of Potential Archaeological Sensitivity and Potential Project Effects
for APEs Between the Harlem River and Peter Minuit Plaza**

Location of Potential Resource	Type of Potential Resource	Depth of Potential Resource	Potential for Effects from Construction Disturbance?		
			No	Yes	Why
Area bounded by Houston, Canal, Chrystie, and Forsyth Sts, including Sara D. Roosevelt Park cont'd					
Sara D. Roosevelt Park, Houston to Delancey St	Precontact	2-23 feet	✓		TB
	Potential former Presbyterian Cemetery burials in northern end of the park and adjacent sidewalks	0-12 feet	✓		TB
	<u>Potential former Stanton St Baptist Church burials on north side of Stanton St</u> ¹	<u>0-16 feet</u>	<u>✓</u>		<u>TB</u>
	<u>Potential former Bethel Baptist Church Cemetery burials, northeast corner of Chrystie and Delancey Sts and adjacent east Chrystie St sidewalk & roadbed</u> ¹	<u>0-36 feet</u>	<u>✓</u>		<u>TB</u>
	19th century foundry and tenement remains	0-34 feet	✓		TB
Forsyth Street, Houston to Delancey St	Precontact	2-23 feet	✓		TW
	Potential former Dutch Mission Cemetery burials in east side of Forsyth St between Houston and Stanton Sts	0-12 feet	✓		TW
Chrystie St, Houston to Delancey St (excluding area of existing subway tunnel)	Precontact	2-23 feet	✓		TB
	Potential former African Burial Ground burials in west side of Chrystie Street between Stanton and Rivington Sts	0-14 feet	✓		TB
Sara D. Roosevelt Park, Delancey to Hester St	Precontact	15-21 feet		✓	C&C
	17th-18th century farm house building remains	14-33 feet		✓	C&C
	19th century residential features	0-33 feet		✓	C&C
	18th century British fortifications within the northern 2/3 of former block north of Grand St	14-33 feet		✓	C&C
	Potential St. Stephen's Church burials at former southeast corner of Chrystie and Broome Sts and adjacent east Chrystie St sidewalk and roadbed	0-20 feet		✓	C&C
Sara D. Roosevelt Park, Hester to Canal St	Precontact	19-24 feet	✓		TB
	17th-18th century farm building remains	14-33 feet	✓		TB
	19th century residential features	0-33 feet	✓		TB
Forsyth Street, Delancey to Hester St	Precontact	15-21 feet	✓		TW
	17th-18th century farm building remains between Delancey and Grand Sts and including Grand St	14-33 feet	✓		TW
	19th century residential shaft features on the west side of Forsyth St	0-33 feet	✓		TW

Table 10-1(cont'd)
Areas of Potential Archaeological Sensitivity and Potential Project Effects
for APEs Between the Harlem River and Peter Minuit Plaza

Location of Potential Resource	Type of Potential Resource	Depth of Potential Resource	Potential for Effects from Construction Disturbance?		
			No	Yes	Why
Area bounded by Houston, Canal, Chrystie, and Forsyth Sts, including Sara D. Roosevelt Park cont'd					
Forsyth Street, Hester to Canal St	Precontact (including Canal Street)	19-24 feet	✓		TW
	17th-18th century farm building remains	14-33 feet	✓		TW
	19th century residential features on the west side of Forsyth Street	0-33 feet	✓		TW
Chrystie Street, Delancey to Broome Sts (excluding area of existing subway tunnel)	Precontact	6-21 feet		✓	C&C
	18th-19th century residential features	0-34 feet		✓	C&C
Potential ancillary station facilities on Broome St, Chrystie St to approximately 185 feet west of Chrystie St	Precontact	10-20 feet		✓	C&C
Chrystie Street, Broome to Grand St (excluding area of existing subway tunnel)	Precontact	4-18 feet		✓	C&C
	18th-19th century residential features	0-30 feet		✓	C&C
Potential ancillary station facilities on Grand St, Chrystie St to approximately 150 feet west of Chrystie St	Potential late 18th century Revolutionary War fortifications	0-22 feet		✓	C&C
Grand Street, Chrystie to Forsyth Streets	Precontact	<u>14-24</u> feet		✓	C&C
	17th-18th century farm building remains	14-33 feet		✓	C&C
Chrystie St, Grand to Hester St (excluding area of existing subway tunnel)	Precontact	3-24 feet		✓	C&C
	18th-19th century residential features	0-37 feet		✓	C&C
Chrystie St, Hester to Canal St (excluding area of existing subway tunnel)	Precontact	13-21 feet	✓		TB
	18th-19th century residential features	0-37 feet	✓		TB
Canal Street, Chrystie to Forsyth Streets	Precontact	19-24 feet	✓		TB
Canal Street to Brooklyn Bridge					
Bowery, Pell to Division St	Precontact	10- <u>27</u> feet		✓	C&C
<u>Chatham Square</u>	<u>Precontact</u>	<u>16-21</u> feet		<u>✓</u>	<u>C&C</u>
	<u>18th century features on east side of square between Division Street and East Broadway</u>	<u>0-16</u> feet		<u>✓</u>	<u>C&C</u>
St. James Pl, Oliver to James St	Potential Shearith Israel Greaveyard former burials	0-8 feet		✓	C&C
	19th century residential features	0-27 feet		✓	C&C
St. James Pl, James to Madison St	Precontact	12- <u>32</u> feet		✓	C&C
	19th century residential features	0- <u>27</u> feet		✓	C&C

Table 10-1(cont'd)
Areas of Potential Archaeological Sensitivity and Potential Project Effects
for APEs Between the Harlem River and Peter Minuit Plaza

Location of Potential Resource	Type of Potential Resource	Depth of Potential Resource	Potential for Effects from Construction Disturbance?		
			No	Yes	Why
Canal Street to Brooklyn Bridge cont'd					
St. James PI at Madison St	Precontact	<u>18-24</u> feet		✓	C&C
	19th century residential features	0-19 feet		✓	C&C
St. James PI, Roosevelt to Pearl St	Precontact	<u>14-30</u> feet	✓		TB
	18th-19th century residential features	0- <u>25</u> feet	✓		TB
Pearl St, St. James PI to Brooklyn Bridge	Precontact, <u>west side of street only</u>	9-26 feet		✓	<u>BU</u>
	18th-19th century residential and commercial features	0- <u>41</u> feet		✓	<u>BU</u>
LOWER MANHATTAN, BROOKLYN BRIDGE TO COENTIES SLIP (corresponds to Figure 10-6)					
Brooklyn Bridge to Wall St					
Pearl St, Brooklyn Bridge to Dover St	Precontact	9-26 feet		✓	<u>BU</u>
	18th-19th century residential and commercial features	0-21 feet		✓	<u>BU</u>
Pearl Street, Dover St to Peck Slip	Precontact	9-26 feet		✓	C&C
	18th-19th century residential and commercial features	0-21 feet		✓	C&C
Pearl St, Peck Slip to Beekman St	Precontact	<u>15-28</u> feet		✓	C&C
	18th-19th century residential and commercial features	0- <u>23</u> feet		✓	C&C
Pearl St, Beekman to Fulton St	Precontact	<u>14-24</u>		✓	C&C
	Revolutionary War Redoubt, 17th-19th century residential and commercial features	0-19 feet		✓	C&C
Fulton St at Pearl St	Precontact	0-unknown depth		✓	C&C
	18th century fill, cribbing, fill retaining devices	0-19 feet		✓	C&C
Water St, Fulton to John Sts	Precontact	<u>14-23</u> feet excluding John St		✓	C&C
	Pre-1730s wharf, mid 18th-19th century fill, fill retaining devices, and 18th-20th residential features	0- <u>18</u> feet		✓	C&C
Water St, John St to Maiden Lane	Precontact	<u>15-33</u> feet excluding Maiden Lane		✓	<u>GS</u>
	Fill, cribbing, fill retaining devices, pre-1730s wharf, and 18th-19th century residential and commercial features	0- <u>28</u>		✓	<u>GS</u>

Table 10-1(cont'd)
Areas of Potential Archaeological Sensitivity and Potential Project Effects
for APEs Between the Harlem River and Peter Minuit Plaza

Location of Potential Resource	Type of Potential Resource	Depth of Potential Resource	Potential for Effects from Construction Disturbance?		
			No	Yes	Why
Brooklyn Bridge to Wall St cont'd					
Water St, Maiden Lane to Wall St	Precontact	18-28 feet excluding Wall St		✓	C&C/ GS
	Pre-1730s wharf, fill, fill retaining devices, and 18th–19th century residential and commercial features	0-23 feet		✓	C&C/ GS
Wall St to Coenties Slip					
Water St, Wall St to Old Slip	Pre-1730s wharf, fill, fill retaining devices, and 18th–20th century residential and commercial features	0-32 feet		✓	C&C
Water St, Old Slip to Coenties Slip	Pre-1730s wharf, fill, fill retaining devices, Cruger's Wharf, and 18th–20th century residential and commercial features	0-41 feet		✓	C&C
Gouverneur Lane spoils conveyance site	17th–18th century docks, wharfs, fill, and drainage system	0-30 feet		✓	C&C
Old Slip spoils conveyance site, excluding area of existing Clark St Tunnels and ventilation shaft	Mid-17th–18th century wharfs, fill, and fill retaining devices	0-32 feet		✓	C&C
Coenties Slip to Peter Minuit Plaza					
<u>Water St, south of Coenties Slip to Broad St¹</u>	<u>17th-18th century fill, Great Dock and Basin, cribbing, wharfs at Coenties Slip, and 18th-20th century residential and commercial features</u>	<u>0-28 feet</u>	<u>✓</u>		<u>TB</u>
<u>Water St, Broad to Moore St¹</u>	<u>17th century fill, fill retaining devices, Great Dock and Basin, Long Bridge Wharf, 18th-20th century residential and commercial features</u>	<u>0-23 feet</u>	<u>✓</u>		<u>TB</u>
<u>Water St, Moore to Whitehall Sts¹</u>	<u>Fill and fill retaining devices, 18th-20th century residential and commercial features</u>	<u>depth unknown</u>		<u>✓</u>	<u>TB/ C&C</u>
<u>State Street south of Whitehall Street¹</u>	<u>17th-18th century fill and fill retaining devices</u>	<u>depth unknown</u>	<u>✓</u>		<u>TB</u>
<u>Peter Minuit Plaza, northwest corner¹</u>	<u>18th century fill retaining structure</u>	<u>0-10 feet</u>	<u>✓</u>		<u>TB</u>

Notes:

1 Area of sensitivity not presented in the SDEIS.

2 The project is currently evaluating a potential vent plant on this block. Construction work for the vent plant would require cut-and-cover construction in the area that may be sensitive. In addition, the removal of soldier piles would be required to construct the Houston Street Station within the Chrystie St and Second Ave roadbeds at the intersection with Houston St. Current plans for this work do not call for construction in any areas sensitive for burials, e.g., the north side of Houston St within Block 442 (potential First Baptist Cemetery burials) and south Houston St sidewalk between Chrystie and Forsyth St (potential Presbyterian Cemetery burials).

C&C = Cut and Cover

BU = Building or other Structural Underpinning

TB = Tunnel Below Depth of Potential Resource

EST = Use or Construct Within an Existing Subway Tunnel

GS = Ground Stabilization

SGA = Surface Grading Activities

TW = Tunnel Entirely West of Potential Resource

The potential effects include only those known at this time. The locations of some project elements have not yet been finalized, and it is possible that additional potential effects to those described above may occur.

Table 10-2
Areas Potentially Sensitive for Human Remains in the APE
and Potential Project Effects

Potential Areas Sensitive for Human Remains			
Former Cemetery	Potential Location <u>Within</u> Second Ave Subway Area of Potential Effect	Potential Depths of Burials	Potential Project Effects?
Methodist Cemetery	West sidewalk <u>and western portion of Second Ave</u> between 2nd and 1st Sts	0-13 feet	Yes
<u>First Baptist Church</u> ¹	<u>Block 442, Lot 6 (potential vent plant site on east side of Second Ave between 1st and Houston Sts)</u>	<u>0-36 feet</u>	<u>Yes</u> ²
<u>First Baptist Cemetery</u> ¹	<u>Block 442, north side of Houston St (former Lots 53-59)</u>	<u>0-36 feet</u>	<u>No</u> ³
<u>St. Stephen's Cemetery</u> ¹	<u>Block 442, south side of First St (former Lots 12-15)</u>	<u>0-36</u>	<u>No</u>
Presbyterian Cemetery	SDR Park, northern end and adjacent sidewalks	0-12 feet	No ³
<u>Stanton Street Baptist Church*</u>	<u>SDR Park, former north side of Stanton St and adjacent east Chrystie St sidewalk</u>	<u>0-16 feet</u>	<u>No</u>
Dutch Mission Cemetery	East sidewalk of Forsyth St between Houston and Stanton Sts	0-12 feet	No
African Burying Ground	West sidewalk of Chrystie St between Stanton and Rivington Sts	0-14 feet	No
<u>Bethel Baptist Church Cemetery</u>	<u>SDR Park, northeast corner of Chrystie and Delancey Sts and adjacent east Chrystie Street sidewalk and roadbed not disturbed by construction of the existing subway beneath Chrystie St</u>	<u>0-36 feet</u>	<u>No</u>
St. Stephen's Church	SDR Park, former southeast corner of Chrystie and Broome Sts <u>and adjacent east Chrystie St sidewalk and roadbed not disturbed by construction of the existing subway beneath Chrystie St</u>	0-20 feet	Yes
Shearith Israel Graveyard	St. James Place, Oliver to James Streets	0-8 feet	Yes
Notes:			
1 <u>Area of sensitivity not presented in the SDEIS.</u>			
2 <u>The project is currently evaluating a potential vent plant on this block. Construction work for the vent plant would require cut-and-cover construction in the area that may be sensitive.</u>			
3 <u>The removal of soldier piles would be required to construct the Houston St Station within the Chrystie St and Second Ave roadbeds at the intersection with Houston St. Current plans for this work do not call for construction in any areas sensitive for burials, e.g., the north side of Houston St within Block 442 (potential First Baptist Cemetery burials) and south Houston St sidewalk between Chrystie and Forsyth Sts (potential Presbyterian Cemetery burials).</u>			

As part of the consultation process, MTA New York City Transit will perform additional work where the potential for significant effects to archaeological resources has been identified, to determine whether any archaeological resources are actually present in those locations and whether those resources are significant and therefore eligible for the State and National Register of Historic Places. As defined in detail in the Programmatic Agreement attached to this document, a combination of some or all of the following would occur:

- Professional archaeologists would continue their ongoing review of geotechnical boring logs to refine their understanding of subsurface conditions (such as the depth of fill and location of original soils) and confirm that archaeological resources may be present. The soil borings program was prepared in consultation with the SHPO: Revisions to the depth and location of potential resources based on completed boring log review (Phase 1A Archaeological

Assessment Supplemental Analysis of Boring Logs, HP1, December 2003) have been accepted by SHPO and LPC in comments dated January 27, 2004 and December 23, 2003 and have been incorporated into the FEIS; and

- Professional archaeologists would also continue to conduct additional documentary research focused on the significance of potential resources and, in consultation with the SHPO, would evaluate and prioritize sensitive sites according to potential research value, testing feasibility, or other criteria identified by the SHPO; and
- Subsurface testing would be undertaken in locations that would be affected by the project and where the potential for significant archaeological resources exists. This testing would be designed to confirm the presence of the resources and could begin once the additional documentary research and prioritization processes described above are completed. The possibility of closing portions of streets or parks where resources may exist for early archaeological testing prior to project construction will also be explored with the New York City Department of Transportation, the New York City Department of Parks and Recreation, or other relevant agencies.

As described in Chapter 4, “Public Outreach and Review Process,” NYCT has initiated an extensive public outreach program, including coordination with local and state agencies and potentially affected parties. As part of this outreach, FTA has initiated contact with Federally- and State-recognized Native American tribes and groups who may attach religious and cultural significance to sites within the APE. In addition, NYCT has identified and begun meeting with descendant groups associated with the areas potentially sensitive for human remains that may be affected by the project.

Wherever possible, locations identified as possibly containing burials will be avoided. Where avoidance is not possible, NYCT would follow the testing and excavation plan developed in consultation with the SHPO and the appropriate descendant communities described in the Programmatic Agreement.

MTA NYCT, in consultation with SHPO, will develop a plan to appropriately phase the archaeological field analysis and data recovery with construction activities. MTA NYCT will also take all practical steps to initiate and complete archaeological field analysis and data recovery (depending on site access and testing feasibility) prior to construction activities in the vicinity of affected resources.

MITIGATION MEASURES

Where any of the work identified above confirms the presence of significant archaeological resources (i.e., resources that are eligible for listing on the State and National Registers) in locations that would be adversely affected by the project, mitigation measures will be developed and implemented as part of the Section 106 process. The specific mitigation measures that would be employed will be determined in light of the unique characteristics of the affected resource. Mitigation might include archaeological excavation at some sites to record information and recover artifacts from significant archaeological sites found to be eligible for the Registers. As with subsurface testing, this could be early excavation, well prior to construction (requiring advance closure of affected streets and sidewalks, which could result in disruption to traffic or pedestrian flows similar to the effects described elsewhere in this FEIS when street closures are required), or it could be conducted immediately before construction begins, once streets and sidewalks are closed for construction activities. All human remains would be either avoided or

fully relocated in consultation with the appropriate descendant community and SHPO. Aside from recovery, other types of mitigation could include public interpretation, or additional analysis and curation.

As another form of mitigation, MTA NYCT will appoint a Cultural Resource Manager who will be responsible for determining the nature of any discovery during construction, including a feature that may warrant construction to cease for a certain period of time while further archaeological investigations continue, including to evaluate the potential extent and significance of the find. The Cultural Resource Manager will be a professional archaeologist who meets the standards of the New York Archaeological Council and the National Park Service (36 CFR 61) and will be located in the New York City metropolitan area. The Cultural Resource Manager will arrange for a physical anthropologist in the New York City area to be on-call in the event that the unanticipated discovery is skeletal material.

It is possible, however, given the wide range of areas identified as potentially archaeologically sensitive and the inaccessibility of some of these locations beneath existing tunnels and structures, that mitigation may not be practicable at every significant archaeological site. The loss of any significant archaeological resources would be an unmitigated significant adverse impact.

The future research steps to be taken to refine the areas of archaeological sensitivity, and any mitigation measures to be developed in consultation with the SHPO are included in a Programmatic Agreement executed by the Federal Transit Administration, the SHPO, and MTA New York City Transit. The New York City Landmarks Preservation Commission is a consulting party to that agreement. The Programmatic Agreement is included at the end of the main volume of this FEIS.

E. PERMANENT IMPACTS OF THE PROJECT ALTERNATIVES

NO BUILD ALTERNATIVE

Since the Second Avenue Subway would not be built under the No Build Alternative, there would be no permanent effects caused by its operation.

SECOND AVENUE SUBWAY

It is anticipated that any potential archaeological resources that would be affected by the project would be disturbed during the construction process, as described above. Once the project is operational, no further effects to archaeological resources would occur.

F. SUMMARY OF SIGNIFICANT ADVERSE IMPACTS AND MITIGATION MEASURES

SIGNIFICANT ADVERSE IMPACTS

If archaeological resources are present in the locations identified in the APE that would be disturbed by the Second Avenue Subway, and if those are significant resources that are eligible for the State and National Registers, the project would result in a significant adverse impact on these resources, requiring implementation of mitigation where practicable. In all cases, the only time at which adverse effects could occur is during construction of the particular phase in which a resource is located.

MITIGATION MEASURES

Ongoing consultation mandated by Section 106 will be undertaken with the SHPO and, as appropriate, with the Advisory Council on Historic Preservation, to investigate further the presence of significant resources and to develop appropriate mitigation measures. This consultation and further work is set forth in the Programmatic Agreement for the project. The Programmatic Agreement is included at the end of the main volume of this EIS. Work to be included will include the following:

- As part of the consultation process, MTA NYCT will perform additional work where the potential for significant effects to archaeological resources has been identified, to determine whether any archaeological resources are actually present in those locations and whether those resources are significant and therefore eligible for the State and National Register of Historic Places. These steps might include, for example, a combination of some or all of the following: review of geotechnical boring logs to refine the understanding of subsurface conditions; additional documentary research focused on the potential significance of potential resources; and subsurface testing in locations that would be affected by the project and where the potential for significant archaeological resources exists.
- MTA NYCT will appoint a Cultural Resource Manager who will be responsible for determining the nature of any discovery during construction. The Cultural Resource Manager will be a professional archaeologist who meets the standards of the New York Archaeological Council and the National Park Service (36 CFR 61) and will be located in the New York City metropolitan area.
- Wherever possible, locations identified as possibly containing burials will be avoided. Where avoidance is not possible, NYCT will follow the procedures identified in the Programmatic Agreement concerning testing and excavation to avoid any insensitive disturbance to human remains. These measures will include, but are not limited to, conducting outreach to and consulting with appropriate descendant communities prior to any archaeological testing and construction, and requiring a physical anthropologist/forensic archaeologist to be on-call or on-site in the event that skeletal material is encountered during archaeological testing or project construction.
- Where this future work confirms the presence of significant archaeological resources (i.e., resources that are eligible for listing on the State and National Registers) in locations that would be adversely affected by the project, mitigation measures will be developed and implemented as part of the Section 106 process. As detailed in the Programmatic Agreement, these measures may include data recovery, public interpretation, or additional analysis and curation. The specific measures to be employed for data recovery and any subsequent development of public interpretation materials, as well as artifact analysis and curation, would be based on the unique characteristics of the affected resource, including location and/or resource type. For example, methods which would be employed during data recovery for retrieving potential Native American artifacts might differ from those used to retrieve materials from a 19th century shaft feature, as would any materials to be provided to the public and the establishment of a repository for artifacts and protocol for their treatment. Protocols for mitigation measures involving human remains would also substantially differ from those established for archaeological features and artifacts. *