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2007

**Phase 1B Archaeological Investigation for
Atlantic Yards Arena and Redevelopment Project,
Block 1119, Lot 1, and Block 1127, Lots 55 and 56**

Brooklyn, Kings County, New York

Prepared for

Forest City Ratner Companies

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Abstract

This cultural resource report details the findings of a Phase 1B archaeological investigation URS Corporation conducted for Forest City Ratner Companies for Block 1119, Lot 1 and Block 1127, Lots 55 and 56. URS performed the investigation in support of the Atlantic Yards Arena and Redevelopment Project. This work was conducted in accordance with the State Environmental Quality Review (SEQR) guidelines (Part 617) and the New York Historic Preservation Act of 1980, Section 14.09, the National Historic Preservation Act of 1966, as amended, and the Advisory Council on Historic Preservation's "Protection of Historic and Cultural Properties" (36 CFR 800). This investigation was also conducted pursuant to the *Standards for Cultural Resource Investigations and the Curation of Archaeological Collections in New York State*, prepared by the New York Archaeological Council and adopted by the New York State Office of Parks, Recreation, and Historic Preservation (NY SHPO 1994). The study was performed according to the City Environmental Quality Review (CEQR)(Executive Order No. 91 of 1977) and conducted pursuant to New York State guidelines for such projects and pursuant to the guidelines established by the New York City Landmarks Commission (LPC) for Stage 1B archaeological work in New York City, dated April 12, 2002. The scope and purpose of the Phase 1B investigation was to determine if historic shaft features—such as wells, cisterns, and possibly privies—associated with mid- to late-nineteenth-century structures were still present within the areas of potential archaeological sensitivity identified by the Phase 1A documentary study prepared for the project (Schneiderman, 2001).

The Phase 1B investigation entailed the excavation of eight test trenches within two areas in Block 1119, Lot 1, and three test trenches in Block 1127, Lots 55 and 56. The investigation of Block 119, Lot 1, encountered an ash layer in three of the test trenches and covering a significant portion of the lot. This ash layer measures approximately 12 x 12 feet (3.6 x 3.6 meters). This ash layer is likely the result of disposal from the carriage factory and coal yard. Based on historical accounts, a fire occurred in 1869—however, no evidence of this was uncovered. The ash layer was composed of a fairly uniform matrix. It contained several large pottery sherds of common types dating to the mid to late nineteenth century. Though few earlier types were observed—for example, a blue edgeware plate—the majority were ironstone and utilitarian yellowwares. Some late-nineteenth-century bottle pieces were also observed. The disturbed nature of the stratigraphic landscape in this area represents the nineteenth-century industrial use and redevelopment and modification during the last one and a half centuries. The chances of recovering intact structures or primary context deposits are remote. Therefore, no further work is recommended for this area.

The investigation of Block 1127, Lots 55 and 56, located the edge of the foundation remains of all three structures once extant on the properties. The area between the structures that formed what may be described as an interior courtyard yielded no features or intact archaeological contexts. The various strata exhibited a significant degree of disturbance and dumping, as evidenced by broken late-nineteenth to early-twentieth-century sewer pipe located at 8.5 feet (2.6 meters) below surface. Due to the unstable nature of the soil, it was not possible to enter the trenches to draw profiles. Since no evidence of either intact deposits or features was encountered, no further work is recommended for this area.

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Introduction and Project Description

The proposed redevelopment of the Atlantic Yards, located in Brooklyn, Kings County, New York, includes plans for an 800,000-square-foot arena (Atlantic Yards Arena) and an urban complex that includes housing, commercial and retail space, and approximately eight acres of landscaped open public space (Figure 1.1). The project area encompasses a small portion of City Block 1128, and all or most of City Blocks 927, 1118, 1119, 1120, 1127, and 1129. The blocks are located between Vanderbilt Avenue, Flatbush Avenue, Dean Street, and Atlantic Avenue. A preliminary evaluation of the project area by the New York City Landmarks Preservation Commission (LPC) determined that a Phase 1A study was required for Block 1118, Lots 6, 21, 22, 23, and 25; Block 1119, Lot 1; and Block 1127, Lots 45, 46, 47, 48, 50, 55, and 56 (Figure 1.2). Historical Perspectives, Inc. (HPI) conducted a Phase 1A archaeological assessment to evaluate the project's potential effects on archaeological resources within these specified areas (Schneiderman 2001). The report recommended Phase 1B archaeological investigations for areas determined to possess archaeological sensitivity.

SUMMARY OF ARCHAEOLOGICAL SENSITIVITY

The Phase 1A documentary study concludes that the possibility exists that historic shaft features—such as wells, cisterns, and privies—associated with mid- to late-nineteenth-century structures may still be present on Block 1119, Lot 1, and Block 1127, Lots 48, 50, 55 and 56 in the project area (Figure 1.3). Additionally, the foundation remains of a structure that dates to the mid-eighteenth to mid-nineteenth century may be present within Block 1127, Lot 48. The report recommended that Phase 1B investigations be applied to these areas. It also recommended that if the Phase 1B investigations determined that Block 1119, Lot 1, is archaeologically sensitive, then supplemental background research should be conducted on the potential African American residents that once occupied the lot.

The specific areas of potential historic archaeological sensitivity and the potentially associated resources identified in the Phase 1A report are:

- *Block 1119, Lot 1.* Possible subsurface shaft features of early- to late-nineteenth-century structures associated with a coal yard and carriage factory. In addition, residential shaft features associated with possible African American occupants.
- *Block 1127, Lots 48, 50, 55, and 56.* Possible subsurface shaft features of mid- to late-nineteenth-century structures associated with residential structures. In addition, the foundation remains of a mid-eighteenth- to mid-nineteenth-century residential structure on Lot 48.

RESEARCH ISSUES

The Phase 1A study indicates that the five lots within the Blocks 1119 and 1127 contained potential historic archaeological resources associated with the development of Brooklyn during the mid-nineteenth century. Historical archaeological resources relating to institutions and residences are often preserved in privies, cisterns, or wells, which in the days before the construction of municipal services (specifically sewers and a public water supply) were an inevitable part of daily life. When rendered obsolete, these shafts became convenient receptacles for all sorts of trash, providing valuable time capsules of stratified deposits for modern archaeologists.

Prior studies in the region have demonstrated that deep shafts are generally located within a few feet of the rear lot boundary. As described above, a number of lots within the project area are sensitive for these rear yard features. If these features have not been impacted by subsequent activities, then they have the potential to address research issues regarding the nature of residential occupation and lifeways in this section of the city related to people of Irish descent, and possibly to African Americans. Information on household dietary patterns and various other aspects of household composition, social and economic status, life cycle, etc., may also be addressed.

URS Corporation (URS) conducted Phase 1B investigations on March 26 and 27, 2007. This report summarizes the research and conclusions of the Phase 1A report and discusses the methods and results of the Phase 1B archaeological investigations of Block 1127, Lots 55 and 56, and Block 1119, Lot 1.

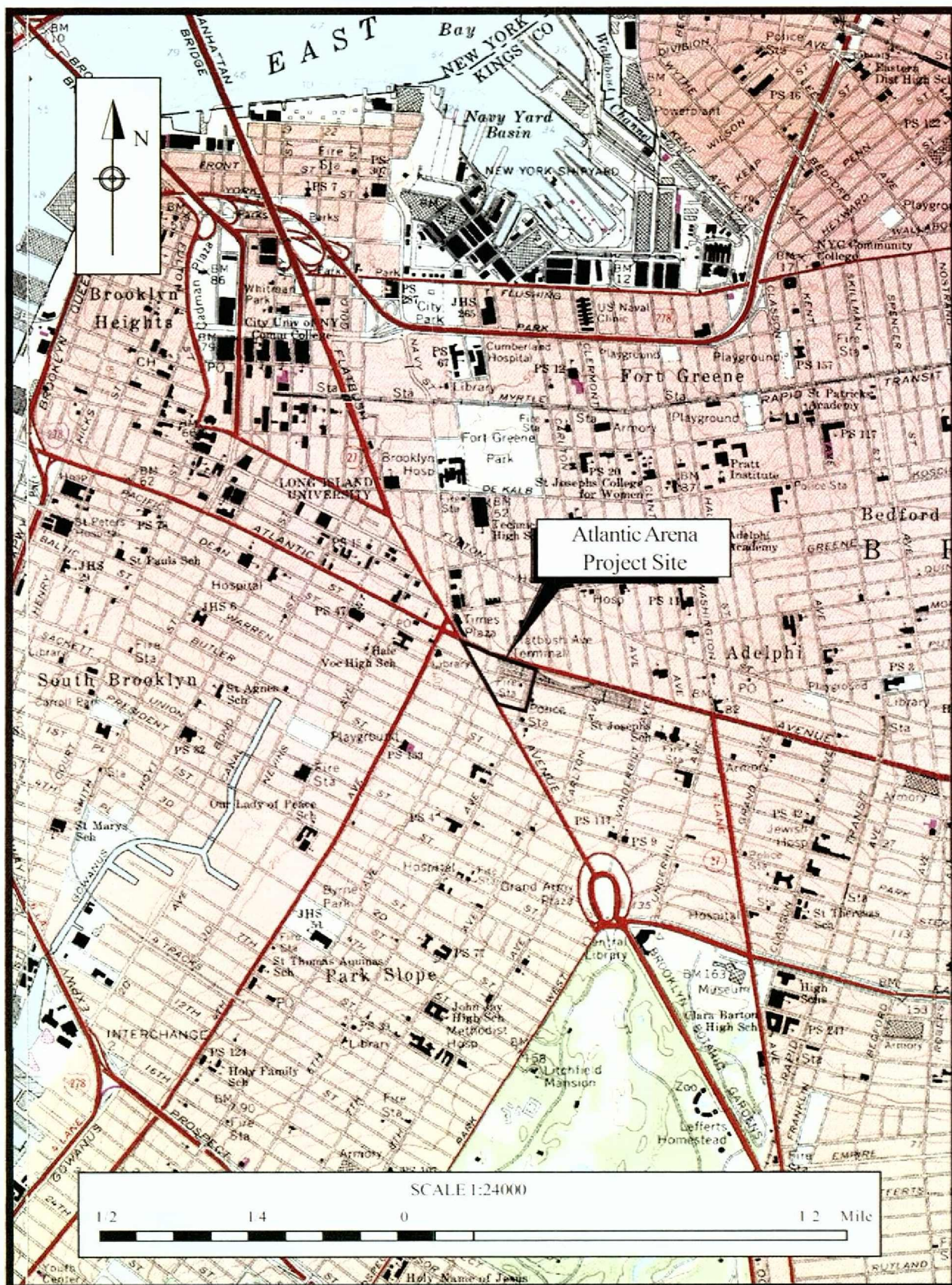


Figure 1.1 Location of project area (Source: Portion of Brooklyn USGS 7.5-Minute Topo Map, New York Quadrangle, Maptech Terrain Navigator 1998).

Figure 1.2

Project area and vicinity.

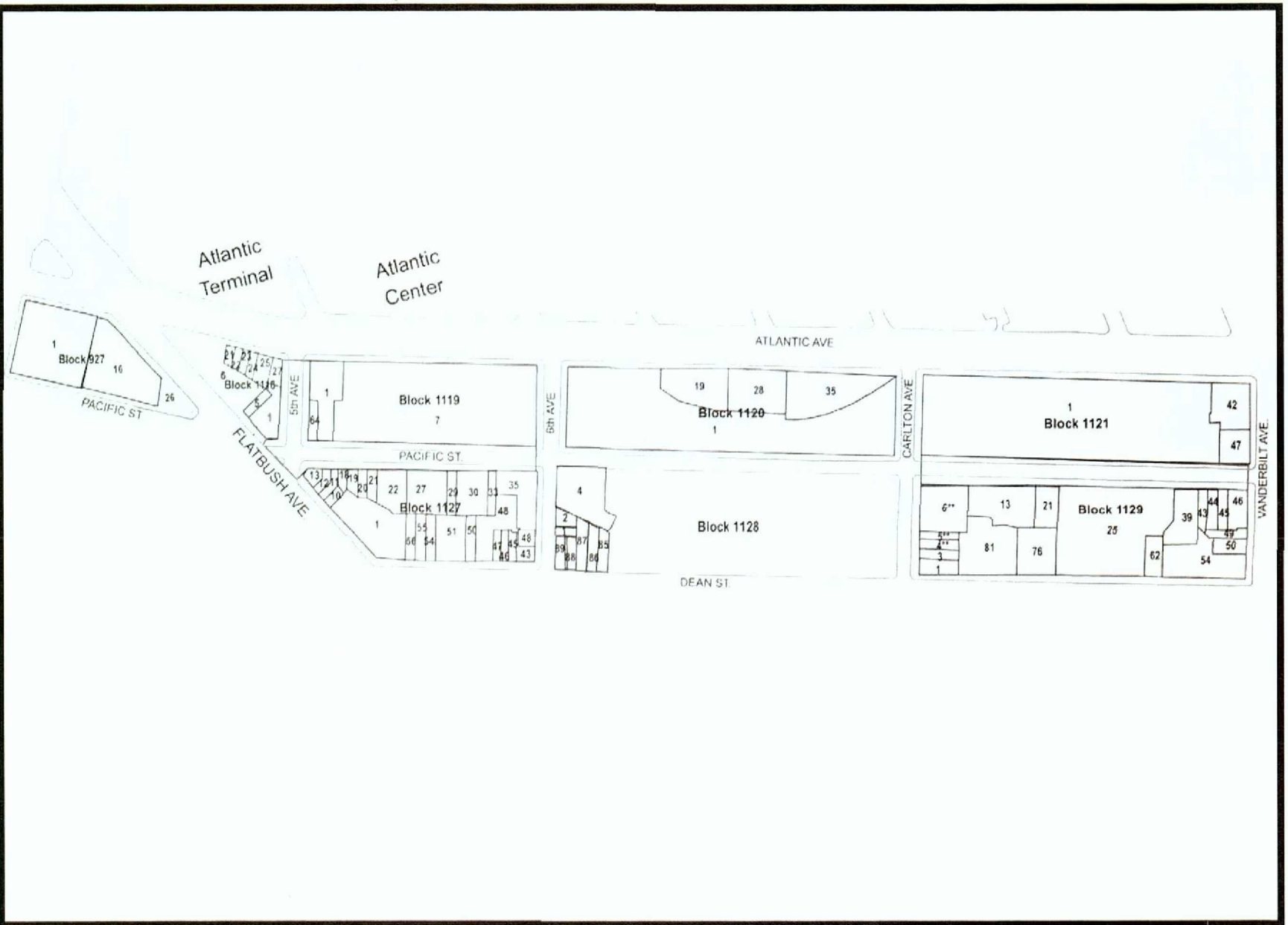
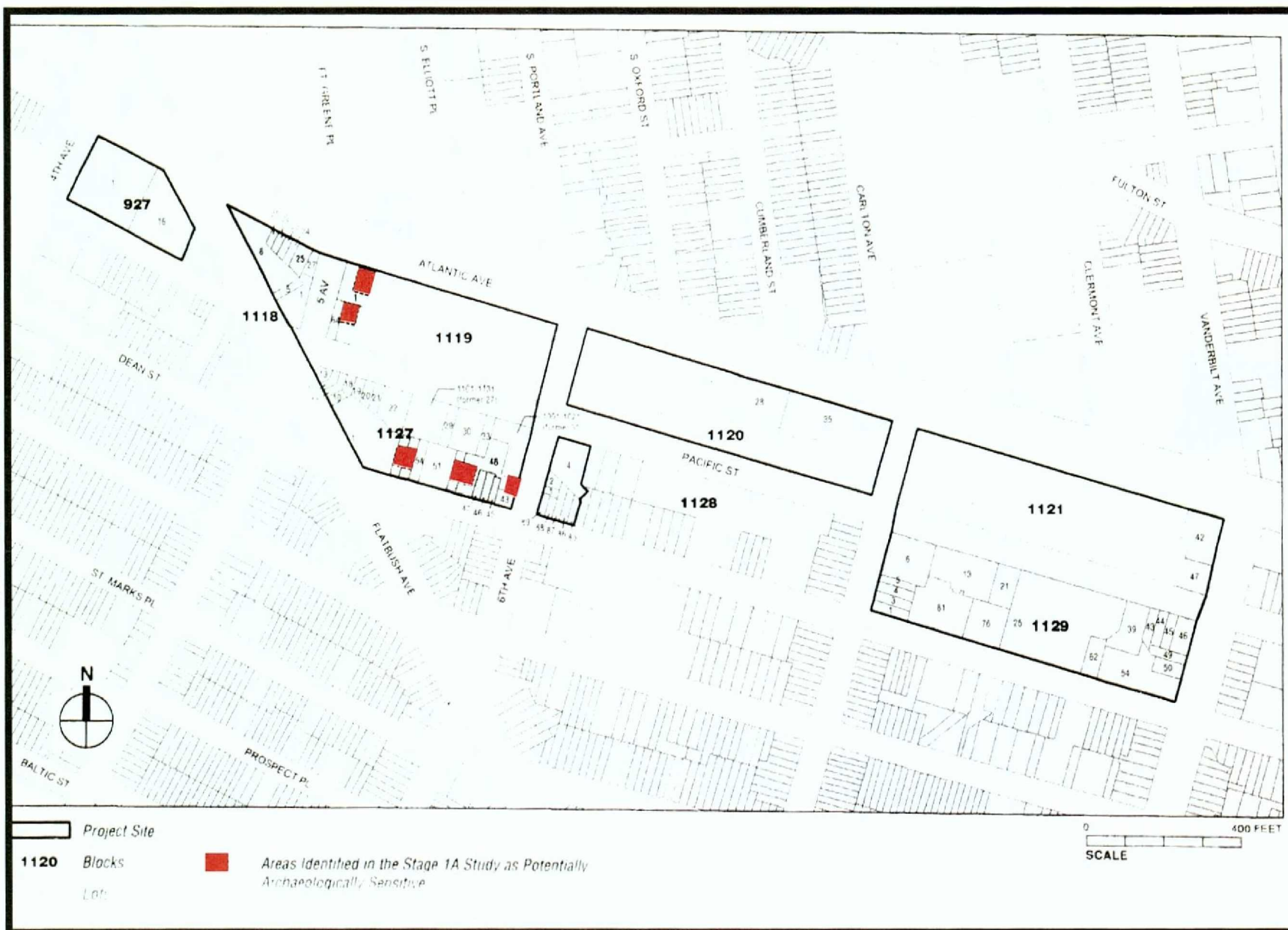


Figure 1.3

Areas of archaeological sensitivity (Source: AKRI, Inc. 2006).

1.4



Historical Context

The Phase 1A study shows a thorough job of gathering the deeds, tax assessments, maps, and building department records available for the project area. For this phase of the overall 1B study, only two areas were tested—Block 1127, Lots 55 and 56, and Block 1119, Lot 1—because access has yet to be obtained for Block 1127, Lots 48 and 50. The following summarizes the information gathered through the Phase 1A study.

BLOCK 1127, LOT 55

This lot was not developed until the 1860s. A map study concluded that in 1850 (Dripps 1850), the property was still vacant. The earliest map to show a structure on the property is the 1869 Dripps map.

The building that was constructed was a four-story structure with a storefront. At the rear of the lot, a three-story dwelling was constructed by 1886. The historical study concluded that the structure was built about the same time as sewer lines and running water were brought into the area. However, there may have been enough of a time lag between the construction of the sewer and water lines and when the buildings were connected to these services to necessitate the use of shaft features.

An analysis of tax and census records could not identify any one family that occupied 463 Dean Street for any sustained length of time.

BLOCK 1127, LOT 56

The history of this property is similar to that of Lot 55. However, documentary research does place Edward Kenny and his family as residents of the property from about 1866 or 1867 until 1903. The Phase 1A report concludes that 461 Dean Street may have been constructed prior to the advent of sewers and running water in the area.

BLOCK 1119, LOT 1

Lot 1 initially consisted of four separate lots before it was consolidated into one lot sometime in the mid to late 1920s. Historic Lots 3 and 4 constituted the north half and Lots 58 and 59 the southern half. Historically, the northern half of the lot was the location of a coal yard, carriage factory, and tenements reportedly occupied by African Americans. Newspaper accounts detailed a significant fire at the carriage factory in 1869. Sometime between 1874 and 1877 a four-story factory was constructed on the eastern section of historical Lot 3 and expanded two years later to incorporate the entire lot. By 1906, the factory expanded into parts of historical Lot 4. The entire factory was razed in the early 1930s and a one-story gas station and associated gasoline tanks were built in the mid 1940s. In the late 1970s the structure was renovated as a U-Haul truck rental facility and has remained unchanged since that time.

The southern half of the lot (historical Lots 58 and 59) was developed sometime between 1850 and 1869 along Pacific Street with multi-story buildings. The only development within the backyard areas consisted of a one-story addition. By 1951, the buildings had been demolished and the lot paved for parking.

A full account of the history of these areas can be found in the Phase 1A report *Stage 1A Archaeological Assessment, Atlantic Yards Arena and Redevelopment Project*, prepared by Historical Perspectives, Inc.

Phase 1B Field Investigations

The Phase 1B work was conducted in accordance with the State Environmental Quality Review (SEQR) guidelines (Part 617) and the New York Historic Preservation Act of 1980, Section 14.09, the National Historic Preservation Act of 1966, as amended, and the Advisory Council on Historic Preservation's "Protection of Historic and Cultural Properties" (36 CFR 800). This study was also conducted pursuant to the *Standards for Cultural Resource Investigations and the Curation of Archaeological Collections in New York State*, prepared by the New York Archaeological Council and adopted by the New York State Office of Parks, Recreation, and Historic Preservation (NY SHPO 1994). The study was performed according to the City Environmental Quality Review (CEQR) (Executive Order No. 91 of 1977) and conducted pursuant to New York State guidelines for such projects and pursuant to the guidelines established by the New York City Landmarks Commission (LPC) for Phase 1B archaeological work in New York City, dated April 12, 2002. The cultural resource specialists who performed this work satisfy the qualifications specified in 36 CFR 61, Appendix A. Alyssa Loorya, RPA, served as Principal Investigator for the project.

ARCHAEOLOGICAL SUBSURFACE INVESTIGATIONS

The goal for this portion of the project was to determine whether potentially significant (i.e., National Register eligible) archaeological resources were extant within the lots on Blocks 1119 and 1127 identified as sensitive in the Phase 1A study. Investigations took the form of ground-penetrating radar (GPR) and excavation. U.S. Radar, Inc., performed the GPR study. Excavation techniques involved backhoe trenching using a toothless backhoe bucket (one with a steel plate across the bucket) in order to avoid any inadvertent disturbances to intact resources during trenching activities. The backhoe was utilized to remove any modern or disturbed redeposited layers present. Redeposited layers of recent origin, or that have been subjected to extensive disruption, were not screened, though diagnostic artifacts were retained on a selective basis. OSHA trenching guidelines were followed in order to ensure the safety of the crew.

Soils from the test trenches were described using the Munsell color system and standard texture classifications. Any recovered artifacts were bagged according to their unique provenience. Soil profiles were described and photographed. Measured drawings could not be made because of safety concerns.

Ground-Penetrating Radar Survey

As part of the archaeological investigation of the project area, a geophysical investigation of Block 1119, Lot 1, was conducted using subsurface penetrating radar. The geophysical data was conducted along a series of parallel transect lines spaced at maximum 1-meter (3.3-foot) increments across the area of interest to identify the potential for Block 1119, Lot 1, to contain buried tanks. The project area consisted of two areas: Area A measured 40 x 70 feet (12.2 x 21.3 meters) and Area B measured 40 x 50 feet (12.2 x 15.2 meters).

A total of 10 anomalies were identified and marked. Three of these were noted for archaeological potential.

- Survey 54 noted an area of disturbance beginning at about 3 feet (0.9 meters) below surface.
- Survey 55 noted a large hyperbola at 2.5 feet (0.8 meters) that may be a tank. Another anomaly was noted 12.5 feet (3.8 meters) east of the survey point and described as a potential well-like feature.
- Survey 59/60 noted a large anomaly at about 4.25 feet (1.3 meters), possibly part of a structure. Another area, extending to 6 feet (1.8 meters), was noted at 12.5 feet (3.8 meters) east of the survey point.

A complete discussion of the GPR study is available in the report by U.S. Radar, Inc. (2007) (see Appendix A).

Results of Field Investigations

Testing for this phase of the Atlantic Yards Phase 1B archaeological investigation occurred within two sections of the project area. Location 1 was Block 1127, Lots 55 and 56 (or those lots formerly identified as 461 and 463 Dean Street). Location 2 was the former U-Haul lot, Block 1119, Lot 1. These areas were tested using trenching in specified areas chosen to reveal a significant portion of the subsurface landscape. A backhoe with a 4-foot (1.2 meters) toothless bucket was utilized for excavation.

LOCATION 1: BLOCK 1127, LOTS 55 AND 56 (463 AND 461 DEAN STREET)

Both lots once contained circa 1850–1868 three-story dwellings located at the southern end of the property, facing Dean Street. These structures were recently demolished to grade due to their highly deteriorated conditions and the public safety hazards they posed. Foundations and other subsurface components were not affected, as the area was known to be potentially archaeologically sensitive.

The Phase 1A study indicated that smaller buildings, associated with the dwellings, were once located at the rear of the lots and that the mid-section remained undeveloped. Therefore, the mid-sections might be potentially sensitive to shaft features associated with the two dwellings once present.

An initial on-site survey prior to testing noted a single vacant lot with a rubble-laden surface (Photograph 4.1). The surface rubble is the result of demolition of the former dwellings and refuse accumulation since demolition. Each individual lot measured 20 x 100 feet (6 x 30.4 meters) for a combined 40-x-100-foot (12-x-30.4-meter) project area. The area to be tested measured 40 x 50 feet (12 x 15.2 meters) and was located within the middle of the lots.

As per the scope of work, a maximum of three east-west trenches and one north-south trench, oriented to the boundaries of the lot were to be excavated. Hand excavation would occur only if an intact surface or deposit were encountered.

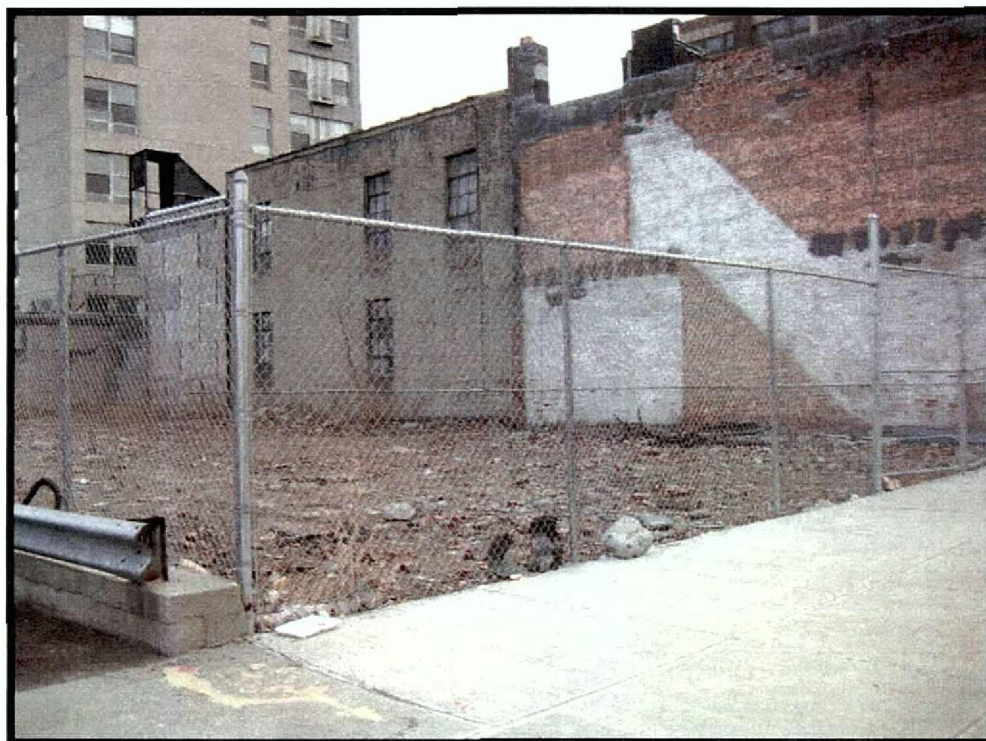
In total three test trenches were excavated on Lots 55 and 56; two on a north-south axis and one on an east-west axis. During the initial survey, two trenches were sited at the mid-point within the original boundaries of each individual lot. A third was sited at the center of the undeveloped area traversing the width of both lots (Figure 4.1).

Trench 1

This was an east-west oriented trench located at the center axis of Lot 56. The trench measured 5 x 40 feet (1.5 x 12 meters) and was excavated to a depth of 6.5 feet (1.97 meters). At the western end of the trench, the remnants of the structure that once stood at the rear of the lot were exposed. There was some evidence of fire among the building rubble.

Four strata were uncovered at the eastern end of the trench (Photograph 4.2):

Stratum I (0–79 cm)	a (2.5Y 6/2) fill horizon composed of rubble and debris.
Stratum II (79–91 cm)	a blackened (10YR 2/1) horizon composed of soot and ash, evidencing a fire episode.
Stratum III (91–167 cm)	a light brownish gray (2.5Y 6/2) fill horizon composed of rubble and ash.
Stratum IV (167–200 cm)	a horizon of medium brown loam (10YR 5/3).



Photograph 4.1 Block 1127, Lots 55 and 56, view looking northeast.

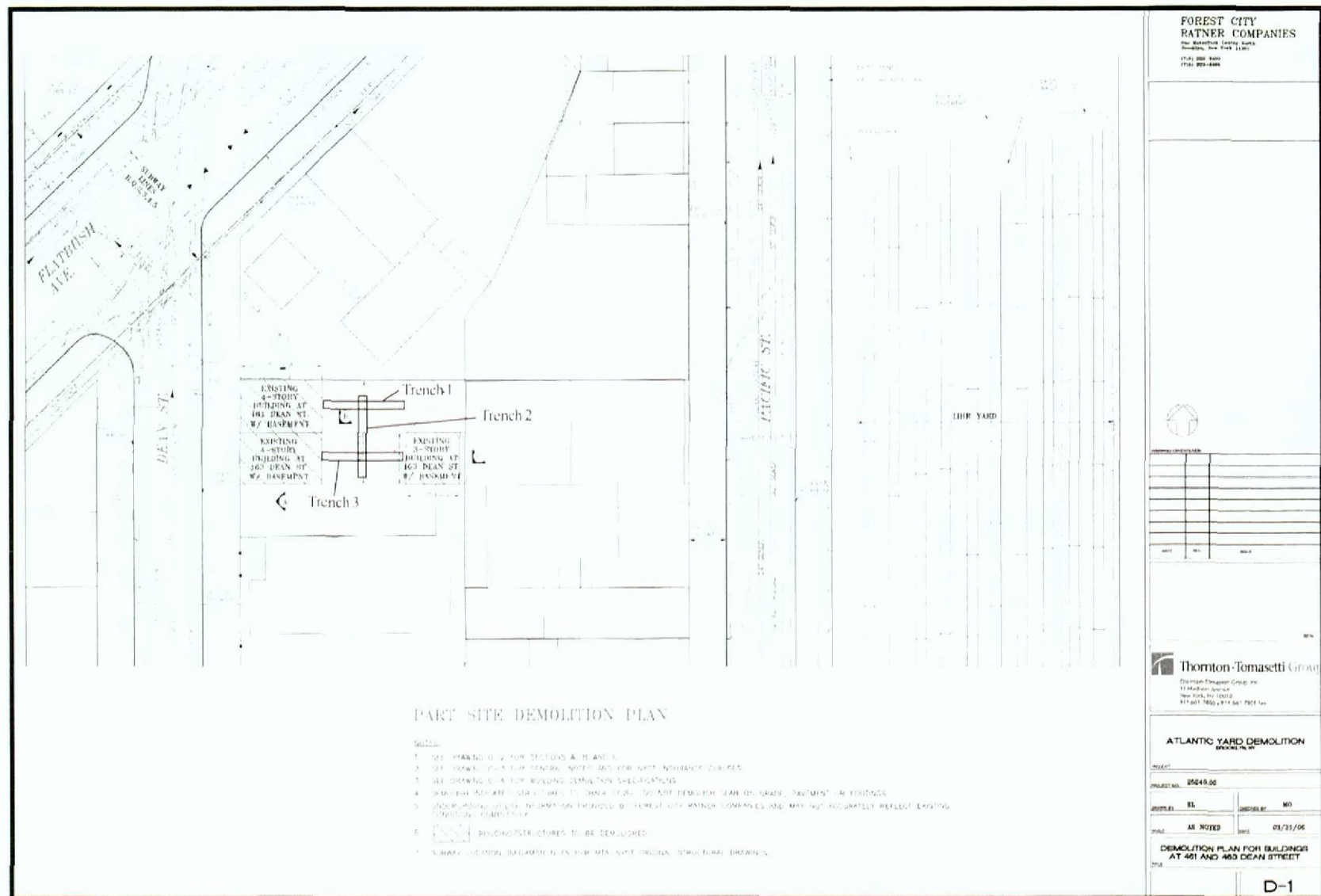


Figure 4-1 Block 1127, Lots 55 and 56: test trench locations



Photograph 4.2 Trench 1, eastern end, view looking east.

However, the majority of the trench only evidenced two strata:

- | | |
|-------------------------------|--|
| Stratum I (0–91 cm) | a (2.5Y 6/2) fill horizon composed of rubble and debris. |
| Stratum II (91–200 cm) | a medium brown loam (10YR 5/3). |

No intact archaeological contexts were uncovered in this trench; as a result, soils were not screened. No pre-twentieth-century artifacts were observed.

Trench 2

This was a north-south oriented trench located at approximately 50 feet (15.2 meters) from the property line and traversing Lots 55 and 56. This trench measured 5 x 30 feet (1.5 x 9.1 meters) and was excavated to a depth of 8.5 feet (2.6 meters). The length of this trench was shortened from that originally proposed so as not to compromise the neighboring building foundation.

The stratigraphy in this trench was similar to that exposed in Trench 1. Two strata were uncovered.

- | | |
|-------------------------------|--|
| Stratum I (0–91 cm) | a fill horizon composed of grayish brown (2.5Y 6/2) coarse sandy soil mixed rubble and debris. |
| Stratum II (91–262 cm) | a fill horizon composed of brown (10YR 5/3) loam. |

At the approximate mid-point of the trench, dumped materials continued to the closing depth of 8.5 feet (2.6 meters). Among the materials were building rubble and broken late-nineteenth to early-twentieth-century sewer pipe and bricks. There was no evidence of a connection or connector to indicate that the sewer pipe was in its original location (Photograph 4.3).

No intact archaeological contexts were uncovered in this trench. As a result, soils were not screened.

Trench 3

This was a north-south oriented trench located at the center axis of Lot 55. The trench measured 5 x 40 feet (1.5 x 12 meters) and was excavated to a depth of 7 feet (2.1 meters).

Only two strata were revealed (Photograph 4.4):

- | | |
|-------------------------------|--|
| Stratum I (0–76 cm) | a fill horizon composed of grayish brown (2.5Y 5/2) coarse sandy soil mixed rubble and debris. |
| Stratum II (76–210 cm) | a fill horizon composed of brown (10YR 4/3) loam. |

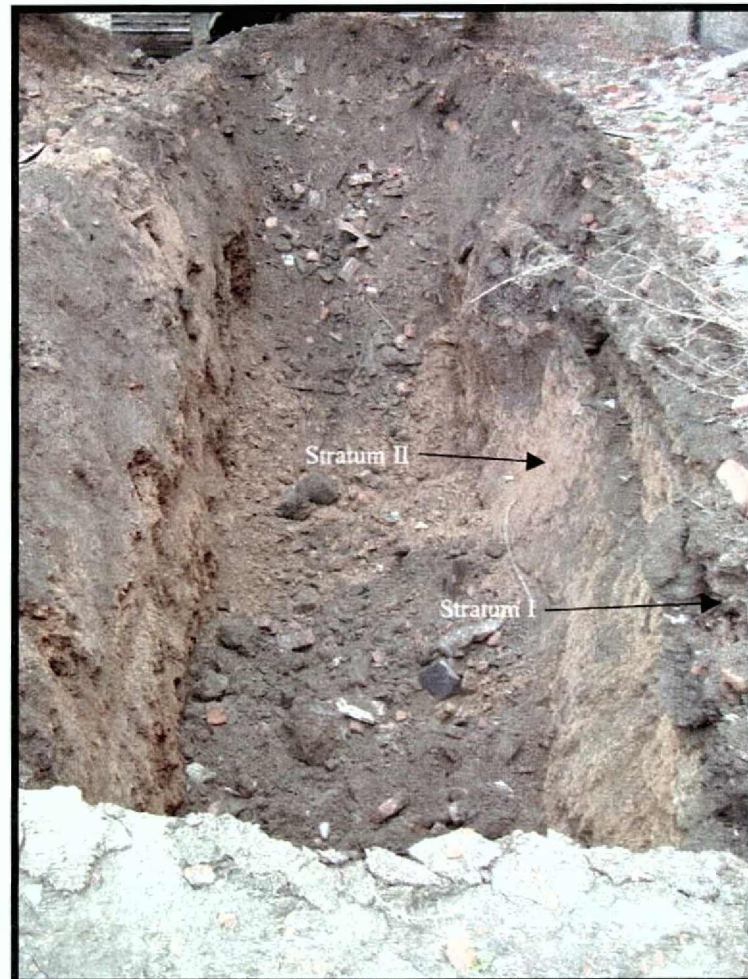
Some areas of Stratum I exhibited significant accumulations of brick. However, these were not in any configuration and appear to have been dumped in this location. No intact archaeological contexts were uncovered in this trench. No pre-twentieth-century artifacts were observed. As a result, soils were not screened.

Summary

Monitoring of Trench 1 located the eastern foundation remains of the structure once extant on Lot 56; while Trench 2 uncovered the eastern foundation remains of the structure once located at the front of Lot 55 and the western foundation remains of the structure that was once located at the rear of the lot. The area between the structures that formed what may be described as an interior courtyard revealed no features or intact archaeological contexts. The various strata exhibited a significant degree of disturbance and dumping, as evidenced by broken late-nineteenth to early-twentieth-century sewer pipe located at 8.5 feet (2.6 meters) below surface. Due to the unstable nature of the soil, it was not possible to enter the trenches to draw profiles. Since no evidence of either intact deposits or features was encountered, no further work is recommended for this area.



Photograph 4.3 Trench 2, view looking east.



Photograph 4.4 Trench 3, northern end, view looking north.

LOCATION 2: BLOCK 1119, LOT 1

Two areas within Lot 1 were recommended for subsurface investigation. The first area measured 40 x 75 feet (12.2 x 22.8 meters) and was located in the northeast corner of the lot (Photograph 4.5). The second was a 40-x-50-foot (12.2-x-15.2-meter) area located in the center of the lot (Photograph 4.6). A reconnaissance survey of the lot conducted by Edward Morin (URS) with the assistance of Kelly Marek (Forest City Ratner Companies) on August 8, 2006, indicated that the lot was an active commercial business renting U-Haul vehicles and utilizing a former one-story gas station as an office. This initial site walkover survey resulted in deciding to use ground penetrating radar (GPR) in order to help identify the exact location of subsurface gas or oil tanks that were known to have been situated somewhere in this portion of the lot (Schneiderman 2001). In addition, while conducting the GPR study, it was noted that two small trenches had been previously excavated in the northeast corner of the site in an attempt to locate active utility lines and disconnect them prior to the demolition of the extant U-Haul office (Photograph 4.7). These trenches indicated that the area was severely disturbed from previous installations of electric, gas, and water lines. In addition, mark outs locating additional utility lines were visible in the southern section of this area (see Photograph 4.7). The excavated trenches, the presence of additional utility lines, the historic background research and the information from the GPR investigation guided the field testing efforts in this section of lot. Since time permitted, the GPR investigation was extended into the northwest section of the lot.

Area A

Prior to conducting the GPR study in the northeast portion of the lot, it was noted that two trenches had been previously excavated in an attempt to locate active utility lines and disconnect them prior to the demolition of the extant U-Haul office (Photograph 4.7). In addition, mark outs, locating other utility lines that had not as yet been excavated, were visible on the surface of the asphalt in the southern section of this area. The location of these unexcavated utility lines, as well as others, were confirmed through the use of ground penetrating radar. Although the gas tanks were located outside the archaeologically sensitive area, the exposed trenches, the additional utility mark outs, the location of the U-Haul office, and the GPR study indicated that this area was severely disturbed and therefore lacked the potential to contain intact archaeological resources. Based on this information, no additional testing was conducted within Area A.

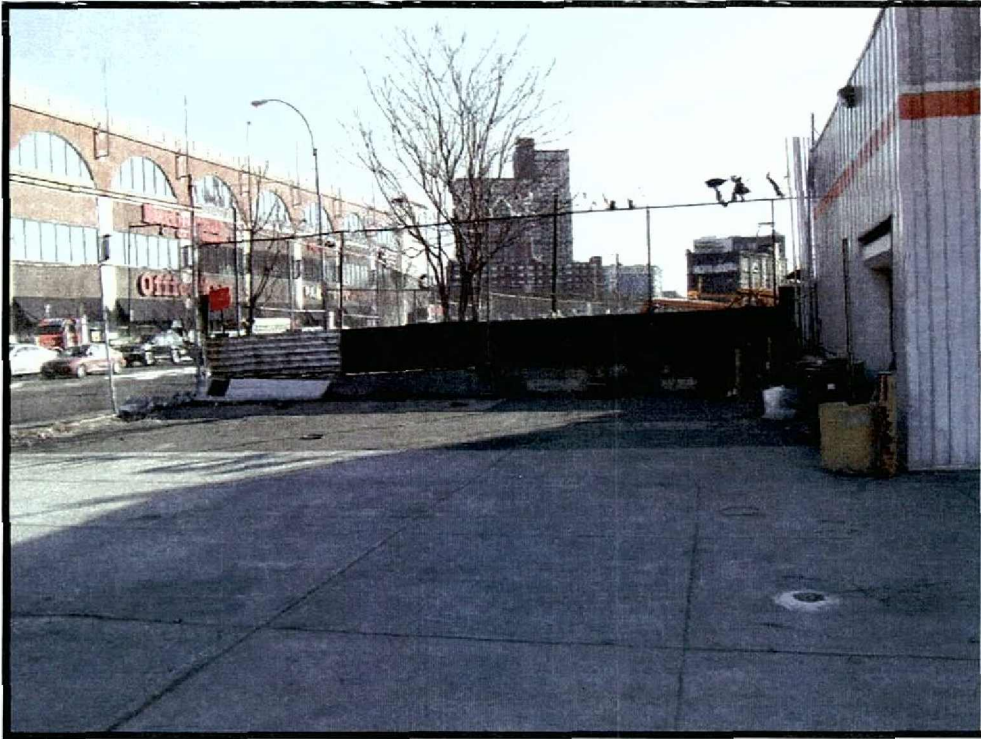
Area B

A total of seven test trenches (Test Trenches 1 through 7) were excavated with the aid of a backhoe fitted with a 4-foot (1.2-meter) toothless bucket in the southern section of the lot (Figure 4.2). The trenches were placed in an attempt to provide the maximum testing coverage in this area and also to intersect several anomalies noted during the GPR study.

Trench 1. This test unit was located at GPR Survey #54. The GPR report noted an anomaly at approximately 3 feet (0.9 meters) below surface.

The test trench was 10 feet (3 meters) long on an east-west axis, 5 feet (1.5 meters) wide and excavated to a depth of 6.5 feet (1.98 meters). Due to the instability of the trench, all observations were made from above ground. Excavation revealed several distinct strata (Photograph 4.8).

Stratum I (0–7.6 cm)	asphalt layer.
Stratum II (7.6–30 cm)	a fill horizon composed of 2Y 4/1 dark gray coarse sand road bedding.
Stratum III (30–64 cm)	a fill horizon composed of 10YR 5/4 brown loam.
Stratum IV (64–170 cm)	a fill horizon composed of 2.5Y 7/1 to 2.5Y 6/2 light gray to gray ash.
Stratum V (170–177 cm)	a horizon composed of 2.5Y 2.5/1 black silt.
Stratum VI (177–198 cm)	a sterile horizon of 10YR 4/3 brown sandy loam.



Photograph 4.5 Block 1119, Lot 1, Area A, view looking east.



Photograph 4.6 Block 1119, Lot 1, Area B, view looking south.



Photograph 4.7 Block 1119, Lot 1, Area A, view looking northeast. Note previous excavations to locate utility lines and white and yellow mark outs locating additional utilities.

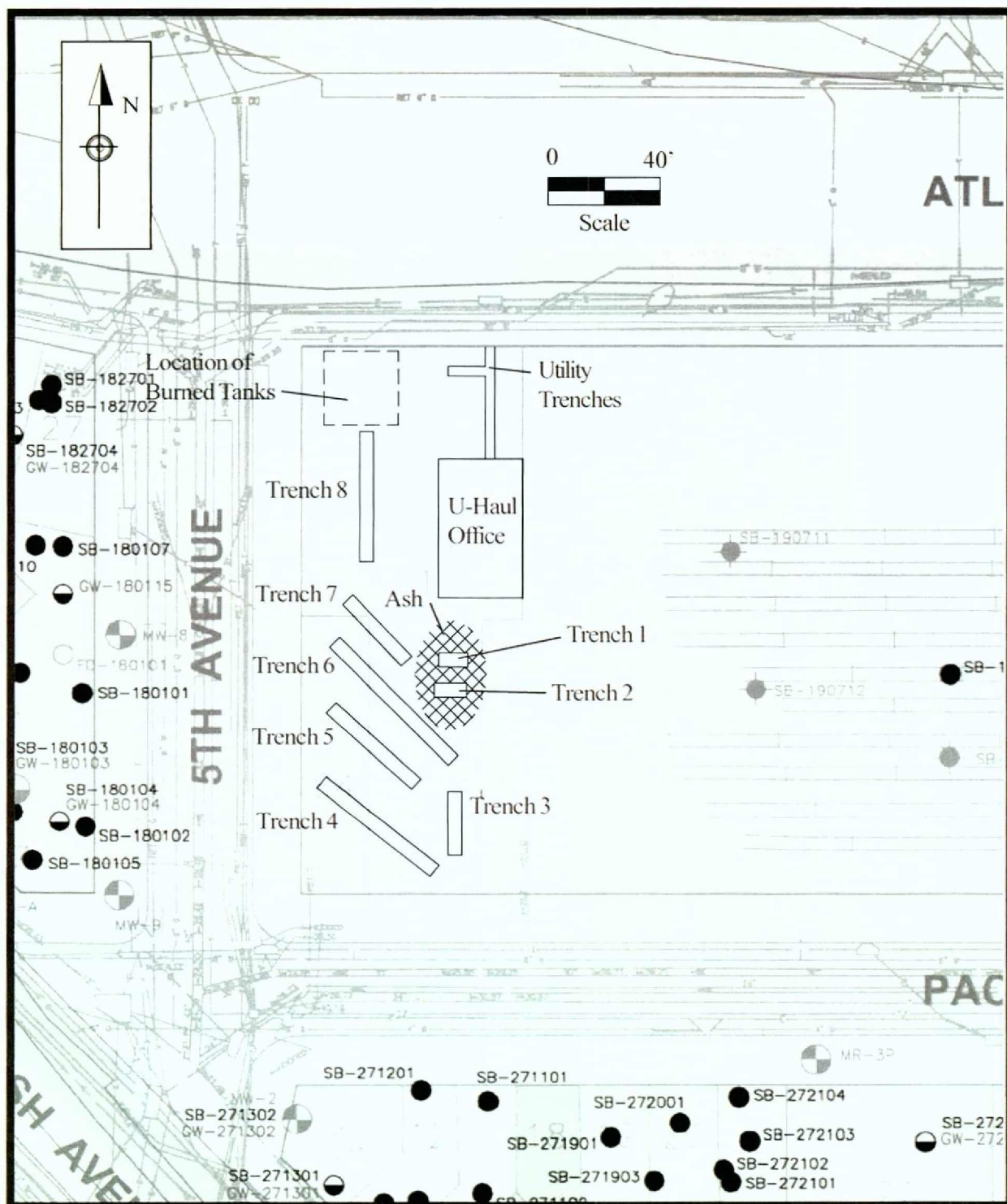
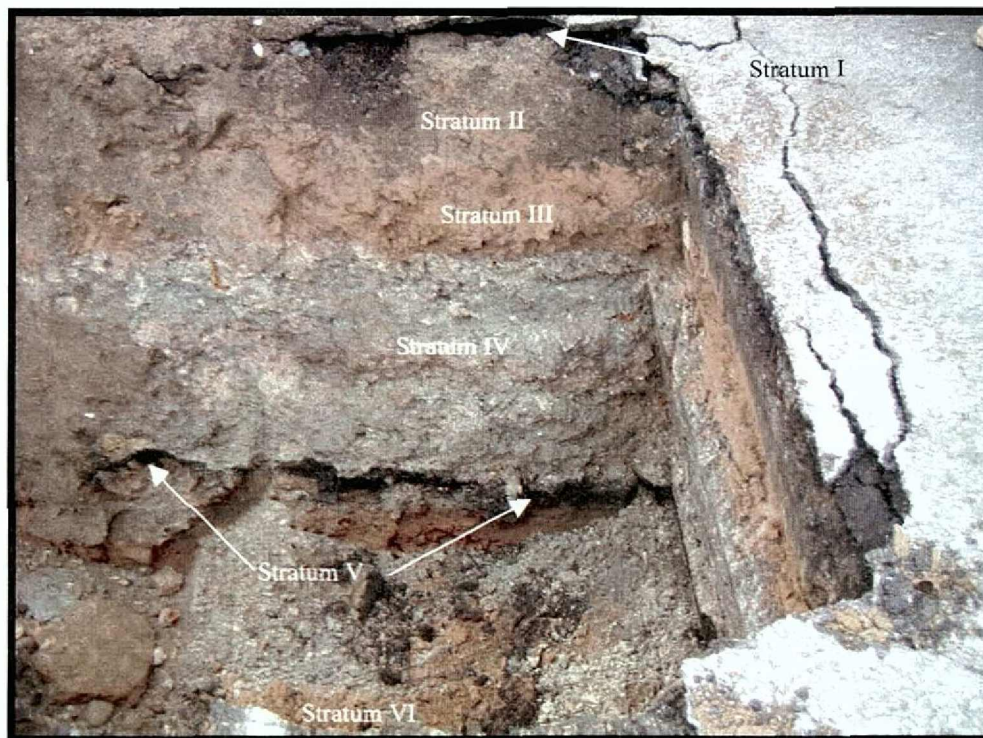


Figure 4.2 Block 1119, Lot 1, test trench locations.



Photograph 4.8 Trench 1, ash layer (Stratum IV), view looking east.

No evidence of the anomaly cited in the GPR report was uncovered. The most prominent layer was Stratum IV, which was a dense ashy layer that contained mid- to late-nineteenth-century artifacts, the majority of which was pottery. The pottery consisted of fairly large sherds of broken vessels in the form of bowls and small plates. Pottery types included blue edgware, North American salt-glazed stoneware, and ironstone. Other artifacts noted were nineteenth-century brick and porcelain plugs. The presence of these artifacts were recorded but not saved due to the disturbed nature of the ash deposit.

Trench 2. This test trench was located 12.5 feet (3.8 meters) east of GPR Survey #55 (see Figure 4.2). The survey indicated a large hyperbola beginning at 2.5 feet (0.8 meters), possibly a tank, and a well-like anomaly at 12.5 feet (3.8 meters) east of the survey point.

The test trench was 12 feet (3.7 meters) long on an east-west axis, 5 feet (1.5 meters) wide and excavated to a depth of 6 feet (1.82 meters). Excavation revealed several distinct strata identical to those revealed in Trench 1 (Photograph 4.9).

Stratum I (0–7 cm)	asphalt layer.
Stratum II (7–20 cm)	a fill horizon composed of 2Y 4/1 dark gray coarse sand road bedding.
Stratum III (20–48 cm)	a fill horizon composed of 10YR 5/4 brown loam.
Stratum IV (48–155 cm)	a fill horizon composed of 2.5Y 7/1 to 2.5Y 6/2 light gray to gray ash.
Stratum V (155–165 cm)	a horizon composed of 2.5Y 2.5/1 black silt.
Stratum VI (165–182 cm)	a sterile horizon of 10YR 4/3 brown sandy loam.

No evidence of the tank or well-like feature cited in the GPR report was uncovered. As with Trench 1, the most prominent layer was Stratum IV, a dense ashy layer (see Photograph 4.9) that contained mid- to late-nineteenth-century artifacts, the majority of which was pottery. Once again, the pottery consisted of fairly large sherds of broken vessels. Pottery types included blue edgware, ironstone, and utilitarian wares in the form of yellowware. Other artifacts noted were nineteenth-century brick and bottle glass. Due to the instability of the trench, all observations were made from aboveground. A few sample artifacts were taken. These consisted of three ceramic sherds (Photograph 4.10).

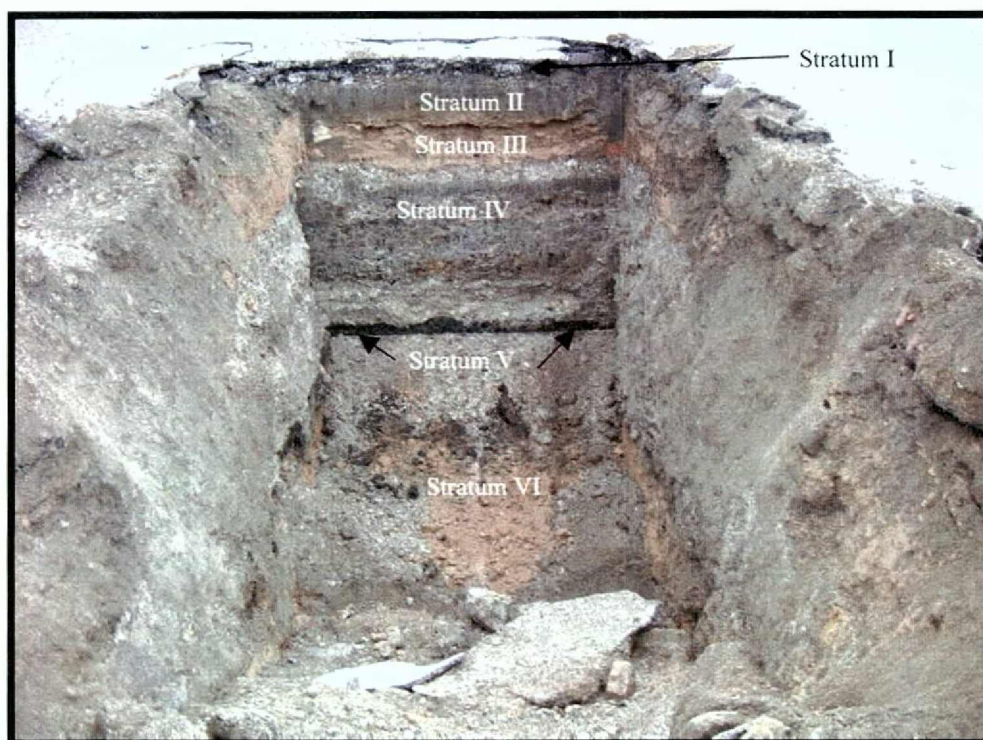
Trench 3. This test trench was located 12.5 feet (3.8 meters) east of GPR Survey #59/60 on a north-south orientation and a large anomaly at about 4.25 feet (1.3 meters) below surface that might be a possible structure. The trench measured 20 x 5 feet (6 x 1.52 meters) and was excavated to a depth of 7 feet (2.1 meters).

Stratum I (0–7 cm)	asphalt layer.
Stratum II (7–40 cm)	a fill horizon composed of 2Y 4/1 dark gray coarse sand road bedding.
Stratum III (40–210 cm)	a fill horizon composed of 10YR 5/6 yellowish brown sandy loam.

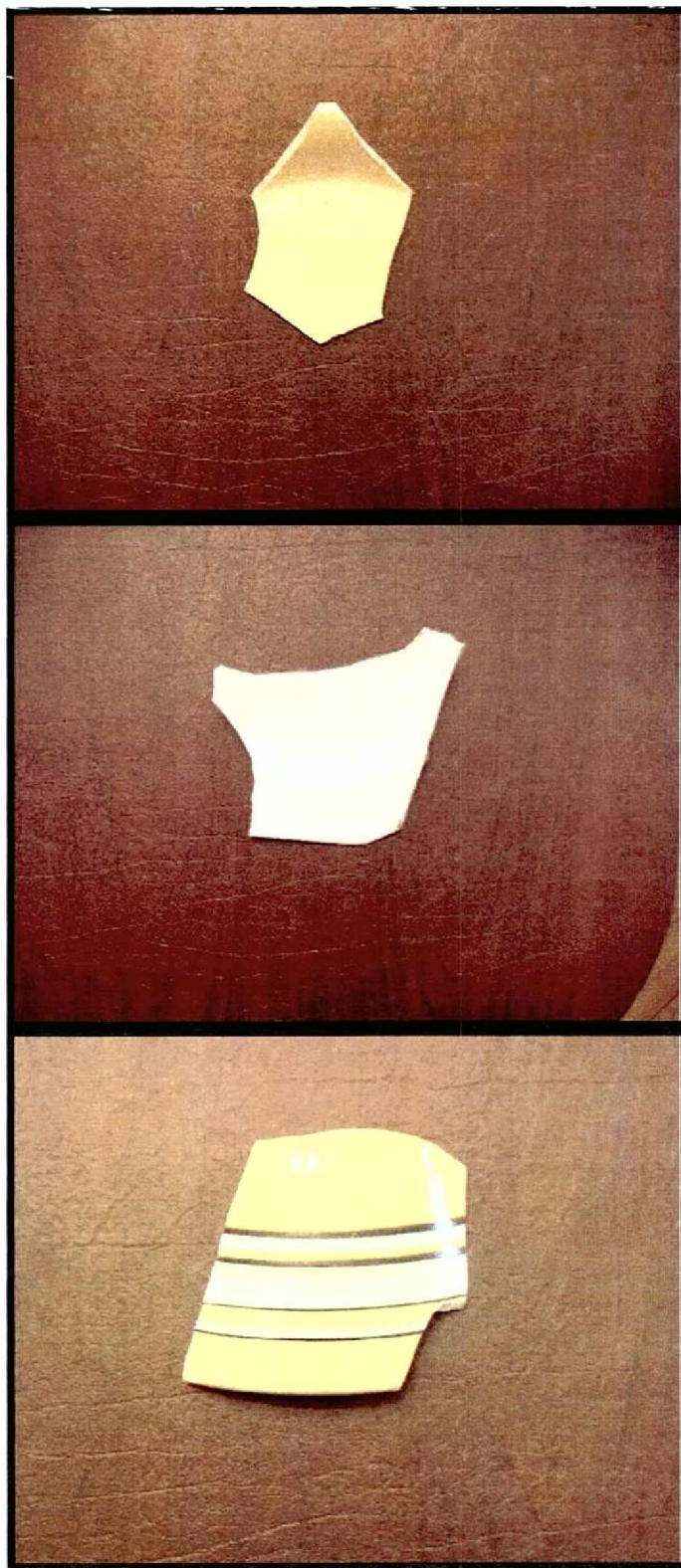
This trench contained a large amount of nineteenth-century brick. The bricks were whole and loosely piled. They appear to have been dumped in this location and showed no evidence of having been in any configuration. This deposit seems to correspond to the anomaly noted in the GPR study.

Trench 4. Situated on an east-west orientation, this trench measured 50 x 5 feet (15.2 x 1.52 meters) and was excavated to a depth of 6.5 feet (1.98 meters). A total of five distinct strata were uncovered (Photograph 4.11).

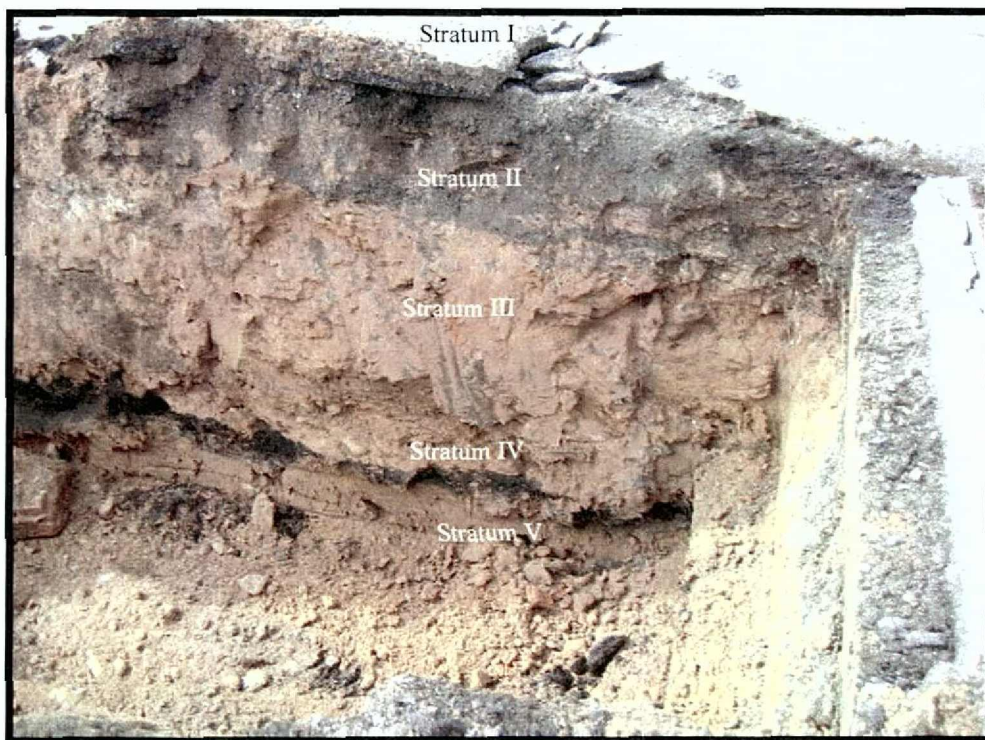
Stratum I (0–7 cm)	asphalt layer.
Stratum II (7–60 cm)	a fill horizon composed of 2Y 4/1 dark gray coarse sand road bedding.
Stratum III (60–162 cm)	a fill horizon composed of 10YR 5/6 yellowish brown sandy loam.



Photograph 4.9 Trench 2, ash layer (Stratum IV), view looking east.



Photograph 4.10 Trench 2, sampled artifacts.



Photograph 4.11 Trench 4, northwestern end, view looking west.

Stratum IV (162–182 cm) a horizon composed of 2.5Y 2.5/1 black silt.

Stratum V (182–198 cm) a sterile horizon of 10YR 4/3 brown sandy loam.

No intact cultural deposits or artifacts were recovered from within this trench.

Trench 5. Located 25 feet (7.6 meters) north from Trench 4, Trench 5 was also situated on an east-west orientation. The trench measured 40 x 5 feet (12.2 x 1.52 meters) and was excavated to a depth of 6.5 feet (1.98 meters).

Stratum I (0–7 cm) asphalt layer.

Stratum II (7–60 cm) a fill horizon composed of 2Y 4/1 dark gray coarse sand road bedding.

Stratum III (60–162 cm) a fill horizon composed of 10YR 5/6 yellowish-brown sandy loam.

Stratum IV (162–182 cm) a horizon composed of 2.5Y 2.5/1 black silt.

Stratum V (182–198 cm) a sterile horizon of 10YR 4/3 brown sandy loam.

Similar to Trench 3, this trench contained a large amount of nineteenth-century brick in Stratum III. Several bricks were mortared together in a square block formation (Photograph 4.12). These may be the remains of column supports for structures that once were located within the lot.

Trench 6. Situated on an east-west orientation, this trench measured 40 x 5 feet (12.2 x 1.52 meters) and was excavated to a depth of 6.5 feet (1.98 meters). At the northwestern end of the trench, two large square concrete slabs with square brick pillars were uncovered. These were not in any context (Photographs 4.13 and 4.14).

Stratum I (0–7 cm) asphalt layer.

Stratum II (7–60 cm) a fill horizon composed of 2Y 4/1 dark gray coarse sand road bedding.

Stratum III (60–162 cm) a fill horizon composed of 10YR 5/6 yellowish-brown sandy loam.

Stratum IV (162–182 cm) a horizon composed of 2.5Y 2.5/1 black silt.

Stratum V (182–198 cm) a sterile horizon of 10YR 4/3 brown sandy loam.

The identification of the brick pillars is uncertain, but they are reminiscent of late-nineteenth to early-twentieth-century street markers. They also could be the remnants of support columns associated with the three-story dwellings that once stood at the southern end of the lot or from the E.G. Webster silverware factory that had occupied the northern half of the lot (Schneiderman 2001:22). The pillars are from a clearly disturbed context and appear to have been dumped in this area when the buildings that were once extant on the lot were demolished sometime in the early 1930s.

Trench 7. Located 20 feet (6 meters) north of Trench 6, Trench 7 was situated on an east-west orientation. The trench measured 30 x 5 feet (9.1 x 1.52 meters) and was excavated to a depth of 6 feet (1.82 meters).

Stratum I (0–7 cm) asphalt layer.

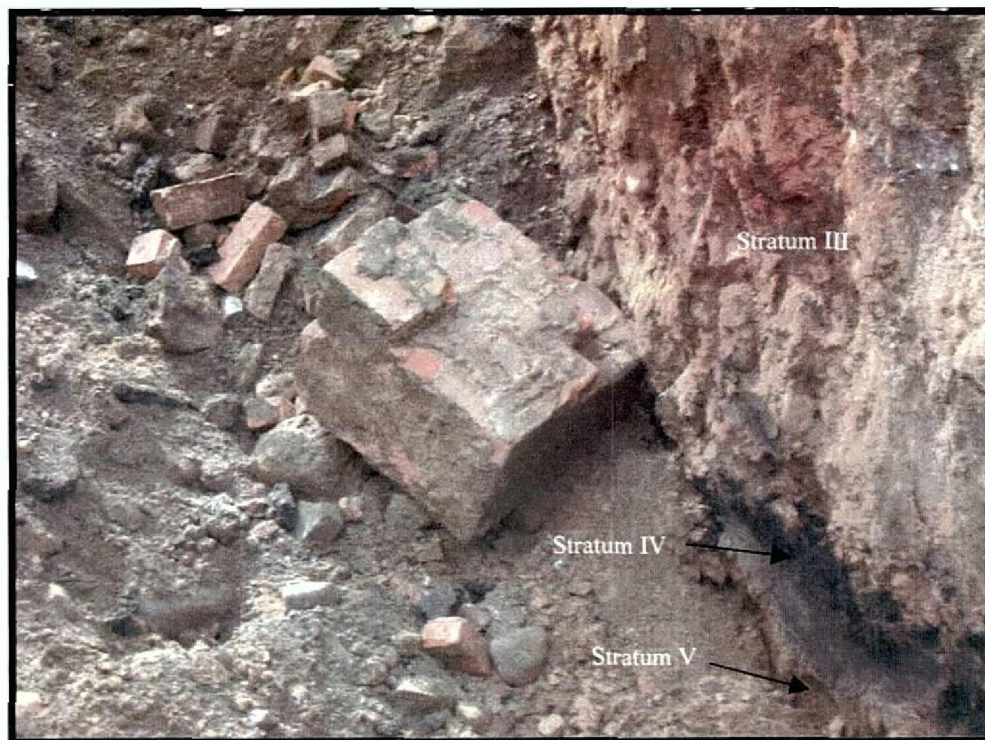
Stratum II (7–60 cm) a fill horizon composed of 2Y 4/1 dark gray coarse sand road bedding.

Stratum III (60–162 cm) a fill horizon composed of 10YR 5/6 yellowish brown sandy loam.

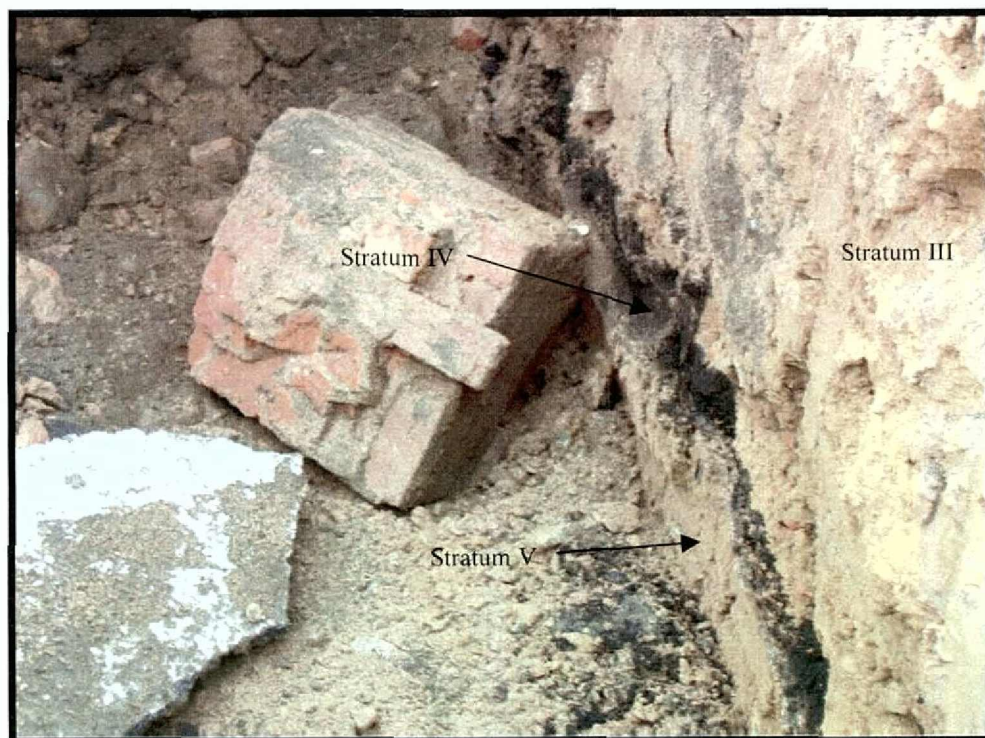
Stratum IV (162–168 cm) a horizon composed of 2.5Y 2.5/1 black silt.

Stratum V (168–182 cm) a sterile horizon of 10YR 4/3 brown sandy loam.

No intact cultural deposits or artifacts were recovered from within this trench.



Photograph 4.12 Trench 5, possible column support, view looking northwest.



Photograph 4.13 Trench 6, possible column support, view looking northwest.



Photograph 4.14 Trench 6, possible column support, view looking northwest.

Trench 8. Even though it was outside of the archaeologically sensitive area previously identified in the Phase 1A study (Schneiderman 2001), Trench 8, situated on a north-south orientation, was located 20 feet (6 meters) from the western edge of the lot (see Figure 4.2). It measured 45 feet (13.7 meters) long and ranged from 5 to 6.5 feet (1.52 x 2 meters) wide. It was excavated at this location in order to complete the archaeological documentation of the entire lot and in the off chance that intact deposits might be located within this area. The soil in this trench was particularly unstable, leading to the collapse of the sidewalls (Photograph 4.15). This made it near impossible to determine the depth the three distinct stratigraphic layers visible from the surface. However, this area appears to contain a large-scale dumping or landfilling episode with deposits similar to what was encountered in Trench 7. Due to instability, the trench was closed at 5 feet. These deposits represent disturbances from either the installation of gas tanks located to the north of the trench or the demolition in the 1930s of the buildings that once stood on the property.

Summary

Area A. Prior to conducting the GPR study in the northeast portion of the lot, it was noted that two trenches had been previously excavated in an attempt to locate active utility lines and disconnect them prior to the demolition of the extant U-Haul office. In addition, mark outs, locating other utility lines that had not as yet been excavated, were visible on the surface of the asphalt in the southern section of this area. The location of these unexcavated utility lines, as well as others, were confirmed through the use of ground penetrating radar. Although the gas tanks were located outside the archaeologically sensitive area, the exposed trenches, the additional utility mark outs, the location of the U-Haul office, and the GPR study indicated that this area was severely disturbed and therefore lacked the potential to contain intact archaeological resources. No further work is recommended for this area.

Area B. An ash layer appeared in three of the test trenches and covers a significant portion of this area of the lot. It was most prominent in Trenches 1 and 2 than in Trench 3. An approximate area for this ash layer measures approximately 12 x 12 feet (3.6 x 3.6 meters). This ash layer is likely the result of disposal from the carriage factory and coal yard and possibly some wooden tenements that were either in or adjacent the lot. Based on historical accounts, a fire occurred in 1869—however, no evidence of this was uncovered. The ash layer was composed of a fairly uniform matrix. It contained several large pottery sherds of common types dating to the mid to late nineteenth century. Though few earlier types were observed—for example a blue edgeware plate—the majority were ironstone and utilitarian yellowwares. Some late-nineteenth-century bottle pieces were also observed.

Due to the unstable nature of the ground surface, the sidewalls easily collapsed upon excavation, and the trenches were not entered. Instead, emphasis was placed on delineating the extent of the ash layer. While additional excavation may yield a larger pottery or glass sample, the area was seemingly devoid of other artifact types. Only a small handful of coal or clinker was observed.

Stratum III of Trenches 4 through 7 contained large amounts of nineteenth-century brick in addition to the above-mentioned square pillars. It is likely that this stratum represents the period in which the coal yard and carriage factory were demolished.

The disturbed nature of the stratigraphic landscape in this area represents the nineteenth-century industrial use and redevelopment and modification during the last one and a half centuries. The chances of recovering intact structures or primary context deposits are remote. Therefore, no further work is recommended for this area.



Photograph 4.15 Trench 8, view looking south.

References

AKRF, Inc.

2006 *Atlantic Yards Arena and Redevelopment Project Final Environmental Impact Statement*. Prepared for Empire State Development Corporation, New York. Prepared by AKRF, Inc., and Philip Habib & Associates, New York.

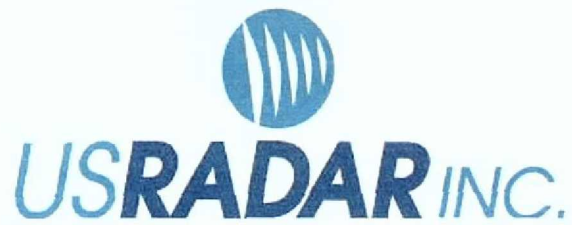
Schneiderman, Faline

2001 *Stage 1A Archaeological Assessment, Atlantic Yards Arena and Redevelopment Project*. Prepared by Historical Perspectives, Inc., Westport, Connecticut. Prepared for AKRF, Inc., New York, New York.

U.S. Radar, Inc.

2007 *Surface Penetrating Radar Investigation Atlantic Yards (Former U-Haul Lot) 622 Atlantic Avenue, Brooklyn, NY*. Prepared for URS Corporation, Burlington, New Jersey.

Appendix A
Ground-Penetrating Radar Study



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Phone: 732 – 566 – 2035
Fax: 732 – 566 - 8522

**Surface Penetrating Radar Investigation
Atlantic Yards (Former U-Haul Lot)
622 Atlantic Ave.
Brooklyn, NY**

Date: March 5, 2007

Prepared by: US Radar, Inc.

**Prepared for: URS Corporation
 437 High St.
 Burlington, NJ 08016**

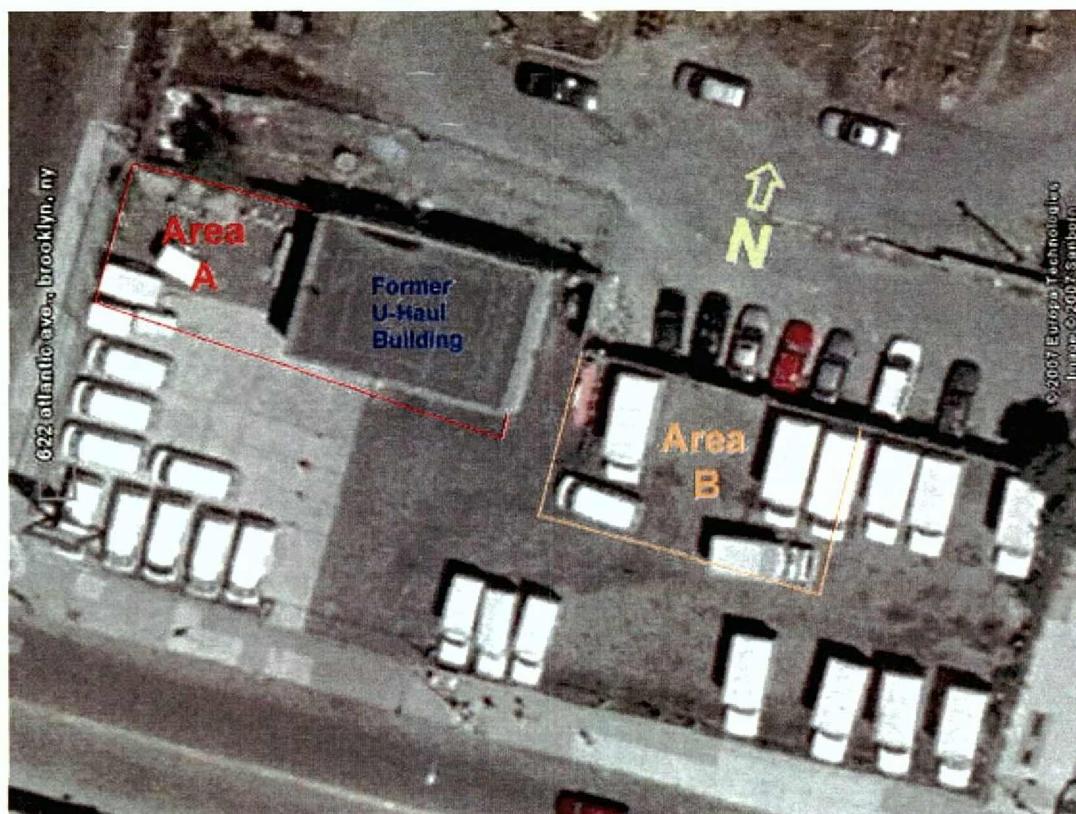
Introduction

Surface penetrating radar (SPR) is a proven non-destructive method of investigating the internal composition of many naturally occurring materials such as rocks, earth, and gravels, as well as man-made materials such as concrete, brick, asphalt, etc. The radar system sends out RF pulses of electrical energy and works by detecting the electrical echo caused by the transition from one material to another. By moving the radar unit across the ground surface, an image is created in a similar fashion to an ultrasound scan. These echoes may be due to voids, excavations, or buried objects such as foundations, wells, privies, graves, etc.

Project

A SPR survey was conducted for URS Corporation at a former U-Haul lot (Atlantic Yards) in Brooklyn, New York on March 5, 2007. The primary purpose of this survey was to identify the subsurface location of abandoned gasoline tanks. A grid search using a SEEKER SPR with a 500 MHz antenna (manufactured by US Radar/Subsurface Imaging Systems) was used for this project. Radar images were acceptable to depths exceeding eight feet.

The project area consisted of two areas (Area A - 40' x 75' and Area B - 40' x 50') inside the former U-Haul parking lot. A total of 10 anomalies were recorded in the project area: one anomaly was recorded in Area A; nine anomalies were recorded in Area B. These anomalies were marked-out in spray paint by their radar survey number along with their approximate depths.

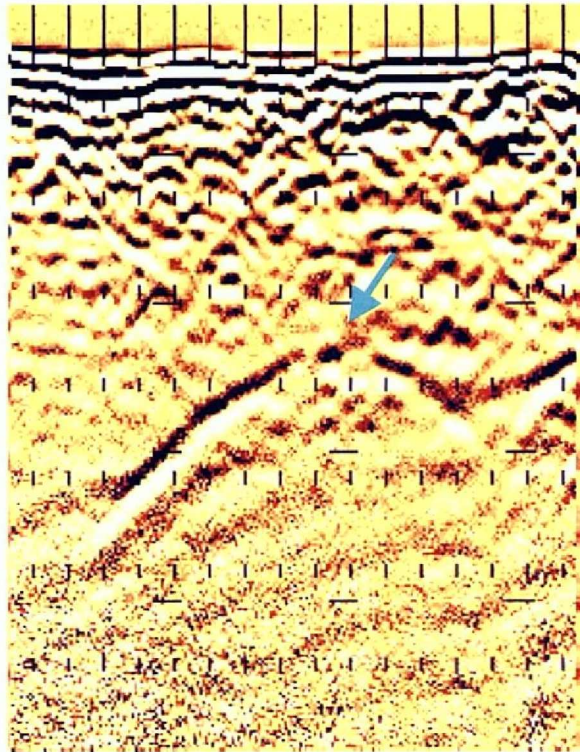


The former U-Haul lot showing the approximate locations of the radar survey areas (Area A and Area B) along with former U-Haul Building.

Area A. Utility companies had recently excavated portions of Area A uncovering utility trenches, water pipes, electrical conduit, etc. The radar survey of Area A verified a number of utility mark-outs showing that this area had been highly disturbed. The one anomaly (Survey 58) recorded in this area shows what is probably a drainpipe in front of the former U-Haul building that lines-up with the drain inside the building.

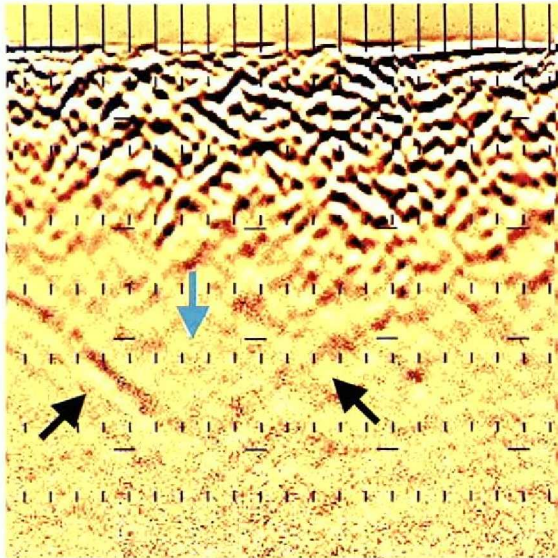
Area B. A total of nine anomalies were recorded in Area B. Depths of these anomalies were between 2.25 feet and below 6.0 feet.

Radar Data Recorded In The Project Area



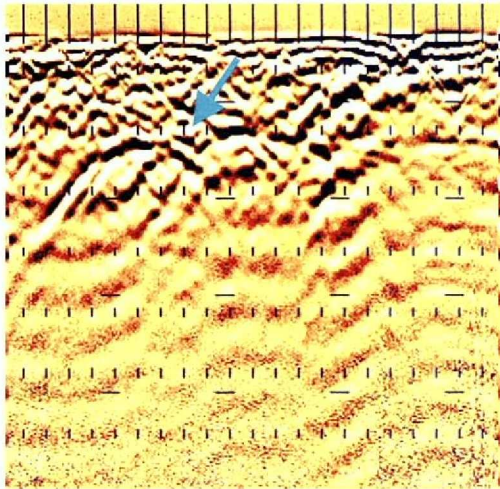
Survey 49/50 – Area B

The above raw radar data image from Survey 49/50 reveals a distinct hyperbola. The arrow indicates a large anomaly at a depth of about 4.0 feet. This could possibly be a large tank.



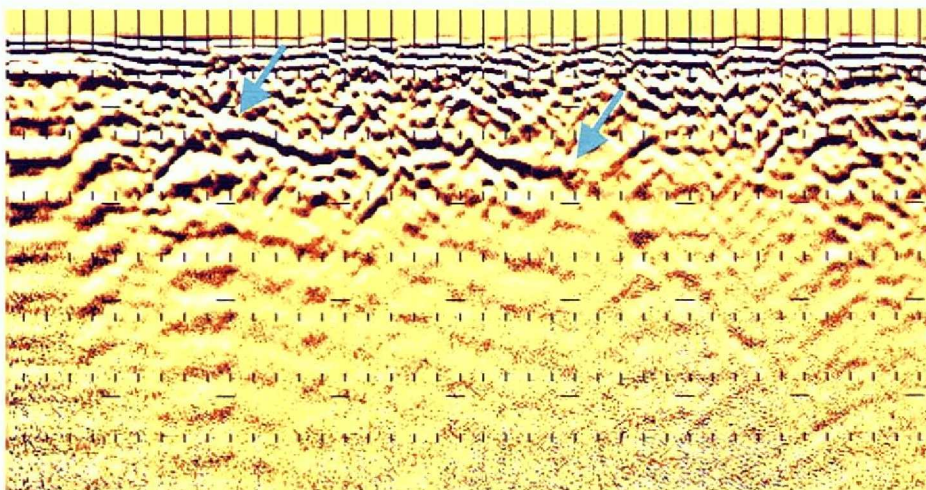
Survey 51 – Area B

The above raw radar data image from Survey 51 shows a possible trench excavation from a depth of 3.0 feet to 6.0 feet. The aqua arrow indicates an area within the center of what may be an excavation. The black arrows indicated potential walls of the trench. Ground disturbance (blue areas) can be seen above the arrow close to the ground surface that is likely associated with the construction of the parking lot.



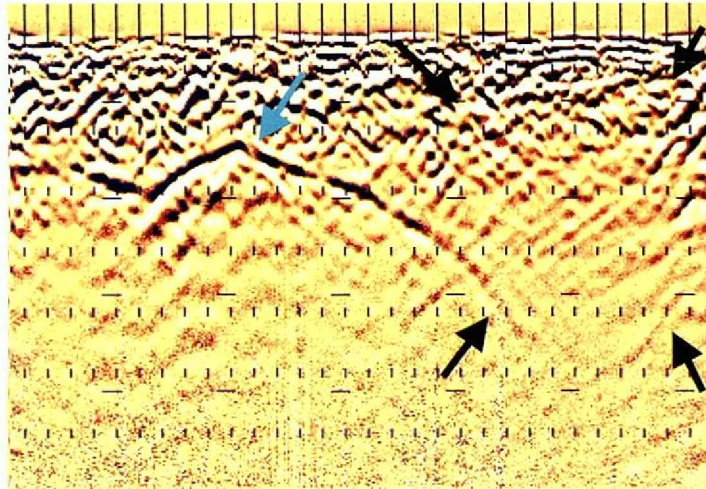
Survey 52/53 – Area B

The above raw radar data image from Survey 52/53 shows two anomalies (indicated by the arrow) side by side at a depth of about 2.2 feet. These anomalies may be two pipes side by side.



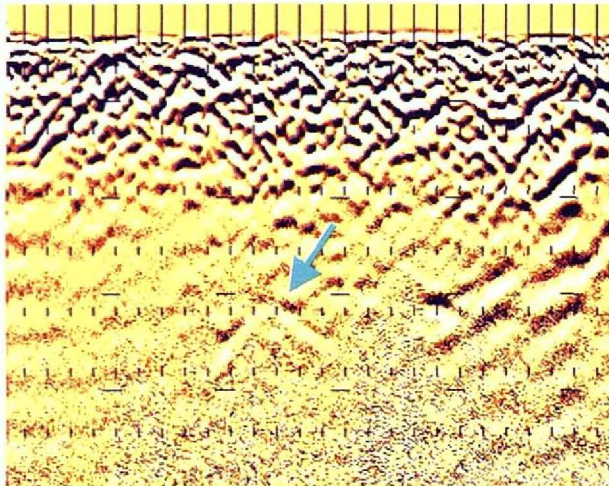
Survey 54 – Area B

The above raw radar data image from Survey 54 shows an area of disturbance (see arrows) starting at a depth of about 3.0 feet.



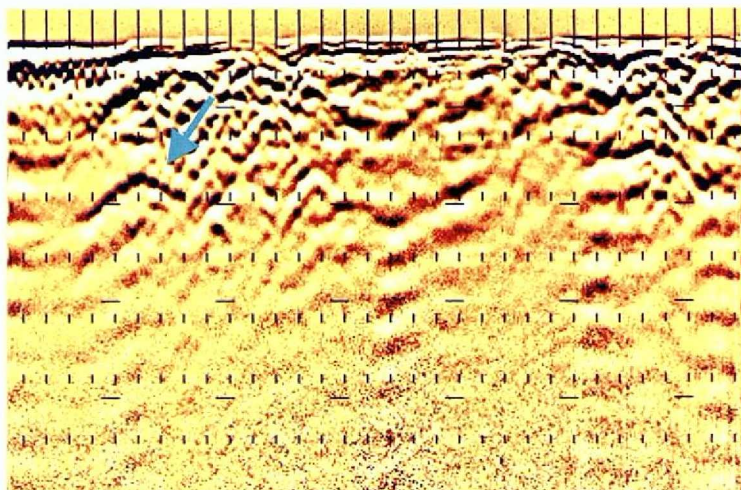
Survey 55 – Area B

The above raw radar data image from Survey 55 shows a large hyperbola (aqua arrow) starting at a depth of about 2.5 feet. This may be a large tank. Located about 12.5 feet east of this anomaly, black arrows indicate a potential well-like feature.



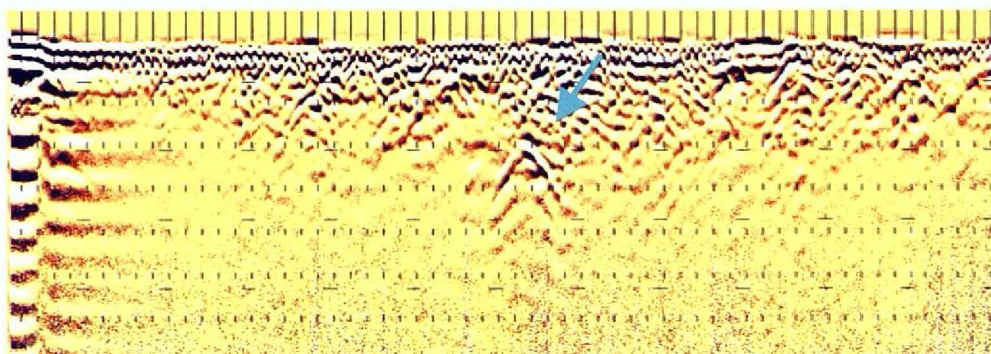
Survey 56 – Area B

The above raw radar data image from Survey 56 shows an anomaly (see arrow) at a depth of about 5.0 feet.



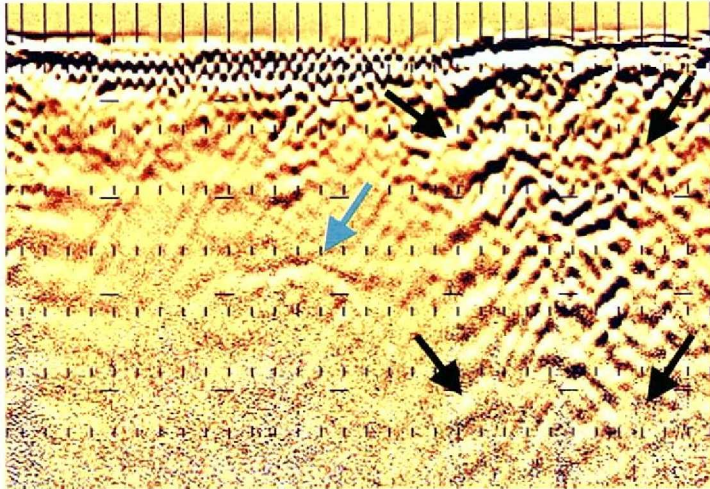
Survey 57 – Area B

The above raw radar data image from Survey 57 shows an anomaly (aqua arrow) at a depth of about 3.0 feet



Survey 58 – Area A

The above raw radar data image from Survey 58 shows an anomaly (aqua arrow) at a depth of about 3.0 feet. This is probably a drainpipe associated with the former U-Haul building.



Survey 59/60 – Area B

The above raw radar data image from Survey 59/60 shows a large anomaly (aqua arrow) at a depth of about 4.25 feet. This may possibly be part of a structure. About 12.5 feet from this anomaly, an area of potential archaeological interest (black arrows) can be seen. This area of disturbance stretches below 6.0 feet in depth.