Fairview Park
Charleston, Staten Island, New York
Phase 2 Archaeological Survey Report

NYCDPR Contract No. CNYG-311MR

DRAFT

"Fairview" 1880s (collection of the SIHS)

Prepared for New York City Department of Parks and Recreation
Through Hargreaves Jones Landscape Architecture DPC (Hargreaves Associates NY)
Prepared by Joan H. Geismar, Ph.D., LLC
May 2016
Fairview Park  
Charleston, Staten Island, New York  
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ABSTRACT

This report presents the methods and findings of a Phase 2 Archaeological Survey of Fairview Park in Charleston, Staten Island, New York. Joan H. Geismar, Ph.D., LLC, a subconsultant to Hargreaves Jones Landscape Architecture DPC (Hargreaves Associates, NY), prepared it for the New York City Department of Parks. A primary goal was to assess any impacts the park’s creation might have on historic-era features and prehistoric sites documented in surveys conducted by John Milner Associates in 1999, 2000, and 2005. The undertaking determined that six historic-era features (B2, B3, B5, C2, C3, and C4) and one prehistoric site (the Fairview Prehistoric Site) are situated within the park’s current 23.5-acre footprint. However, their mapped locations coordinated with current plans confirmed they all are located within the park’s designated passive zone where disturbance will be limited to the creation of paths. No additional archaeological resources were identified. In addition to addressing these resource-related issues, historical research was carried out to expand the park’s known history and to develop text for an informational sign about the former owner of the parkland, Balthazar Kreischer, his home (Fairview) once located within the park, his clay products manufacture, and his role in the development of Kreischerville as Charleston was known for more than 50 years prior to World War I.

Protection of the located archaeological features was and is a concern as is the safety of park visitors who may venture off designated paths. To eliminate potential danger, archaeological shaft features will be filled but not obscured. To protect the archaeological resources, construction documents will alert the contractor to identified concerns and dangers. No further archaeological work is recommended although park staff and any future plans should ensure the continued protection of archaeological features and be aware of the potential for prehistoric resources. Should presently unknown features or archaeological deposits be encountered in the future, archaeological input should be provided.
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INTRODUCTION

This report presents the methods and findings of a Phase 2 Archaeological Survey of Fairview Park in Charleston, Staten Island, New York (Figures 1 and 2). Joan H. Geismar, Ph.D., LLC, (JHG), a subconsultant to Hargreaves Jones Landscape Architecture DPC (Hargreaves Associates NY), the park’s designers, prepared it for the New York City Department of Parks & Recreation (Parks). Amanda Sutphin, Director of Archaeology at the New York City Landmarks Preservation Commission (LPC) approved the designation as a Phase 2 Archaeological Survey. As such, it is an updated assessment of archaeological features previously documented during field surveys conducted by John Milner Associates (JMA 2000 and 2005) where extensive testing was carried out. The goal of the current Phase 2 survey was to locate these features, assess their integrity, confirm or identify their function if possible, and determine the potential impact current park plans might have on these identified archaeological resources. Previously unknown archaeological features were also a consideration.

Milner’s field investigations, carried out in 1999, 2000, and 2005, and an earlier 1A documentary study (HPI 1996) were associated with various development projects now realized in one form or another. As a consequence of these projects and of additional development, the park’s configuration has been altered since 1991 when development was first proposed.

The three Milner investigations document six historic-era features (B2, B3, B5, C2, C3, and C4) and one prehistoric site (Fairview Prehistoric Site) within the current park footprint (Figure 3). Among them are the disturbed foundation of “Fairview,” the mid-19th-century Balthazar Kreischer mansion (C2), what was identified as the building’s porch wall (C3), and an unidentified shaft feature (C3) (JMA 2002:17). Also documented were the likely foundation of a water tower (B5), a possible cistern feature (B2), and a small, unidentified shaft feature (B3). Another potential issue was a severely disturbed pond documented on a 2002 park survey (Parks 2002) and possibly partly located within the park’s passive zone. However, a current park survey (Munoz 2016; see Appendix A) does not show this disturbed feature, suggesting it is located beyond park boundaries. An unidentified foundation, again noted on the 2002 topographical survey and on Milner’s graphics may have straddled the northern park limit near the pond (see Figure 3), however neither the Milner surveys nor recent site walkovers located the feature, nor is it documented on the current park survey (Munoz 2016; see Appendix A). It also is not found on a topographical survey issued in 1913 that includes the project area (Richmond Topo 1913:Sections 81, 82, 88, 89; see Figures 4).

Determining the location and condition of the six features relevant to current park plans, and, more specifically, their relation to the park’s proposed “activity” zone, were major issues. Another issue was how to address features located within the park’s designated passive zone where no direct impact is anticipated. Here the concerns are preservation and safety rather than impact. In this regard, the project’s Area of Potential Effects (APE) is twofold: the active area APE and the passive

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1 Other archaeological features noted in earlier reports, e.g., Milner 2000, 2005, are located beyond the boundaries of the current park site. No attempt was made to locate a drainage ditch (B4) noted in the passive park zone (JMA 2000:29).

2 It should be noted that research for a later Fairview owner, Arnold Kreusler (presented below), suggests the 1913 survey was plotted sometime between 1890 and 1905 although the publication date for the relevant sections is 1913. Facilities in the activity area will include a multipurpose field, a baseball field, tennis and pickleball courts, bocce courts, horseshoes, adult fitness equipment, and game tables.
FAIRVIEW PHASE 2 SURVEY  Project Site Location (USGS Arthur Kill Quad 1966, Photorevised 1981, detail)

X  project site
FAIRVIEW PHASE 2 SURVEY  Farview Prehistoric Site and Historic-era Features
(JMA 2000)

based on JMA 2000: Figure 17 and B. Seamans, Hargreaves Jones Landscape Architecture

- park boundary (part of)
- historic-era feature
- Farview prehistoric site
- foundation (2002) never located
- pond, disturbed, in passive zone
- drainage ditch, not located
- negative shovel test unit
- positive shovel test unit, prehistoric
- positive shovel test unit, historic
- positive shovel test unit, prehistoric and historic
- 3-x-3-foot unit
FAIRVIEW PHASE 2 SURVEY  1913 Topographical Survey in Relation to the Park Site
(Richmond Topo 1913:Sheets 81, 82, 88, 89, detail)
zone APE, although they are addressed as one in this report. In addition to assessing the project APE, research was undertaken to expand the park site’s history and provide text for proposed park signage.

ASSESSMENT HISTORY

The potential archaeological sensitivity of Staten Island’s Charleston section has long been known and the New York State Historic Preservation Office (NYSHPO) identifies it as having high archaeological potential (e.g., HPI 1996:11-14). Given this potential sensitivity, the area development first proposed in 1991 and subsequent proposals were subject to environmental review that included archaeological concerns (e.g., AECOM 2013:2.6-7). However, even prior to mandated environmental review, the prehistoric archaeological sensitivity of the Charleston area was to a degree addressed and long established (e.g., Salwen 1968).

The earlier archaeological assessments coordinated with current plans indicate that the archaeological potential of most if not all the current park site has been addressed to some extent. A limitation to a comprehensive archaeological assessment was, and remains, the dense summer vegetation found throughout the park site. Some is regrowth that followed a 1931 fire that destroyed the mid-19th-century Balthazar Kreischer mansion (see below). However, some is the result of clearing with heavy equipment prior to the 2005 archaeological IB assessment (JMA 2005). Unfortunately, this well-intentioned clearing damaged at least one documented archaeological feature (A7, a possibly man-made pond; see Figure 3), albeit, as it turns out, apparently just beyond the current park limits or, if in the park, in the passive park zone. However, it serves as a cautionary tale, an impact to be avoided during any archaeological reassessments or park construction.

Although previous archaeological surveys considered various and somewhat different potential park configurations, all of them included the park’s current footprint and, therefore, addressed the park’s archaeological potential. This was accomplished through records research (HPI 1996) and, as mentioned, through in-ground testing (JMA 2000, 2005). However, with each proposed development project, the park’s parameters shifted as the surrounding property was subject to planned or realized multiple-use development. Initially located within 67 acres of basically vacant land, the current 23.5-park site has survived these development plans.

Despite documented limitations, earlier research identified several potentially sensitive areas throughout the park site. Rather than conducting typical systematic site walkovers, this was accomplished mainly by considering accepted criteria to identify potentially sensitive locations for both prehistoric and historic-era sites (JMA 2000:4-6; see below). Testing was then carried out where application of these criteria identified potentially sensitive areas.

Criteria for Prehistoric Sites:

- slightly elevated areas (preferred locations for prehistoric settlement);
- well-drained areas adjacent to wetlands and water courses (preferred prehistoric site locations);
- views;
- exposed shell middens (heaps);
- "potholes" that indicate amateur archeological excavations;
- atypical vegetation that suggests different underlying soil conditions;
- approximate locations of previously recorded prehistoric sites.
Criteria for Historic-Period Sites:
- depressions (cellar holes, foundations, and other features);
- mounds that suggest structural debris;
- ornamental plants that suggest former gardens or landscaping;
- berms and/or other irregular ground surface rises (possible foundations, landscaping, walls, etc.);
- large, old trees (possible boundaries or house lots);
- concentrations of coal and cinders (possible household debris);
- concentrations of brick and dressed stones (proximity of a structure?);
- extensive poison ivy (indication of disturbed soils);
- stone walls (boundary markers?)

Applying these criteria, the six numbered historic-era archaeological features noted throughout this report—components of the Kreischer Estate (JMA 2000, 2005) or, as identified in this report, domestic/ farm complex—and the nearby Fairview Prehistoric Site are now entered in the files of the NYSHPO. All are located within the park but, as mentioned, in the passive zone where no impact associated with current development is anticipated (natural, unlighted paths are planned). It was these archaeological components and perhaps other unknown features that warranted the Phase 2 Survey. As stated, the goal was to assess their location in relation to the area of impact and to determine or verify their function, their current viability, and their archaeological significance.

METHOD

To locate and reassess these identified features in relation to the current undertaking, a detailed review of the findings of the 2000 and 2005 1B testing reports was coordinated with the proposed park development. In addition, site visits/walkovers were made to locate and photograph the relevant features³ and historical research was carried out to expand the site’s history. The historical information was used to develop the park’s interpretive signage, an undertaking meant to inform without endangering archaeological resources. This information will also be used to develop a Construction Protection Plan for inclusion in construction documents, one that offers safety to park goers and protection to the resources.

The function of several features encountered during the earlier Phase IB field research (JMA 2000, 2005), which entailed excavation of several hundred shovel tests as well as small excavation units, remained unidentified because of feature instability or other hazardous or hampering conditions. To provide more precise identifications as well to amass information for park signage, research was conducted at the Staten Island Historical Society (SIHS), the Staten Island Museum, the New York Public Library, The New York Historical Society, the Richmond County Register’s Office, The Topographical Bureau of the Richmond County Borough President’s Office, and on-line. In addition, review of data included in earlier reports proved revealing when combined with new information.

To identify the function of B2, one of the shaft features found too unstable to investigate by traditional excavation methods (JMA 2000:29), a soil boring was drilled to sample the fill and determine its depth. This approximately 5-foot (1.5 m) diameter brick shaft feature is located

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³ On these visits, I was accompanied by fellow archaeologists Shelly Spritzer and Diane George both individually and together and on one occasion, by Brett Seamans from Hargreaves.
about 10 feet (3.0 m) southeast of what has now been confirmed as the base of Fairview’s former water tower (B5; see below). The function of a small, nearby shaft feature, approximately 1.5 to 2.0 feet (0.46 to 0.61 m) in diameter, was partially tested in 2000 but remains unidentified.

The cultural material from, or noted in, Milner’s 227 shovel tests and several small excavation units was encountered mainly within the first 6 inches (0.15 m) of excavation, and none was found deeper than 18 inches (0.46 m) below the ground surface (BGS).

As stated, the goal of the Phase 2 Archaeological Survey was to promote avoidance of identified archaeological resources during park construction, or, if necessary, to mitigate adverse effects. Moreover, recommended protective measures considered both the protection of any archaeological resources and of the public that may encounter them (of concern are significant but potentially dangerous foundations or obscured “holes” situated off the prescribed paths in the passive park zone). The proposed protective measures were developed in concert with Hargreaves Jones Landscape Architecture, the landscape consultants, and Parks to ensure the most viable and best solutions.

BALTHAZAR KREISCHER AND THE KREISCHER CLAY WORKS

The park’s mid-19th-century development was carried out by Balthazar Kreischer, a European émigré who left his native Bavaria for America in 1836 at the age of 23. Perhaps prophetically, his first American stop was the Tompkinsville Quarantine, a hospital complex on Staten Island where immigrants then first landed.\(^5\) His initial Staten Island experience was short lived, however, and he made his way to Manhattan to benefit from the rebuilding he anticipated would follow the devastating fire that had destroyed seventeen blocks of Lower Manhattan the year before he arrived.

The 1843-44 New York City directory lists Kreischer as a mason at 177 Third [Street] (Rode 1843-44). In 1845, Kreischer and Charles Mumpeton—the first of Kreischer’s several partners and associates—acquired clay from New Jersey to produce firebrick ovens at their new Goerck Street clay works. After Mumpeton’s death in 1849, Kreischer purchased land on Staten Island that included the superior clay deposits found in what is now Clay Pit Ponds State Park adjacent to the Fairview Park site.

Although Kreischer moved his home and clay production to Staten Island by the mid 1850s, he maintained New York City and Kreischerville residences and his New York City business address throughout his lifetime (see Figure 5 for advertisements of his Staten Island and New York City businesses). With his clay works now on the Arthur Kill in Androvetteville or Androvettetown, as the area was then called,\(^6\) he could take advantage of the local clay and the transportation opportunities afforded by the Arthur Kill, a waterway described in the early 20th century as “…the Inland passage from New York Bay to Chesapeake Bay” (U.S. Coastal and Geodetic Survey 1904:41). The Arthur Kill offered an excellent means of distributing his clay products in his extensive fleet of boats (Photo 1). He described his operation in a personal

\(^5\) Almost 60 years after its founding in 1799, organized Staten Islanders burned this feared and hated hospital complex to the ground in early September 1858 (Bayles 1887:267-271).

\(^6\) So named for the Androvette family who had settled there in the 17th century (http://www.tottenvillehistory.com/History-Tottenville- Staten-Island-New-York/history-charleston.html).
Photo 1. A Kreischer sloop moored on the Arthur Kill loaded with fire bricks from the nearby Kreischer clay works. (Xerox copy courtesy of the SIHS)
account now in the archives of the New York Historical Society:

In 1855 the [Staten Island] factory was built… I built sloops, schooners and propellers. In 1858 the factory for Gas Retorts was started, about 1 1/2 acres of land and 200-250 men employed…(Abbott 1949:35 quoting from the papers of Louise Kreischer, Balthazar’s granddaughter)

Kreischer’s commercial success provided jobs to an expanding local population and for fifty years prior to the First World War, Charleston7 was known as Kreischerville, Staten Island’s only company town. At about the time of Kreischer’s death in 1886, the Kreischer & Sons clay works on Arthur Kill Road was said to employ 50 to 75 workers “and sometimes more” (Clute 1877:326). However, based on Kreischer’s own account, “and sometimes more” may have been a gross understatement.

In addition to the clay products Kreischer produced on the island, he was a founder of the Staten Island Railroad in 1860 and among its saviors when it later went into bankruptcy. He lived a prosperous life, and, as an American citizen, frequently traveled throughout Europe with members of his family (see Figure 6, Kreischer’s request for unencumbered travel abroad).

While Kreischer held patents on firebricks (e.g., Improvement in the Manufacture of Fire-Bricks, Letter Patent 1871) and was the first in America to produce bricks comparable to the high standards of English firebrick, they were not his only clay product. A record book in the New York Historical Society manuscript division indicates that in 1878, the year he retired, Kreischer bricks, gas retorts (essential to the growing gas industry), and numerous other clay products were shipped nationwide. In fact, his network extended as far west as Los Angeles, California, as far north as Rochester, New York, and as far south as Charleston, South Carolina and Galveston, Texas. This is in addition to local customers in Brooklyn and Harlem (Kreischer Record Book 1873-1885:c. 40 ff).

By 1854, Kreischer had built “Fairview,” a 26-room frame house with a rooftop cupola (Abbott 1949:36), a convention of the time that would have allowed him to keep abreast of shipping activities on the Arthur Kill. In an archaeological perspective, the presence of the nearby water tower shown perhaps somewhat fancifully on an 1887 engraving (see Figure 7), suggests that his home may have included sanitary amenities then only available to someone of means. And although the New York City Directories indicate his residence at various Manhattan addresses

7 Also known as Androvetteville or Androvettetown after 17th-century settlers.
throughout his lifetime, beginning with the 1854 New York City directory, Staten Island is listed as his home (e.g., Rode 1854).

Kreischer was twice married and twice a widower (see Photo 2 for a Kreischer likeness). His first wife, Caroline Haenchen (Photo 3), whom he married shortly after his arrival in New York, bore him three sons and four daughters who survived him. Among them were twins, Frederika, the only one of his children not to marry, and George (Photo 4). However, Green-Wood Cemetery records indicate that at least one son, Alfred, died young (Find-a-Grave:misc). Following Caroline’s death in February 1853 (Weekly Herald 1853) at forty-six, nine days after the birth of their son, Edward, Kreischer married Mathilde (Mathilda) Zumberger. Two sons, apparently the only children from this second union, also died young.

Kreischer retired in 1878. Five years later, he founded Saint Peter’s German Evangelical Church in Kreischerville (NY Times 1883), bequeathing the building and land to the church. At his death on August 26, 1886, it was from here that he was buried in Green-Wood Cemetery, as were Caroline, Mathilde, and several of their children (Findagrave re Kreischer burials).

Complying with Kreischer’s will, his son, George Kreischer, and son-in-law, William Steinway, as executors of his estate, sold the Fairview property at auction in 1890 (LD 201:242). It is assumed the proceeds were divided among his seven adult children. Arnold Kreusler from Brooklyn then became Fairview’s new owner. Kreusler maintained ownership until 1905 when, by then a resident of Manhattan, he sold the house and land to his daughter (Liber of Deeds [LD] 309:205; see below for what is known about Kreusler).

The family interest in the Kreischer business ended in 1899. The Kreischerville clay works and Fairview were later abandoned and both were destroyed by fire between 1927 and 1931.

FAIRVIEW

In November 1853, shortly after his first wife’s death, Kreischer acquired several Staten Island properties from John B. Cole and his wife Susan (LD 32:441). Among them was a 98+-acre parcel where he built “Fairview,” his 26-room home, on a knoll overlooking the Arthur Kill and bay in what is now Fairview Park. The aforementioned 1887 engraving illustrates the 2 1/2-story Italianate style frame structure with a rooftop cupola (Figure 7). The engraving depicts an elegant, well cared-for dwelling with manicured grounds, a sweeping drive, and the aforementioned brick water tower close by (Figure 7). However, a photograph in the collection of the Staten Island Historical Society from a series taken in the 1880s, all without evidence of the water tower, suggest it was perhaps somewhat further from the house than indicated in the engraving.

Archaeological evidence combined with information found on the 1913 topographical map (Richmond County Topo 1913:82; Figure 8) indicate the square, 2 1/2 story frame structure and stone foundation measured 46.6 by 46.5 feet (14.2 by 14.2 m). A 40-foot (12.2 m) long and 20.5-foot (6.3-m) wide extension, also 2 1/2 stories high, extended east to the brick wall now identified as C4 (see below). The 1913 topographical survey also documents a 1-story, 19.5-foot

8 Edward, who was involved in the family business, committed suicide in 1894 under hazy circumstances, but money problems including embezzlement apparently were primary factors (Steinway, Friday, June 22, 1894).
Photo 2. Balthazar Kreischer in an image from and undated carte de visite. (courtesy of the Staten Island Museum Archives)

Photo 3. Caroline Haenchen Kreischer, first wife of Balthazar Kreischer, in an undated portrait (ca. 1851?) in the Staten Island Museum (Staten Island Museum on-line)

Photo 4. Fredericka (left) and George Kreischer, the twin children of Caroline and Balthazar Kreischer, ca. 1851. (Staten Island Museum on-line)
Photo 5. The north (center) and west (right) facades of "Fairview." The 1880s photo is the same view as Figure 7 (above). Note the difference in the grounds. (Xerox copy courtesy of the SIHS)
(5.9-m) long appurtenance on the south side of this extension (see C3 below), and a porch along the building’s western facade. The above-mentioned brick water tower apparently was no longer extant when the topographical survey was conducted in the late 19th and/or early 20th centuries as it is not indicated (see Figure 8; also Figure 4). The survey does show outbuildings, one identified as a 2-story frame barn (see Figure 8), just beyond the park’s boundary. A fragment of decorative terra-cotta noted in the cellar hole of the house during a site visit (Photo 6) suggests at least one decorative element, and the west-facing porch must have provided spectacular sunsets over the bay.

ARNOLD KREUSLER

As mentioned, according to Kreischer’s will, Fairview was to be sold with the proceeds shared by his seven adult children. Four years after Kreischer died, it was sold at auction to Arnold Kreusler (LD 201:242), at the time a Brooklyn based merchant/broker specializing in products related to beer production. Years earlier, he and his family lived in Rochester, New York, where he was a brewery foreman (Federal Census [FC] 1880) and he ultimately held several patents related to beer production. Among them was an 1893 patent for a refrigerating machine. His address in the patent listing is Kreischerville, Staten Island (US Patent Office 1893:73). While his home was then Kreischerville, his office was at 18 Whitehall in Manhattan where the city directory lists him as a merchant (Trow’s 1894).

Kreusler, who owned and apparently occupied Fairview from 1890 until about 1905, is somewhat of an enigma. In 1891, his young son, Frederick, who according to an article in the New York World was made the overseer of a Massachusetts brewery, went missing. In this and other related articles, the elder Kreusler is identified as “a broker in brewers’ supplies” (e.g., Boston Herald 1891). While there was speculation that Frederick may have been murdered (The Evening World 1891), he was soon found (Springfield Republican 1891) and the incident ended well, apparently an example of a young man overcome by responsibility who temporarily went missing but recovered. It seems, went on to lead life as a brewer (FC 1900).

In 1905, Kreusler sold Fairview to his married daughter, Helen Huber “for $1 and other considerations” (LD 309:205). At the time, he shared his home, which was then an apartment on West 112th Street in Manhattan, with his wife Helena (or Helen) and daughter Tilla (State Census [SC] 1905). However, directories and census records suggest that perhaps he, like Kreischer, had in the past maintained more than one residence, possibly one in Brooklyn. That said, despite the similarity between the name Kreischer and Kreusler, there is no known connection between the two men except their German origins and their entrepreneurship.

The 1913 topographical survey identifies Fairview as the “Kreusler Triangulation Station” (see Figures 4 and 8). This is somewhat surprising since Kreusler sold the house in 1905, a year before the first of the Richmond County Topographical maps (1906-1913) was
issued. The Kreusler identification suggests the Charleston area of Staten Island was surveyed after he acquired the property in 1890 but before he sold it in 1905. It certainly was carried out before the sections relevant to the project area were issued in 1913. It should also be noted that a precursor to Englewood Avenue, which now runs north of the park, was known as Kreusler Lane when the topographical survey was underway.

According to census data, Kreusler, who died in Wiesbaden Germany in April 1907 at the age of 72 (Hauk 2016:personal communication; Brewer’s Journal 1907:278), never became a United States citizen (e.g., SC 1905).

FEATURE IDENTIFICATION AND THE FAIRVIEW PREHISTORIC SITE

Among the stated goals of the Phase 2 Archaeological Survey was to locate, assess and, to the extent possible, identify archaeological features within the park’s current footprint. As mentioned, the six features (B2, B3, B5, C2, C3, C4) Milner located and identified in their 1999, 2000, and 2005 surveys are situated within the passive park zone and were components of the core of Kreischer’s domestic/farm complex (Photos 7 to 12).

Milner’s identifications and the current findings are presented in Table 1. It should be noted that assessments made for this Phase 2 Archaeological Survey were based on observation and coordination with existing topographical surveys (1913 Topo [Figures 4 and 8], EDC 2002 [not illustrated], and Munoz 2016 [Appendix A]). As mentioned earlier, a dedicated soil boring in B3 was employed to determine the depth and composition of the fill in this circular brick feature. In this instance, 24 feet (7.3 m) of fill were documented under a 7-foot (2.1-m) void below the feature’s rim. The boring was terminated at 31 feet [9.5 m] below the ground surface (BGS) but it obviously continued to an unknown depth. The depth of the fill made it clear that it was a well rather than a cistern as previously identified (Milner 2000:21-23). A redeposited fill, comprising gravel with ash and fragments of brick, glass, slag, unburned coal, ceramic and glass among other debris (see Photo 13), apparently was introduced after the feature was abandoned. This fill material can be compared with the natural soils documented in a nearby soil boring (B-12; see Soil Boring logs in Appendix B). Terra-cotta drain pipe fragments cut and retrieved by the sampling spoon at 19 -21 feet (5.8 - 6.4 m) BGS suggest that a trashed drain pipe was included in the fill, or it might be a conduit related to Kreischer’s water system, but this is merely speculation.

As noted previously, all six features discussed here lie within Fairview Park’s designated passive zone and, therefore, will not be disturbed. However, in addition to the brick well, revisiting these features has made it possible to reinterpret the function/use of two others. For example, C3 identified as a circular shaft or vault feature (JMA 2000:23) is instead a cellar hole and stone foundation, apparently the remnants of a 1-story appendage to the mansion’s extension documented on the 1913 topographical survey and a 1920s photograph (see Figures 4 and 8 and Photo 14). Nor is C4 a porch foundation (JMA 2000:23), but rather the extension’s eastern foundation wall. The aforementioned 1913 topographical survey combined with field measurements provided information to reassess both features. Therefore, this Phase 2 survey has altered the identification of three features (B2, C3, and C4) and confirmed the identification of two others (B5 and C2). Of the six, only B3, a small, possibly shallow, brick shaft feature, remains unidentified.

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9 I am grateful to Linda Hauk, Director of the Tottenville Historical Society, for this reference.
Table 1. FAIRVIEW PARK Selected Feature Identifications 2000 and 2016

<table>
<thead>
<tr>
<th>Feature No.</th>
<th>2000 Identification</th>
<th>2016 Identification</th>
<th>Method/Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>B2</td>
<td>Brick lined circular shaft feature c. 5 ft. (1.5 m) in diameter. Identified as a cistern, it was filled with leaves and other natural debris to approximately 6 ft (1.9 m) below the ground surface (BGS). Safety was an issue and it was not tested. Identified as a cistern possibly associated with the nearby water tower (B5, see below). Machine-aided excavation was recommended to determine the content of the feature's fill, its depth, and possibly its function.</td>
<td>Brick well (Photo 7) more than 31 ft. (9.5 m) deep, apparently associated with the former Kreischer water tower (B5) located ca. 8 ft. (2.4 m) to the NE (see B5 below).</td>
<td>A soil boring was drilled into the fill and continuous samples collected to 30 ft. (9.1 m) BGS revealed a redeposited fill (ash, clinkers, some small ceramic, glass, and fragments, stones, etc.) rather than “natural” debris; see Photo 13). The deposit continued to an undetermined depth but undoubtedly to the deeply buried water table. Trapped water was observed in several samples but ground water was not reached. The homogeneity of the fill indicated it, or at least the upper 21 ft. (6.4 m), had probably been introduced in a single episode. Two terra-cotta fragments cut and extracted by the sampling spoon 19 -21 ft. (5.8 -6.4 m) BGS may have been a trashed drainpipe or possibly piping to conduct water from the well to the adjacent water tower (B5), but this is speculation.</td>
</tr>
<tr>
<td>B3</td>
<td>Unidentified circular, leaf-filled brick shaft feature, ca. 2 ft. (0.6 m) in diameter with a ca. 1 ft (0.31 m) aperture.</td>
<td>Unidentified circular, leaf-filled brick shaft feature, ca. 2 ft. (0.6 m) in diameter with a ca. 1 ft (0.31 m) aperture.</td>
<td>The feature was excavated to 1 ft. (0.31 m) BGS in 2000 but its depth and function remain undetermined. It may be associated with former farm structures.</td>
</tr>
<tr>
<td>B5</td>
<td>Kreischer Water Tower base.</td>
<td>Kreischer Water Tower base.</td>
<td>This ca. 5-ft (1.5-m) diameter stone and brick base is a remnant of the water tower depicted somewhat fancifully in the 1887 engraving of Fairview (see Figure 7). The tower is not indicated on the 1913 topographical survey (see Figures 4 and 8).</td>
</tr>
<tr>
<td>C2</td>
<td>Fairview mansion cellar hole and stone foundation.</td>
<td>Fairview mansion cellar hole and stone foundation.</td>
<td>The feature’s measurements correspond with those on the 1913 topographical survey.</td>
</tr>
<tr>
<td>C3</td>
<td>Circular brick-lined shaft or vault feature adjacent to the SE corner of C2. Ca. 8 ft. (2.4 m) in diameter and at least 7 ft. (2.1 m) deep. Observed within the feature's interior were architectural debris such as brick, stone, and mortar.</td>
<td>Rectangular Foundation/ cellar hole of a structural appendage on the 5 side of the extension ending in the brick wall now identified as C4; this is depicted in the 1887 engraving, the 1913 topographical survey, and in Photo 14.</td>
<td>The feature’s measurements correspond with those of an appendage to the main Fairview structure documented on the 1913 topographical survey (see Figure 8). Also, remnants of the feature’s west stone wall appear to be straight rather than circular, suggesting a square foundation rather than a circular shaft feature.</td>
</tr>
<tr>
<td>C4</td>
<td>Possible foundation wall of porch depicted in the 1887 engraving of Fairview (Figure 7).</td>
<td>East brick foundation wall of the extension on the east side of the mansion indicated on the 1887 engraving (Figure 7) and 1913 topographical survey (Figures 4 and 8).</td>
<td>The 1913 topographical survey documents an extension running east from the house and its eastern end wall corresponds to the location of C4 (see Figure 8). The porch, indicated on the survey and in the 1887 engraving, is on the west side of the building (see Figure 8).</td>
</tr>
</tbody>
</table>
Photo 7. A brick well (B2), approximately 5 feet (1.5 m) in diameter, was originally identified as a cistern (JMA 2000, 2005). However a soil boring revealed that it extended down more than 31 feet (9.5 m) BGS to an unknown depth and was instead a well. (Photo: B. Seamans 11-19-2015).

Photo 8. This small, unidentified shaft feature (B3) was partially excavated in 1999 or 2000 (JMA 2000) but remains unidentified. (Photo: J. Geismar 1-8-2016)
Photo 9. Water tower foundation (B5) looking northeast. B5 and B2 are probably features associated with Balthazar Kreischer’s water system. (Photo: B. Seamans 11-19-2015).

Photo 10. Remnant of Fairview’s western foundation wall (C2). The building was destroyed by fire in 1931 and little of the foundation remains. (Photo: J. Geismar 2-8-2016)
Photo 11. The cellar hole of an appendage (C3) on the south side of Fairview’s eastern extension. A remnant of a straight line of foundation stones (arrow) contradicts what appears to be a circular feature when it is actually rectangular. (Photo: J. Geismar 2-8-2016)

Photo 12. The remnant of the brick foundation wall (C4) that marks the end of Fairview’s east extension. (Photo: J. Geismar 12-3-2015)
Photo 13. Sample of the fill in B2 recovered from a soil boring intended to determine the function of this circular feature originally identified as cistern. The depth of the fill, which proved to extend beyond 31 feet (9.5 m) below the feature surface, established that it was a well. The sampling spoon is in the upper left corner. (Photo: J. Geismar 4-8-2016)

Photo 14. This 1920s view of Fairview, at the time abandoned, documents a 2 1/2-story eastern extension (right) with a 1-story appendage (C4) on its south side. (Photo from the collection of the SIHS)
As for the Fairview Prehistoric Site, confusion about the site’s identification and location is addressed in HPI 1996 and on the OPRHP site form (the form will be found in Appendix B this report). The site is one of several where surveys documented shallow finds of mixed prehistoric and historic-era material. However, two diagnostic artifacts (hammerstones) were surface or shallow finds (e.g., JMA 2000:26, page 20 of unnumbered Appendix II) where commercial development has now or will occur.

The Fairview Prehistoric Site is located about 50 feet (15.2 m) southeast of the house foundation (C2) and associated features, referred to in this report as the domestic/farm complex (see Figure 3 for location). Prehistoric material was recovered from three of twelve shovel tests and two 3-foot square (0.91 m) excavation units in 1999 and 2000. This comprised stone debitage related to tool production (primarily quartz flakes), fire cracked rock fragments, and a quartz pebble mixed with historic-era material, that is, in a mixed, disturbed, and therefore non-discrete context. No diagnostic artifacts were recovered (JMA 2000:17).10 Pockets of crushed stone noted nearby but beyond the current park site, perhaps from a former drive, suggested that construction of the house in the mid-19th century may have disturbed a prehistoric site located on the knoll (JMA 2000:25).11 Given the mixed and disturbed context of the Fairview Prehistoric Site, and its location in the passive park zone, no attempt was made to revisit it for this study.

SUMMARY AND RECOMMENDATIONS

The goal of this Phase 2 Archaeological Survey was to update the archaeological findings of field surveys conducted by John Milner Associates in 1999, 2000, and 2005 (JMA 2000, 2005) as they relate to the current plans for Fairview Park. A primary focus was to assess any impacts the park’s creation might have on historic-era features and prehistoric sites documented in these surveys. The undertaking determined that six historic-era features (B2, B3, B5, C1, C2, and C3) and one prehistoric site (the Fairview Prehistoric Site) were situated within the park’s current 23.5-acre footprint, a configuration that comprises passive and active zones. Coordinating mapped locations of these resources with current plans confirmed that all are situated within the park’s designated passive zone where disturbance will be limited to the creation of paths. Once this was established, site walkovers located the six historic-era features, assessed their condition, and confirmed, rethought, or, if their use was unidentified, attempted to establish their function. No attempt was made to locate the Fairview Prehistoric Site that solely comprised stone debitage and fire cracked rock fragments in a mixed and disturbed context.

In addition to addressing these resource-related issues, historical research was carried out to expand the park’s known history and develop text for an informational sign about the former owner of the parkland, Balthazar Kreischer, and his clay products manufacture.

In 1853, Kreischer acquired 98+ acres on Staten Island and built “Fairview,” his 26-room home/mansion, on a knoll that overlooked the bay. At about the same time, he purchased nearby land with its clay pits (now Clay Pit Ponds State Park) that provided the superior clay used to produce clay

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10 While no diagnostic artifacts were collected or encountered from the Fairview Prehistoric Site, two hammerstones were recovered beyond the current park boundary, one in the shallow context of a shovel test, the other a surface find (JMA 2000:26, Appendix II; pages 5 and 20 of an unnumbered artifact catalog).

11 See HPI (1996:11-14 and Appendix IX) for detailed discussion of the site area’s archaeological potential and local prehistoric considerations.
products in his Staten Island clay works on the Arthur Kill and in Manhattan. This successful enterprise produced firebricks and other clay products that were distributed nationwide. Kreischer died in 1886 (eight years after his retirement) but his clay works, by then run by his sons, remained in the Kreischer family until 1899. The former Kreischer clay works were destroyed by fire in 1927 and “Fairview” met a similar fate in 1931. The archaeological features addressed here, as remnants of the Kreischer domestic/farm complex, are a vestige of the Kreischer occupation of what is now parkland.

By applying established criteria to identify potentially archaeologically sensitive areas, Milner located the one prehistoric site and six historic-era features addressed here. The identifications made in the current assessment were based on the aforementioned site walkovers and feature measurements. The measurements were then coordinated with those found on a topographical survey issued in 1913 but potentially surveyed prior to 1905, that is, a year before the first of its 91 survey sheets was issued. Measurements indicated on the survey were augmented by scaled measurements as needed. This confirmed the function of two of the features (B2, the platform of a water tower, a component of Balthazar Kreischer’s domestic/farm complex, and C1, the stone foundation of “Fairview,” Kreischer’s home). It also reconsidered the function of three others: B2, originally identified as a cistern but where a soil boring determined it was instead a well that went to unknown depths; C2 identified as a brick shaft feature proved to be the rectangular cellar hole and stone foundation of an appendage to the Kreischer dwelling; and C3, originally identified as a wall of Fairview’s porch, was instead the foundation wall of an extension to the house structure. Only B3, a small, shallow brick shaft feature partially excavated by Milner, remains unidentified. It should be noted that no additional features were located and that no prehistoric or historic-era resources were identified in the park’s activity zone. This is where a multipurpose field, a baseball field, tennis and pickleball courts, bocce courts, horseshoes, adult fitness equipment, and game tables are planned.

Protection of the located archaeological features is a concern as is the safety of those who may venture off designated paths. At this writing, it is expected the shaft features will be filled to the brim with aggregate. This will eliminate the potential danger presented by these somewhat hidden hazards while protecting but not obscuring the resources. In addition, construction documents will alert the contractor to these concerns and dangers. That said, no further archaeological work is recommended although park staff and any future plans should consider the continued protection of these archaeological features and be aware of the potential for prehistoric material. Should presently unknown features or archaeological deposits be encountered in the future, archaeological input should be provided.

The park’s informational sign will inform visitors about Balthazar Kreischer, his home in Fairview Park, his contributions to local history, and his role in the commercial and domestic development of the area once known as Kreischerville.
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Locations of the Kreischer Estate Site and the Fairview Prehistoric Site.
NEW YORK STATE PREHISTORIC ARCHAEOLOGICAL SITE INVENTORY FORM
NYS OFFICE OF PARKS, RECREATION & HISTORIC PRESERVATION
(518) 237-8643

FOR OFFICE USE ONLY—SITE IDENTIFIER________________________

Project Identifier Fairview Park Phase 1B Archeological Survey

Your Name Patrick J. Heaton
Address 1 Croton Point Avenue Croton-on-Hudson, NY 10520
Organization (if any) John Milner Associates, Inc.

1. SITE IDENTIFIER(S) Fairview Prehistoric Site (previously recorded as Canada Hill Site)
2. COUNTY Richmond One of the following: CITY
TOWNSHIP
INCORPORATED VILLAGE
UNINCORPORATED VILLAGE OR HAMLET

3. PRESENT OWNER New York City Department of Parks and Recreation
Address Olmstead Center, Flushing Meadows – Corona Park, Flushing, NY 11368

4. SITE DESCRIPTION (check all appropriate categories):

Site
- Stray Find
- Pictograph
- Burial
- Surface Evidence
- Material below plow zone
- Single component
- Material in plow zone
- Multicomponent

Location
- Under cultivation
- Never cultivated
- Previously cultivated
- Pastureland
- Woodland
- Floodplain
- Upland
- Sustaining erosion

Soil Drainage: excellent _ good _ fair _ poor _
Slope: flat _ gentle _ moderate _ steep
Distance to nearest water from site (approx.) 1500 feet (Mill Creek), 1800 feet (Arthur Kill)
Elevation: 120–125 feet AMSL

5. SITE INVESTIGATION (append additional sheets, if necessary):
Surface—date(s)
- Site map (Submit with form)
- Collection

Subsurface—date(s) Spring 1999, Spring 2000
Testing: shovel _ coring _ other, ____________ unit size
no. of units 15 (Submit plan of units with form)
Excavation: unit size 3-foot-by-3-foot no. of units 2

Investigator John Milner Associates, Inc. (Robert K. Fitts, Principal Investigator)
NEW YORK STATE PREHISTORIC ARCHAEOLOGICAL SITE INVENTORY FORM

FOR OFFICE USE ONLY - SITE IDENTIFIER

Project Identifier Fairview Park Phase 1A Archaeological Survey

Your Name Patrick J. Heatly
Address 1 Groton Point Avenue, Cold Spring, NY 10516
Organization (if any) John Miller Associates, Inc.

1. SITE IDENTIFIER(S) 
Fairview Prehistoric Site (previously recorded as Canandaigua Site)
2. COUNTY Richmond
CITY
TOWNSHIP
INCORPORATED VILLAGE
UNINCORPORATED VILLAGE OR HAMLET

3. PRESENT OWNER New York State Department of Parks and Recreation
Address: 855 Main St., Albany, NY 12207

4. SITE DESCRIPTION (check all appropriate categories):

- Site
  - Stray Find
  - Photograph
  - Burial
  - Surface Evidence
  - Material below plow zone
  - Single component
  - Multi-component

- Location
  - Under cultivation
  - Never cultivated
  - Previously cultivated
  - Pastureland
  - Woodland
  - Floodplain
  - Upland
  - Rolling terrain

- Soil Draining: excellent __ good ___ fair ___ poor ___
- Slope: flat ___ gentle ___ moderate ___ steep
- Distance to nearest water: from site (approx.) 1500 feet (Mill Creek), 1800 feet (Arthur Kill)
- Elevator: 120-125 feet AMSL

5. SITE INVESTIGATION (append additional sheets if necessary):

- Surface data(s)
  - Site map (Sketch in with form)
  - Collection

- Subsurface data(s)
  - Spring 1999, Spring 2000
  - Testing: shovel x, cores __ other __________ unit size:
  - no. of units 15 __________ (Submit plan of units with form)
  - Excavation: unit size __________ 3-foot-by-1-foot __________ 1-foot-by-1-foot __________
  - no. of units 2

Investigator John Miller Associates, Inc. (Robert K. P. Principal Investigator)
SITE DESCRIPTION:

In 1967 the Metropolitan Area Archaeological Survey (MAAS) recorded the location of the “Canada Hill” site (LPC Site 17; NYSM Site 770; OPRHP Site A085-01-0073; Boesch 1994; Williams 1967). A sketch map prepared as a component of the MAAS survey identifies three loci (indicating surface scatters of shell fragments), the westernmost of which appears to be in approximately the same location as the ruins of the Balthasar Kreischer Estate. The OPRHP Archeological Site Inventory Form provides the following information (from Williams 1967):

[Location:] In block bounded by Drumgoole Avenue, Arthur Kill Road, Englewood Avenue, and West Shore Expressway... [Description:] From the surface were recovered a fragment of kaolin pipe, a whelk column, quartz and chert chips, fragments of glazed ceramic, and fire-cracked rock. A light scatter of shell fragments (mostly clam) appeared on surface in areas marked on map. Five shallow test pits were dug, revealing a humus layer of about 2–3 inches, underlain by at least 1.5 feet of red clay... Numerous potholes attest to excavation by persons unknown.

In the Phase 1A report prepared for the proposed Charleston Retail Center, HPI (1996:13) determined that the name attributed to the site during the 1967 MAAS survey was erroneous:

Of the sites identified in the site file search, the site numbered A085.01-0073 and located in the southeast corner of the project site is of interest due to its name. The site is known as “Canada Hill.” The naming of the site as Canada Hill appears erroneous as Canada Hill is located just north of the Staten Island Rapid Transit's Richmond Valley Station (Morris 1898:378; personal conversation with Edward Johnson, Curator of Natural Science, SIIAS; personal conversation with Raymond Matarazzo, Assistant Curator of Natural Science, SIIAS). Despite the problems with the site’s name, the location of it inside the limits of the proposed construction accentuates the prehistoric potential of the project site.

Based on the location information provided in the HPI report, it appears that the actual location of “Canada Hill” (the landform) is approximately one-half mile south-southeast of the Kreischer Estate/Fairview Park Project Area, within the area bounded on the north by the Richmond Parkway/Outerbridge Crossing Toll Plaza, on the south by Amboy Road, and on the west by Page Avenue. Historical sources refer to the rise that the Kreischer Estate (and Fairview Park) is located on as Kreischer’s Hill.

During the Phase 2 archeological investigations at the Kreischer Estate site (JMA 2000), prehistoric artifacts were recovered from test units located southeast of the foundation remains of the main house at the Kreischer Estate Site. Phase 2 fieldwork resulted in the recovery of numerous artifacts related to stone tool production. No diagnostic artifacts were recovered. Although most of the prehistoric material came from within a small 60-foot-by-40-foot area southeast of the remains of the main estate house, small quantities of prehistoric material were also recovered northwest and east of that location. The distribution of recovered materials suggests that the site may at one time have occupied the entire knoll, but was disturbed by the construction of the Kreischer mansion. Although the prehistoric site appears to have been partially disturbed by the nineteenth-century occupation of the site, the limited testing done by JMA suggests that at least portions of the site retain sufficient integrity to contribute important archeological data.

JMA believes that the prehistoric materials from the Kreischer Estate recovered during the 1999-2000 Phase 2 fieldwork represent one of the loci previously reported as the “Canada Hill” site. To avoid future confusion regarding site location and place names, JMA refers to this site as the Fairview Prehistoric Site.

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Note: The soil boring log for the well is identified as "WELL." B-12, also documented in a soil boring log, was located approximately 15 feet (4.6 m) northeast of the well (Tim Pace of Matrix New World Engineering; e-mail April 8, 2016)
FAIRVIEW PHASE 2 SURVEY APPENDIX C  Well Soil Boring Location

- park boundary
- well soil boring
- X B-12 (approx.)
## BORING LOG

### BORING NO.: Well

### SHEET 1 OF 2

**PROJECT NO.:** 14-602  
**PROJECT:** Fairview Park  
**DATE:** 4/08/16 - 4/08/16

**PROJECT LOCATION:** Staten Island, New York 10309  
**BORING LOCATION:** Woods (next to B-12)

**DRILLING EQUIPMENT:** CME 850 XR  
**ANGLE:** -90.0°  
**DIR.:**  
**ELEV.:**  
**DATUM:** Site Datum

**DRILLING CONTRACTOR:** Craig Test Boring Co. Inc.  
**DRILLER:** Eric Delmeier  
**INSPECTOR:** Tim Pace

### CASING and HAMMER

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<th>Drop</th>
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<td>3/8&quot;</td>
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</tr>
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<td>AUTO</td>
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<td>140 lbs</td>
<td>30&quot;</td>
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### SAMPLER and HAMMER

### GROUNDWATER LEVELS

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### Depth | CASING | SAMPLE | Description Of Material | Laboratory Tests

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</tr>
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- **S-1:** SS 7-9 1-WH-1-WH (0)  
  S-1: No Recovery (Leaves)
- **S-2:** SS 9-11 2-1-2-1 (21)  
  S-2: Dark Brown SILT, trace wood, trace bricks, trace mortar, dry (FILL/ML)
- **S-3:** SS 11-13 1-1-2-2 (25)  
  S-3: Dark Brown SILT, some mortar, trace bricks, dry (FILL/ML)
- **S-4:** SS 13-15 1-2-3-3 (26)  
  S-4: Same as Above, dry (FILL/ML)
- **S-5:** SS 15-17 3-3-2-2 (13)  
  S-5: Same as Above, dry (FILL/ML)
- **S-6:** SS 17-19 2-2-1-1 (25)  
  S-6: Dark Brown SILT, some mortar, trace bricks, trace glass, wet (FILL/ML)
- **S-7:** SS 19-21 3-1-2-3 (33)  
  S-7: Same as Above, wet (FILL/ML)
- **S-8:** SS 21-23 3-3-6-3 (50)  
  S-8: Same as Above, wet (FILL/ML)
- **S-9:** SS 23-25 2-1-3-1 (100)  
  S-9: Light Brown fine SAND, some Silt, trace bricks, trace ceramic, trace glass, dry (FILL/SM)
## BORING LOG

**BORING NO.:** Well  
**PROJECT NO.:** 14-602  
**PROJECT:** Fairview Park  
**DATE:** 4/08/16 - 4/08/16

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<td>SS</td>
<td>1-3-1-2 (50)</td>
<td>S-10: Dark Brown SILT, trace bricks, trace glass, dry (FILL/ML)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>S-11</td>
<td>SS</td>
<td>3-2-2-3 (50)</td>
<td>S-11: Same as Above, dry (FILL/ML)</td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>S-12</td>
<td>SS</td>
<td>1-1-2-2 (58)</td>
<td>S-12: Same as Above, dry (FILL/ML)</td>
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Bottom of Borehole @ 31 ft.
# BORING LOG

**Boring No.:** B-12  
**Sheet 1 of 2**

**Project No.:** 14-602  
**Project:** Fairview Park  
**Date:** 4/08/16 - 4/08/16

**Project Location:** Staten Island, New York 10309  
**Boring Location:** Woods

**Drilling Equipment:** CME 850 XR  
**Angle:** -90.0  
**Dir.:** -----  
**Elev.:** -----  
**Datum:** Site Datum

**Drilling Contractor:** Craig Test Boring Co., Inc.  
**Driller:** Eric Delmeier  
**Inspector:** Tim Pace

## Casing and Hammer

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<th>Sample</th>
<th>Blows/foot</th>
<th>Blows/6&quot; (REC, %)[RCD %]</th>
<th>Description of Material</th>
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<td>Push 1</td>
<td>S-1 SS</td>
<td>2-1-3-4 (54)</td>
<td>S-1: Red-Brown Silt, little fine sand, trace roots, wet (ML)</td>
<td></td>
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<tr>
<td>S-2 SS 2-4</td>
<td>Push 10</td>
<td>S-2 SS</td>
<td>6-9-9-14 (100)</td>
<td>S-2: Same as Above, wet (ML)</td>
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<tr>
<td>S-3 SS 4-6</td>
<td>Push 60</td>
<td>S-3 SS</td>
<td>12-12-13-15 (58)</td>
<td>S-3: Red-Brown Silt, some mф Sand, trace gravel, wet (ML)</td>
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<tr>
<td>S-4 SS 6-8</td>
<td>Push 60 MUD</td>
<td>S-4 SS</td>
<td>19-15-20-15 (100)</td>
<td>S-4A (Top 18}): Same as Above, wet (ML)</td>
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<tr>
<td>S-5 SS 8-10</td>
<td>Push 10</td>
<td>S-5 SS</td>
<td>20-16-11-10 (100)</td>
<td>S-4B (Bottom 6&quot;) : Light Brown mф SAND, little Silt, trace Gravel, dry (SM)</td>
<td></td>
</tr>
<tr>
<td>S-6 SS 10-12</td>
<td>Push 10</td>
<td>S-6 SS</td>
<td>11-10-10-10 (100)</td>
<td>S-5: Same as Above, dry (SM)</td>
<td></td>
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<tr>
<td>S-7 SS 15-17</td>
<td>Push 15</td>
<td>S-7 SS</td>
<td>5-6-8-9 (67)</td>
<td>S-7: Light Brown mф SAND, little Silt, dry (SM)</td>
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<td>S-8 SS 20-22</td>
<td>Push 20</td>
<td>S-8 SS</td>
<td>5-8-9-10 (67)</td>
<td>S-8: Same as Above, dry (SM)</td>
<td></td>
</tr>
<tr>
<td>25 MUD</td>
<td>Push 25</td>
<td>MUD</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

**Laboratory Tests**
<table>
<thead>
<tr>
<th>Depth (Elev.)</th>
<th>CASING</th>
<th>No.</th>
<th>Type</th>
<th>Sample</th>
<th>Blows/&quot; (REC, %) [RQD %]</th>
<th>Description Of Material</th>
<th>Laboratory Tests</th>
</tr>
</thead>
<tbody>
<tr>
<td>35</td>
<td>S-10</td>
<td>SS</td>
<td>30-32</td>
<td>13-13-15-16 (50)</td>
<td>S-10A (Top 5*: Light Brown mf* SAND, trace Silt, wet (SP-SM) S-10B (Bottom 7*: Gray-Brown fine SAND, trace Silt, dry (SP-SM)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>40</td>
<td>S-12</td>
<td>SS</td>
<td>40-42</td>
<td>9-9-11-10 (67)</td>
<td>S-12: Same as Above, dry (ML)</td>
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</tr>
<tr>
<td>45</td>
<td>MUD</td>
<td>S-13</td>
<td>SS</td>
<td>45-47</td>
<td>8-10-11-11 (71)</td>
<td>S-13: Gray-Brown fine SAND, some Silt, trace Gravel, dry (SM)</td>
<td></td>
</tr>
</tbody>
</table>

4" Casing to 5 feet bgs Bottom of Borehole @ 47 ft.