Potomac Yard Property

City of Alexandria, Virginia

WSSI #21486.08

Geoarcheological Investigations of a Portion of Landbay G

August, 2011
Revised September 2011

Prepared for:
RP MRP Potomac Yard LLC
3050 K Street, NW, Suite 125
Washington, D.C. 20007

Prepared by:
Craig Rose, M.A.

Thunderbird Archeology
A Division of Wetland Studies and Solutions, Inc.®

5300 Wellington Branch Drive, Suite 100
Gainesville, Virginia 20155
Tel: 703-679-5600 Email: contactus@wetlandstudies.com
www.wetlandstudies.com

ABSTRACT

An archeological study to evaluate the potential for the recovery of significant archeological resources was conducted within a portion of Landbay G, located within the Potomac Yard property in the City of Alexandria, Virginia. The study followed a Scope of Work approved by Alexandria Archaeology. The work was carried out in July of 2011 by Thunderbird Archeology, a division of Wetland Studies and Solutions, Inc., of Gainesville, Virginia for MRP Realty of Washington, D.C. The soil analysis was conducted by Craig Rose, M.A. and Tammy Bryant, M.A.

Archeological test boring within the Area of Potential Effect (APE) confirmed that much of the original landscape has been altered, presumably by the establishment and dismantling of the Potomac Yard facility. Although the boring indicated one location where a buried ground surface may be present, it was confined to a small geographic area, and due to the truncated and deflated appearance of the soils in the test bore, the probability of locating significant archeological resources within this isolated area is minimal.

No further archeological work is recommended for this portion of Landbay G or within the remainder of Landbay G.

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INTRODUCTION

This report presents the results of exploratory archeological soil boring within a portion of Landbay G, located within the Potomac Yard property in the City of Alexandria, Virginia (Exhibit 1). Landbay G is located immediately south of the Potomac Yard Shopping Center and is situated between Potomac Avenue and Route 1. Following the recommendations from the 2007 Resource Management Plan for Potomac Yard, only the northeastern portion of Landbay G was subjected to testing (Mullen and Breckenridge 2007). This portion of Landbay G, defined in this study as the Area of Potential Effect (APE), measured approximately 500 by 200 feet (see Exhibit 1). East Glebe Road bisects the APE from west to east and Potomac Avenue forms the eastern boundary of the APE.

Thunderbird Archeology, a division of Wetland Studies and Solutions, Inc., of Gainesville, Virginia, conducted the studies described in this report for MRP Realty of Washington, D.C. John P. Mullen, M.A., RPA served as Principal Investigator on this project and Craig Rose, M.A conducted the field investigations. The soil boring was conducted by Connelly & Associates Drilling Services, of Frederick, Maryland, under contract to Wetland Studies and Solutions, Inc.

The purpose of the survey, which was conducted in July of 2011, was to determine the presence/absence of buried surfaces which could yield significant prehistoric and historic archeological resources, and to define the horizontal extent of any buried surfaces discovered. This study is in compliance with the City of Alexandria Archaeological Protection Code and followed a Scope of Work approved by Alexandria Archaeology (Appendix I). The final repository for all field data resulting from this project will be the Alexandria Archaeology Museum, Alexandria, Virginia.

ENVIRONMENTAL SETTING

The APE lies within the Coastal Plain, which is underlain by sediments that have been carried from the eroding Appalachian Mountains to the west, and includes layers of Jurassic and Cretaceous clays, sands and gravels. These are overlain by fossiliferous marine deposits, and above these, sands, silts and clays continue to be deposited. The Coastal Plain is the youngest of Virginia's physiographic provinces and elevations range from 0 to 200/250 feet above sea level (a.s.l.). It is characterized by very low relief broken by several low terraces. The Province runs west to the Fall Line, a low escarpment at circa 200 feet a.s.l., which formed where the softer sedimentary rocks of the Coastal Plain abut the more resistant rocks of the Piedmont. Where rivers cross this juncture, rapids or falls have developed.

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Area of Potential Effect (APE)

Landbay G

Vicinity Map
Landbay G (Potomac Yard)
WSSI #21486.08
Scale: 1" = 2000'

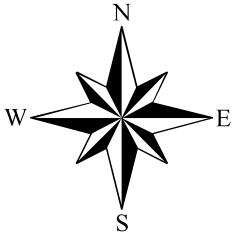

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Exhibit 1

Landbay G and the larger Potomac Yard property are situated along low terraces overlooking the Potomac River to the east (Exhibit 2). Four Mile Run empties into the Potomac River along the northern boundary of the yard, although the course and flow of this tributary has been altered by development. Over the years, much of the original topography in the vicinity of the APE has been modified – cut and/or filled – by the development of Potomac Yard.

The 1861 Boschke map of the District of Columbia shows the APE at the head of a small ravine, near the boundary of a wooded area (Exhibit 3). The wooded area just north of the project area is the only inland wooded area depicted on this portion of the Boschke map and probably indicates that the area surrounding the site was originally marshy. According to Jim Foley, a former Potomac Yard employee and historian (personal communication 2006), this "sloping land mass down to the back washes and tidal marshes of Dangerfield's Island" was filled during the construction of the Potomac rail yard.

A Christopher Consultants Ltd. map that depicts which areas had been cut and filled during the construction of Potomac Yard confirms Foley's description (see Appendix I, SOW Exhibit 1).

The APE, or portion of Landbay G under investigation, is situated northwest and southwest of the intersection of East Glebe Road and Potomac Avenue. The area is currently a gravel parking area used for equipment storage and maintenance (Plates 1 and 2).

METHODOLOGY

The boring was conducted using the Geoprobe® Model 7720DT, a high-capacity direct push machine that collected 5 foot soil samples within a plastic tube liner, allowing for easy continuous sampling and recording of the soil profile (see Plates 1 and 2). The testing interval and strategy were established in consultation with Alexandria Archaeology (see Appendix I) and consisted of testing at 100 foot intervals across the APE. The testing interval was reduced to 50 feet to refine the limits of potential buried ground surfaces. According to the 2008 Scope of Work, the bores were to be excavated to the shallower of the projected depth of the historic surface or to the depth of the planned construction impact. At the time of the present study, the current grade within the APE was roughly equivalent to the historic elevation; however, the test bores were excavated to a depth of at least ten feet below the current grade.

Soil profiles were recorded with soil descriptions noted in standard soil terminology (A, Ap, B, C, etc.). Soil colors were described using the Munsell Soil Color Chart designations. The location of each bore was mapped and documented.

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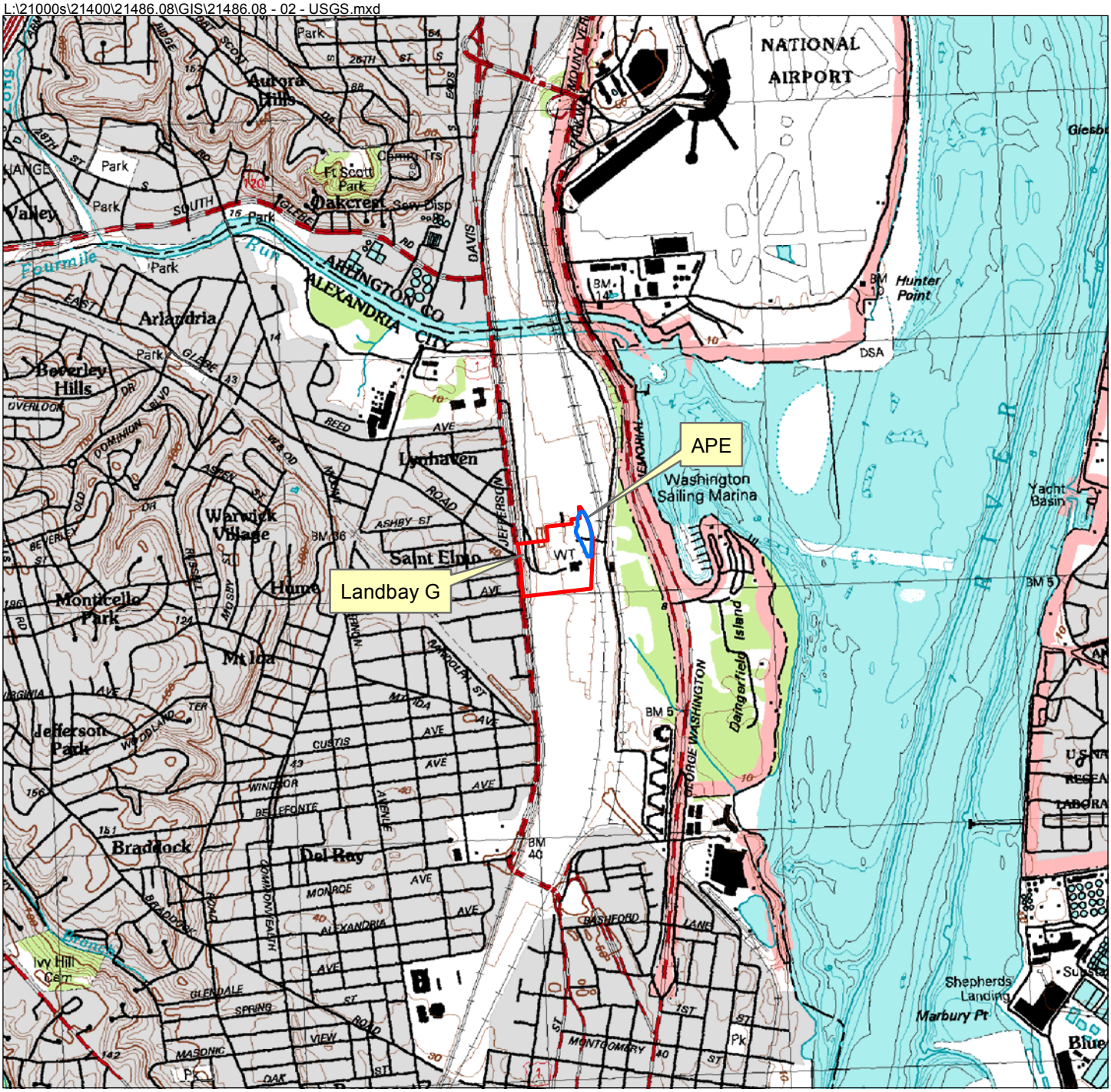

Area of Potential Effect (APE)

Landbay G

USGS Quad Map
Alexandria, VA-DC-MD 1994
Landbay G (Potomac Yard)
WSSI #21486.08
Scale: 1" = 2000'

N
W E
S

Latitude: 38°49'55" N
Longitude: 77°02'57" W
Hydrologic Unit Code (HUC): 020700100301
Stream Class: II
Name of Watershed: Potomac River-Fourmile Run
COE Region: Atlantic and Gulf Coastal Plain

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Exhibit 2

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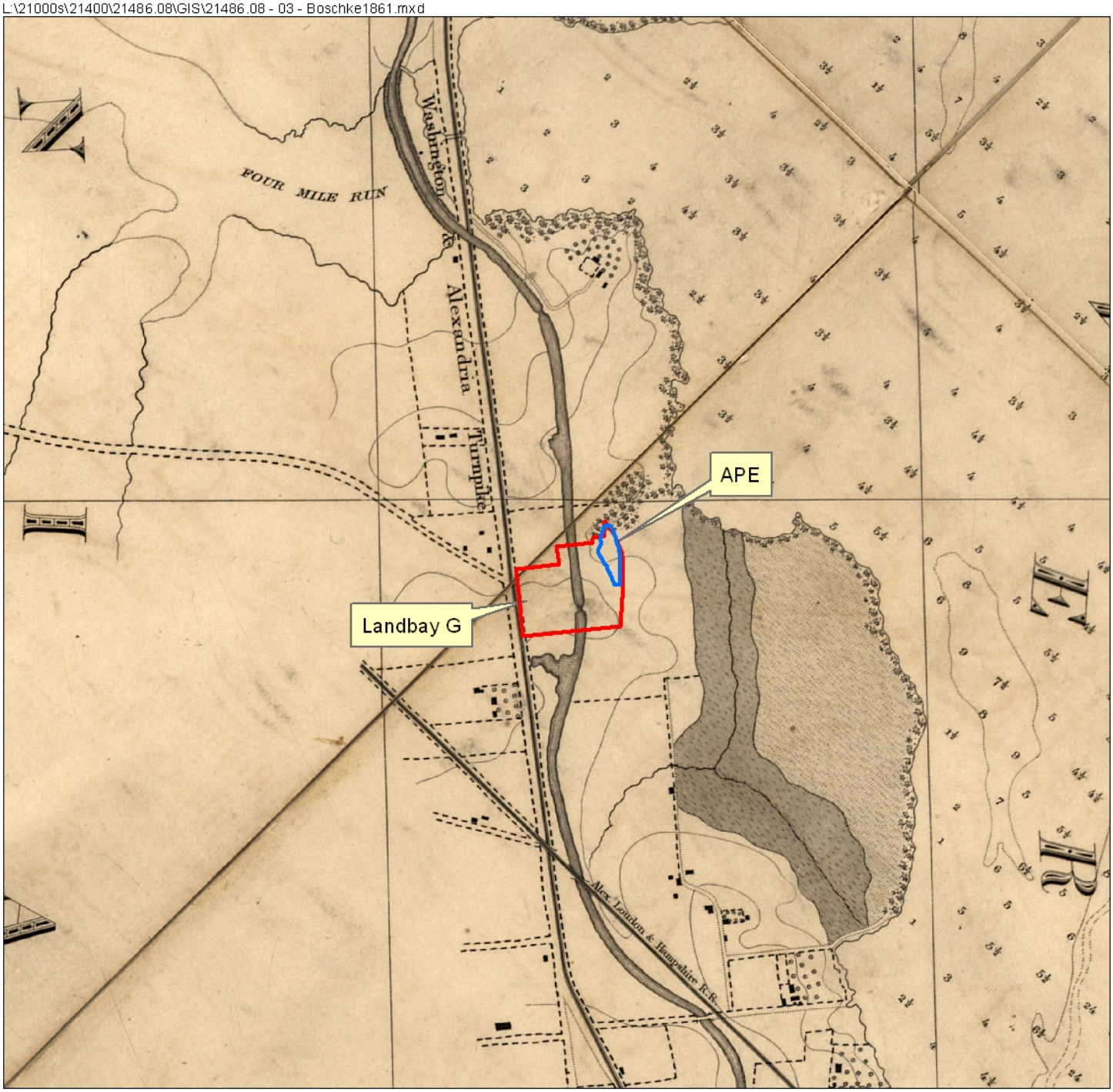

Area of Potential Effect

Landbay G

1861 A. Boschke Map
Washington, District of Columbia
Landbay G (Potomac Yard)
WSSI #21486.08
Scale: 1" = ¼ mile

N
W E
S

Map Source: "Topographical map of the District of Columbia. Surveyed in the years 1856 '57 '58 & '59 by A. Boschke". 1861. Library of Congress Geography and Map Division Washington, D.C. Original Scale: 1:15,840

RESEARCH EXPECTATIONS

In general, the "in-filled areas" in the eastern half of Potomac Yard were assessed with a moderate to high probability of containing intact archeological resources because the 20th century disturbance in this area consisted of infilling, rather than down-cutting. Archeological investigations within the "in-filled areas" of Landbay G were recommended in the 2007 Resource Management Plan for Potomac Yard, if construction was proposed to impact the 30-35 foot elevation contours.

The very edge of one terrace along the eastern half of Landbay G may have survived and been buried under fill deposits. Historic maps (circa 1860s) show the extreme northeastern corner of the Landbay was wooded (see Exhibit 3). The trees and the topography suggest a possible drainage leading down to the Potomac River; therefore, any undisturbed portion of this terrace would have a moderate to high probability for containing archaeological resources, particularly prehistoric. However, the level of 20th century disturbance in this area from the establishment and dismantling of the Potomac Yard facility may have lowered the likelihood of any intact significant archeological resources.

RESULTS OF FIELD INVESTIGATIONS

A total of nine (9) test bores were planned at 100 foot intervals within the APE; however, 14 test bores were actually excavated within the APE (Exhibit 4). Only the southernmost stake, planned for a boring location, was extant in the southern half of the project area; this was present at an elevation of 35.85 feet. All test bores were excavated into sterile subsoil and varied between 8.8 and 13.4 feet in depth. The detailed soil profiles from each of the test bores can be found in Appendix II.

The majority of the soil bore profiles (12 of 14) revealed fill horizons which overlay subsoil; no buried land surfaces were located in these test bores. However, a potentially buried ground surface was located within two locations (Test Bores 1 and 6), which were separated by approximately four hundred feet (see Exhibit 4). Additional bores were excavated at 50 foot intervals around these two locations. Subsequent examination of the soils revealed that only the first test bore, located south of East Glebe Road, exhibited a truncated buried surface (Table 1 and see Exhibit 4).

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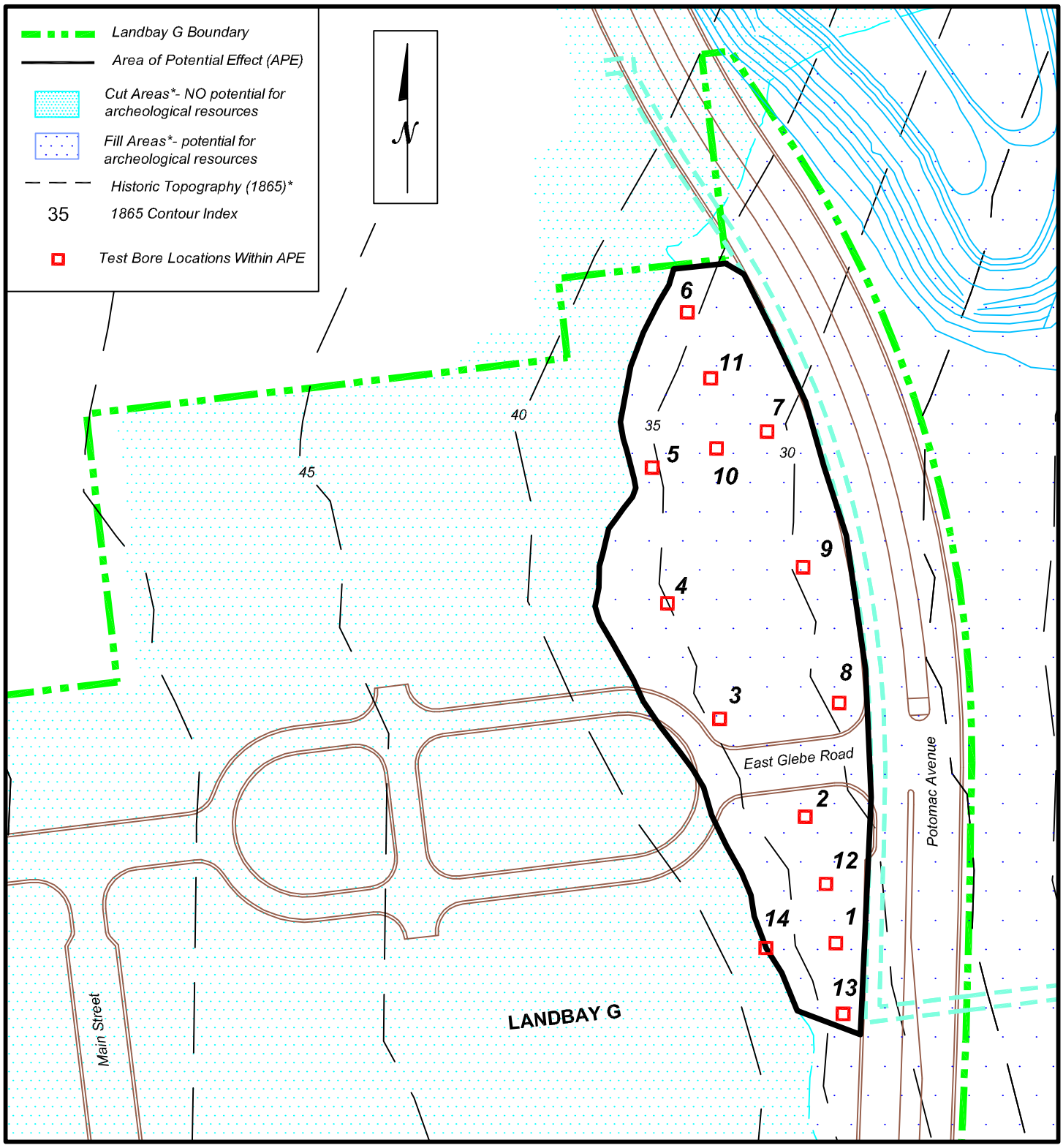

Location of Test Bores Within APE
Potomac Yard - WSSI #21486.08
Scale: 1" = 100'

**Select data extracted from Christopher Consultants Ltd. digital file overall-CUTFILL.dwg. Received 12-15-06*

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Exhibit 4

Table 1: Test Bore 1

Depth (feet)	Soil Horizon	Soil Description
0 – 4.0	Various fills	Crushed asphalt, cinder, silt and gravel fills
4.0 – 5.2	Ab/Apb?	[10YR 4/3] brown sandy loam with water sheeting, truncated
5.2 – 11.8	B horizon	[7.5YR 4/6] strong brown clay with [5Y 4/1] dark gray sandy clay mottles

Analysis of the soil columns revealed truncation of the natural subsoil strata in several bores from grading activities. Evidence of poor drainage was also noted in a number of the profiles.

RECOMMENDATIONS

Archeological test boring within portions of Landbay G confirmed that much of the original landscape has been altered presumably by the establishment and dismantling of the Potomac Yard facility. No further work is needed within these disturbed areas. A possible buried historic surface was located in one isolated location, but due to the truncated and deflated appearance of the soils in one of the bores, the probability of locating significant archeological resources within this area is minimal.

No further archeological work is recommended for the APE or within the remainder of Landbay G.

REFERENCES CITED

Mullen, John P. and Curt Breckenridge
2007 *Archeological Resource Management Plan for the Potomac Yard Property, Alexandria, Virginia.* Report prepared for Potomac Yard Development, L.L.C of Alexandria, Virginia by Thunderbird Archeology, a division of Wetland Studies and Solutions, Inc. of Gainesville, Virginia.

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PLATES

PLATE 1
Existing Conditions within the APE of Landbay G, Facing South

PLATE 2
Existing Conditions within the APE of Landbay G,
Looking North From East Glebe Road

PLATE 3
Overview Near Potomac Avenue Showing Geoprobe® Model 7720DT Used During Testing, Looking South

PLATE 4
Overview of Testing within Southern Portion of APE, Looking North

APPENDIX I

Scope of Work

Scope of Work
for an Archaeological Evaluation of
Landbay G (Potomac Yard Town Center)
Alexandria, Virginia

August 14, 2008

Introduction

The goal of this scope of work is to determine if significant archaeological resources are present within the project area. Historical resources that were present within the project area include the Alexandria Canal; the Alexandria & Washington Railroad; the Washington & Alexandria Turnpike; and the Washington and Ohio Junction Station. Previous archival work[1] suggested that these historic resources were all located within the portions of the project area where significant grading is thought to have occurred. These graded areas have little archeological potential and no work was recommended (Exhibit 1).

The project area is located along terraces of the Potomac River, situated above the marshes and tributaries of Daingerfield Island. This environment would have been attractive to Native American populations; therefore, this area has a moderate to high probability for locating prehistoric archeological resources. The previous archival work suggested that the eastern edge of the project area had been historically filled during the construction of Potomac Yard (see Exhibit 1). It is possible that the remnants of the buried terraces could contain archaeological resources that could provide insight into Native American activities prior to the arrival of Europeans and archeological work was recommended. However, the level of 20th century disturbance from the construction and decommissioning of the Yard is unknown.

A Contextual Study and Resource Management Plan have been completed for the entire Potomac Yard property. This Scope of Work is for conducting the Archaeological Investigations. If a significant site or sites are discovered as a result of the field work, the sites must be registered with the Virginia Department of Historic Resources.

All aspects of this investigation will adhere to OSHA regulations and will comply with the *City of Alexandria Archaeological Standards* dated January 1996 and the *Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation.* Miss Utility must be informed before excavations are made.

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[1] *Resource Management Plan for the Potomac Yard Property, Landbays E, G, H, I, J, K, L, and M, City of Alexandria, Virginia,* Mullen and Breckenridge March 2007 (Revised November 2007; Exhibits Revised April 2008).

Archaeological Evaluation - *Geomorphological Assessment*

The archeological excavation plan will consist of the excavation of nine (9) test bores at 100-foot intervals within the area of archeological potential as depicted in Exhibit 2. The test bore interval will be reduced to 50 feet, at the discretion of the archaeologist, in order to refine the limits of the buried ground surface if located. The maximum number of bores will not exceed twenty-five (25).

The purpose of the geomorphological testing will be to locate intact prehistoric ground surfaces beneath the historic fills. The drilling operation will utilize a split spoon continuous sample in order to visually inspect all soils excavated. The testing strategy and interval was established in consultation with Pam Cressey, Alexandria City archaeologist.

If the event that a buried ground surface is encountered, additional work may be needed to assess the significance of the findings. Decisions regarding the significance and the need for additional testing will be made in consultation with Alexandria Archaeology.

Archival Research

If required, the parameters of the additional archival and historic research will be determined in consultation with Alexandria Archaeology after the testing has been completed.

Laboratory Work and Curation

Although it unlikely that archeological artifacts will be recovered from the test borings; any recovered artifacts will be cleaned, stabilized (if necessary), cataloged, labeled and packaged in accordance with the guidelines set forth in the *City of Alexandria Archaeological Standards*.

At the conclusion of the project, all original photographs, negatives, slides, digital images, videotapes, copies of historical documents, field notes and forms (original copy and a duplicate copy), other field records, as well as the artifacts if they are to be donated to the City, will be delivered to Alexandria Archaeology. Archaeological collections recovered as a result of the Alexandria Archaeology Resource Protection Code must be curated at a facility which meets Federal standards for archaeological curation and collections management as described by 36CFR Part 79. The Alexandria Archaeology Storage Facility meets these standards, and the property owner is encouraged to donate the artifact collection to the City for curation. The archaeological consultant is responsible for arranging for the donation of the artifacts with the owner and will deliver the artifacts and signed forms to the appropriate storage facility.

Archaeological Evaluation Report

The Archaeological Evaluation Report will include, but not be limited to the following: a public summary; the results of any additional archival and documentary research (if needed); a map of the project area; a map with testing locations; a summary of the procedures; results of the field investigation and an integration of the field and analysis data with the historical record. If any archeological artifacts are recovered, the report will include artifact analysis and a distribution map or other graphics which indicate potentially significant archaeological areas.

If the investigation results in the discovery of features that require additional archaeological work, the Archaeological Evaluation Report will include a Resource Management Plan. The Resource Management Plan will present a strategy, scope of work (including a map indicating locations of proposed work in relation to completed tests).

All archaeological sites discovered will be registered with the Virginia Department of Historic Resources and copies of the registration forms will be submitted to Alexandria Archaeology.

When the fieldwork is completed, one copy of the full Archaeological Evaluation Report will be submitted to Alexandria Archaeology as a draft for review. However, if further archaeological investigations are necessary, the evaluation report can be a letter report to accompany the Resource Management Plan with the final report produced after all field work is completed.

Once the report is approved by the City Archaeologist, revisions will be made, and four copies of it, one unbound with original graphics, will be submitted to Alexandria Archaeology. The report will also be submitted on a CD. All site maps and drawings must be inked or computer-generated so as to produce sharp and clear images that will result in clear photocopies or microfilms.

Public Interpretation

The *City of Alexandria Archaeological Standards* require that a public summary be prepared as part of an Archaeological Evaluation Report. The public summary will be approximately 4 to 8 pages long with a few color illustrations. This should be prepared in a style and format that is reproducible for public distribution and use on the City's web site. Examples of these can be seen on the Alexandria Archaeology Museum website. A draft of the summary should be submitted to Alexandria Archaeology for review along with the draft of the Archaeological Evaluation Report. Upon approval, a master copy (hard copy as well as on CD or computer disk) will be submitted to Alexandria Archaeology. The summary and graphics should also be e-mailed to Alexandria Archaeology for publication on our web site.

Tasks

The following is a summary of the tasks to be completed:

1. Obtain archeological certification from City of Alexandria.

2. Notify Alexandria Archaeology of the field work start date. Conduct the field investigation. Alexandria Archaeology staff will conduct site inspections throughout the course of the field work to facilitate decision making regarding number and placement of units.

3. Process all significant artifacts and complete the analysis.

4. Produce and submit one draft Archaeological Evaluation Report to Alexandria Archaeology, including the public summary document. If further archaeological investigations are necessary, the evaluation report can be a letter report to accompany the Resource Management Plan with the final report produced after all field work is completed.

5. Deliver to Alexandria Archaeology four bound copies and one unbound copy, plus a CD of the final report, final versions and CDs of the public summary and historic marker text and graphics, plus all field notes, copies of historic documents, photographs, slides, digital images, cassette tapes, transcriptions, forms and associated records.

6. In addition, arrange for the donation and delivery of the artifacts to an appropriate storage facility. Alexandria Archaeology is the preferred repository and requires a City of Alexandria Deed of Gift form.

<u>Formats for Digital Deliverables:</u>

1. Photographs:	.jpg.
2. Line Drawings:	.gif or .jpg as appropriate.
3. Final Report/Public Summary	Word, PageMaker and/or PDF
4. Oral History	Word
5. Catalogue:	Word, Access or Excel
6. Other Written material:	Word, Access, Excel, PageMaker or PDF as appropriate

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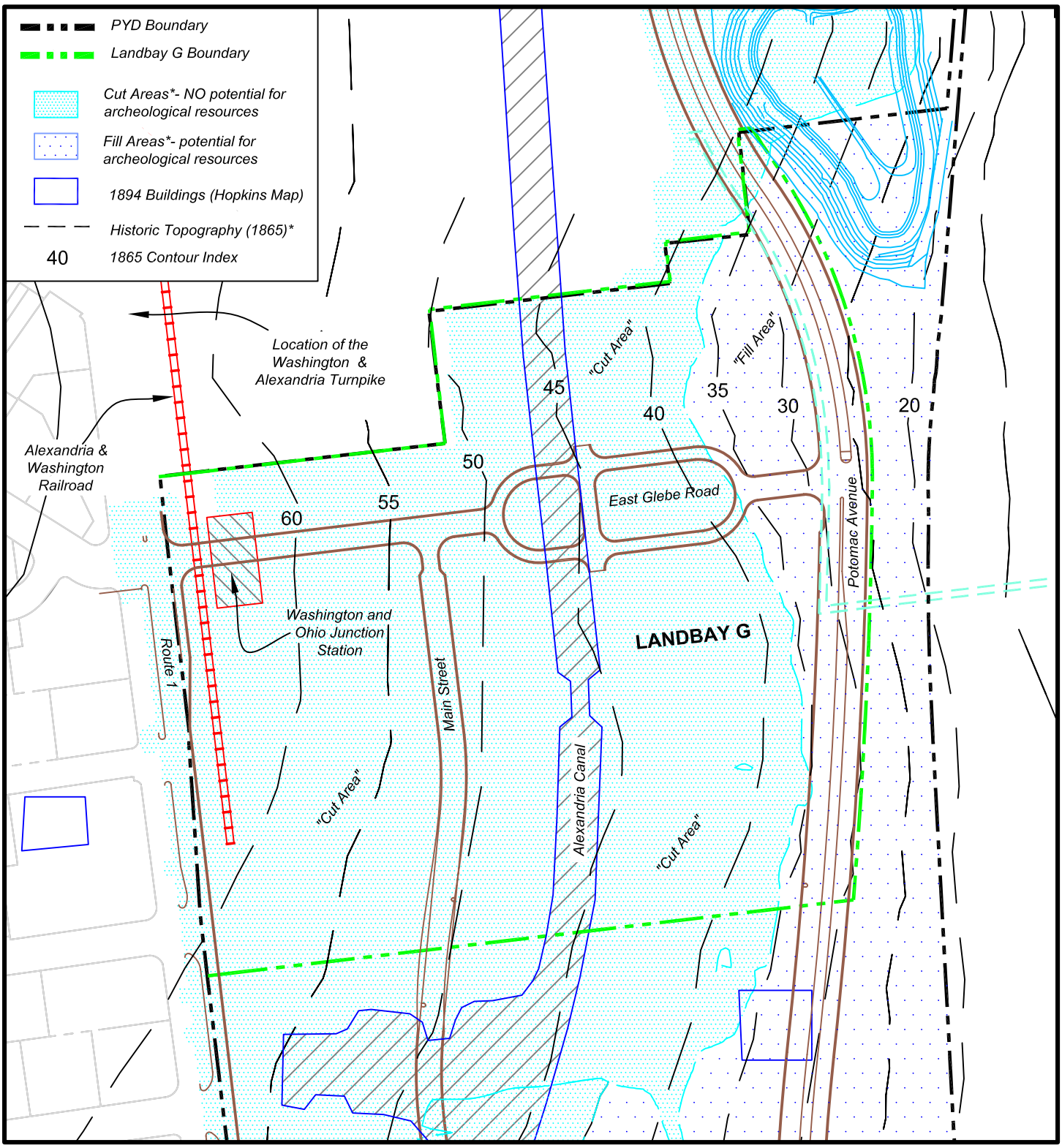

LANDBAY G: Projected Historic Resources and CUT/FILLED Areas
Potomac Yard - WSSI #21486.05
Scale: 1" = 200'

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Exhibit 1

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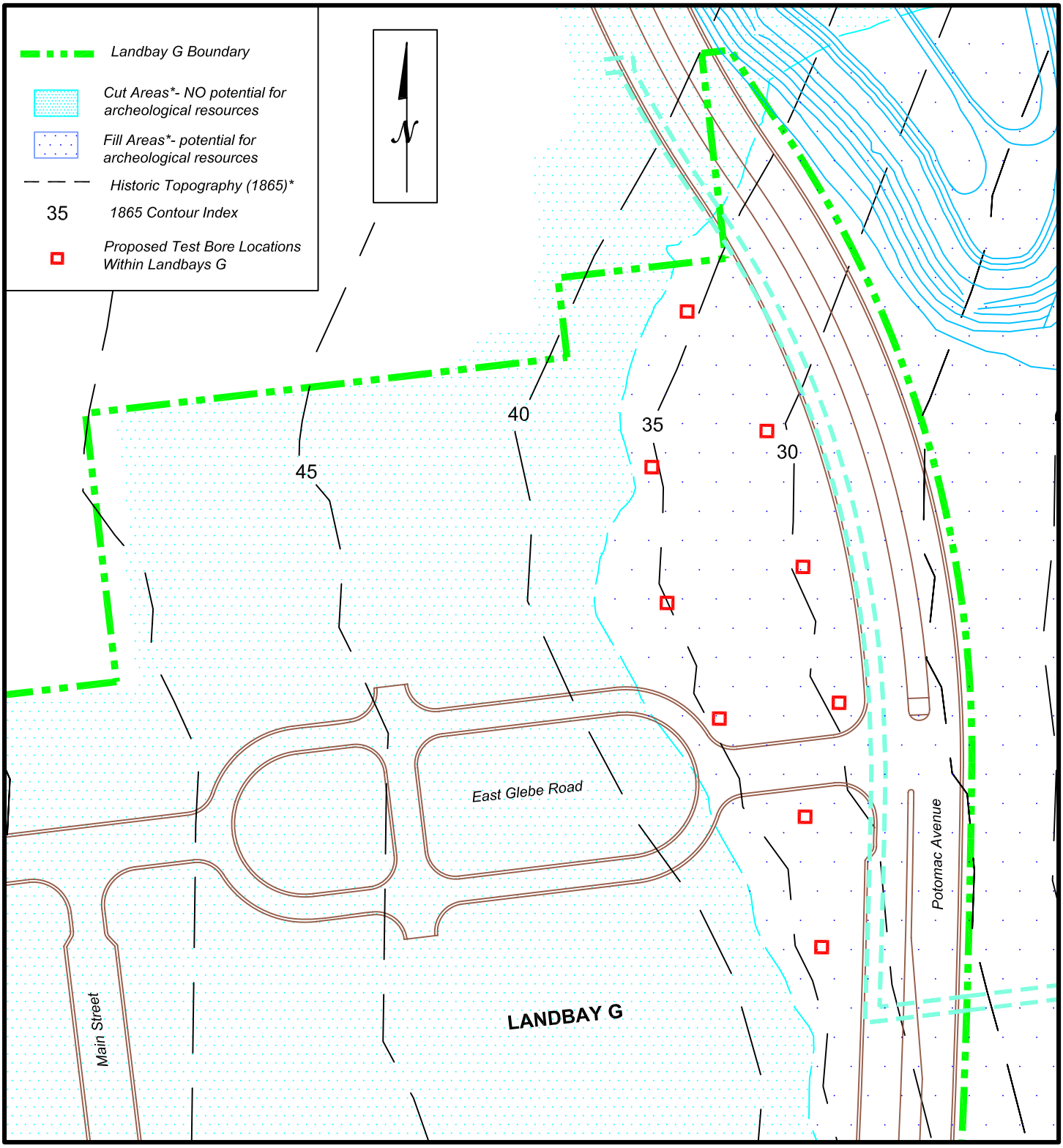

LANDBAY G: Proposed Location of Test Bores
Potomac Yard - WSSI #21486.05
Scale: 1" = 100'

**Select data extracted from Christopher Consultants Ltd. digital file overall-CUTFILL.dwg. Received 12-15-06*

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Exhibit 2

APPENDIX II

Soil Profiles

Test Bore Profiles

Test Bore # 1

Depth (feet)	Soil Horizon	Soil Description
0-3.0	Fill	Various fills
3.0-3.3	Fill	[5YR 7/1] light gray ashy silt
3.3-4.0	Fill	[7.5YR 6/2] pinkish gray mottled with [7.5YR 5/4] brown sandy clay
4.0-4.8	Fill	[10YR 2/2] very dark brown loam with wood, slag and coal - likely railroad fill
4.8-5.2	Ab/Apb?	[10YR 4/3] brown sandy loam with water sheeting, truncated
5.2-11.8	B	[7.5YR 4/6] strong brown clay loam with [5Y 4/1] dark gray sandy clay

Test Bore # 2

Depth (feet)	Soil Horizon	Soil Description
0-1.8	Fill	[10YR 5/2] grayish brown clay
1.8-2.0	Fill	[10YR 6/8] brownish yellow sandy clay
2.0-4.0	Fill	[10YR 4/3] brown sandy clay
4.0-5.0	Fill	[10YR 5/2] grayish brown sand
5.0-7.0	Fill	[7.5YR 4/6] strong brown sandy clay
7.0-9.2	Fill	[10YR 5/2] grayish brown sand
9.2-10.6	B (Subsoil)	[7.5YR 4/6] strong brown clay loam with [5Y 4/1] dark gray sandy clay mottles
10.6-11.1		[10YR 6/3] pale brown sand
11.1-11.4	B (Subsoil)	[7.5YR 4/6] strong brown clay loam with [5Y 4/1] dark gray sandy clay mottles
11.4-11.6		[10YR 6/3] pale brown sand
11.6-11.9	B (Subsoil)	[7.5YR 4/6] strong brown clay loam with [5Y 4/1] dark gray sandy clay mottles

Test Bore # 3

Depth (feet)	Soil Horizon	Soil Description
0-4.5	Fill	Various fills
4.5-5.2	Fill	Mixture of coal, ash, cinders within a gravelly sand substrate
5.2-5.7	Fill	[7.5YR 4/1] dark gray clay loam
5.7-6.5	Fill	[7.4YR 4/6] strong brown clay
6.5-7.4	Fill	[7.5YR 4/1] dark gray sandy gravel with coal and slag - likely railroad fill
7.4-9.4	B (Subsoil)	[7.5YR 4/6] strong brown clay loam with [5Y 4/1] dark gray sandy clay mottles
9.4-9.7		[7.5YR 5/1] gray sand
9.7-11.5	B (Subsoil)	[7.5YR 4/6] strong brown clay loam with less [5Y 4/1] dark gray sandy clay mottles

Test Bore # 4

Depth (feet)	Soil Horizon	Soil Description
0-4.3	Fill	Various fills
4.3-5.5	Fill	[7.5Yr 4/1] dark gray gravelly sand with coal and slag
5.5-5.7	Fill	Layer of crushed quartz gravel
5.7-8.0	B (Subsoil)	[7.5YR 4/6] strong brown clay loam with [5Y 4/1] dark gray sandy clay mottles
8.0-8.2		[7.5YR 6/3] light brown sand
8.2-11.4	B (Subsoil)	[7.5YR 4/6] strong brown clay loam with [5Y 4/1] dark gray sandy clay mottles

Test Bore # 5

Depth (feet)	Soil Horizon	Soil Description
0-3.0	Fill	Various fills
3.0-4.0	Fill	[7.5Yr 4/1] dark gray gravelly sand with coal and slag
4.0-10.0	B (Subsoil)	[7.5YR 4/6] strong brown clay loam with [5Y 4/1] dark gray sandy clay mottles

Test Bore # 6

Depth (feet)	Soil Horizon	Soil Description
0-4.2	Fill	Various fills
4.2-5.4	Fill	[7.5YR 4/3] brown silty sand mottled with [7.5YR 3/2] very dark gray
5.4-8.0	C horizon?	[7.5YR 4/3] brown silty sand
8.0-10.0	B (Subsoil)	[7.5YR 4/6] strong brown clay loam with [5Y 4/1] dark gray sandy clay mottles
10.0-11.4	B (Subsoil)	[7.5YR 4/3] strong brown clay loam with [5Y 4/1] dark gray sandy clay mottles

Test Bore # 7

Depth (feet)	Soil Horizon	Soil Description
0-3.7	Fill	Various fills
3.7-6.8	Fill	[5Y 4/1] dark gray clay with [7.5YR 4/6] strong brown clay inclusions
6.8-7.1	Fill	[7.5YR 4/3] brown sandy clay (at bottom of previous fill)
7.1-9.0	B (Subsoil)	[7.5YR 4/6] strong brown sandy clay
9.0-11.7	B (Subsoil)	[7.5YR 4/6] strong brown clay loam with [5Y 4/1] dark gray sandy clay mottles

Test Bore # 8

Depth (feet)	Soil Horizon	Soil Description
0-3.5	Fill	Various fills
3.5-4.1	Fill	Granite gravels with [7.5YR 4/1] dark gray gravelly sand
4.1-5.4		[10YR 4/3] brown sandy clay
5.4-5.8	Lens	[10YR 6/3] pale brown sand
5.8-7.7		[10YR 4/3] brown sandy clay
7.7-8.0		[7.5YR 4/1] dark gray clay
8.0-9.0		[7.5YR 4/3] brown clay
9.0-10.1		[10YR 5/2] grayish brown sandy clay
10.1-10.5		[10YR 4/2] dark grayish brown gravelly sand
10.5-13.4		[7.5YR 4/6] strong brown clay loam with [5Y 4/1] dark gray sandy clay mottles

Test Bore # 9

Depth (feet)	Soil Horizon	Soil Description
0-3.6	Fill	[10YR 6/2] light brownish gray clay loam
3.6-7.0	Fill	[7.5YR 4/3] brown with [7.5YR 4/6] strong brown sandy clay mottled and brick fragments
7.0-10.1	B (Subsoil)	[7.5YR 4/6] strong brown clay loam with [5Y 4/1] dark gray sandy clay mottles
10.1-10.4		[7.5YR 4/6] strong brown clay
10.4-11.3		[5Y 4/1] dark gray clay

Test Bore # 10

Depth (feet)	Soil Horizon	Soil Description
0-1.8	Fill	Various fills
1.8-3.6	Fill	[7.5YR 4/1] dark gray gravelly sand with coal and slag
3.6-5.3	Fill	[7.5YR 5/3] brown sandy clay mottled with [7.5YR 5/3] brown sandy clay
5.3-5.5	Fill	[5Y 4/1] dark gray clay with [7.5YR 4/6] strong brown clay inclusions
5.5-6.6	Fill	[10YR 6/3] pale brown sand, diesel odor
6.6-7.3	B (Subsoil)	[7.5YR 4/3] brown sandy clay mottled with [7.5 YR 4/6] strong brown clay
7.3-8.0	B (Subsoil)	[7.5YR 4/6] strong brown clay loam with [5Y 4/1] dark gray sandy clay mottles
8.0-8.8	B (Subsoil)	[7.5YR 4/3] brown dense clay

Test Bore # 11

Depth (feet)	Soil Horizon	Soil Description
0-5.0	Fill	Various fills
5.0-6.1	Fill	[10 YR 6/2] light brownish gray clay
6.1-8.3	Fill	[5Y 4/1] dark gray clay with [7.5YR 4/6] strong brown clay, with iron inclusions
8.3-10.8	Fill	[7.5YR 4/3] brown sandy clay with brick flecks
10.8-12.0	B (Subsoil)	[7.4YR 4/3] brown gravelly clay mottled with [10YR 4/2] dark grayish brown clay
12.0-13.6	B (Subsoil)	[10YR 4/2] dark grayish brown gravelly clay

Test Bore # 12

Depth (feet)	Soil Horizon	Soil Description
0-2.6	Fill	Modern fill with gravel and brick
2.6-6.4	Fill	[10YR 5/3] brown clay
6.4-7.8		[10YR 6/3] pale brown sand
7.8-8.4		[2.5Y 5/2] grayish brown silty sand
8.4-9.5		[7.5YR 4/6] strong brown clay loam with [5Y 4/1] dark gray sandy clay mottles; less mottled from 9.0-9.5
9.5-10.0		[7.5YR 4/1] gray sand
10.0-10.4		[5Y 4/1] dark gray sand
10.4-11.1		[10YR 5/2] grayish brown clay with iron concretions

Test Bore # 13

Depth (feet)	Soil Horizon	Soil Description
0-1.8	Fill	Modern fill with gravel
1.8-5.5	Fill	[7.5YR 5/2] grayish brown clay
5.5-7.4	Fill	[7.5YR 4/1] gray loamy clay
7.4-7.6	Fill	quartz gravel
7.6-8.5		alternating bands of [5Y 4/1] dark gray and [7.5YR 4/6] strong brown
8.5-9.0		[10YR 5/2] grayish brown sand
9.0-9.4		[5Y 4/1] dark gray sand
9.4-10.1		[2.5Y 5/2] grayish brown silty sand
10.1-16		[10YR 4/2] dark grayish brown clay

Test Bore # 14

Depth (feet)	Soil Horizon	Soil Description
0-3.0	Fill	Various fills
3.0-4.0	Fill	[10YR 4/1] dark gray gravelly sand
4.0-6.3	Fill	[10YR 6/2] light brownish gray clay
6.3-7.5		[7.5YR 4/6] strong brown clay loam with [5Y 4/1] dark gray sandy clay mottles; iron concretions at base
7.5-9.0		[7.5YR 4/6] strong brown clay loam with [5Y 4/1] dark gray sandy clay mottles; [10YR6/2] light brownish gray silty sand
9.0-10.5		[7.5YR 4/6] strong brown clay loam with [5Y 4/1] dark gray sandy clay mottles
10.5-11.0		[10YR 6/2] light brownish gray sand
11.0-12.0		[7.5YR 4/6] strong brown clay loam with [5Y 4/1] dark gray sandy clay mottles