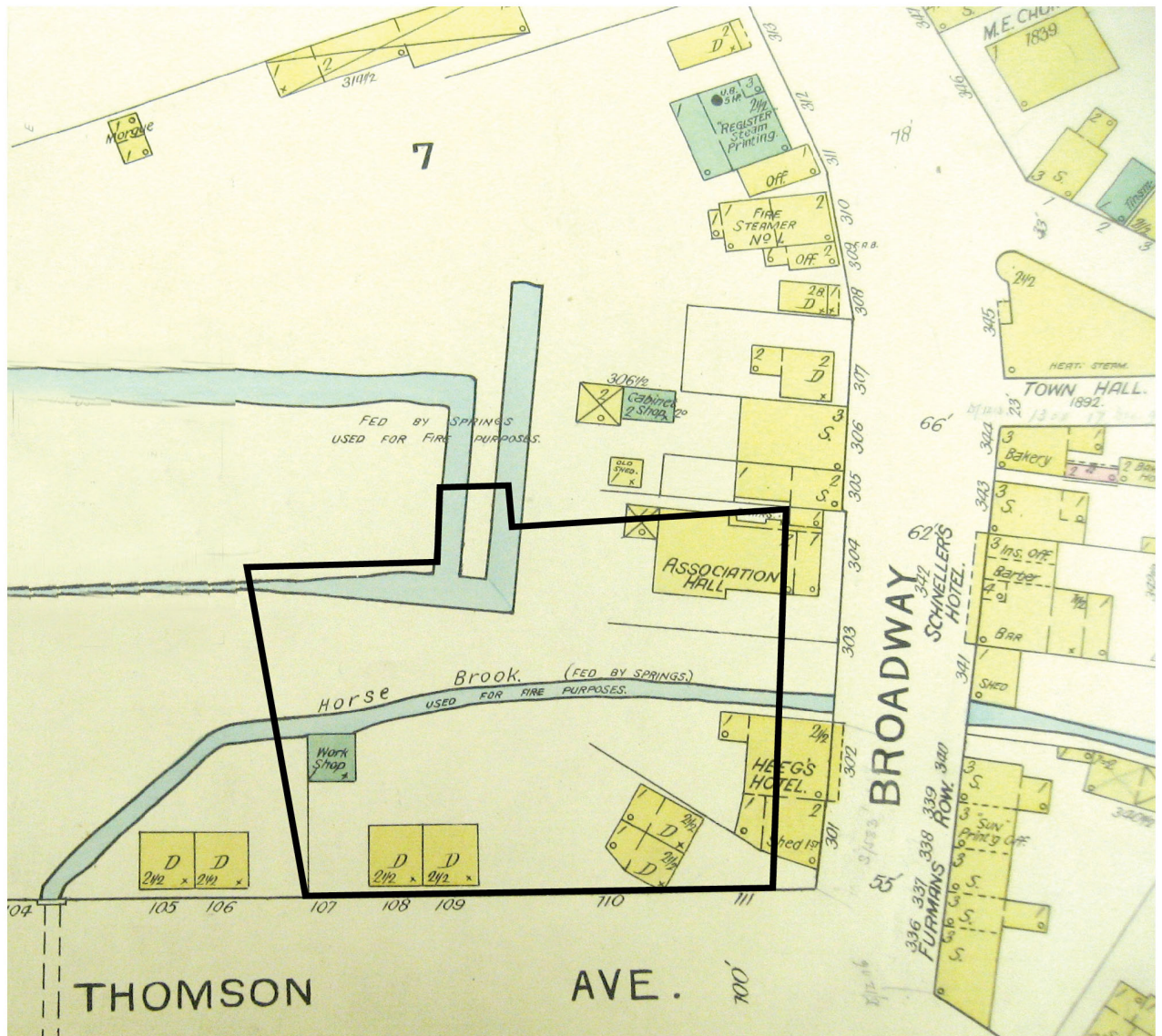

Geoarchaeological Assessment of Soil Sediments from 85-15 Queens Boulevard (Block 1549, Lots 28 and 41), Elmhurst, Queens County, New York: An Archaeological Mitigation

BSA Project No. 10BSA060Q



1893

Prepared for 85-15 Queens Realty, LLC through Page Cowley Architects LLC
Prepared by Joan H. Geismar, Ph.D., LLC and Geoarchaeology Research Associates
January 2013

Geoarchaeological Assessment of Soil Sediments from
85-15 Queens Boulevard (Block 1549, Lots 28 and 41)
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ABSTRACT

These reports, which comprise an archaeological mitigation based on a Geoarcheological Assessment of Soil Sediments from 85-15 Queens Boulevard (Block 1549, Lots 28 and 41), Elmhurst, Queens County, New York, present the methods and findings of collection and analysis of selected soil sediments recovered from the project site. The collection, by Joan H. Geismar, Ph.D., was carried out in conjunction with a construction-related soil boring program in August 2012; the analysis was conducted by Joseph Schuldenrein, Ph.D. of Geoarchaeology Research Associates (GRA) assisted by Chelsea Richard. The findings indicate that prehistoric cultural resources are not an issue while aspects of the site's Pleistocene and Holocene landscape were documented. This mitigation satisfies the project's archaeological component.

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 Principal/Writing, Production: Joan H. Geismar, Ph.D. Assisted by: Shelly Spritzer, M.A. Graphics: Amy Geller	
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Joseph Schuldenrein, Ph.D,
with Chelsea Richard, B.S., Geoarchaeological Technician
Geoarchaeology Research Associates (GRA)

INTRODUCTION

This report presents the findings of a geoarchaeological assessment of soil sediment samples collected from the 85-15 Queens Boulevard project site (Block 1549, Lots 28 and 41),¹ Queens County, New York (Figures 1 and 2). It was undertaken by Joan H. Geismar, Ph.D. LLC for 85-15 Queens Realty through Page Cowley Architects. The soil sediment assessment was carried out by Joseph Schuldenrein, Ph.D. assisted by Chelsea Richard, B.S. of Geoarchaeology Research Associates, Inc. (GRA).

Soil sediment analysis was recommended as the archaeological mitigation based on 1A documentary research conducted to assess the development site's archaeological potential (Geismar 2010). It was suggested by factors documented in the boring logs from a 2002 soil boring program that addressed only the eastern half of the site (Carlin-Simpson 2002; also in Carlin-Simpson 2012). The logs documented from 2.0 to 13.0 feet (0.61 to 4.0 m) of fill throughout this half of the site (see B-1 to B-5, B-7, and B-8 in Table 1),² with an average depth of almost 10 feet (3.1 meters). In addition, evidence of varving—a water-deposited stratification with the potential to yield valuable information about the site's prehistoric development—was noted in the log for boring B-1 (see Appendix 1 this report). Based on this information, the purpose of the mitigation was to obtain data about prehistoric site use and formation, especially as might relate to prehistoric human populations and to Horse Brook, a stream that traversed the site historically. Channeled either during the last decade of the 19th century or the very beginning of the 20th century, Horse Brook was a site feature until it was filled sometime after 1903 (Geismar 2010:4).

A second, more recent soil boring program in August 2012 covered the entire site with the caveat that several areas, initially selected for testing based on both construction and archaeological considerations, were eliminated or relocated to accommodate an active parking area used by a Wendy's restaurant located on the western half of the site.

The mitigation, which followed a protocol approved by the New York City Landmarks Preservation Commission (Geismar 2012; Sutphin 2012), entailed collecting soil sediment samples obtained during the second construction-related soil boring program carried out by Carlin-Simpson Associates. Six samples in glass jars were then sent to GRA for analysis with selected specimens sent to Beta Analytic Radiocarbon Dating Laboratory for radiocarbon (¹⁴C) dating. The details of the study and its findings are presented in the GRA report that follows.

METHOD

On August 20, 2012, I was on site to collect samples from soil borings B-118 on the east side³ of the site in the vicinity of B-1 where varving had been documented in 2002 and B-104 on the west side in the approximate historic-era location of Horse Brook or a possible branch or tributary (see Figure 3 for the location of borings B104 and B-118 in relation to these historic-era water courses⁴). While I was not on site for the drilling and sampling of B-104, Carlin-Simpson's

¹ Also identified as two separate addresses, 85-07 and 85-15 Queens Boulevard.

² B-6 was eliminated.

³ In the field, these boring were originally identified as B4 and B18 respectively

⁴ Historical maps show either sketchy or variable locations for the brook

on-site field supervisor, Eric Shaw, noted that varving, or layering of sand and clay, albeit faint, was present at a depth of about 14 feet (4.3 m) and called me to come review and retrieve samples he had collected.

Given its greater depth, it is not surprising that radiocarbon dating indicated the silt layers in the sample collected from in B-118 document a more ancient deposit than the shallower samples from B-104. Also, the information from B-118, and its relative distance from historical Horse Brook, suggests an extensive wetland or swamp, or an older, larger water course.

Soil sediment samples from B-104 and B-118 were those submitted to GRA for geoarchaeological analysis. While the soil boring log from B-104 indicates “silt and sand layering,” that is, “varving” at a depth of about 14 feet (4.3 m), it should be noted that the log for B-118 fails to document any such deposit. Also, subsequent review of the soil boring log for B-104 records even deeper layered soil deposits than those retrieved in the field (55 feet [18.8 m] and then again at 73 feet [22.3 m]). Review of the soil boring logs revealed that the log from B-109 documented varved deposits similar to those collected but not noted in B-118. That is, clay and sand layering at about 14 feet (4.3 m), but no sample was collected (see Appendix 1 for the boring logs from B-1, B-104, B-109, and B-118).

CONCLUSIONS

As noted, GRA’s assessment will be found in the accompanying geoarchaeological report. It can be said, however, that radiocarbon dating of selected soil sediment samples yielded dates that spanned almost 13,000 years of geological time, that is, from approximately 31,500 to 14,600 years before the present (B.P.). While this sequence predates a locally known human presence by several thousand years, and therefore is not associated with human populations, it revealed phases of the site’s prehistoric development history. These include non-consecutive deposition of water based deposits that extended beyond Horse Brook, a water course located on the site historically. Consequently, it enhances our knowledge of local geological process and has proved a rewarding archaeological mitigation: The millennia of geological time represented by varving or “layering” observed in the field or noted in the site’s soil boring logs are, to the geoarchaeologist, further confirmation of these geological processes. To the non-geoarchaeologist, they are mind expanding.

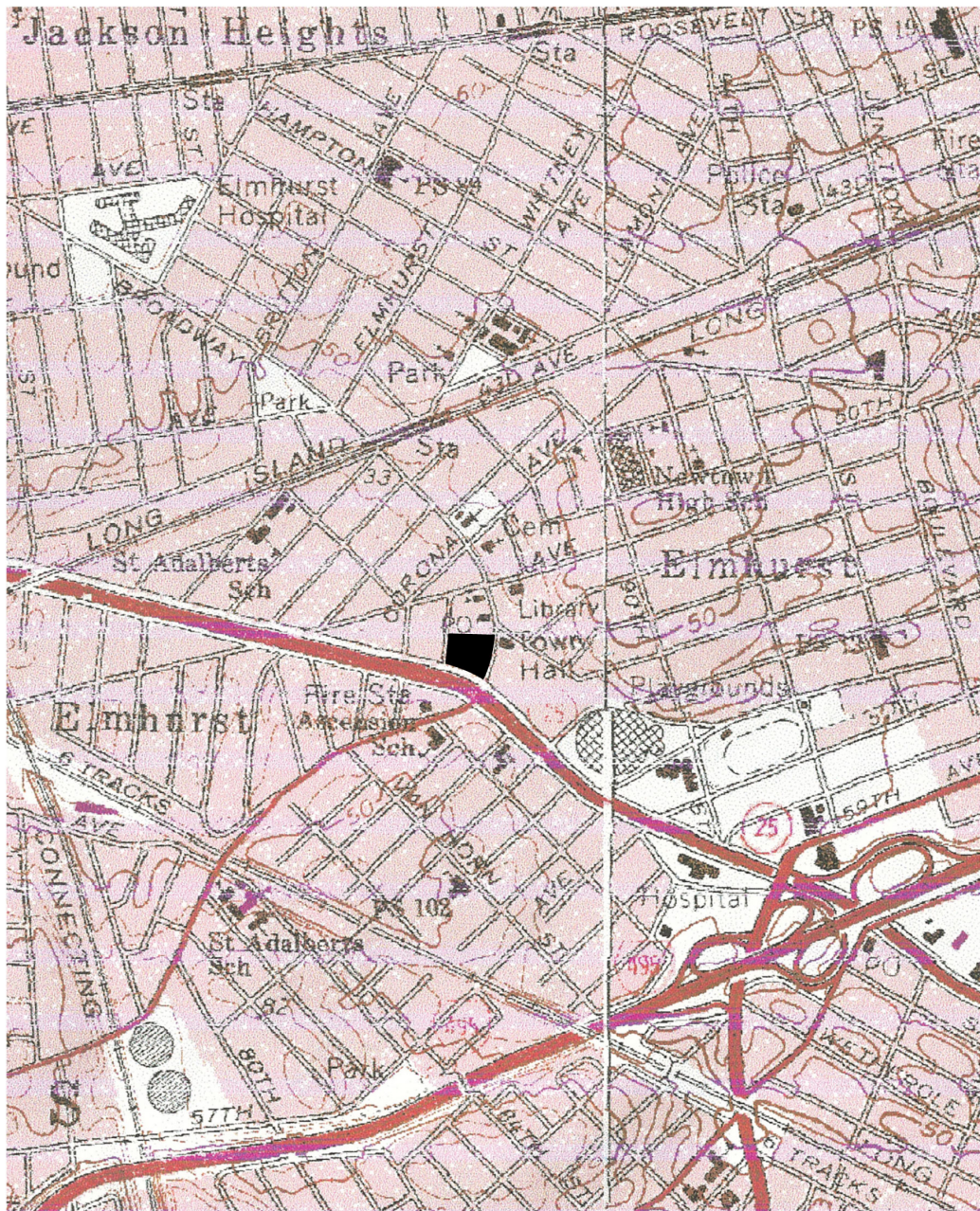
This archaeological mitigation fulfills the site’s archaeological requirement.

Table 1. Soil Boring Data (Carlin-Simpson 2012:6-7)

Boring No.	Approximate Ground Surface Elevation	Depth to Bottom of Existing Fill (Elevation)	Observed Depth to Groundwater (Elevation)
B-1	+20.0	10'6" (+9.6)	9'0" (+11.0)
B-2	+20.5	7'6" (+13.0)	9'6" (+11.0)
B-3	+19.4	13'0" (+6.4)	9'0" (+10.4)
B-4	+19.8	11'6" (+8.3)	11'6" (+8.3)
B-5	+10.3	2'8" (+7.6)	2'0" (+8.3)
B-7	+19.1	10'0" (+9.1)	10'6" (+8.6)
B-8	+19.3	10'0" (+9.3)	11'0" (+8.3)
B-102	+20.3	10'0" (+10.3)	11'0" (+9.3)
B-103	+21.0	7'0" (+14.0)	8'0" (+13.0)
B-104	+21.0	8'6" (+12.5)	9'0" (+12.0)
B-105	+19.6	10'0" (+9.6)	10'0" (+9.6)
B-107	+19.7	10'0" (+9.7)	10'0" (+9.7)
B-108	+20.5	8'0" (+12.5)	8'0" (+12.5)
B-109	+20.0	10'0" (+10.0)	10'0" (+10.0)
B-110	+20.0	5'3" (+14.7)	8'6" (+11.5)
B-115	+19.0	11'0" (+8.0)	10'0" (+9.0)
B-116	+18.6	18'0" (+0.5)	10'0" (+8.5)
B-117	+19.5	5'0" (+14.5)	10'0" (+9.5)
B-118	+20.0	8'0" (+12.0)	7'0" (+13.0)

Note: Borings B6, B101, and B111 through B114 were eliminated

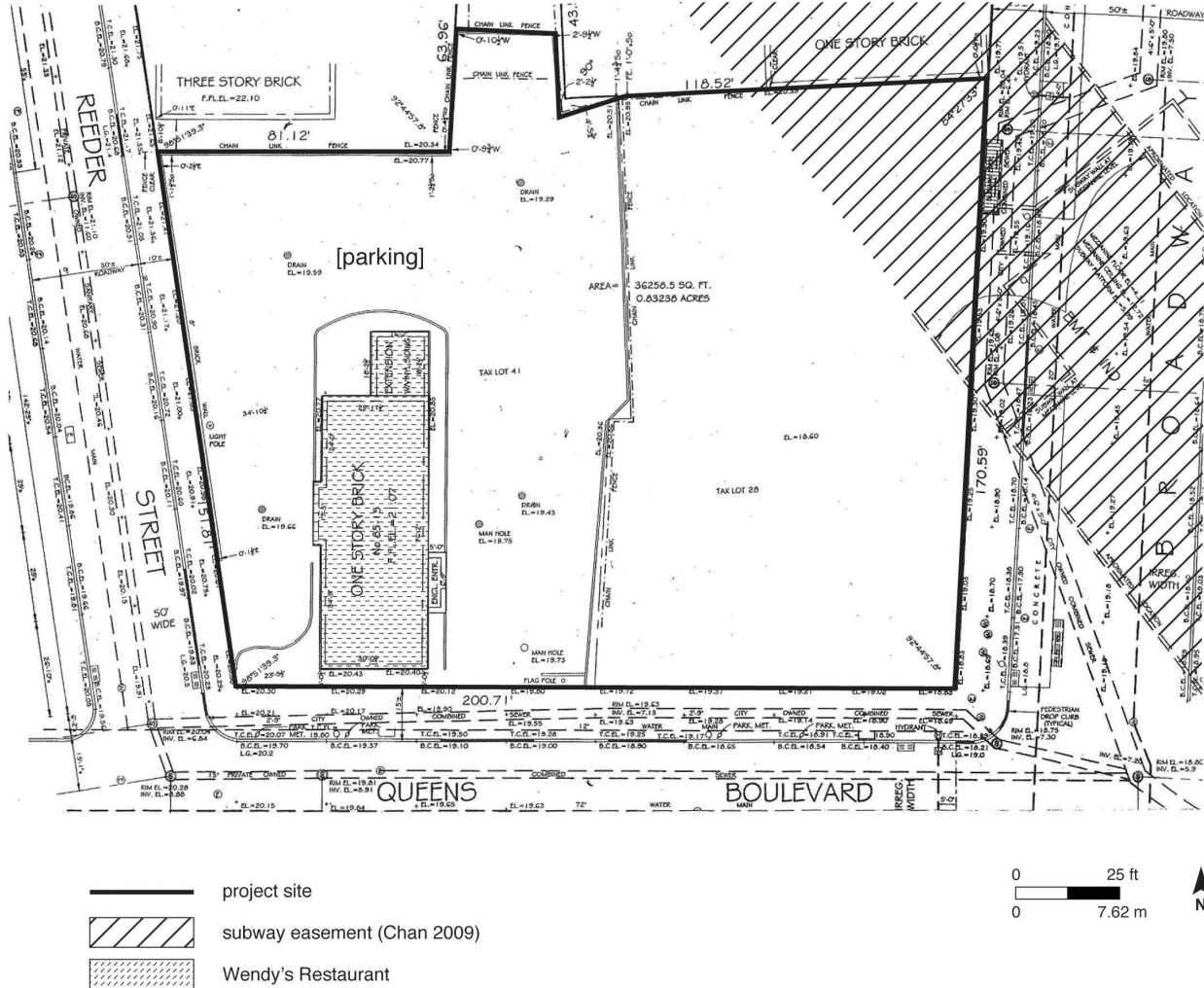
FIGURES



project site

0 1000 ft
0 304.8 m





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USGS, 1979. Brooklyn Quadrangle 1967, Photo Revised 1979. United States Geological Survey, Reston VA.

APPENDIX 1

SOIL BORING LOCATIONS AND SELECTED SOIL BORING LOGS

(B-1, B-104, B-109, B-118)

(Source: Carlin-Simpson 2012)

Note: all soil boring logs will be found on the CD accompanying the hard copy of the report

CARLIN - SIMPSON & ASSOCIATES South Amboy, N.J.				TEST BORING LOG		BORING NUMBER B-1	
Project: Proposed Building 85-15 Queens Blvd. Queens, NY				SHEET NO.: 2 of 3			
Client: 85-15 Queens Boulevard Realty, LLC				JOB NUMBER: 01-161			
Depth (ft.)	Casing Blows pre Foot	Sample Number	Blows on Sample Spoon per 6"	Symbol	IDENTIFICATION	REMARKS	
23							
24					<u>Varved gray CLAY & SILT,</u> <u>occasional thin lens fine Sand</u> <u>[Class 5b]</u>		
25							
26		S-8	5		Varved gr C & S, occasional thin lens f S	Rec = 24"	
27			7			very moist	
28			10			PP = 0.75 to 1.0 TSF	
29							
30							
31		S-9	11		Br cf S, t S, a mf G	Rec = 14"	
32			14			wet	
33							
34							
35							
36		S-10	66		Rd br cf S, l S, l mf G	Rec = 6"	
37			70			wet	
38			52		<u>Brown, red brown coarse to fine</u> <u>SAND, little Silt, little medium</u> <u>to fine Gravel [Class 3a]</u>		
39			32				
40							
41		S-11	30		do, br	Rec = 8"	
42			42			wet	
43			38				
44			31				
45		S-12	100/1"		do	No recovery	
46							
47							

CARLIN - SIMPSON & ASSOCIATES South Amboy, N.J.				TEST BORING LOG		BORING NUMBER B-1	
Project: Proposed Building 85-15 Queens Blvd. Queens, NY				SHEET NO.: 3 of 3		JOB NUMBER: 01-161	
Client: 85-15 Queens Boulevard Realty, LLC							
Depth (ft.)	Casing Blows pre Foot	Sample Number	Blows on Sample Spoon per 6"	S y m	IDENTIFICATION	REMARKS	
48							
49							
50							
51		S-13	29		Br cf S, l S, s cf G	Rec = 10"	
52			30			wet	
53			28			52'0"	
54					<u>End of Boring @ 52'0"</u>		
55							
56							
57							
58							
59							
60							
61							
62							
63							
64							
65							
66							
67							
68							
69							
70							
71							
72							

CARLIN - SIMPSON & ASSOCIATES Sayreville, NJ				TEST BORING LOG					BORING NUMBER B-104	
Project: Proposed Building 85-15 Queens Blvd. Queens, NY									SHEET NO.: 1 of 4	
Client: 85-15 Queens Boulevard Realty, LLC									JOB NUMBER: 01-161-B	
Drilling Contractor: General Borings, Inc.									ELEVATION: +21.0	
GROUNDWATER					CASING	SAMPLE	CORE	TUBE	DATUM: Topo	
DATE	TIME	DEPTH	CASING	TYPE	Pipe	SS			START DATE: 22 Aug 12	
22 Aug 12	0900	9'0"	Auger	DIA.	3"	1 3/8"			FINISH DATE: 22 Aug 12	
				WGHT		140#			DRILLER: Tom M	
				FALL		30"			INSPECTOR: EJS	
Depth (ft.)	Casing Blows per Foot	Sample Number	Blows on Sample Spoon per 6"	Sym	IDENTIFICATION				REMARKS	
1					Asphalt				0'2 1/2"	
2		S-1	12		FILL (Br cf S, s (-) \$, l cf G)					
3			7						Rec = 20"	
4		S-2	10		same, l (+) \$				moist	
5			12						Rec = 17"	
6			8		FILL (Brown coarse to fine SAND, some (-) Silt, little coarse to fine Gravel) [Class 7]				moist	
7		S-3	7		same, l (-) mf G					
8			2						Rec = 16"	
9		S-4	5						very moist	
10			3		Dk gr \$ a (-) cf S, t (-) f G				8'6"	
11		S-5	3		Dark gray SILT and (-), coarse to fine Sand, trace (-) fine Gravel [Class 6]				10'0"	
12			12		Dk gr cf S, l (-) \$, t (+) cf G, w/\$ layers, cobbles					
13		S-6	6		Dark gray coarse to fine SAND, little (-) Silt, trace (+) coarse to fine Gravel, with Silt, layers, cobbles [Class 3b]				13'6"	
14			4						Rec = 15"	
15		S-7	14		Br cf S, l (+) \$, s cf G				wet	
16			16		same, s \$, w/cobbles					
17			34						Rec = 3"	
18		S-8	50/2"		Brown coarse to fine SAND, little (+) Silt, some coarse to fine Gravel, with cobbles [Class 3b]				wet	
19										
20										
21			14		Br cf S, l (-) \$, s (-) mf G					
22			20						Rec = 14"	
			18						wet	
			17							

CARLIN - SIMPSON & ASSOCIATES Sayreville, NJ				TEST BORING LOG		BORING NUMBER B-104
Project: Proposed Building 85-15 Queens Blvd. Queens, NY				SHEET NO.: 2 of 4		
Client: 85-15 Queens Boulevard Realty, LLC				JOB NUMBER: 01-161-B		
Depth (ft.)	Casing Blows per Foot	Sample Number	Blows on Sample Spoon per 6"	S y m	IDENTIFICATION	REMARKS
23						
24						
25						
26		S-9	10		Br cf S, l S, s (+) cf G, w/cobbles, boulders	Rec = 14" wet
27			11			
28			29			
29						
30						
31		S-10	20		same	Rec = 13" wet
32			21			
33			22		<u>Brown coarse to fine SAND, little Silt, some (+) coarse to fine Gravel, with cobbles and boulders [Class 3b]</u>	
34						
35						
36		S-11	9		same	Rec = 3" wet
37			10			
38			12			
39			16			
40						
41						
42						
43						
44						
45						
46		S-12	12		same, w/cobbles, boulders	Rec = 12" wet
47			14			
			17			
			20			

CARLIN - SIMPSON & ASSOCIATES Sayreville, NJ				TEST BORING LOG		BORING NUMBER B-104
Project: Proposed Building 85-15 Queens Blvd. Queens, NY				SHEET NO.: 3 of 4		
Client: 85-15 Queens Boulevard Realty, LLC				JOB NUMBER: 01-161-B		
Depth (ft.)	Casing Blows per Foot	Sample Number	Blows on Sample Spoon per 6"	S y m	IDENTIFICATION	REMARKS
48						
49						
50						
51						
52						
53						
54						
55						
56		S-13	50/3"			No recovery
57					<u>Brown coarse to fine SAND, little Silt,</u>	
58					<u>some (+) coarse to fine Gravel, with</u>	
59					<u>occasional clay lenses, cobbles,</u>	
60					<u>boulders [Class 3b]</u>	
61						
62						
63						
64						
65						
66		S-14	21		Br cf S, l S, s (+) cf G, w/occ C lenses, cobbles,	Rec = 12"
67			20		boulders	wet
68			22			
69						
70						
71						
72						

CARLIN - SIMPSON & ASSOCIATES Sayreville, NJ				TEST BORING LOG		BORING NUMBER B-104	
Project: Proposed Building 85-15 Queens Blvd. Queens, NY				SHEET NO.: 4 of 4			
Client: 85-15 Queens Boulevard Realty, LLC				JOB NUMBER: 01-161-B			
Depth (ft.)	Casing Blows per Foot	Sample Number	Blows on Sample Spoon per 6"	S y m	IDENTIFICATION	REMARKS	
73		S-15			Br cf S, l \$, s (+) cf G, w/occ C lenses, cobbles, boulders <u>Brown coarse to fine SAND, little Silt,</u> <u>some (+) coarse to fine Gravel, with</u> <u>occasional clay lenses, cobbles</u> <u>boulders [Class 3b]</u> <u>End of Boring @ 75'0"</u>	Rec = 14" wet	
74			21	19			
			22				
75			24				
76							
77							
78							
79							
80							
81							
82							
83							
84							
85							
86							
87							
88							
89							
90							
91							
92							
93							
94							
95							
96							
97							

CARLIN - SIMPSON & ASSOCIATES Sayreville, NJ				TEST BORING LOG				BORING NUMBER B-109	
Project: Proposed Building 85-15 Queens Blvd. Queens, NY				SHEET NO.: 1 of 4				JOB NUMBER: 01-161-B	
Client: 85-15 Queens Boulevard Realty, LLC				ELEVATION: +20.0				DATUM: Topo	
Drilling Contractor: General Borings, Inc.				START DATE: 23 Aug 12				FINISH DATE: 23 Aug 12	
GROUNDWATER				DRILLER: Tom M				INSPECTOR: EJS	
DATE	TIME	DEPTH	CASING	TYPE	Pipe	SS	CORE	TUBE	
23 Aug 12	1245	10'0"	Auger	DIA.		1 3/8"			
				WGHT		140#			
				FALL		30"			
Depth (ft.)	Casing Blows per Foot	Sample Number	Blows on Sample Spoon per 6"	Sym	IDENTIFICATION			REMARKS	
1					Asphalt/Stonebase			2 1/2" Asphalt	
2		S-1	20		FILL (Br gr cf S, l (-) \$, s (+) cf G, w/brick, concrete)			3" Stonebase	
3			35					Rec = 15"	
4			34					moist	
5			50/2"						
6		S-2	5		FILL (Brown gray coarse to fine SAND, little (-) Silt, some (+) coarse to fine Gravel, with brick and concrete) [Class 7]				
7			12					Rec = 15"	
8			10	same				moist	
9			9						
10									
11		S-3	4		Gr cf S, l \$, l (+) cf G, w/ \$ layers			10'0"	
12			7		Grav coarse to fine SAND, little Silt, little (+) coarse to fine Gravel, with Silt layers [Class 3b]			Rec = 17"	
13			6					moist-wet	
14		S-4	4		Gr \$ s, cf S, l cf G			12'0"	
15			4		Grav SILT some, coarse to fine Sand, little coarse to fine Gravel [Class 6]			Rec = 18"	
16			7					wet	
17		S-5	2	same, w/organics				Rec = 17"	
18			2					wet	
19			4					17'0"	
20		S-6	10		Br cf S, l \$, l (+) cf G			Rec = 20"	
21			16		Brown coarse to fine SAND, little Silt, little (+) coarse to fine Gravel [Class 3a]			wet	
22			19						
23		S-7	21						
24									
25			6		Br \$ s, cf S, t f G			Rec = 19"	
26			9					wet	
27			13		Brown SILT, some coarse to fine Sand, trace fine Gravel [Class 6]				
28			16						

CARLIN - SIMPSON & ASSOCIATES Sayreville, NJ				TEST BORING LOG		BORING NUMBER B-109	
Project: Proposed Building 85-15 Queens Blvd. Queens, NY				SHEET NO.: 2 of 4			
Client: 85-15 Queens Boulevard Realty, LLC				JOB NUMBER: 01-161-B			
Depth (ft.)	Casing Blows per Foot	Sample Number	Blows on Sample Spoon per 6"	S y m	IDENTIFICATION	REMARKS	
23							
24							
25							
26		S-8	3		Gr \$ s, cf S, t (-) f G		
27			3		<u>Grav SILT some, coarse to fine</u>	Rec = 22"	
28			10		<u>Sand, trace (-) fine Gravel [Class 6]</u>	wet	
29							
30							29'0"
31							
32							
33							
34							
35							
36		S-9	9		Br cf S, l (+) \$, s (+) cf G, w/cobbles, boulders		
37			21			Rec = 16"	
38			21			wet	
39			23				
40					<u>Brown coarse to fine SAND, little (+)</u>		
41					<u>Silt, some (+) coarse to fine Gravel,</u>		
42					<u>with cobbles and boulders [Class 3a]</u>		
43							
44							
45							
46		S-10	10		same		
47			17			Rec = 14"	
			22			wet	
			23				

CARLIN - SIMPSON & ASSOCIATES Sayreville, NJ			TEST BORING LOG		BORING NUMBER B-109	
Project: Proposed Building 85-15 Queens Blvd. Queens, NY			SHEET NO.: 4 of 4			
Client: 85-15 Queens Boulevard Realty, LLC			JOB NUMBER: 01-161-B			
Depth (ft.)	Casing Blows per Foot	Sample Number	Blows on Sample Spoon per 6"	ft	IDENTIFICATION	REMARKS
73		S-13	15		Br cf S, l (+) S, s (+) cf G, w/cobbles, boulders <u>Brown coarse to fine SAND, little (+)</u> <u>Silt, some (+) coarse to fine Gravel,</u> <u>with cobbles and boulders [Class 3a]</u> 75'0" <u>End of Boring @ 75'0"</u>	Rec = 13" wet
74			19			
75			20			
76			20			
77						
78						
79						
80						
81						
82						
83						
84						
85						
86						
87						
88						
89						
90						
91						
92						
93						
94						
95						
96						
97						

CARLIN - SIMPSON & ASSOCIATES Sayreville, NJ				TEST BORING LOG				BORING NUMBER B-118	
Project: Proposed Building 85-15 Queens Blvd. Queens, NY				SHEET NO.: 1 of 4				JOB NUMBER: 01-161-B	
Client: 85-15 Queens Boulevard Realty, LLC				ELEVATION:				DATUM:	
Drilling Contractor: General Borings, Inc.				GROUNDWATER				DATE	
DATE	TIME	DEPTH	CASING	TYPE	Pipe	SS	CORE	TUBE	START DATE: 20 Aug 12
20 Aug 12	1130	7'0"	Pipe	DIA.	3"	1 3/8"			FINISH DATE: 20 Aug 12
				WGHT		140#			DRILLER: Tom M
				FALL		30"			INSPECTOR: EJS
Depth (ft.)	Casing Blows per Foot	Sample Number	Blows on Sample Spoon per 6"	S y m	IDENTIFICATION				REMARKS
1		S-1	6		FILL (Br cf S, l (-) S, s cf G, w/brick, concrete)				Rec = 18"
			9						moist
			10						
2			9						
			6	same					
3		S-2	8						Rec = 15"
			10		<u>FILL (Brown coarse to fine SAND, little (-) Silt, some coarse to fine Gravel, with brick and concrete)</u>				moist
			14		<u>[Class 7]</u>				
5									
			16	same					
6		S-3	16						Rec = 15"
			9						very moist
			9						
			9	same					
8		S-4	9						8'0" Rec = 14"
			5		Gr cf S, l S, t cf G				wet
9			2						
					<u>Grav coarse to fine SAND, little Silt, trace coarse to fine Gravel</u>				
10					<u>[Class 6]</u>				
			2	same					
11		S-5	1						Rec = 15"
			2						wet
			4						
12									12'0"
			9		Gr cf S, l S, l cf G				
13		S-6	27						
			28		<u>Grav coarse to fine SAND, little Silt, little coarse to fine Gravel</u>				
14			28		<u>[Class 3a]</u>				
15									15'0"
			6		Gr S t (+), cf S, t (-) f G				
16		S-7	7						Rec = 16"
			9						wet
			11						
					<u>Grav SILT trace (+), coarse to fine Sand, trace (-) fine Gravel [Class 5b]</u>				
18									
19									
20									
			3	same					
21		S-8	6						Rec = 19"
			7						wet
22			9						

CARLIN - SIMPSON & ASSOCIATES Sayreville, NJ				TEST BORING LOG		BORING NUMBER B-118
Project: Proposed Building 85-15 Queens Blvd. Queens, NY				SHEET NO.: 2 of 4		
Client: 85-15 Queens Boulevard Realty, LLC				JOB NUMBER: 01-161-B		
Depth (ft.)	Casing Blows per Foot	Sample Number	Blows on Sample Spoon per 6"	S y m	IDENTIFICATION	REMARKS
23		S-9	4		Gr \$ t, cf S, t (-) f G	Rec = 18" wet
			8			
			12			
24		S-10	8		<u>Gray SILT trace, coarse to fine Sand, trace (-) fine Gravel [Class 5b]</u>	Rec = 19" wet
25						
26			3			
27			4			
28			6			
29		S-11	6		same, Cy \$	boulder @ 27'6"
30						
31						
32						
33						
34		S-12	20		Br cf S, l S, s (-) cf G	Rec = 13" wet
35			42			
36			24			
37			18			
38						
39		S-13			<u>Brown coarse to fine SAND, little Silt, some (-) coarse to fine Gravel, with cobbles [Class 3a]</u>	Rec = 12" wet
40						
41						
42						
43						
44		S-14	25		same	Rec = 12" wet
45			15			
46			20			
47			22			
48						
49		S-15			same, w/cobbles	Rec = 12" wet
50						
51						
52						
53						
54		S-16	25		same, a (-) cf G, w/cobbles	Rec = 12" wet
55			22			
56			21			
57			29			
58						
59		S-17			same, a (-) cf G, w/cobbles	Rec = 12" wet
60						
61						
62						
63						
64		S-18	25		same, a (-) cf G, w/cobbles	Rec = 12" wet
65			28			
66			23			
67						
68						
69		S-19	29		same, a (-) cf G, w/cobbles	Rec = 12" wet
70						
71						
72						
73						

CARLIN - SIMPSON & ASSOCIATES Sayreville, NJ				TEST BORING LOG		BORING NUMBER B-118	
Project: Proposed Building 85-15 Queens Blvd. Queens, NY				SHEET NO.: 3 of 4			
Client: 85-15 Queens Boulevard Realty, LLC				JOB NUMBER: 01-161-B			
Depth (ft.)	Casing Blows per Foot	Sample Number	Blows on Sample Spoon per 6"	S y m	IDENTIFICATION	REMARKS	
48							
49							
50							
51							
52							
53							
54							
55							
56		S-14	27		Br cf S, l (-) S, a (-) cf G	Rec = 10" wet	
57			30				
58			28				
59			32				
60					<u>Brown coarse to fine Sand, little (-)</u> <u>Silt, and (-) coarse to fine Gravel,</u> <u>with cobbles and boulders [Class 3a]</u>		
61							
62							
63							
64							
65							
66		S-15	28		same, w/cobbles, boulders	Rec = 36" wet	
67			29				
68			25				
69			31				
70							
71							
72							

CARLIN - SIMPSON & ASSOCIATES Sayreville, NJ				TEST BORING LOG		BORING NUMBER B-118	
Project: Proposed Building 85-15 Queens Blvd. Queens, NY				SHEET NO.: 4 of 4			
Client: 85-15 Queens Boulevard Realty, LLC				JOB NUMBER: 01-161-B			
Depth (ft.)	Casing Blows per Foot	Sample Number	Blows on Sample Spoon per 6"	S y m	IDENTIFICATION	REMARKS	
73		S-16					
			29		Br cf S, 1 (-) S, a (-) cf G		
74			30		<u>Brown coarse to fine Sand, little (-)</u>	Rec = 6"	
			29		<u>Silt, and (-) coarse to fine Gravel,</u>	wet	
75			28		<u>with cobbles and boulders [Class 3a]</u>		75'0"
76					<u>End of Boring @ 75'0"</u>		
77							
78							
79							
80							
81							
82							
83							
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95							
96							
97							

**GEOARCHAEOLOGICAL ASSESSMENT OF SOIL-SEDIMENT SAMPLES
BLOCK 1549, LOTS 28 AND 41, QUEENS BOULEVARD**

ELMHURST, QUEENS COUNTY, NEW YORK

Prepared for:

Joan H. Geismar, Ph.D., LLC
40 East 83rd Street
New York, New York 10028

Assembled by:

Geoarcheology Research Associates
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Suite 207
Yonkers, NY 10701

Joseph Schuldenrein, Ph.D.
Principal Investigator

with

Chelsea Richard, B.S.
Geoarcheological Technician



December 17, 2012

INTRODUCTION AND OBJECTIVES

Geoarcheology Research Associates (GRA) was commissioned by Joan H. Geismar, PhD., LLC to undertake a limited geoarchaeological assessment of subsurface deposits of a project area occupied by Block 1549, Lots 28 and 41, Broadway and Queens Boulevard, Elmhurst, Queens County, NY. The deposits, recovered in the field by split spoon boring, were collected by Geismar during a construction-related soil boring program. Sediment samples were subsequently forwarded to GRA for formal characterization and possible radiocarbon dating.

The objective was to determine if the sediments could be linked to discrete depositional environments that were of an age associated with prehistoric landscapes. Field observations of the sediment disclosed laminar structures in a silt-clay matrix at depths in excess of 12 feet (3.6 m). Such matrices are typically diagnostic of lake-bed or deltaic sedimentation linked to terminal glacial or early post-glacial times.

The contemporary site setting, boring locations, and surficial geology of the project area are shown in Figure 1. The project area was part of the historic town of Newtown, and was formerly downcut by Horse Brook until its diversion, sometime during the 19th century.

PREHISTORIC SENSITIVITY

Initial concerns for pre-contact archaeological sensitivity focused on Horse Brook and its former floodplain. However, Boesch (1997 in Geismar 2010:2) proposed that the local landscape was once a swampy area with insufficient high ground to have sustained Native American settlement. Additionally, extensive Euroamerican re-landscaping, the development of Newtown, and most significantly the channelization of Horse Brook would likely have displaced any potential evidence for prehistoric activity. Additional support for low pre-contact sensitivity is provided by the absence of cultural resources in surveys and testing of nearby development locales (Geismar 1990; Historical Perspectives 2007, 2006, 1988; Key Perspectives 1989; McLean 2005, all in Geismar 2010).

HISTORIC SENSITIVITY

As described in the project's 1A documentary report (Geismar 2010), the site was previously the center of the colonial town of Newtown, whose physical settings and terrain contours changed in response to land use activities. One of the site's earliest documented buildings belonged to the Young Men's Christian Association (YMCA). On the western half of the site, a barn or double house was built in 1873. Arcanum Hall was constructed prior to 1893 and may have been a separate facility or an enlargement of the YMCA rooms. The property also supported the Flushing Railroad between 1873 and 1876. Between 1887 and 1904, approximately 7.5 feet (2.3 m) of fill were added to the area (Geismar 2010:3). In 1889, a portion of the project area was purchased for the development of "Broadway House," an edifice that survived until at least 1930. The building was subsequently either partially or completely razed during the widening of Queens Boulevard in 1930. An "Auto Laundry" was built on the western part of the project site between 1932 and 1951. In 1966, a bank (since demolished) occupied the

footprint of Broadway House, and a Wendy's restaurant was built on the western half of the site in 1979.

GEOLOGIC BACKGROUND

Nearly the entirety of Queens County's surficial geology is a product of glacial processes of the Last Glacial Maximum, when the Wisconsin ice sheet reached its furthest extent by 20,000 years B.P. (Sirkin, 1986; Sirkin and Stuckenrath, 1980). Deglaciation of the region began between 13,000 and 12,000 years B.P.

The primary natural surficial geologic units (Figure 1) were laid down by a series of cyclic glacial pulses representing advances and limited retreats of the ice-front. These produced a diverse series of landforms, distinguished currently by unique sediment types of varying texture, structure, and composition. The project lot, as well as the immediate site vicinity, has been mapped as Ground Moraine *glacial till (t)* dominated by poorly-sorted, relatively impermeable clay to boulder-clay, with a range of clast sizes and types. Till accumulations range from between 1 to 50 meters thick (Cadwell 1989). The tills are readily sub-divided into two depositional sub-units reflective of unique landforms. Thus the general project area is dominated by a (Late Wisconsinan) Ground Moraine with a primary *sandy loamy till (tda)*. The moraine feature is surrounded by a contemporaneous Kame Moraine (or probable kame complex) characterized by gravel, sand, and silt) (*ke*). The capping unit is exclusively anthropogenic and of historic/subrecent age; it is mapped as *Manmade Land (f)* (Fullerton 1992).

It is noted that at the scale of inquiry the surficial geology mapping is best considered a guideline for delineating the margins of the units/sub-units, and especially for the distribution of *Manmade Land (f)*. Accordingly, direct sedimentological inspection and radiometric analyses are pivotal to interpretations and assessments of landscape integrity and history.

RESULTS

A total of six (6) split spoon samples were forwarded to GRA for formal sedimentological description. Those descriptions and macro- and microscopic inspections of matrix for organic matter resulted in the selection of two (2) specimens of organic sediment for ^{14}C dating. Radiometric assays by the AMS method were performed by Beta Analytic Laboratories. Results are provided in Appendix A.

Boring B-104, from the western half of the property (Figure 1), was sampled just beneath a loamy medium sand fill (10YR 3/2 with redox streaks, burnt roots, and other plant material) at the top of the mapped *ground moraine (tda)* till stratum (from 12 to 14 feet below ground surface [BGS]). This stratum is a mottled fill (10YR 2/1) trending to an oxidation streaked natural silty loam (5Y 4/2) with 35-40% redox staining. This sample returned a conventional ^{14}C date of $14,630 \pm 60$ years BP (Beta-335206). The sample from Boring B-118, from the eastern half of the site, was deeper in the stratigraphic sequence (25 to 27 feet BGS) and is best classified as a fluvio-limnic clay silt (10YR 4/2), despite being formally mapped as *ground moraine (tda)* as well. The sample returned a conventional ^{14}C date of $31,560 \pm 210$ years BP (Beta-335207).

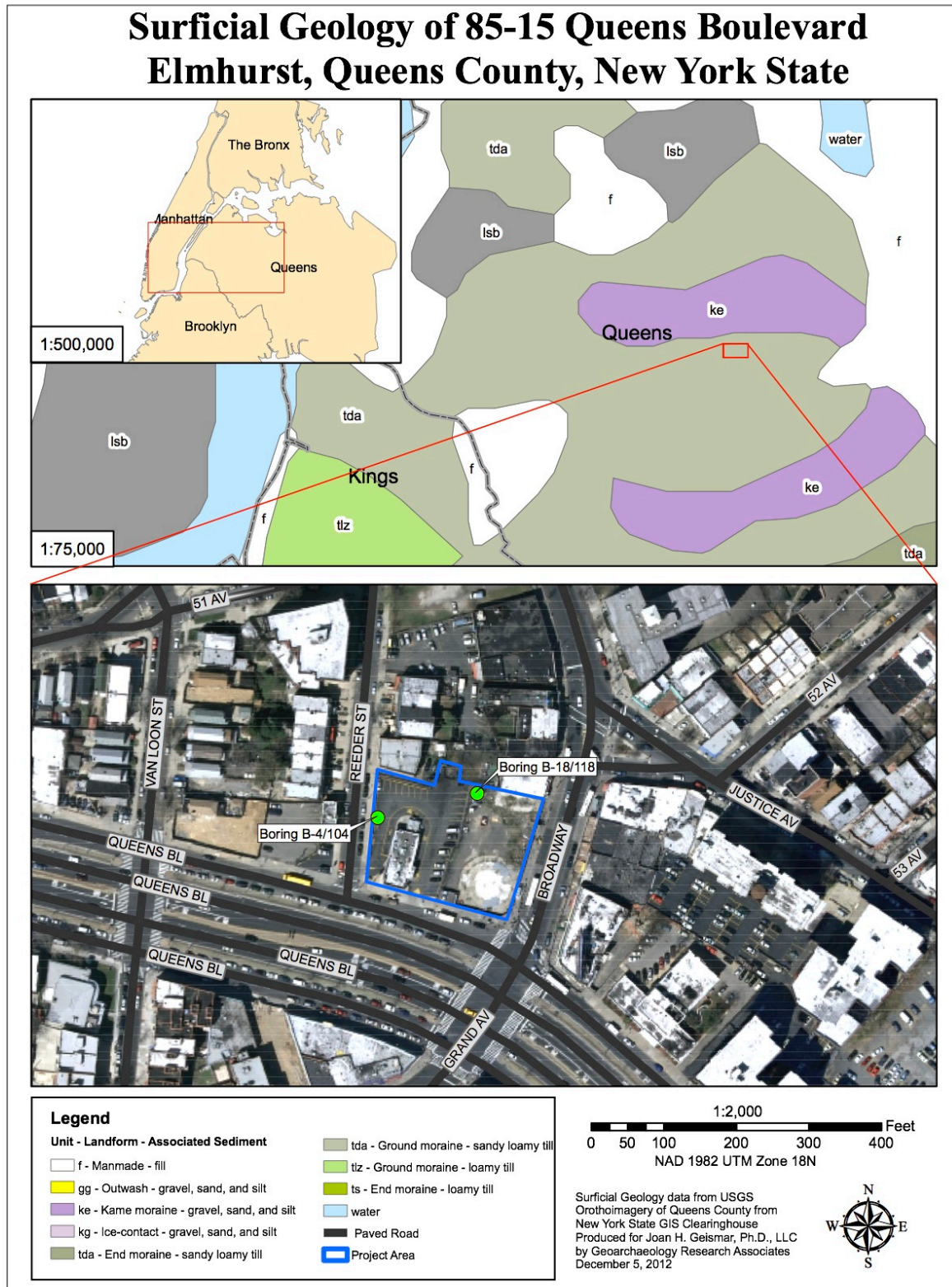
DISCUSSION AND CONCLUSIONS

The radiocarbon dates are from bulk sediment contexts and reflect an approximate age for a specific deposition. However, it is significant that the two (2) determinations are consistent with the chronology of the regional Pleistocene succession. The time range, from ca. 31,500-14,600 years B.P., as well as the (vertically) correct stratigraphic ordering, makes a provisional case for an intact sedimentary suite, spanning the latter part of the Wisconsinan glaciation.

It is noted that the fluvio-limnic depositional association, proposed on the strength of the matrix observations, is consistent with basin-edge or even deltaic accretion. While laminations were noted in the field, that interpretation is provisional, in part, because the horizontal cleavage planes may be a product of compression by the split-spoon. However, the fine textures and macro-structure of the sediment indicate a water-borne origin for the deposit. Minor basins proliferated in the complex moraine landscape, such that basin-margin accumulations of fines would not be unexpected.

For purposes of assessing archaeological expectation, the key chrono-stratigraphic measure of the sequence is the sediment packages beneath the fill. Sediment characteristic for both are consistent with regional glacial stratigraphy and, by most measures, they pre-date Paleoindian or the antiquity of known prehistoric occupation in the area. Therefore, the property would appear to have negligible to no sensitivity for prehistoric cultural resources beneath the historic fill.

Figure 1: Surficial geology of the APE and surrounding areas.



REFERENCES

(References cited in Geismar 2010 are in parentheses)

- (Boesch, Eugene J., 1997. Archaeological Evaluation and Sensitivity Assessment of the Prehistoric and Contact Period Aboriginal History of Queens, New York. Prepared for the New York City Landmarks Preservation Commission. New York. June 15, 1997).
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- Cadwell, D.H. (Cartographer). (1989). Surficial Geologic Map of New York, Lower Hudson 1:250,000 Sheet.
- Fullerton, David S. (Editor), 1992. Quaternary Geologic Map of the Hudson River 4° x 6° Quadrangle, United States and Canada.
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- (Geismar, Joan H., 1990. Addendum to the Archaeological Documentary Study for the St. John's Queens Hospital Proposed Parking Garage, Block 2860, Lots 16 and 25. CEQR No. 89-167Q. Prepared for Catholic Medical Center of Brooklyn and Queens, Inc. Prepared by Joan H. Geismar, Ph.D).
- (Historical Perspectives, 2007. Archaeological Documentary Study, Elmhurst Zoning Map Change, Block 1600, Lots 61, 80, 86, 99, 110 and 130, 4510 94th Street, 9323, 9205 and 9123 Corona Avenue, and 4323 91st Place, Elmhurst, Queens County, New York. CEQR #05DCP093Q. Prepared by Historical Perspective, Inc. Prepared for Einbinder and Dunn, LLP. October 2007).
- (Historical Perspectives, 2006. Phase 1A archaeological Assessment, SCA New High School Facility/Art and Leather Factory Building, Block 1600, Lot 61, 45-10 94th Street, Elmhurst, Queens County, New York. Prepared by Historical Perspectives, Inc. Prepared for AKRF, Inc. January 2006).
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(McLean, Jo-Ann, 2005. Phase 1a Archaeological Investigation – Documentary Research and Sensitivity Assessment of the 90-15 Corona Avenue Project Area, Elmhurst, Borough of Queens, New York City. Conducted by Jo-Ann McLean Inc. Archaeological Consultants. Prepared for Peter G. Geis, Cozen O’Conner, Attorneys. October 2005, Revised August 2005, Revised September 2006.)

Sirkin, L. (1986). Pleistocene Stratigraphy of Long Island, New York. In The Wisconsin Stage of the First Geological District, eastern New York. Albany: New York State Museum.

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Appendix A: RADIOCARBON DATING RESULTS

CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-26.4;lab.mult=1)

Laboratory number: Beta-335206

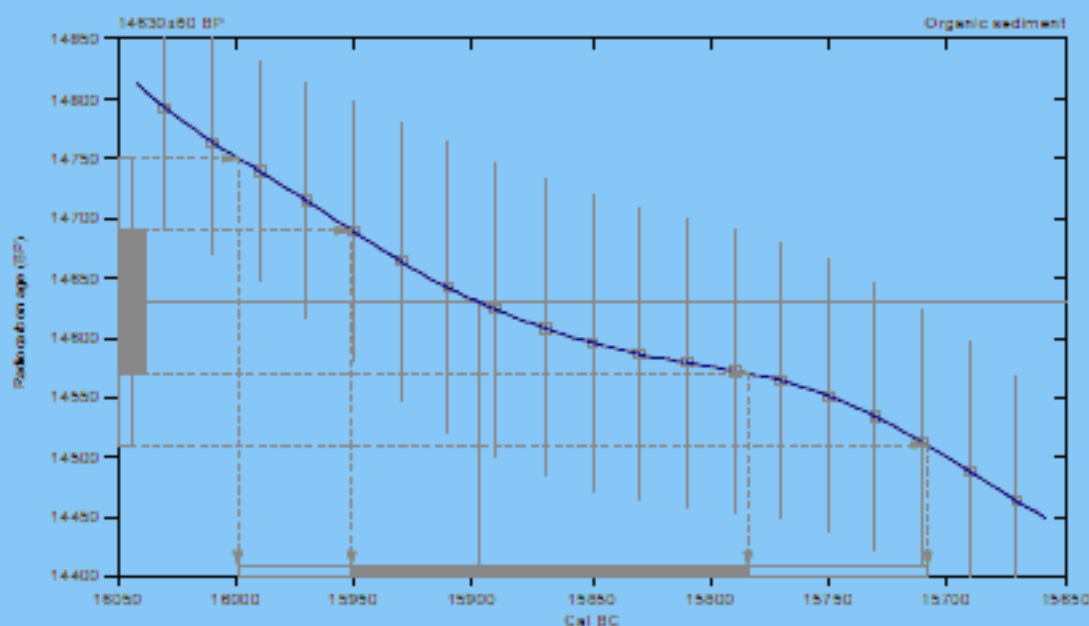
Conventional radiocarbon age: 14630±60 BP

2 Sigma calibrated result: Cal BC 16000 to 15710 (Cal BP 17950 to 17660)
(95% probability)

Intercept data

Intercept of radiocarbon age
with calibration curve: Cal BC 15900 (Cal BP 17850)

1 Sigma calibrated result: Cal BC 15950 to 15780 (Cal BP 17900 to 17730)
(68% probability)



References:

Database used

INTCAL09

References to INTCAL09 database

Heaton, et al., 2009, *Radiocarbon* 51(4):1131-1164, Reimer, et al., 2009, *Radiocarbon* 51(4):1117-1130,

Stuiver, et al., 1999, *Radiocarbon* 55(1):137-189, Oeschger, et al., 1975, *Tellus* 27: 168-192

Mathematics used for calibration scenario

A Simplified Approach to Calibrating C-14 Dates

Talma, A. S., Vogel, J. C., 1993, *Radiocarbon* 35(2):317-322

Beta Analytic Radiocarbon Dating Laboratory

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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-22.4;lab. mult=1)

Laboratory number: Beta-335207

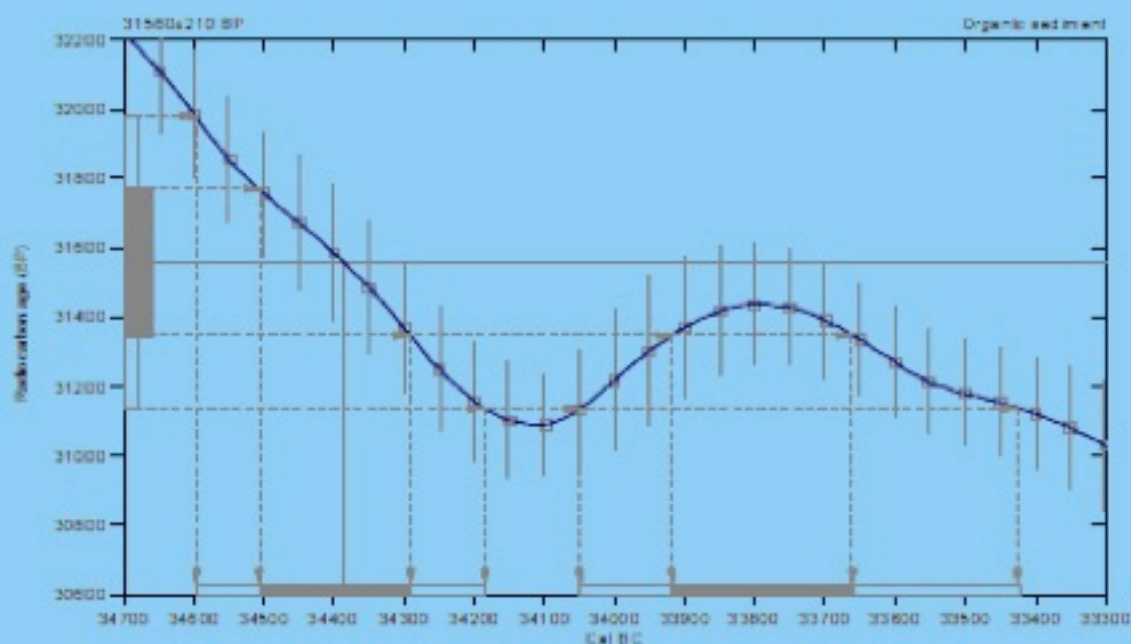
Conventional radiocarbon age: 31560±210 BP

2 Sigma calibrated results: Cal BC 34600 to 34180 (Cal BP 36550 to 36140) and
(95% probability) Cal BC 34050 to 33420 (Cal BP 36000 to 35380)

Intercept data

Intercept of radiocarbon age
with calibration curve: Cal BC 34390 (Cal BP 36340)

1 Sigma calibrated results: Cal BC 34510 to 34290 (Cal BP 36460 to 36240) and
(68% probability) Cal BC 33920 to 33660 (Cal BP 35870 to 35610)



References:

Database used

INTCAL09

References to INTCAL09 database

Reimer et al., 2009, *Radiocarbon* 51(4):1151-1164, Reimer et al., 2009, *Radiocarbon* 51(4):1131-1150,

Stuiver et al., 1993, *Radiocarbon* 35(1):187-189, Giesecke et al., 1995, *Tellus* 27:168-192

Mathematics used for calibration scenario

A Simplified Approach to Calibrating C14 Dates

Talbot, A. S., Vogel, J. C., 1993, *Radiocarbon* 35(2):317-322

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