

August 25, 2010

Mr. Henry Willems
Environmental Engineer
New York State Department of Environmental Conservation
625 Broadway
Albany, New York 12233-7014

**RE: Supplemental Remedial Investigation Work Plan
Williamsburg Works Former Manufactured Gas Plant (MGP) Site
Brooklyn, New York
Site No. 224055
Index No. A2-0552-0606**

Dear Mr. Willems:

National Grid is submitting for your review and approval the following Supplemental Remedial Investigation (SRI) Work Plan to conduct SRI field activities adjacent to the Williamsburg Works former Manufactured Gas Plant (MGP) site in Brooklyn, New York (Site). National Grid has prepared this work plan in order to further evaluate the extent of dense non-aqueous phase liquid (DNAPL) tar impacts that have migrated offsite, to locate the source of petroleum impacts, and to confirm extent of impacts described in the Metcalf & Eddy/AECOM June 2007 Cost to Cure Report. The Site and proposed sample locations are shown in Plate 1.

1.0 SRI SCOPE OF WORK

National Grid and its contractors have completed the Remedial Investigation (RI) sampling activities that were proposed as part of the New York State Department of Environmental Conservation (NYSDEC) and New York State Department of Health (NYSDOH)-approved RI Work Plan and addendums. These documents include the original work plan titled *Remedial Investigation Work Plan Williamsburg Works, Former Manufactured Gas Plant Site, Brooklyn, New York ACO Index No A2-0552-0606, Site # 224055*, dated May 2008 (the approved RI work plan), the 50 Kent Ave Addendum dated February 12, 2009, 35 Kent Ave Addendum dated November 19, 2008, and deeper borings at 50 Kent Ave Addendum dated December 7, 2009. The findings of the RI activities completed to date are provided in a separate deliverable *Draft Remedial Investigation Interim Data Summary, Williamsburg Works Former MGP Site* letter dated July 20, 2010.

Soil borings advanced as part of RI activities encountered tar impacts to the north, west, and south of the Site as deep as 60 feet below ground surface (bgs). All visual evidence of contamination, including site related tar impacts as well as potentially off-site related petroleum impacts were found above a confining clay layer at approximately 60 feet bgs. A previous Metcalf & Eddy/AECOM Cost to Cure Report dated June 2007 provides an extent of impacts figure. In this SRI Work Plan, the installation of soil borings, monitoring wells, and sediment cores are proposed to evaluate the extent of tar impacts in subsurface soil that have migrated off-site, to locate the source of petroleum impacts, and to confirm extent of impacts described in the Metcalf & Eddy/AECOM June 2007 Cost to Cure Report (Plate 1).

The SRI activities will be conducted in accordance with the approved RI work plan, including the Health and Safety Plan (HASP), Quality Assurance Project Plan (QAPP), and Field Sampling Plan (FSP). A Community Air Monitoring Plan (CAMP) will be implemented at the Site during intrusive field activities. The remainder of this letter describes the proposed soil borings, sediment cores, and monitoring wells, as well as their analyses.

1.1 Proposed Soil Borings

Eighteen soil borings (WW-SB-43 through WW-SB-55 and WW-MW-18 through WW-MW-22) are proposed at locations adjacent to the Site. The proposed soil boring locations are shown in Plate 1. Table 1 contains sample descriptions, rationale, and analysis. Actual drilling locations will be determined based upon the subsurface utility clearance activities, permanent above ground structures, and property owner requirements. The borings will be installed with a sonic drill rig or hollow stem auger rig in accordance with drilling methods and procedures in the FSP and RI Work Plan. Each boring location will be hand cleared for utilities to 5 feet bgs.

Soil samples will be collected and logged continuously from each boring. Nineteen of the borings will be advanced to the clay layer present at approximately 60 feet bgs. One soil boring (WW-SB-49) will be advanced to approximately 10 feet below the clay layer. If tar is present below the clay layer, the boring will be advanced to 10 feet below the bottom of observed tar or top of bedrock. The borings will be advanced using roto-sonic or hollow stem auger techniques.

If DNAPL tar impacts are observed near the top of the clay layer in the proposed deep boring, 7-inch casing will be advanced to the top of clay to isolate the contaminated zone. The 7-inch casing will be seated in a 5-foot-thick column of bentonite slurry placed at the top of clay. The bentonite slurry will be used to mitigate downward migration of the contamination along the walls of the casing. Once the 7-inch casing has been seated in the bentonite, soil sampling will continue below the casing. Six-inch casing will be advanced after collection of each sample to case the borehole below the bottom of the seven-inch casing.

After completing each borehole, the 6-inch casing will be removed incrementally as the boring is grouted. If 7-inch isolation casing is used, once the grout has reached the bottom depth of the 7-inch casing, the 6-inch casing will be completely removed. Grouting will then proceed with incremental removal of the 7-inch casing.

Up to three soil samples per boring will be selected for chemical analysis. One will be collected from the depth interval indicating the greatest apparent degree of contamination from beneath the pavement and road base to approximately 5 feet bgs. A sample will also be collected during boring advancement at the depth interval indicating the greatest degree of impacts. The greatest degree of impacts will be identified by field screening of the borings with a Photoionization Detector (PID), and by visual and olfactory observations. If soils within a particular boring appear un-impacted, then a sample will be collected from the observed groundwater table. A sample will be collected beneath impacts, if present, at the completion of the boring. Each sample will be analyzed for volatile organic compounds (VOCs) by EPA Method 8260B, semivolatile organic compounds (SVOCs) by EPA Method 8270C, target analyte list (TAL) metals by EPA Method 6000/7000 series, and free cyanide by extraction by EPA

Method 9013A and analysis by microdiffusion in accordance with the RI work plan. One sample within the fill at each location will also be analyzed for herbicides by EPA Method 8151A, pesticides by EPA Method 8081A, and polychlorinated biphenyls (PCBs) by EPA Method 8082. Three samples of the clay layer will also be analyzed for permeability and Atterberg limits. The RI work plan and QAPP detail the quality assurance/quality control (QA/QC) samples that will be collected.

Drilling and sampling equipment will be decontaminated between each sample location as described in the FSP. Soil cuttings and decontamination fluids will be contained within United States Department of Transportation (USDOT) 55-gallon drums and disposed of at a National Grid-approved disposal facility.

1.2 Proposed Monitoring Wells

Five of the proposed soil borings (WW-MW-18 through WW-MW-22) will be completed as permanent monitoring wells. The proposed well locations are shown in Plate 1. Table 1 provides sample description, rationale, and analysis. The wells will be installed using rotosonic methods in accordance with drilling methods and procedures in the FSP and RI Work Plan.

Each proposed monitoring well will be screened in the uppermost portion of the water table aquifer. Each monitoring well will be constructed with an approximate 10-foot length of 2-inch inner diameter (ID) 0.010 inch slotted monitoring well screen and finished with 2-inch ID poly vinyl chloride (PVC) riser pipe to the surface and a 2-foot sump. Each well screen will extend approximately 2 feet above the water table. The annular space between the well screen and borehole wall will be backfilled with chemically inert sand to promote sufficient groundwater flow to the well and to minimize the passage of any fine-grained formational material into the well. A bentonite clay seal will be placed above the sand pack. The remaining annular space will be filled to grade with cement/bentonite grout. Each monitoring well will be fitted with a lockable cap and finished with a flush-mounted curb box secured with cement.

Each newly installed monitoring well will be developed by alternatively surging and pumping until the turbidity is less than 50 nephelometric turbidity units (NTUs) or until a maximum of 10 well volumes of water has been removed. A field turbidity meter will be used to monitor the NTU levels. Well development will be completed in general accordance with the FSP.

Each of the newly installed monitoring wells will be sampled after a minimum of two weeks following completion of well development. Prior to sampling, two synoptic rounds of groundwater level measurements will be recorded for the 16 existing and six newly installed monitoring wells and the established surface water measuring point in the East River; the groundwater will be gauged at both the low and high tidal levels.

The six newly installed monitoring wells will be purged and sampled using low flow groundwater sampling procedures and in accordance with the FSP. Each groundwater sample will be analyzed for VOCs by EPA Method 8260B, SVOCs by EPA Method 8270C, TAL metals by EPA Method 6000/7000

series, herbicides by EPA Method 8151A, pesticides by EPA Method 8081A, PCBs by EPA Method 8082 and, total cyanide by EPA Method 9012B. The RI work plan and QAPP detail the QA/QC samples that will be collected.

Purge water generated during the installation and sampling of monitoring wells will be collected in 55-gallon USDOT drums or frac tank and will be disposed of at a National Grid-approved disposal facility.

1.3 Proposed Sediment Cores

Nine sediment boring locations (WW-SED-08 through WW-SED-16) are proposed for installation within the East River adjacent to the Site. The proposed sediment boring locations are shown on Plate 1. Table 1 provides sample description, rationale, and analysis. The borings will be installed using a resonant sonic drilling rig that will be staged on a barge or floating drilling platform in accordance with resonant sonic drilling methods and procedures described in the FSP. Resonant sonic methods are proposed because of the depth of the borings. The barge will be equipped with oil absorbent booms and other spill control materials in the event that any oily residue is generated during the sampling process.

Sediment samples will be collected and logged continuously. Cores will be advanced to the top of the clay layer present at approximately 50 feet below the sediment surface. Core locations will be surveyed using Global Positioning System (GPS) equipment and referenced to New York State Plane Coordinate System and North American Vertical Datum (NAVD).

Up to three sediment samples per core location will be selected for chemical analysis. The first sediment sample will be collected from 0 to 6 inches. A sample will also be collected at the depth interval indicating the greatest degree of impacts. The greatest degree of impacts will be identified by field screening of the cores with a PID, and by visual and olfactory observations. If no impacts are observed, analytical samples will be collected from the sediments at the interface of the sediment deposits and the native material. A sample will also be collected beneath the tar impacts, if present, or at the completion of the boring. Drilling and sampling equipment will be decontaminated between each sample location as described in the FSP.

Each sample will be analyzed for VOCs by EPA Method 8260B, SVOCs by EPA Method 8270C, TAL metals by EPA Method 6000/7000 series, and free cyanide [extraction by EPA Method 9013A and analysis by Microdiffusion ASTM Method D4282-02]. The sample collected from 0 to 6 inches will also be analyzed for total organic carbon (TOC) by EPA Method 9060, herbicides by EPA Method 8151A, PCBs by EPA Method 8082 and pesticides by EPA Method 8081A. The RI work plan and QAPP detail the quality assurance/quality control (QA/QC) samples that will be collected.

1.4 Survey

The sample locations will be surveyed by a New York State Licensed Land Surveyor. The elevation of each sample location will be determined to ± 0.01 foot and will be tied into the Site benchmark. All

locations and elevations will be referenced to the New York State Plane Eastern Zone North American Datum 1983 and North American Vertical Datum 1988.

1.5 Data Validation and Management

The soil and groundwater samples will be analyzed by a NYSDOH environmental lab approval program accredited laboratory. Analytical results will be provided in a New York State Category B data deliverable format. The data will be validated in accordance with New York State Analytical Service Protocols, and a data usability summary report will be prepared documenting the adequacy of the analytical data obtained from the laboratory and discussing any quality control non-compliance issues or limitations on the use of the data.

2.0 REPORT PREPARATION

The information collected as part of this SRI will be used to refine the site conceptual model and will be incorporated into the RI report, as described in the Final RI Work Plan.

3.0 SCHEDULE

Field activities can commence following NYSDEC and NYSDOH approval of this work plan, contractor availability, and access to private properties. The work is projected to last approximately two months. A schedule will be developed following the approval of this work plan.

If you have any questions or require additional information, please feel free to contact me at (718) 963-5453 or by e-mail at donald.campbell@us.ngrid.com.

Sincerely,



Donald Campbell
Project Manager

Attachments

c: B. Callaghan, NYSDOH (1 Copy)
T. Bell, National Grid
F. Murphy, National Grid
D. Terry, GEI
M. Felter, GEI

Table 1
Sample Location Rationale
Supplemental Remedial Investigation Work Plan
Former Williamsburg Works MGP Site
Brooklyn, New York

Proposed Sample Identification Number	Location	Rationale	Approximate Completion Depth	Number of Samples		VOCs (EPA 8260B)	SVOCs (EPA 8270C)	TAL Metals (6000/7000)	Cyanide ¹	Herbicides (EPA 8151A) ²	PCBs (EPA 8082) ²	Pesticides (EPA 8081A) ²	TOC (EPA 9060) ³
				Soil	GW								
Soil Borings and Monitoring Wells													
WW-MW-18	Within Block 2277 Lot 1 (Bayside Fuel Oil Co.), north of the Site	Delineate visual impacts northeast of WW-SB-46 (within Bayside Fuel Oil Co.) if present. Confirm extent of impacts described in the Metcalf & Eddy/AECOM June 2007 Cost to Cure Report. Evaluate groundwater flow and potential impacts within shallow groundwater zone (water table) north of the Site.	Top of Clay	3	1	X	X	X	X	X	X	X	
WW-MW-19	Within Block 2277 Lot 1 (Bayside Fuel Oil Co.), north of the Site	Evaluate soil quality downgradient of a former tar tank. Evaluate groundwater flow and potential impacts within shallow groundwater zone (water table) north of the Site.	Top of Clay	3	1	X	X	X	X	X	X	X	
WW-MW-20	Within Block 2277 Lot 1 (Bayside Fuel Oil Co.), north of the Site	Delineate visual impacts north of the Site. Confirm extent of impacts described in the Metcalf & Eddy/AECOM June 2007 Cost to Cure Report. Evaluate groundwater flow and potential impacts within shallow groundwater zone (water table) north of the Site.	Top of Clay	3	1	X	X	X	X	X	X	X	
WW-MW-21	Kent Avenue, south of the Site.	Delineate visual impacts southwest of WW-SB-01 (within N 11th Street) where petroleum sheen and staining was encountered from 9 to 16.5 feet. Evaluate groundwater flow and potential impacts within shallow groundwater zone (water table) south of the Site.	Top of Clay	3	1	X	X	X	X	X	X	X	
WW-MW-22	32 North 10th Street, adjacent to North 10th Street, south of the Site.	Delineate visual impacts southwest of WW-SB-28 and WW-SB-29 (within N 11th Street) where tar staining and blebs were encountered between 14.7 and 25 feet. Evaluate groundwater flow and potential impacts within shallow groundwater zone (water table) south of the Site.	Top of Clay	3	1	X	X	X	X	X	X	X	
WW-MW-23	86 Kent Avenue, adjacent to North 10th Street and the East River, south of the Site.	Delineate visual impacts southwest of WW-SB-31 and WW-SB-32 (within N 11th Street) where petroleum sheen and staining, and tar staining were encountered to depths of 17.9 and 22.6 feet. Evaluate groundwater flow and potential impacts within shallow groundwater zone (water table) south of the Site.	Top of Clay	3	1	X	X	X	X	X	X	X	

Table 1
Sample Location Rationale
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Former Williamsburg Works MGP Site
Brooklyn, New York

Proposed Sample Identification Number	Location	Rationale	Approximate Completion Depth	Number of Samples		VOCs (EPA 8260B)	SVOCs (EPA 8270C)	TAL Metals (6000/7000)	Cyanide ¹	Herbicides (EPA 8151A) ²	PCBs (EPA 8082) ²	Pesticides (EPA 8081A) ²	TOC (EPA 9060) ³
				Soil	GW								
WW-SB-43	Within Block 2277 Lot 1 (Bayside Fuel Oil Co.), north of the Site	Delineate visual impacts north of WW-SB-18 (within Kent Avenue) where petroleum sheen and staining, and tar staining were encountered between 6.9 and 25.7 feet. Confirm extent of impacts described in the Metcalf & Eddy/AECOM June 2007 Cost to Cure Report.	Top of Clay	3	0	X	X	X	X	X	X	X	
WW-SB-44	Within Block 2277 Lot 1 (Bayside Fuel Oil Co.), north of the Site	Delineate visual impacts northeast of WW-SB-27 (within N 12th Street) where petroleum sheen was encountered from 10 to 13.8 feet.	Top of Clay	3	0	X	X	X	X	X	X	X	
WW-SB-45	Within Block 2277 Lot 1 (Bayside Fuel Oil Co.), north of the Site	Delineate visual impacts northeast of WW-SB-26 (within N 12th Street) where petroleum sheen and staining, and tar blebs were encountered between 10 and 42 feet.	Top of Clay	3	0	X	X	X	X	X	X	X	
WW-SB-46	Within Block 2277 Lot 1 (Bayside Fuel Oil Co.), north of the Site	Delineate visual impacts northeast of WW-SB-25 (within N 12th Street) where petroleum sheen, tar staining and blebs were encountered between 9.5 and 33 feet.	Top of Clay	3	0	X	X	X	X	X	X	X	
WW-SB-47	Within Block 2277 Lot 1 (Bayside Fuel Oil Co.), north of the Site	Delineate visual impacts northeast of WW-MW-10 (within N 12th Street) where tar staining and blebs were encountered from 4 to 12.2 feet.	Top of Clay	3	0	X	X	X	X	X	X	X	
WW-SB-48	Within Block 2277 Lot 1 (Bayside Fuel Oil Co.), north of the Site	Delineate visual impacts northeast of WW-SB-34 (within N 12th Street) where petroleum sheen and staining, and tar blebs were encountered between 5 and 15.6 feet.	Top of Clay	3	0	X	X	X	X	X	X	X	
WW-SB-49	Within Block 2277 Lot 1 (Bayside Fuel Oil Co.), north of the Site	Delineate visual impacts northeast of WW-SB-16 (within N 12th Street) where petroleum sheen and staining, and tar staining and blebs were encountered between 0.6 and 25 feet.	Top of Clay	3	0	X	X	X	X	X	X	X	
WW-SB-50	Within Block 2277 Lot 1 (Bayside Fuel Oil Co.), north of the Site	Delineate visual impacts northeast of WW-SB-36 (within N 12th Street) where petroleum sheen and staining, and tar blebs were encountered between 8.4 and 21.6 feet. Evaluate the depth and thickness of the clay layer.	10 Feet Below Bottom of Clay	3	0	X	X	X	X	X	X	X	
WW-SB-51	Within Block 2277 Lot 1 (Bayside Fuel Oil Co.), north of the Site	Delineate visual impacts northeast of WW-SB-45 (within Bayside Fuel Oil Co.) if present. Confirm extent of impacts described in the Metcalf & Eddy/AECOM June 2007 Cost to Cure Report. Evaluate groundwater flow and potential impacts within shallow groundwater zone (water table) north of the Site.	Top of Clay	3	0	X	X	X	X	X	X	X	

Table 1
Sample Location Rationale
Supplemental Remedial Investigation Work Plan
Former Williamsburg Works MGP Site
Brooklyn, New York

Proposed Sample Identification Number	Location	Rationale	Approximate Completion Depth	Number of Samples		VOCs (EPA 8260B)	SVOCs (EPA 8270C)	TAL Metals (6000/7000)	Cyanide ¹	Herbicides (EPA 8151A) ²	PCBs (EPA 8082) ²	Pesticides (EPA 8081A) ²	TOC (EPA 9060) ³
				Soil	GW								
WW-SB-52	Within Block 2277 Lot 1 (Bayside Fuel Oil Co.), north of the Site	Evaluate soil quality within a former tar tank.	Top of Clay	3	0	X	X	X	X	X	X	X	
WW-SB-53	Within Block 2277 Lot 1 (Bayside Fuel Oil Co.), north of the Site	Evaluate soil quality within a former tar tank.	Top of Clay	3	0	X	X	X	X	X	X	X	
WW-SB-54	Within Block 2277 Lot 1 (Bayside Fuel Oil Co.), north of the Site	Evaluate soil quality downgradient of a former tar tank.	Top of Clay	3	0	X	X	X	X	X	X	X	
WW-SB-55	40 North 10th Street, adjacent to North 10th Street and Kent Avenue, south of the Site.	Delineate visual impacts southwest of WW-SB-17 (within N 11th Street) where tar staining and blebs were encountered from 25 to 33 feet.	Top of Clay	3	0	X	X	X	X	X	X	X	
WW-SB-56	Block 2301 Lot 50, adjacent to North 10th Street, south of the Site.	Delineate visual impacts southwest of WW-SB-31 and WW-SB-32 (within N 11th Street) where petroleum sheen and staining and tar staining and blebs were encountered to 17.9 and 22.6 feet.	Top of Clay	3	0	X	X	X	X	X	X	X	

Table 1
Sample Location Rationale
Supplemental Remedial Investigation Work Plan
Former Williamsburg Works MGP Site
Brooklyn, New York

Proposed Sample Identification Number	Location	Rationale	Approximate Completion Depth	Number of Samples		VOCs (EPA 8260B)	SVOCs (EPA 8270C)	TAL Metals (6000/7000)	Cyanide ¹	Herbicides (EPA 8151A) ²	PCBs (EPA 8082) ²	Pesticides (EPA 8081A) ²	TOC (EPA 9060) ³
				Soil	GW								
Sediment Borings													
WW-SED-08	East River, west of the Site	Delineate visual impacts south of WW-SED-01 where tar staining was encountered between 1.2 and 10 feet.	Top of Clay	3	0	X	X	X	X	X	X	X	X
		Evaluate sediment quality above the clay layer.											
WW-SED-09	East River, west of the Site	Delineate visual impacts west and downgradient of WW-MW-14 (within N 11th Street) where tar staining and blebs were encountered between 15 and 43.9 feet.	Top of Clay	3	0	X	X	X	X	X	X	X	X
WW-SED-10	East River, west of the Site	Delineate visual impacts south of WW-SED-05 where petroleum sheen and tar blebs were encountered as deep as 17.3 feet.	Top of Clay	3	0	X	X	X	X	X	X	X	X
		Evaluate sediment quality above the clay layer.											
WW-SED-11	East River, west of the Site	Delineate visual impacts northwest and downgradient of WW-MW-14 (within N 11th Street) and WW-SED-01 where tar staining and blebs were encountered to 43.9 and 17.3 feet.	Top of Clay	3	0	X	X	X	X	X	X	X	X
WW-SED-12	East River, west of the Site	Evaluate sediment quality northwest and downgradient of WW-SED-10.	Top of Clay	3	0	X	X	X	X	X	X	X	X
WW-SED-13	East River, west of the Site	Delineate visual impacts northwest and downgradient of WW-SED-05 where petroleum sheen and tar blebs were encountered as deep as 17.3 feet.	Top of Clay	3	0	X	X	X	X	X	X	X	X
WW-SED-14	East River, west of the Site	Delineate visual impacts northwest and downgradient of WW-SED-06 where tar coating and saturation were encountered as deep as 10 feet.	Top of Clay	3	0	X	X	X	X	X	X	X	X
WW-SED-15	East River, west of the Site	Evaluate sediment quality northwest and downgradient of the Bayside Fuel Oil Co.	Top of Clay	3	0	X	X	X	X	X	X	X	X

Notes:

Chemical analysis test methods specified are from U.S. EPA SW-846 test methods

EPA TO-15 analysis will include VOCs and naphthalene

EPA - Environmental Protection Agency

VOC - volatile organic compounds

SVOC - semivolatile organic compounds

TAL - target analyte list

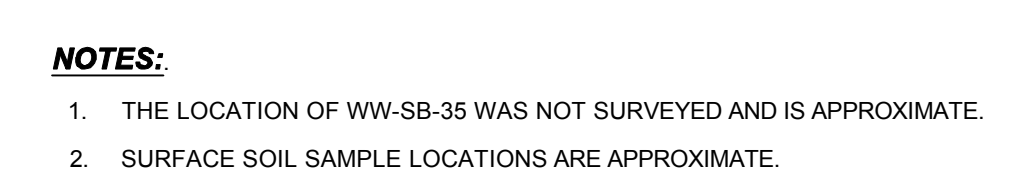
PCBs - polychlorinated biphenyls

TOC - total organic carbon

1 - Soils will be analyzed by Free Cyanide [extraction by EPA Method 9013A and analysis by Microdiffusion American Society for Testing and Materials (ASTM)], water will be analyzed by Total Cyanide EPA Method 9012B

2 - One soil sample of the fill in each boring will be sampled for PCBs, pesticides, and herbicides

3 - The shallow sediment sample will be sampled for TOC



SOURCES:

1. PHOTOGRAPH OBTAINED FROM BLUE SKY INTERNATIONAL LTD. ALL RIGHTS RESERVED. COPYRIGHT 2007.
2. SANBORN FIRE INSURANCE MAPS (1887 THROUGH 1996).
3. NEW YORK CITY OPEN ACCESSIBLE SPACE INFORMATION SYSTEM <http://www.oasinc.net>, ACCESSED JANUARY 2008.
4. SURVEY OF WILLIAMSBURG WORKS BOUNDARIES, EXISTING CONDITIONS, AND SAMPLE LOCATIONS CONDUCTED BY GEI CONSULTANTS, INC. SURVEYED BY NEW YORK CITY DEPARTMENT OF CITY PLANNING AND LAND MARKS.