nationalgrid

Andrew Prophete
Project Manager

June 15, 2011

Mrs. Robin Hackett
Project Manager MGP Remedial Section
New York State Department of Environmental Conservation
Division of Environmental Remediation
Bureau of Western Remedial Action, 11th Floor
625 Broadway,
Albany, New York 12233-701

Re: Site Characterization Work Plan Addendum
Flatbush Station A & B Former Gas Holder Site Brooklyn, Kings County, NY
NYSDEC Site No.: 224061, Order on Consent Index #: A2-0552-0606

Dear Ms. Hackett:

National Grid is submitting the following Site Characterization (SC) Work Plan Addendum for the Flatbush Station A & B Former Gas Holder Site (Site), located in Brooklyn, Kings County, New York. This addendum was developed and will be implemented on a fast track schedule as directed by the NYSDEC to accommodate the planned start of construction activities at 760 Parkside Avenue by the property owner (SUNY Downstate). The property owner has informed National Grid that construction will start some time after July 1, 2011. The activities proposed in this SC Work Plan Addendum are to address potential data gaps identified from the SC, to collect additional data to support the development of the SC Report and the Site Management Plan, and to prepare for the third party construction proposed on 760 Parkside Avenue in July 2011.

A SC was conducted on the Site in 2011 according to the approved SC Work Plan (AECOM, 2010). A summary of the site characterization activities and results were presented to the NYSDEC on May 18, 2011 at the NYSDEC headquarters in Albany, NY. The SC results identified MGP impacts below 15 ft bgs mainly on the southern portion of the Site and petroleum impacts from potential offsite sources. A review of the SC results also identified data gaps that will be addressed by this addendum.

The objectives of this SC Work Plan Addendum are:

- delineate the extent of MGP residuals observed at 760 Parkside Avenue in borings SB-15 and SB-17;
- determine the extent of groundwater impacts from MGP residuals;

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- evaluate potential indoor air risk;
- determine extent of soil and groundwater impacts from potential off-site sources; and
- determine the location of the remnants (if any) of the valve house and oil house on 760 Parkside Avenue and evaluate the subsurface conditions at these locations.

To accomplish these objectives, National Grid proposes to advance six soil borings, install two monitoring wells, excavate two test pits, and collect three soil intrusion samples. The proposed supplemental SC locations are shown on Figure 1, and the rationale, anticipated depth, number of samples, and analyses to be performed are included on Table 1. All work will be performed in accordance with the procedures specified in the 2010 NYSDEC-approved SC Work Plan.

Test Pits

Two test pits (TP-1 A/B and TP-2) will be excavated along and around the former valve house and oil house locations in the western portion of the 760 Parkside Avenue property as shown in Figure 1. The test pits will be excavated to investigate the presence of historic MGP structures believed to be in the alignment of the proposed building location or utility corridor. The condition of the soil will be logged to aid in the delineation of nearby borings.

A backhoe will be used to excavate the test pits, which will be approximately 10 feet in length as shown in Figure 1 and will extend down to the 8 to 10 ft bgs. The final length and depth of test pit excavation will be based on field observations and professional judgment of the supervising geologist or environmental scientist. Additional test pits will be excavated as needed to further visually delineate any source areas. The materials uncovered in the test pits will be logged by the supervising geologist or environmental scientist in the field using the most appropriate and current guidelines provided by American Society of Testing Machine (ASTM) and the Unified Soil Classification System (USCS). Soil will be screened for the presence of volatile organics using a PID. The corners of each test pit will be flagged for location by survey.

After completion, the test pits will be backfilled (in reverse order) with the excavated soil at each location. Between the completion of each test pit, the backhoe will be decontaminated decontaminate (e.g., brush and steam-clean) as deemed appropriate by the supervising geologist or environmental scientist overseeing the work, and following the completion of all work.

Borehole Advancement and Monitoring Well Installation

Following or simultaneously with the test pit excavations, two soil borings (SB-18 and SB-19) will be completed west and north of SB-17, two soil borings (SB-20 and SB-21) will be completed north and south of SB-15, one boring (SB-22) will be completed south of SB-6/MW-6, and one boring (SB-23) will be completed downgradient of former MGP structures and west of SB-8/MW-8 to laterally and vertically delineate any residual MGP materials (see Figure 1). Soil boring locations may be modified based on the observations from the test pit excavations or already completed borings. Soil borings SB-18 through SB-21 will be completed to a depth of 85 feet, or deeper, if impacts are observed at 85 feet. These borings have been positioned to provide delineation to the north, east, south, and west of MGP residuals encountered at SB-17 and SB-15. These borings are also in areas that may shortly become unavailable due to the

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property owner's (SUNY Downstate) plans to expand their medical facility. Soil boring SB-22 will be advanced to 75 ft bgs to determine the presence or absence of MGP residuals and or petroleum impacts southeast of the gas holder and along the eastern site boundary. The boring will be completed as a monitoring well (MW-9) to determine if the off-site source of petroleum impacts detected at MW-6 are contributing to VOC and SVOC impacts detected at monitoring well MW-8. Soil boring SB-23 will be advanced to 75 ft bgs to determine the presence or absence of MGP residuals downgradient of the observed impacts in SB-15 and SB-17. The boring will be completed as a monitoring well (MW-10) to determine if dissolved phase MGP residuals are present downgradient of the southern gas holder, and to provide cross-gradient delineation of groundwater impacts detected at well MW-8.

Soil Sampling

Soil sampling will be performed during soil boring advancement at each borehole and test-pit TP-1. In summary, soil samples may be collected at the following depth intervals based on field observations:

- At the depth interval exhibiting the highest PID readings or visual evidence of impacts. If no impacts are noted, this sample will not be collected; and
- At the first clean interval or the base of the borehole.

Actual soil sampling depths may be adjusted based on field conditions or in consultation with NYSDEC field oversight personnel. Soil samples will be analyzed for:

- TCL Volatile organic compounds (VOCs) by EPA Method 8260B
- TCL Semi-volatile organic compounds (SVOCs) by EPA Method 8270C
- TCL Pesticides USEPA Method 8081A
- TCL Herbicides USEPA Method 8151A
- PCBs as Aroclors USEPA Method 8082
- TAL Metals USEPA Method 6000-7000 Series
- Free Cyanide (extraction by EPA method 9014A and analysis by Microdiffusion, ASTM International method D4282-02)

Groundwater Gauging and Sampling

A comprehensive round of groundwater sampling will be performed at least two weeks after the development of newly installed wells. All site wells will be gauged and sampled following EPA's low-flow groundwater sampling procedures in accordance with the SC Work Plan. Field measurements will be collected during the sampling of each monitoring well. The following parameters will be monitored: pH, specific conductance, dissolved oxygen (DO), oxidation reduction potential (ORP), temperature, and turbidity.

Groundwater samples will be analyzed for:

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- TCL VOCs by EPA Method 8260B
- TCL SVOCs by EPA Method 8270C
- TCL Pesticides USEPA Method 8081A
- TCL Herbicides USEPA Method 8151A
- PCBs as Aroclors USEPA Method 8082
- TAL Metals by USEPA Method 6000-7000 Series
- Total cyanide by EPA Method 9012B

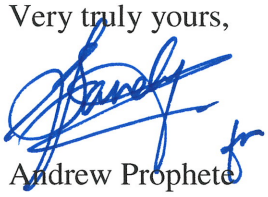
Soil Vapor Intrusion Sampling

Three soil vapor intrusion (SV-1, SV-2, and SV-3) points will be installed within the footprint of the proposed build footprint at 760 Parkside Avenue. Data from the SVI points will be used to evaluate the potential risk to human health by soil vapor intrusion into the planned building. The SVI points will be installed in accordance with New York State Department of Health (NYSDOH) protocols. Following installation, soil vapor samples will be collected from SV-1, SV-2, and SV-3 as well as an ambient air sample. Samples will be analyzed for VOCs by TO-15 plus National Grid MGP specific compounds for MGP Sites.

As mentioned above, all supplemental SV activities will be conducted as per the NYSDEC approved SC Work Plan.

If you have any questions, comments, or require any additional information, please do not hesitate to contact me (718) 963-5412 or via electronic mail (e-mail) at Andrew.Prophete@us.ngrid.com.

Very truly yours,



Andrew Prophete
Project Manager

Enclosures

Cc – S. Selmer, NYSDOH (w/enclosure - 1 hard copy)
T. Bell, National Grid (w/enclosure – via email only)
C. Willard, National Grid (w/enclosure – via email only)
J. Giordano, National Grid (w/enclosure – via email only)
R. Crawley, Ostrow & Partners (w/enclosure - via email only)
S. Pandya, AECOM (w/enclosure – via email only)
J. Millard, AECOM (w/enclosure – via email only)
File: 60144412-200

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Tables

Table 1
Summary of Soil Boring, Test Pit, Monitoring Well, and Soil Vapor Locations, Rationale, and Analyses
Site Characterization Flatbush Station A and B Former Gas Holder Site
Brooklyn, New York

AECOM

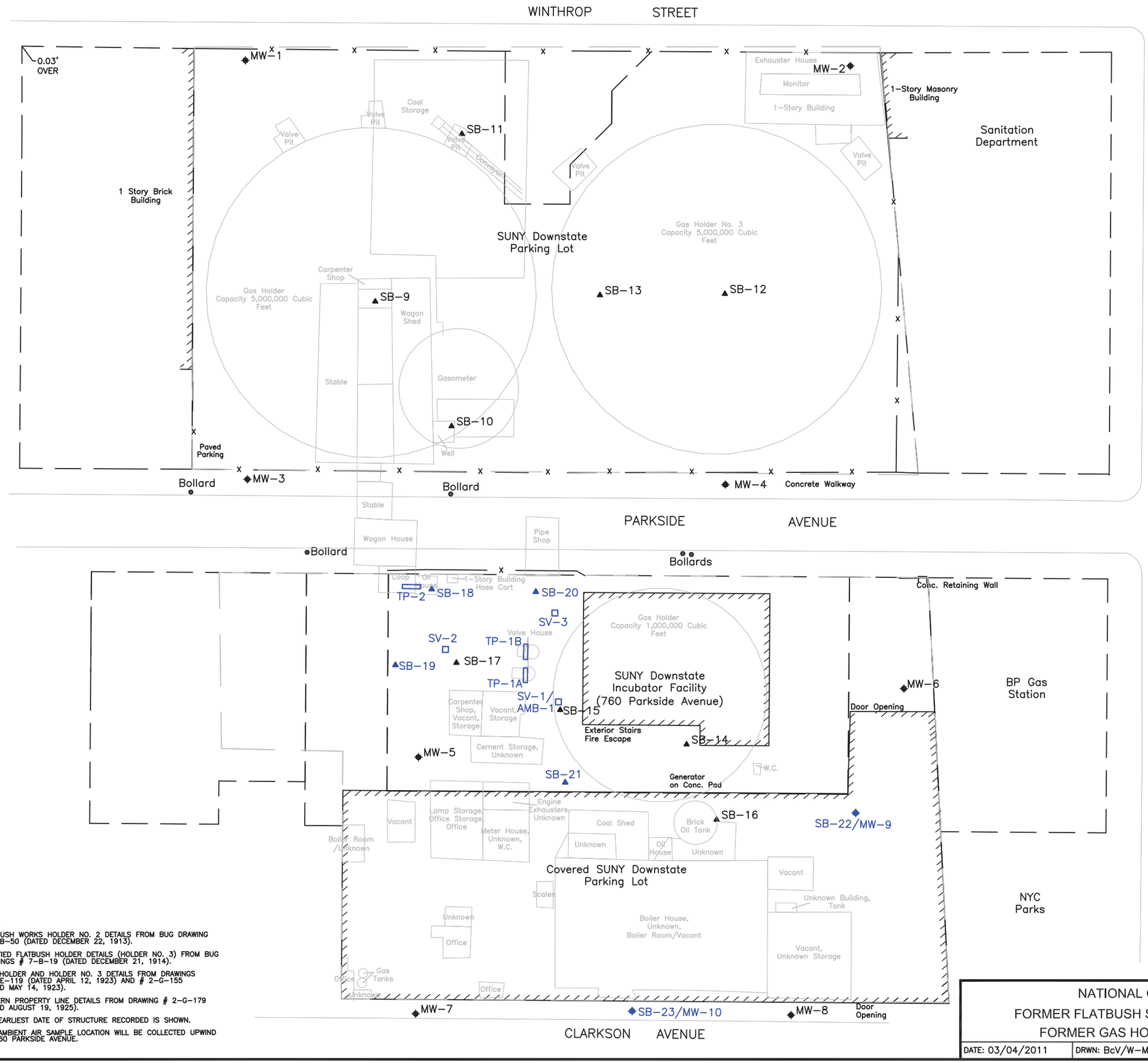
Sample Location	Sample ID	Sample Location Rationale	Completion Depth (ft bgs)	Sample Depth Interval	Number of Samples	Soil Sample Proposed Laboratory Analysis
Soil Borings and Test Pit						
SB-18	SB-18 (depth)	West of SB-17 to evaluate the potential presence of manufactured gas residuals observed in SB-17.	Est. 85 feet	Upper 5 feet, most impacted, vertical extent	3	TCL VOCs, TCL SVOCs, TCL Pesticides/Herbicides, PCBs as Aroclors, TAL Metals, Free Cyanide
SB-19	SB-19 (depth)	North of SB-17 to evaluate the potential presence of manufactured gas residuals observed in SB-17.	Est. 85 feet	Upper 5 feet, most impacted, vertical extent	3	TCL VOCs, TCL SVOCs, TCL Pesticides/Herbicides, PCBs as Aroclors, TAL Metals, Free Cyanide
SB-20	SB-20 (depth)	North of SB-15 to evaluate the potential presence of manufactured gas residuals observed in SB-15.	Est. 85 feet	Upper 5 feet, most impacted, vertical extent	3	TCL VOCs, TCL SVOCs, TCL Pesticides/Herbicides, PCBs as Aroclors, TAL Metals, Free Cyanide
SB-21	SB-21 (depth)	South of SB-15 to evaluate the potential presence of manufactured gas residuals observed in SB-15 and SB-17.	Est. 85 feet	Upper 5 feet, most impacted, vertical extent	3	TCL VOCs, TCL SVOCs, TCL Pesticides/Herbicides, PCBs as Aroclors, TAL Metals, Free Cyanide
SB-22	SB-22 (depth)	Downgradient of MW-6 and between MW-6 and MW-8 to evaluate potential presence of petroleum related impacts observed in SB-6/MW-6.	Est. 75 feet	Upper 5 feet, most impacted, vertical extent	3	TCL VOCs, TCL SVOCs, TCL Pesticides/Herbicides, PCBs as Aroclors, TAL Metals, Free Cyanide
SB-23	SB-23 (depth)	Between MW-7 and MW-8 to characterize soil down gradient of the former MGP structures to evaluate the potential for offsite migration, and to provide hydrologic data south of the site.	Est. 85 feet	Upper 5 feet, most impacted, vertical extent	3	TCL VOCs, TCL SVOCs, TCL Pesticides/Herbicides, PCBs as Aroclors, TAL Metals, Free Cyanide
TP-1	TP-1 (depth)	Evaluate former Valve House for potetial MGP impacts	Est. 8-10 feet max	Upper 5 feet, most impacted, vertical extent	2	TCL VOCs, TCL SVOCs, TCL Pesticides/Herbicides, PCBs as Aroclors, TAL Metals, Free Cyanide
TP-2	--	Evaluate former oil house	Est. 8-10 feet max	--	--	--
Groundwater						
MW-09	MW-09 (depth)	Associated with SB-22. Evaluate potential off-site source along eastern site boundary. Provide hydrologic data along the eastern area of the property.	Water Table Well - Completion depth estimated at 62 feet below grade surface	-	1	TCL VOCs, TCL SVOCs, TCL Pesticides/Herbicides, PCBs as Aroclors, TAL Metals, Free Cyanide
MW-10	MW-10 (date)	Associated with SB-23, Characterize groundwater quality down gradient of the former MGP structures to evaluate the potential for offsite migration, and to provide hydrologic data south of the site.	Water Table Well - Completion depth estimated at 62 feet below grade surface	-	1	TCL VOCs, TCL SVOCs, TCL Pesticides/Herbicides, PCBs as Aroclors, TAL Metals, Free Cyanide
Soil Vapor and Ambient Air						
SV-1	SV-1 (date)	Within and at the perimeter of the former southernmost holder footprint and east of former valve houses and within the proposed footprint of the SUNY Downstate Incubator Building to evaluate soil vapor quality.	Est. 4 feet below grade surface	-	1	TO-15, plus National Grid MGP specific compounds for MGP sites.
SV-2	SV-2 (date)	West-Northwest of location SB-17 and within the proposed footprint of the SUNY Downstate Incubator Building to evaluate soil vapor quality.	Est. 4 feet below grade surface	-	1	TO-15, plus National Grid MGP specifc compounds for MGP sites.
SV-3	SV-3 (date)	Within the proposed footprint of the SUNY Downstate Incubator Building to evaluate soil vapor quality.	Est. 4 feet below grade surface	-	1	TO-15, plus National Grid MGP specifc compounds for MGP sites.
AMB-1	ABM-1 (date)	To be placed upwind of SVI sampling locations at 760 Parkside Avenue.	-	-	1	TO-15, plus National Grid MGP specific compounds for MGP sites.

Notes:

TCL - Target Compound List
TCL VOCs - TCL volatile organic compounds using EPA Method 8260B
TCL SVOCs - TCL semi volatile organic compounds using EPA Method 8270C
TCL Pesticides/Herbicides - using EPA Methods 8081A/8151A, respectively.
TBD - to be determined based on site conditions including depth to water, lithologic variation, and observed impacts, if any.
* - 10 feet of clean required if impacted soils encountered. If no impacts observed, boring will terminate at the water table.

PCBs - Polychlorinated Biphenyls as Aroclors using EPA Method 8082.
TAL Metals - Target Analyte List Metals using EPA Methods 6010 and 7471.
Total cyanide (extraction by EPA method 9012)
Free cyanide (extraction by EPA method 9012)
ft bgs - feet below ground surface.

Figures



NOTE:

FLATBUSH WORKS HOLDER NO. 2 DETAILS FROM BUG DRAWING # 6-B-50 (DATED DECEMBER 22, 1913).

MODIFIED FLATBUSH HOLDER DETAILS (HOLDER NO. 3) FROM BUG DRAWINGS # 7-B-19 (DATED DECEMBER 21, 1914).

NEW HOLDER AND HOLDER NO. 3 DETAILS FROM DRAWINGS # 2-E-119 (DATED APRIL 12, 1923) AND # 2-G-155 (DATED MAY 14, 1923).

EASTERN PROPERTY LINE DETAILS FROM DRAWING # 2-G-179 (DATED AUGUST 19, 1925).

THE EARLIEST DATE OF STRUCTURE RECORDED IS SHOWN.

THE AMBIENT AIR SAMPLE LOCATION WILL BE COLLECTED UPWIND OF 760 PARKSIDE AVENUE.

AECOM

	HISTORIC STRUCTURES
	EXISTING BUILDING
	CURRENT FEATURES AND PROPERTY BOUNDARY
x	FENCE
	APPROXIMATE HISTORICAL BOUNDARY
MW-3	SC MONITORING WELL
SB-10	SC SOIL BORING
●	BOLLARD
SB-22/MW-9	PROPOSED SUPPLEMENTAL SC MONITORING WELL
SB-18	PROPOSED SUPPLEMENTAL SC SOIL BORING
TP-1A	PROPOSED SC TEST PIT
SV-1/AMB-1	PROPOSED SC SOIL VAPOR AND AMBIENT AIR SAMPLE

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GRAPHIC SCALE IN FEET

NAD 83 New York East Long Island

DRAFT

NATIONAL GRID FORMER FLATBUSH STATION A & B FORMER GAS HOLDER SITE			**PROPOSED SUPPLEMENTAL SITE CHARACTERIZATION LOCATIONS**	
DATE: 03/04/2011	DRWN: BcV/W-MA	JOB #: 60144412-310		**FIGURE -1**

File: B:\work\60144412\Cad\Figure1_SiteCharacterizationAdditionalInvestigationLocations.dwg Layout: AECOM-TBLK User: WeiX1 Plotted: Jun 15, 2011 - 3:13pm Xref's: