nationalgrid

James Morgan
Project Manager

February 14, 2013

Mr. Scott Deyette
Project Manager
New York State Department of Environmental Conservation
625 Broadway
Albany, New York 12233-7014

Re: Pre-Design Investigation, Alternatives Analysis/Remedial Action Work Plan
Troy (Liberty Street) Non-Owned Former Manufactured Gas Plant (MGP) Site
Troy, New York
NYSDEC Site # V000482

Dear Mr. Deyette:

National Grid is providing this letter Work Plan for Pre-Design Investigation (PDI) studies at the Troy (Liberty Street) Non-Owned Former Manufactured Gas Plant (MGP) Site. The PDI will support development of an Alternatives Analysis (AA) and Remedial Action Work Plan (RAWP). The site location is presented in Figure 1.

Background

The New York State Department of Environmental Conservation (NYSDEC) approved the Remedial Investigation (RI) Report for the Site on August 31, 2012. That letter initiated our planning for remedial activities at the Site and authorized development of a combined AA and RAWP.

While we are able to evaluate alternatives, development of the RAWP is not possible without generation of more precise Site information. In short, the following data and information are required:

- Brick sewer evaluation in Hill Street – to locate and determine the sewer function and ensure that remedial activities will not damage the sewer.
- Geotechnical data – grain-size and standard penetration tests.
- Physical and analytical data – to confirm excavation limits, determine whether Non-Aqueous Phase Liquid (NAPL) may exhibit hazardous characteristics, and pre-characterize waste soil for disposal.

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Pre-Design Investigation

***Sewer Evaluation*.** City officials have reported that a 24x36-inch brick sewer is present below Hill Street. City water department staff marked out its location during the RI, but acknowledged that the mark-out was approximate at best. The approximate location is shown in Figure 2. More precise location is necessary so that it can be adequately protected both during the PDI and the eventual removal of the southern tar well.

We will attempt to retrieve engineering documents from the City that provide information about the sewer in Hill Street and the five-foot diameter brick sewer known at the City as the "Great South Sewer". Any documents obtained will be used to assist in determining the sewer location. We anticipate, however, that successful location will require application of geophysical and remote sensing methods. Specifically, we will subcontract with New York Leak Detection (NYLD) who will apply any or all of the following tools to better locate the sewer:

- Ground Penetrating Radar 250 mhz (0'-30' depths), 500 mhz (0'-6' depths), 1000 mhz (0'-2' depths)
- Profiler EMP-400 (electromagnetic induction sensor)
- Variable wattage magnetometers,
- Video inspection with locatable heads,
- Computerized electronic acoustic leak locators, 350' fiberglass rods with sonde transmitters (15' and 40' depth potential).

Assuming that a likely feature is identified and it is consistent with documentation, the location will be marked in Hill Street and surveyed. City of Troy officials will be notified so they can update their own maps.

***Community Air Monitoring Plan (CAMP) and Work Zone Air Monitoring*.** As required by NYSDEC and New York State Department of Health (NYSDOH), community air monitoring will be conducted by GEI Consultants, Inc. (GEI) at the upwind and downwind Site boundaries during intrusive investigations to monitor respirable dust and Volatile Organic Compounds (VOCs). The NYSDEC-approved RI CAMP will be implemented. Wind direction will be determined by observing a flag mounted on the drill rig or flags mounted on surrounding buildings.

Air monitoring equipment will be calibrated at the start of each day. Total VOCs vapors will be measured using a Photo-ionization detector (PID), either a RAE Systems MiniRAE 2000 PID or Ion Science PhoCheck+ PID. Particulates less than 10 microns in size will be measured using a Thermo MiniRAM™ or DataRAM™ PM-10 particulate meter with a cyclone and air pump or a

TSI Dust Trak aerosol monitor. The PIDs and dust meters will automatically log information continuously throughout the work day.

The following levels should not be exceeded for more than 15 consecutive minutes at the down-wind perimeter of the site:

- Benzene 1 part per million (ppm)
- Total VOCs 5 ppm
- Naphthalene 10 ppm
- Dust 150 micrograms per cubic meter (µg/m3)

These action levels are above (in addition to) the background ambient (upwind) concentration. If real-time measurements of total VOCs indicate that the benzene action level is exceeded, then the benzene concentration will be determined at that location using benzene-specific colorimetric tubes. The same procedure will be followed for naphthalene. If the action levels are exceeded, work will stop and resume based on procedures outlined in the existing approved CAMP.

Work zone air monitoring will be conducted as well. A RAE Systems MultiRae will be used to measure total VOCs, hydrogen cyanide, hydrogen sulfide, lower explosive limit, and oxygen. Particulates less than 10 microns in size will also be measured using the same instruments described above. The action levels for work zone air monitoring are outlined in the existing approved Health and Safety Plan.

Northern Tar Well

The northern tar well appears to be intact and we believe its bottom is approximately 17 feet below ground surface (bgs). One boring was installed during the RI [B-323(10)] next to the well. The boring was advanced to 30 feet bgs. No physical impacts were observed. Samples collected at 18.5 and 28.5 feet, respectively, did not contain detectable benzene, toluene, ethylbenzene, and xylenes (BTEX). Total Polycyclic Aromatic Hydrocarbons (PAH) were only 3.093 milligrams per kilogram (mg/kg) at the shallower location. However, additional data are required to confirm excavation limits and further evaluate the possibility the well may have leaked NAPL.

Excavation Limits. Four vertical borings will be installed to a depth of 30 feet, at the locations shown in Figure 2. Two of the borings will be installed with a truck-mounted hollow-stem auger so that standard penetration test (SPT) data are generated to support remedial design and project bidding. Grain-size samples will also be collected. The other two borings will be installed with direct push methods. All borings will be continuously logged, digitally photographed, screened

with a PID, and sampled to confirm excavation limits. Additional "step-out borings will be installed if necessary.

At least 12 samples will be collected to document the concentrations of total BTEX (EPA Method 8260B) and total PAHs (EPA method 8270C), supporting determination of excavation limits. Samples will be collected from intervals believed to be most impacted, based on appearance of physical impacts, odors, and PID measurements.

If physical tar impacts are observed in any of the four borings surrounding the tar well, at least one angle boring will be advanced under the tar well to assess potential leakage from the bottom of the well.

Disposal Pre-Characterization. Four soil samples will be collected from the exterior perimeter of the tar well and composited into two respective analytical samples for disposal pre-characterization, based on the required parameters for several disposal facilities on the National Grid list of approved facilities.

One sample of NAPL from the northern tar well will be collected to evaluate whether the tar may be hazardous. Some of the NAPL will be composited into the disposal pre-characterization samples for identifying the characteristics of hazardous wastes outlined in Title 40 of the Code of Federal Regulations (CFR) at Part 261, Subpart C.

Southern Tar Well

The southern tar well is apparently damaged and has leaked NAPL. The total depth of the broken structure is unknown, but is assumed to be similar in depth to the northern tar well. Existing RI borings have demonstrated that NAPL impacts are confined to 25 feet bgs and shallower; only odors were apparent beyond 25 feet. Some free NAPL was observed at the RI borings. Total BTEX was as high as 1,378 mg/kg at B-313(10), where total PAHs were 68,380 mg/kg.

Excavation Limits. Additional borings are required to confirm excavation limits. Some drilling in Hill Street may be required. Any work conducted in the street requires a work permit purchased from the City, and a road closing permit. These permits will be obtained before work begins.

A minimum of 12 borings (Figure 2) will be installed to a maximum depth of 25 feet bgs. As many as 36 samples will be collected to document the concentrations of total BTEX and total PAHs and support determination of excavation limits. Samples will be collected from intervals

believed to be most impacted, based on appearance of physical impacts, odors, and PID measurements.

Disposal Pre-Characterization. Disposal Pre-Characterization will also be conducted for the southern tar well. Four soil samples will be collected from impacted soil around the well and composited into two respective analytical samples. These samples will be analyzed the same as those at the northern well.

Well Decommissioning. All five piezometers and six monitoring wells at the site will be abandoned, consistent with guidance provided in the November 2009 NYSDEC Monitoring Well Decommissioning Guidance, and the NYSDEC-approved work plan (1/10/13). Monitoring wells B/MW-103(05), B/MW-201(06), B/MW-301(10), B/MW-302(10), B/MW-303(10), and B/MW-324(10) will be abandoned.

The drilling contractor will attempt to pull the piezometer/monitoring well casings that are 25 feet in depth or shallower, per *NYSDEC CP-43*. Boreholes will be pressure-grouted using a tremie pipe with a bentonite mix or portland cement grout mixture. Excess soil cuttings will be screened with a PID and inspected visually and olfactorily. Apparently clean cuttings, PVC material, and concrete will be collected in 55-gallon United States Department of Transportation (US DOT) drums and disposed of as construction and demolition debris by the drilling contractor. Obviously impacted materials will be drummed separately for proper disposal by Clean Harbors, on behalf of National Grid.

Data Validation. All analytical data will be validated per appropriate EPA guidance, consistent with New York State Analytical Services Protocol (NYSASP) Category B guidance.

Reporting and Alternative Analysis/Remedial Action Work Plan

GEI will develop a "PDI Data Report" on behalf of National Grid. The data report will present a brief description of methods and procedures, followed by a summary of significant findings and conclusions. Analytical results will be provided in data tables, and relevant figures will be updated. Boring logs, Data Usability Reports, and validated Form 1 results will be included as appendices.

GEI will also develop a combined AA and RAWP for the Site. As requested by NYSDEC, three alternatives will be considered and the anticipated recommended alternative for NYSDEC and National Grid will be removal of the two tar wells and tar-impacted soil surrounding them.

As such, the RAWP will describe a plan to remove the tar wells. The extent of each excavation will be identified based on the RI and PDI data, and the need to protect the brick sewer below Hill Street, near the southern tar well.

If you have any questions or require additional information, please feel free to contact me at (315) 428-3101 or Jerry Zak at GEI at (860) 368-5404.

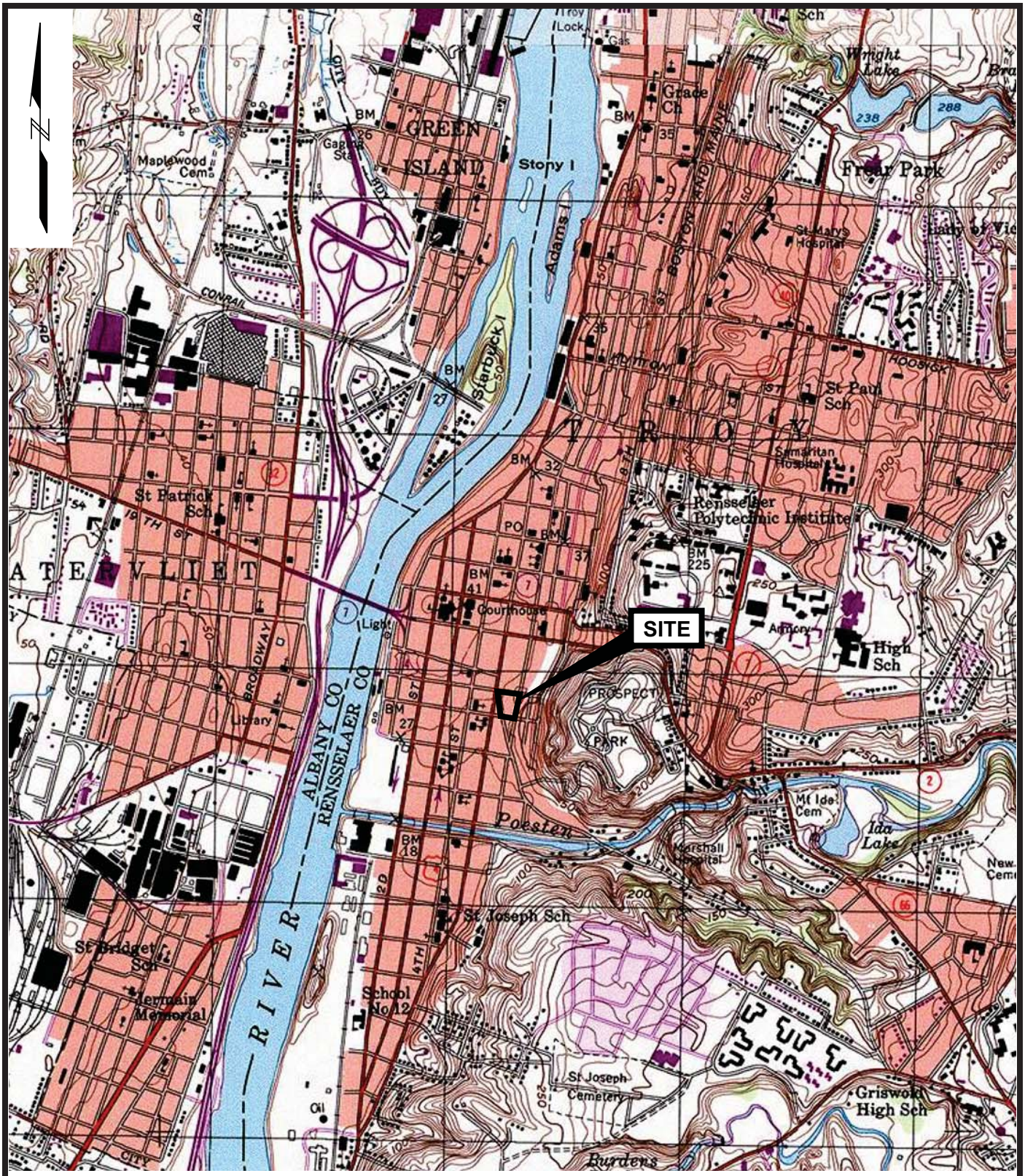
Sincerely,


for

James Morgan
Project Manager

Attachments

JZ/ah H:\WPROC\Project\NationalGrid\NG-Troy-LibertySt093300\PDI WP\Troy PDI Work Plan_02-2013.doc



SOURCE: Map created with TOPO! ® ©2001 National Geographic (www.nationalgeographic.com/topo)"

0 2000 4000

SCALE, FEET

PRE-DESIGN INVESTIGATION
TROY (LIBERTY ST.) NON-OWNED
FORMER MGP SITE
TROY, NEW YORK

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GEI Consultants

SITE LOCATION MAP

Project 093300-2-1201 | February 2013 | Figure 1

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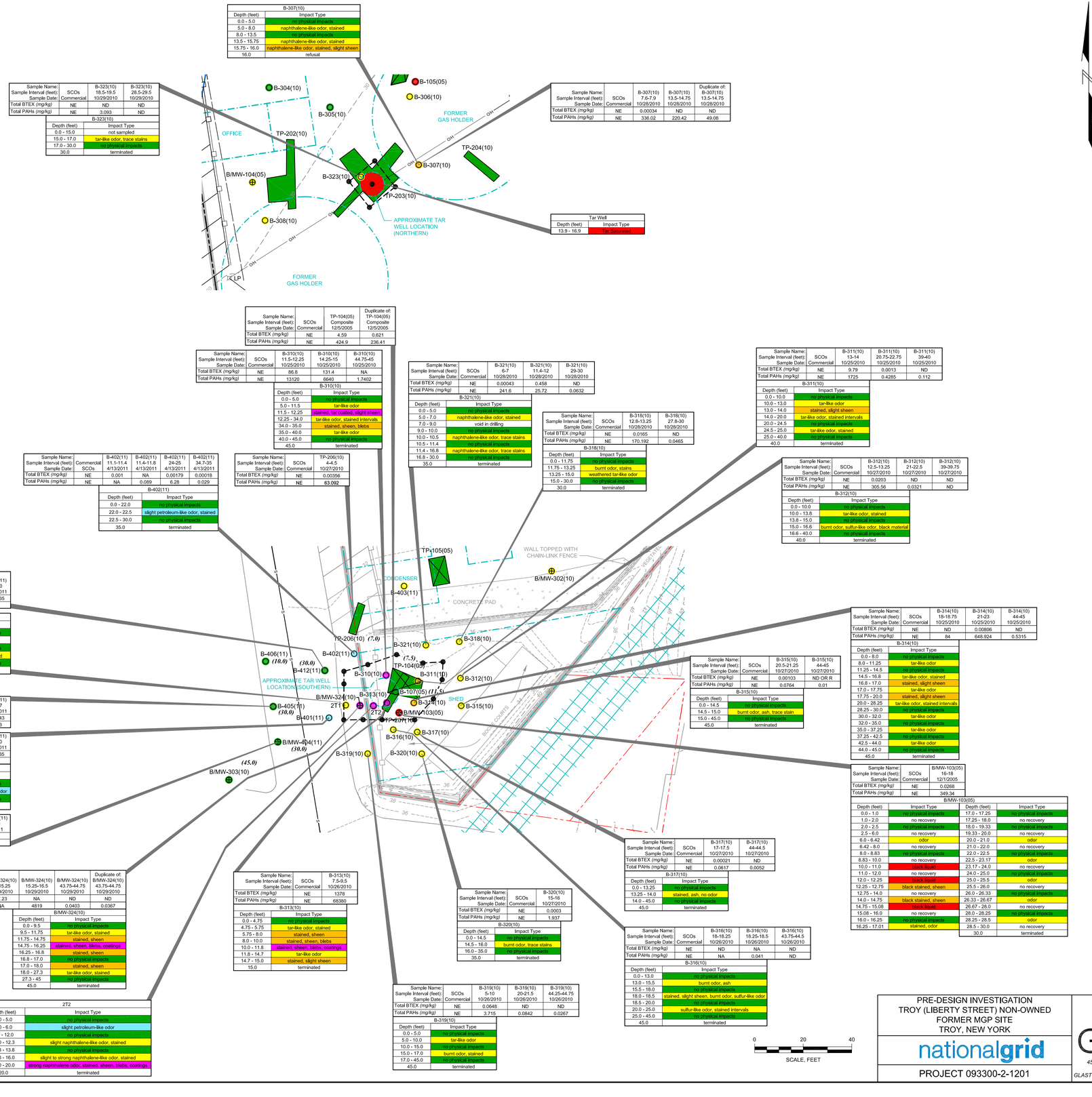

LEGEND:

- PROPERTY LINE
- SITE BOUNDARY
- GROUND SURFACE CONTOURS (FROM 1/4/2006 SURVEY, PRIOR TO INSTALLATION OF CONCRETE BLOCK RETAINING WALL)
- CONCRETE BLOCK RETAINING WALL
- CHAIN-LINK FENCE
- METAL FENCE WITH BRICK PILLARS
- GUIDE RAIL
- EDGE OF PAVEMENT
- 24x36-INCH BRICK SEWER (APPROXIMATE)
- HISTORICAL RAILROAD TRACKS (APPROXIMATE)
- HISTORICAL STRUCTURE BASED ON 1885 SANBORN FIRE INSURANCE MAP
- FORMER GAS HOLDER/TAR WELL SURVEYED UNLESS NOTED
- CONCRETE PAD
- ESTIMATED LIMIT OF EXCAVATION
- PROPOSED BORING (2013)
- TP-101(05) TEST PIT (EA ENGINEERING PC, 2005)
- B-105(05) SOIL BORING (EA ENGINEERING PC, 2005)
- B/MW-101(05) SOIL BORING/ MONITORING WELL (EA ENGINEERING PC,2005)
- B/MW-201(06) SOIL BORING/ MONITORING WELL (EA ENGINEERING PC, 2006)
- TP-201(10) TEST PIT (GEI, 2010)
- B-304(10) SOIL BORING (GEI, 2010)
- B/MW-301(10) SOIL BORING/ MONITORING WELL (GEI, 2010)
- B-401(11) SOIL BORING (GEI, 2011)
- B/PZ-407(11) SOIL BORING/PIEZOMETER (GEI, 2011)
- B/MW-404(11) SOIL BORING/ MONITORING WELL (GEI, 2011)
- 2T1 NYSEARCH COAL TAR VAPORIZATION STUDY BORING (GEI, 2010)
- 2V1 NYSEARCH COAL TAR VAPORIZATION STUDY SOIL VAPOR SAMPLE (GEI, 2010)
- *(16.0)* BORING/TEST PIT TERMINATED (DEPTH IN FEET)

PHYSICAL OBSERVATIONS

- TAR SATURATED
- COATED MATERIAL, LENSES
- HARDENED TAR
- BLEBS, GLOBS, SHEEN
- STAINING, ODORS
- PETROLEUM IMPACTS SATURATION AND SHEENS
- PETROLEUM IMPACTS, STAINING, ODORS
- PURIFIER WASTE AND ODOR
- NO PHYSICAL IMPACTS OBSERVED
- NO SAMPLE/NO RECOVERY

NOTES:

1. ELEVATIONS REFERENCED TO NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88). HORIZONTAL LOCATIONS REFERENCED TO NORTH AMERICAN DATUM OF 1983 (NAD 83).
2. BOUNDARIES BASED ON SURVEY BY M.J. ENGINEERING AND LAND SURVEYING, P.C., DATED APRIL 2011.
3. THE COLOR SHADING AT EACH BORING/WELL LOCATION SYMBOL INDICATE THE WORST PHYSICAL IMPACTS OBSERVED AT THAT LOCATION.

SOURCES:

1. BASE MAP TAKEN FROM *TOPOGRAPHIC SURVEY AND MAP OF NIAGARA MOHAWK MGP SITE SITUATED AT HILL STREET*, CITY OF TROY, COUNTY OF RENSSELAER, N.Y., SCALE: 1" = 50', SITE SURVEYED IN DECEMBER 2005, DECEMBER 2006, OCTOBER 2010, DECEMBER 2010 AND APRIL 2011 BY M.J. ENGINEERING AND LAND SURVEYING, P.C., CLIFTON PARK, NY.
2. SANBORN FIRE INSURANCE MAP, 1885.
3. SOIL BORINGS WITHOUT CALL-OUT BOXES DID NOT HAVE PHYSICAL IMPACTS/ODORS OBSERVED. THE TERMINATION DEPTH IS PROVIDED IN PARENTHESIS.
4. THE INFORMATION PROVIDED IN 2005 AND 2006 CALL-OUT BOXES IS INTERPRETED FROM EA ENGINEERING BORING LOGS.

DRAFT

PRE-DESIGN INVESTIGATION
TROY (LIBERTY STREET) NON-OWNED FORMER MGP SITE
TROY, NEW YORK

nationalgrid

PROJECT 093300-2-1201

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SUITE 201
GLASTONBURY, CONNECTICUT 06033

PROPOSED BORING LOCATIONS

February 2013 — Figure 2

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