

Memo



To: Joseph Martella, RIDEM
Barbara Morin, RIDEM

From: Meg Kilpatrick, GZA
James Clark, GZA

CC: Michele Leone, National Grid

Date: September 28, 2012

GZA Job No.: 05.0043654.00

Re: Summary of Air Quality Monitoring during Substation Earthwork
Former Tidewater MGP and Power Plant
Pawtucket, Rhode Island
RIDEM Case No. 95-022

On behalf of The Narragansett Electric Company d/b/a National Grid (National Grid), GZA GeoEnvironmental, Inc. (GZA) has prepared this memorandum summarizing the air quality monitoring program which will be implemented during earthwork activities associated with the upcoming electrical substation upgrade project. The substation upgrade project is currently anticipated to begin the week of October 22, 2012. This upgrade project will involve approximately 4 to 6 weeks of earthwork over a 4 month time period.

This air monitoring program was developed based on GZA's April 2011 *Air Quality Monitoring Plan (AQMP)*, GZA's February 20, 2012 *Evaluation of Applicability of Air Pollution Control Regulation No. 9¹*, both of which were submittal to the RIDEM Office of Air Resources (OAR), and subsequent correspondence with RIDEM. In addition, this program includes elements based on correspondence and discussions with interested community members.

FIELD INSTRUMENTS AND METHODOLOGY

During the proposed substation earthwork activities, real time air monitoring will be performed involving the use of the following hand held instrumentation.

- *Portable Photoionization Detector (PID) Photovac 2020* – this instrument measures total volatile organic compounds (TVOC) with a detection limit of 10 parts per billion (ppb) or 0.01 parts per million (ppm). TVOC readings are measured every 10 seconds and an average is electronically logged every 3 minutes.

¹ On July 5, 2012, RIDEM issued a letter stating that an air permit for these proposed earthwork activities would not be required.

- *DustTRAK Dust Meter* - this dust meter uses infrared electromagnetic radiation to sense airborne particles less than 10 microns in size. The detection limit for this instrument is 1 ug/m³. Similar to the PID, the readings from this hand held instrument are measured every 10 seconds and an average is electronically logged every 3 minutes.
- *A portable field gas chromatograph (Photovac Voyager)* - this instrument is used to monitor real time benzene concentrations in the field. The detection limit for benzene is 10 ppb. The Photovac Voyager collects and electronically records a measurement every three minutes. This instrument will be available on-site during earthwork activities, but will only be deployed in the event total VOCs are detected above the threshold levels described herein.

Hand held portable field equipment was determined to be appropriate for the substation project based on the scope of the earthwork (i.e., no remediation) and the limited impacts detected within the excavation areas where were based on the extensive pre-characterization sampling (i.e., urban fill, no NAPL or significant contamination noted). In addition, the use of hand held field equipment allows field personnel to alter monitoring locations based on the activity being performed and changing wind directions

The readings from these hand held instruments are displayed in real time on the units and monitored by GZA's field personnel. The data is also electronically logged on each unit and available for download at the end of the work day. As the field personnel move the instruments from monitoring location to location, the time is recorded to aid in correlating the downloaded data to each monitoring location. In addition, periodic real time measurements are also hand recorded by field personnel.

During times of earthwork activities which involve soil disturbance, hand held readings will be collected both within the work zone itself as well as at certain pre-designated locations along the Site perimeter. Refer to attached Figure 1 for these perimeter locations (S1 through S5). These perimeter locations were selected based on nearby sensitive receptors (i.e., Varieur School and residences along western property line). Field personnel will select the appropriate monitoring location reading depending on activities being performed and wind direction. During the course of an 8-hour work day, readings will be collected a minimum of 4 times per day at the five Site perimeter locations (S1 through S5). Readings at these perimeter locations will be collected over a minimum period of 6 minutes. The majority of the real-time air monitoring will be focused on the work zone area. In the event elevated levels are observed within the work area which indicate the work zone perimeter threshold levels are being approached (sustained TVOC levels of 1.0 ppmv or sustained particulate levels of 1,000 ug/m³), GZA field personnel will proceed to collect monitoring data at the closest Site perimeter location.

In addition to this real time work zone and perimeter locations (S1 through S5) monitoring, a fixed air monitoring station equipped with a PID (to measure TVOCs) and a dust meter will be located at the southeastern fence line at the nearest residence, 24 Thornton Street (identified as FS1 on Figure 1). The PID and dust meter at this location will be set to log data continuously in 3-minute intervals during earthwork activities. Field personnel will monitor data from this location at regular intervals throughout the day and compare the data to established action levels.

THRESHOLD LEVELS/RESPONSE ACTIONS

The following table presents the real-time monitoring threshold levels for the work zone perimeter and property line. Figure 1 shows the property line air monitoring locations (S1 through S5) and the fixed monitoring location (FS1) that will be monitored during the earthwork.

Compound	Work Zone Perimeter	Property Line (S1, S2, S3, S4, S5, FS1)
Total Volatile Organic Compounds (TVOC)	1.0 ppm	0.1 ppm
Respirable Particulate Dust (PM ₁₀)	1,000 ug/m ³	150 ug/m ³

In the event these values are exceeded at sustainable levels within the work zone or at the perimeter locations (*i.e.*, in excess of the respective threshold levels for a period of 5 minutes), GZA will identify the likely cause, and the Contractor shall implement appropriate engineering controls and/or modify work practices. The following table presents the actions that will be undertaken if a sustained exceedance of either respirable dust or TVOC is encountered.

Compound	Immediate Actions in Event of a Sustained Exceedance of Action Levels
Total Volatile Organic Compounds (TVOC)	<ol style="list-style-type: none"> 1. Evaluate the likely source of sustained readings (<i>i.e.</i> truck emissions, moisture in the area, off-Site source, actual work, etc.) 2. If determined that the source is the actual work, Contractor shall implement appropriate engineering controls and/or modify work practices to address exceedances. Engineering controls shall include covering of materials with polyethylene sheeting, application of foams, application of water, limiting trenching lengths, etc. 3. Immediately deploy summa canisters in both an upgradient and downgradient location and submit for laboratory analysis when the work day is complete. 4. Immediately deploy the real-time benzene monitor for the remainder of the day.
Respirable Particulate Dust (PM ₁₀)	<ol style="list-style-type: none"> 1. Evaluate the source of sustained readings (<i>i.e.</i> earthwork, heavy wind, off-Site source, etc.) 2. If determined that the source is the actual work, Contractor shall implement appropriate engineering controls (<i>e.g.</i>, application of water, calcium chloride, etc.) and/or modify work practices to address the exceedances.

The likely source of the sustained TVOC or particulate dust readings will be evaluated by Site personnel based field deductions using a combination of visual and/or olfactory evidence and real-time field measurements. By using hand-held field equipment, Site personnel can easily move these instruments from location to location to “track down” likely sources of emissions.

If determined that the source is the actual work, examples of engineered controls and/or modifications to work practices to address exceedances which may be implemented include application of water and/or calcium chloride to mitigate fugitive dust, and covering open trench excavations with plastic sheeting,

and/or application of specially engineered foams to mitigate vapor emissions. These activities would be implemented within the limits of work.

As would be typical of any project at this Site, in the unlikely event that unexpected soil conditions are encountered, the Contractor will be directed to halt Site work and cordon off the area. The area will be stabilized and covered with plastic sheeting and work will not proceed until an appropriate course of action is determined based on the nature of materials encountered.

In addition to the above immediate response activities to exceedances of the threshold levels, in the event of a sustained exceedance of a perimeter threshold level at S1, S2, S3, S4, S5 or FS1, National Grid will notify interested community members through a phone message alert system. This notification system will be implemented within approximately two hours of a sustained perimeter exceedance and will include information regarding the date/time of exceedance, nature of exceedance and field measures/work practice modifications implemented in response to the exceedance. Signup to the phone message alert system can be made by emailing a request to Michele Leone of National Grid (Michele.Leone@nationalgrid.com).

During air monitoring activities, GZA will make note of conditions which may be contributing to any observed transient TVOC levels both in the work zone and at the perimeter locations. Several conditions and/or activities unrelated to actual emissions from the subsurface can result in PID readings in excess of 0.1 ppm including earthwork equipment and/or truck/vehicle exhaust, moisture/humidity levels, precipitation, dust/dirt accumulation and temperature. GZA will maintain a record of these types of local activities and/or conditions in our field reports along with corresponding, transient (less than 5 minute sustained) PID readings. Please note that given the extremely low threshold levels established for this project, there may be times when we cannot explain these transient occurrences

DATA AVAILABILITY/COMMUNICATION TO PUBLIC

In order to keep the public informed of the excavation activities described herein and the associated air monitoring, several avenues of data communication have been established and will be employed during the substation earthwork project, including the following:

- Bulletin boards at the end of Tidewater Street and Bowles Court
- RIDEM publicly available website: <http://www.dem.ri.gov/programs/benviron/waste/tide.htm>
- National Grid publicly available website: www.tidewatersite.com [website is under construction and will be live by the start of the project]

Availability of the above will be provided to the public via email and posted on the community bulletin boards. Interested parties can contact Michele Leone at National Grid (Michele.Leone@nationalgrid.com) or visit the National Grid website (www.tidewatersite.com, when live) to sign up for the email list.

On a weekly basis, the following air monitoring data will be posted to the National Grid website and on the bulletin boards located at the end of Tidewater Street and the end of Bowles Court (the previous weekly data will be posted by the end of day the following Monday).

- TVOC data from the work zone and perimeter locations (S1 through S5) presented in graphical format;
- Dust data from the work zone and perimeter locations (S1 through S5) presented in graphical format;
- TVOC and dust data from the fixed monitoring station (FS1) presented in graphical format

- Laboratory analytical data (if collected); and
- Observations related to transient TVOC or dust detections.

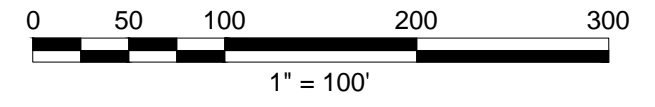
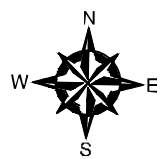
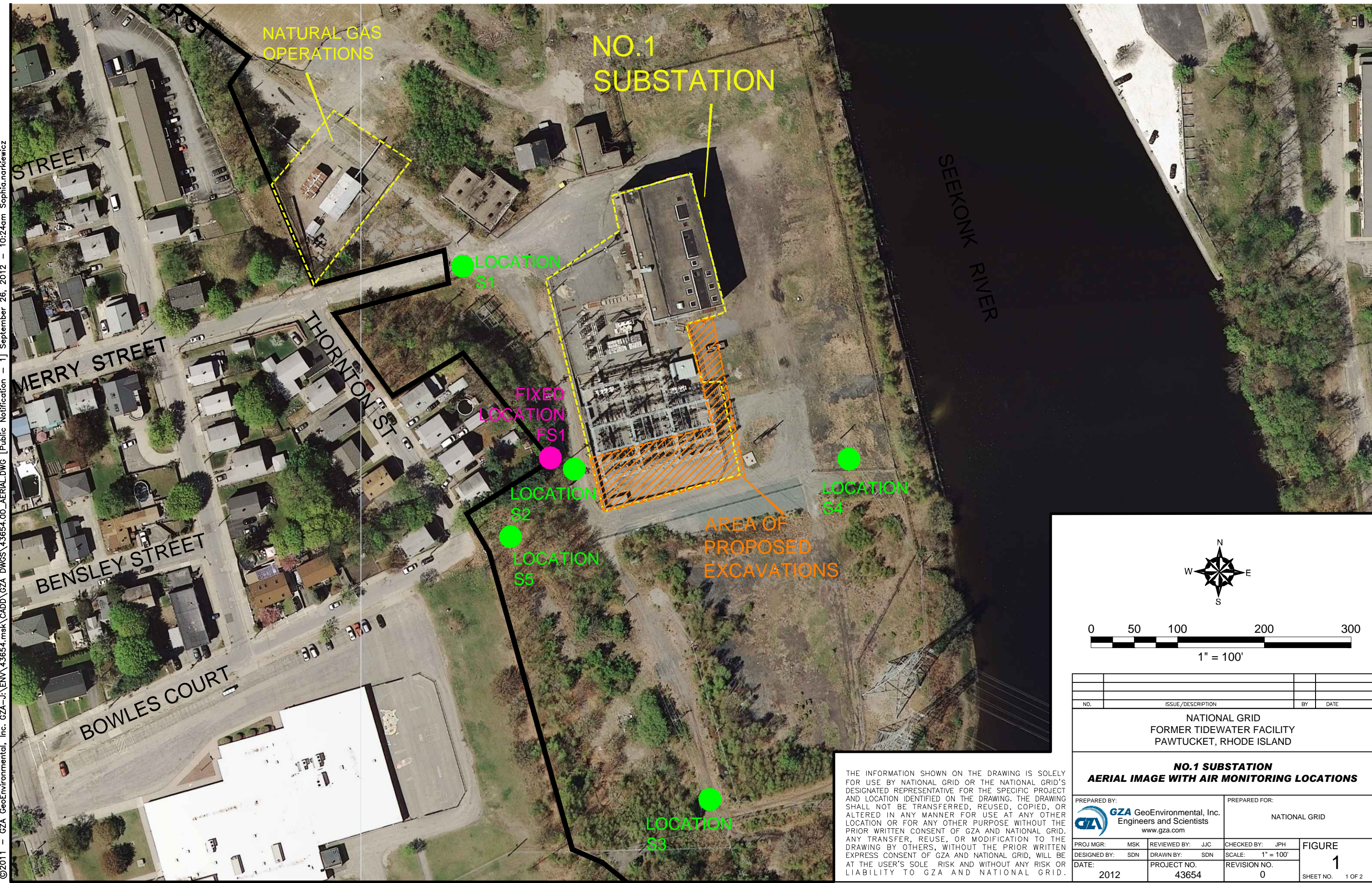
This information will also be transmitted to RIDEM to be posted to the RIDEM-maintained website on an approximately weekly basis. In addition to activation of the community phone message alert system described above, in the event a sustained exceedance of a perimeter threshold level is observed, this information will also be posted on the National Grid web-site and on the bulletin boards within 48 business hours of collection.

Currently, the work is anticipated to begin the week of October 22nd. Once the work starts, the schedule for activity involving earthwork is likely to change on a daily basis depending on Contractor availability, weather, and the required sequence and scope of the work being performed. In an additional effort to keep the public aware of the earthwork schedule, National Grid/GZA will post a notice on the National Grid website and bulletin boards at the beginning of each day as to whether or not soil disturbance activities are planned for that given day. This notice will include use of a color coded sheet of paper posted on the bulletin boards indicating whether or not earthwork activities are being performed (e.g., a purple sheet would indicate earthwork is underway while a yellow sheet would indicate no earthwork is being performed).

Attachments: Figure 1 – No.1 Substation Aerial Image with Air Monitoring Locations

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NO.	ISSUE/DESCRIPTION	BY	DATE
	NATIONAL GRID FORMER TIDEWATER FACILITY PAWTUCKET, RHODE ISLAND		

**NO. 1 SUBSTATION
AERIAL IMAGE WITH AIR MONITORING LOCATIONS**

PREPARED BY: GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com		PREPARED FOR: NATIONAL GRID	
PROJ MGR: MSK	REVIEWED BY: JJC	CHECKED BY: JPH	FIGURE 1 SHEET NO. 1 OF 2
DESIGNED BY: SDN	DRAWN BY: SDN	SCALE: 1" = 100'	
DATE: 2012	PROJECT NO. 43654	REVISION NO. 0	

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