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Prepared for:  
National Grid  
Hicksville, NY

Prepared by:  
AECOM  
Chelmsford, MA  
60414000  
September 21, 2015

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A handwritten signature in black ink, appearing to read 'Melissa McLaughlin'.

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Prepared By: Melissa McLaughlin

A handwritten signature in black ink, appearing to read 'Leo J. Gendron'.

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Reviewed By: Leo J. Gendron

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## List of Acronyms

AM – Air Monitoring

AMS – Air Monitoring Station

BTEX – Benzene, Toluene, Ethylbenzene, and Xylenes

CAMP – Community Air Monitoring Plan

CM – Construction Manager

COI – Contaminants of Interest

DER-10 – DER-10 Technical Guidance for Site Investigation and Remediation

EPA – Environmental Protection Agency

GC – Gas Chromatograph

HASP – Health and Safety Plan

MGP – Manufactured Gas Plant

PID – Photoionization Detector

PM<sub>10</sub> – Particulate Matter with a diameter 10 micrometers or less

NYSDEC – New York State Department of Environmental Conservation

NYSDOH - New York State Department of Health

TVOC – Total Volatile Organic Compound

VOC – Volatile Organic Compound

## Executive Summary

This Site-specific Community Air Monitoring Plan (CAMP) has been developed to provide specific procedures for measuring, documenting, and responding to potential airborne contaminants during the remedial action at the 50 Kent Avenue property of the former Williamsburg Works Manufactured Gas Plant (MGP) site, referred to herein as the Site. The former Williamsburg Works MGP site consists of four properties located along North 12<sup>th</sup> and North 11<sup>th</sup> Streets, Kent Avenue, and the East River in the Williamsburg neighborhood of Brooklyn, NY.

The procedures in this CAMP are focused on the monitoring of airborne contaminants at the Site perimeter and complement the work zone monitoring conducted to protect Site workers as described in the Site Health and Safety Plan (HASP). This CAMP is based on and builds on the air monitoring guidelines established by the New York State Department of Health (NYSDOH) and by the New York State Department of Environmental Conservation (NYSDEC) DER-10 Technical Guidance for Site Investigation and Remediation (DER-10) (May 2010). DER-10 is designed to provide monitoring procedures, Response Limits, Action Limits, and contingency measures if concentrations of the contaminant of interest (COI) approach these limits. DER-10 defines a Response Limit as a contaminant concentration or odor intensity that triggers contingent measures. A contaminant or odor intensity greater than the Response Limit does not suggest the existence of a health hazard, but the limit serves as a screening tool to trigger contingent measures, if necessary, and to assist in minimizing offsite transport of contaminants and odors during remedial activities. DER-10 defines an Action Limit as a contaminant concentration or odor intensity that triggers a series of contingent measures and/or work stoppage. National Grid has created an Alert Limit for total volatile organic compound (TVOC) concentrations to provide notification of increasing TVOC concentrations. Contingent measures triggered by a Alert, Response and/or Action Limit concentration are defined in the Site-specific Contractor's Dust Control Plan and Odor Control Plan.

During times of active remedial activities, perimeter air monitoring (AM) will be conducted using a combination of real-time (continuous and nearly instantaneous) AM at fixed locations (24 hours a day/7 days a week), walk-around supplemental monitoring using hand-held instruments on an as-needed basis, integrated sampling, and continuous meteorological monitoring during active periods of the remedial program.

Contaminants commonly found at former MGP sites will be monitored, including volatile organic compounds (VOCs) and inhalable particulate matter (PM) 10 micrometers or less in diameter, known as PM<sub>10</sub>. Relative odor intensity will also be monitored using an ASTM International method. The Contingency Plan included in this document defines the Site-specific Alert, Response, and Action Limits, and the response activities to be implemented during working hours if contaminant concentrations are measured above the Alert, Response, and/or Action Limit.

The CAMP describes the AM to be conducted during activities on the Site where there is reasonable expectation of encountering MGP-impacted materials. Where appropriate, an alternative level of monitoring which is in compliance with DER-10 and equally protective of the community may be employed. Based on specific field activities, a decision will be made as to the appropriate level of monitoring.

## 1.0 Introduction

This Site-specific Community Air Monitoring Plan (CAMP) has been developed to provide specific procedures for measuring, documenting, and responding to potential airborne contaminants during the remedial action at the 50 Kent Avenue property of the former Williamsburg Works Manufactured Gas Plant (MGP) site, referred to herein as the Site. This CAMP is based on and builds on the air monitoring guidelines established by the New York State Department of Health (NYSDOH) in the New York State Department of Environmental Conservation (NYSDEC) DER-10 Technical Guidance for Site Investigation and Remediation (DER-10) (May 2010).

The purpose of the air monitoring program is to provide early detection in the field of potential short-term emissions. The early detection of potential emissions and associated contingency measures is intended to expedite any necessary mitigation measures, and to reduce the potential for the community and public to be exposed to hazardous constituents at levels above accepted regulatory limits and guidelines provided in DER-10.

During remedial activities at the Site, the CAMP will be implemented using a combination of real-time air monitoring at fixed locations, supplemental walk-around perimeter monitoring using hand-held instruments as appropriate, integrated sampling, and continuous meteorological monitoring during active periods of the remedial program.

A regional view of the location of the Site and the aerial overview of the Site are shown in **Figure 1-1** and **Figure 1-2**, respectively. Additionally, a Site map showing the proposed locations of the air monitoring stations (AMS) is shown in **Figure 1-3**. Locations of the AMS were selected based on the proximity to the excavation area, proximity to sensitive receptors and climatological wind conditions. Climatological wind conditions from LA Guardia Airport from 2010 through 2014 are shown in **Figure 1-4** and indicate a predominately northwest direction with other peaks from the northeast and south directions.

The objectives of the CAMP are as follows:

- Provide an early warning system to alert National Grid that concentrations of total organic compounds (TVOC), inhalable particulate matter (PM) 10 micrometers or less in diameter, known as PM<sub>10</sub>, and odor in ambient air are approaching Action Limits due to Site activities;
- Provide details for a Site Contingency Plan that is designed to reduce the offsite migration of contaminants/odors if established Action Limits are approached or exceeded;
- Determine whether engineering controls are effective in maintaining ambient air concentrations below Action Limits and make appropriate and necessary corrective actions; and
- Develop a permanent record that includes a database of perimeter air monitoring results and meteorological conditions, equipment maintenance and calibration records, and other pertinent information.

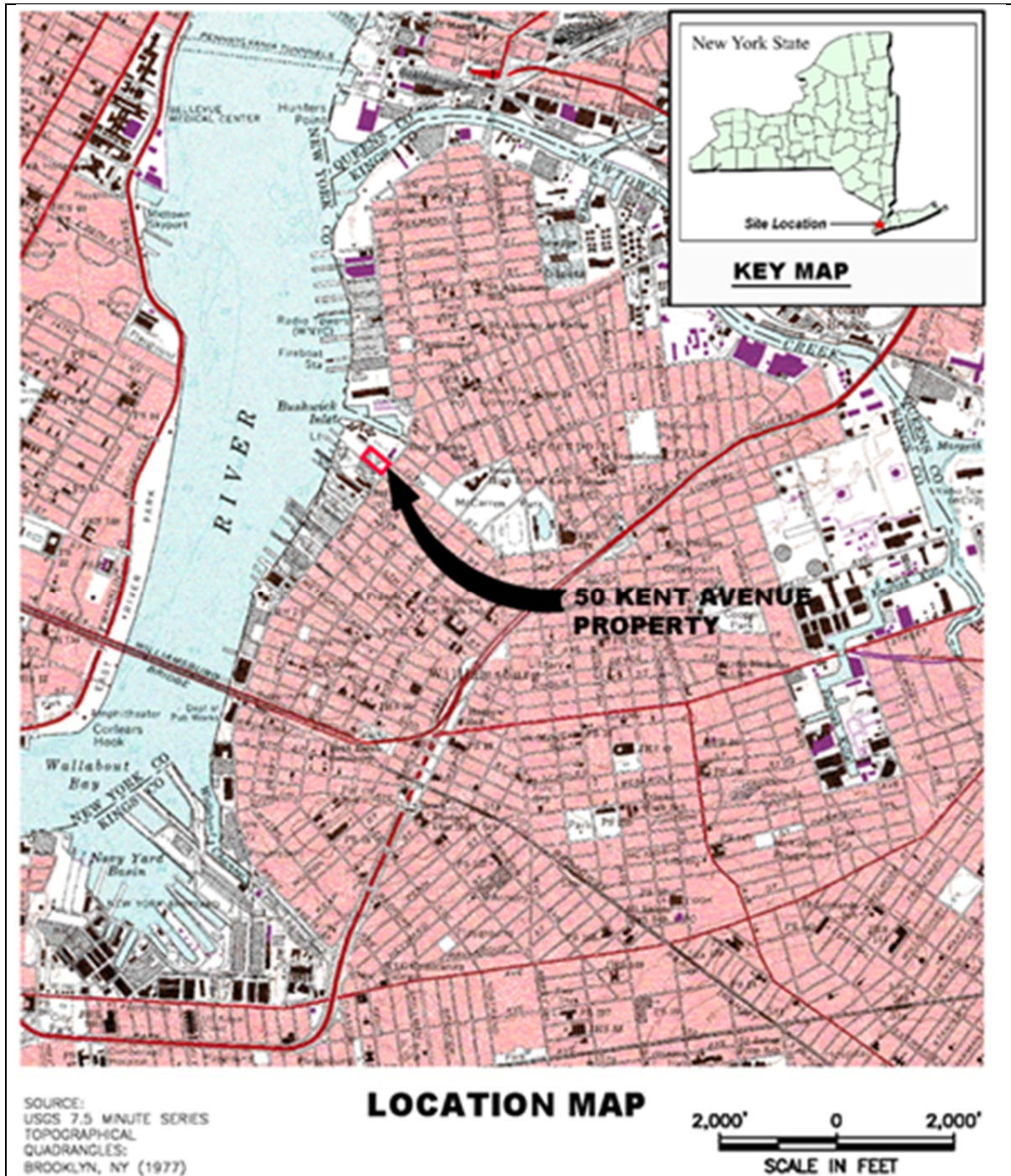


## 1.1 General Approach

The general approach to meet the objectives of the CAMP is two-fold:

1. Utilize a real-time air monitoring system to measure the contaminants of interest (COI). Real-time monitoring data will be used as an early warning system so that the air monitoring consultant can alert National Grid and the Site Construction Manager (CM) if concentrations of the COI are approaching the Action Limits. Under this scenario, National Grid, the Site CM, and the air monitoring consultant can then begin to evaluate and implement appropriate Site controls to maintain acceptable ambient air concentrations.
2. Develop comprehensive data management and analysis procedures. Data will be generated from a variety of sources, including real-time fixed and portable air monitoring, integrated VOC sampling, pre-construction baseline sampling, supplemental hand-held equipment, and meteorological monitoring. These data will be reduced, evaluated, verified, and presented to National Grid and the Site CM in a timely manner to facilitate timely decision-making.

Figure 1-1: Regional Site Overview





**Figure 1-2: Aerial View**

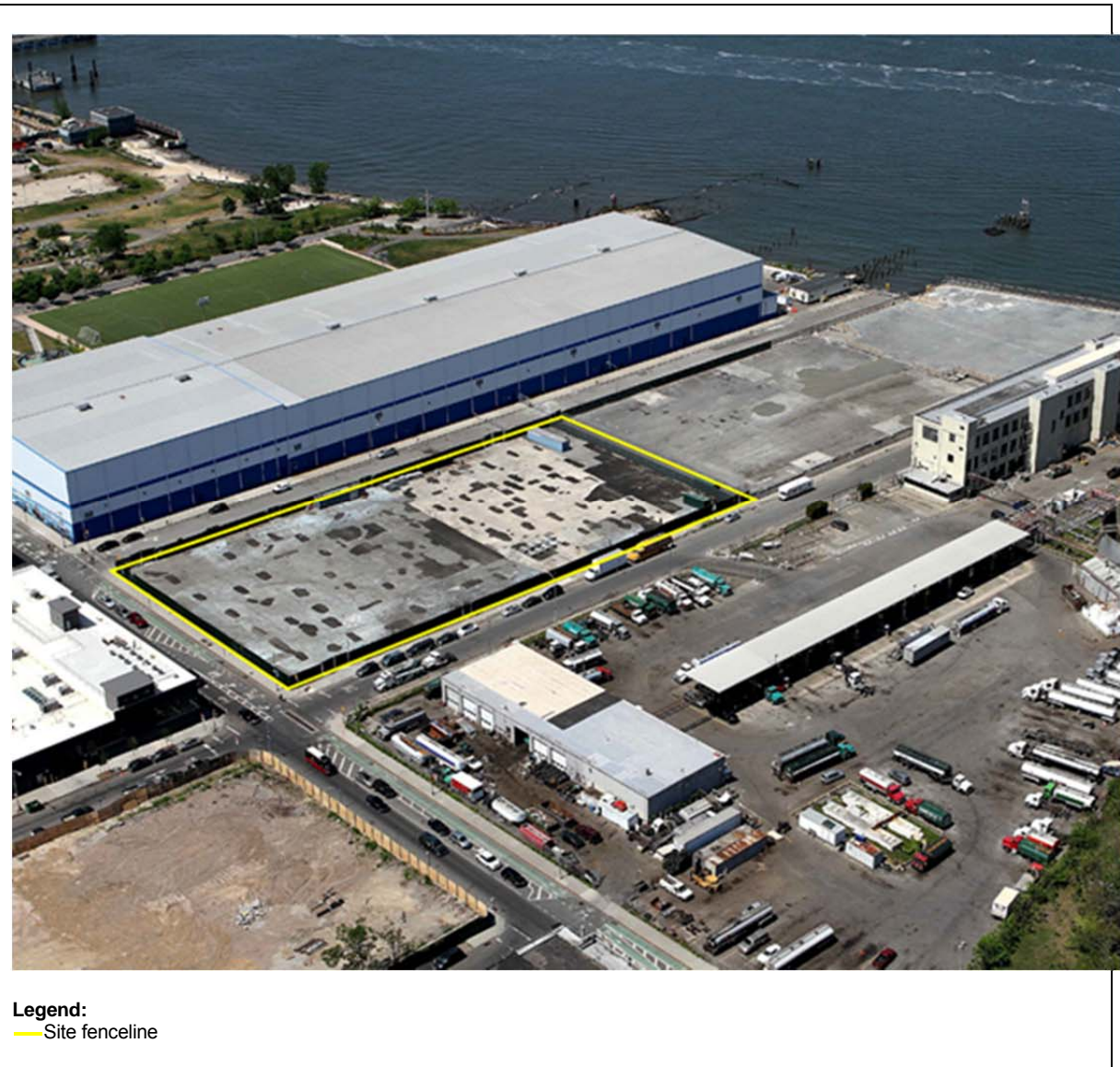


Figure 1-3: Proposed Locations of the Air Monitoring Stations

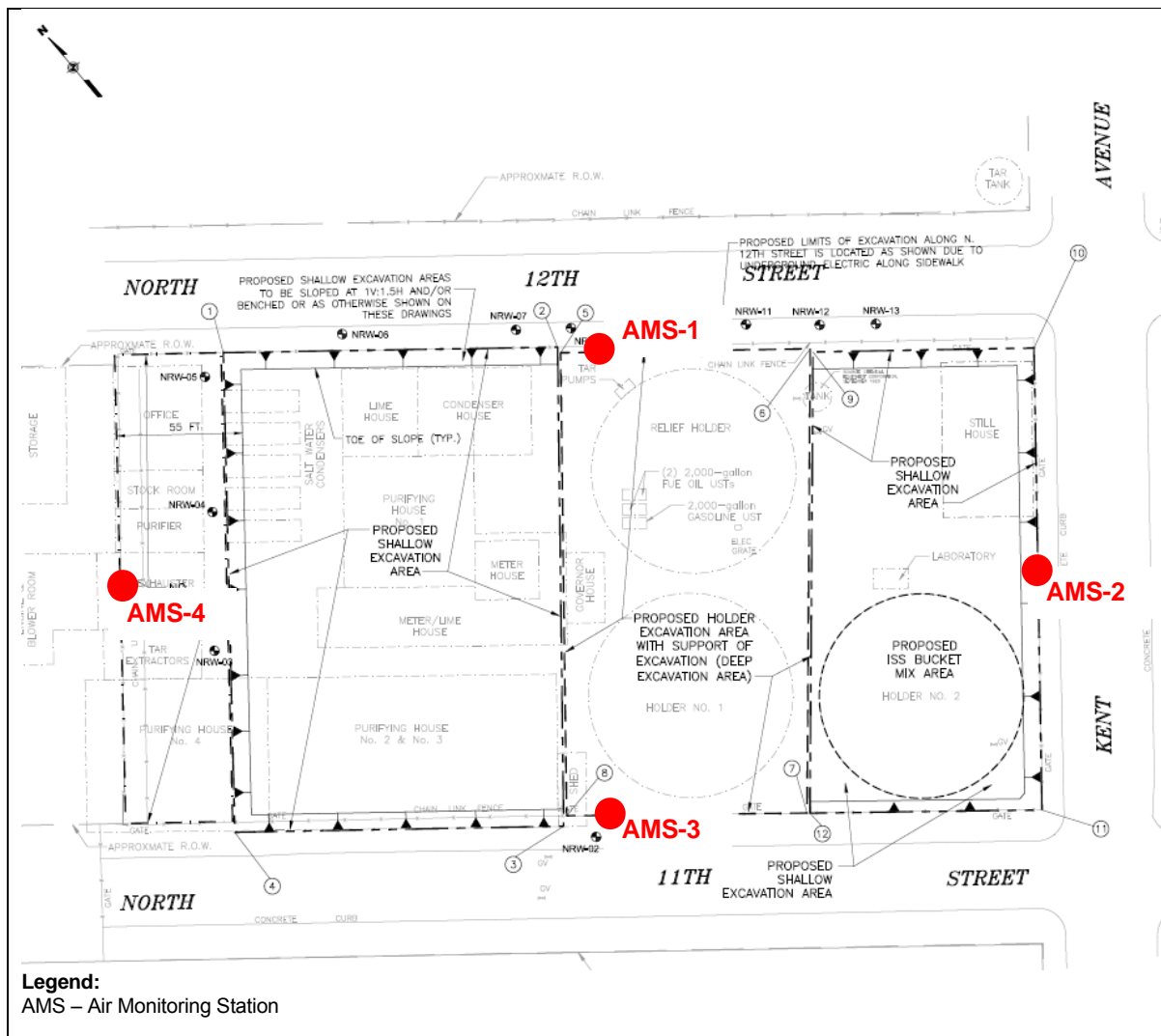
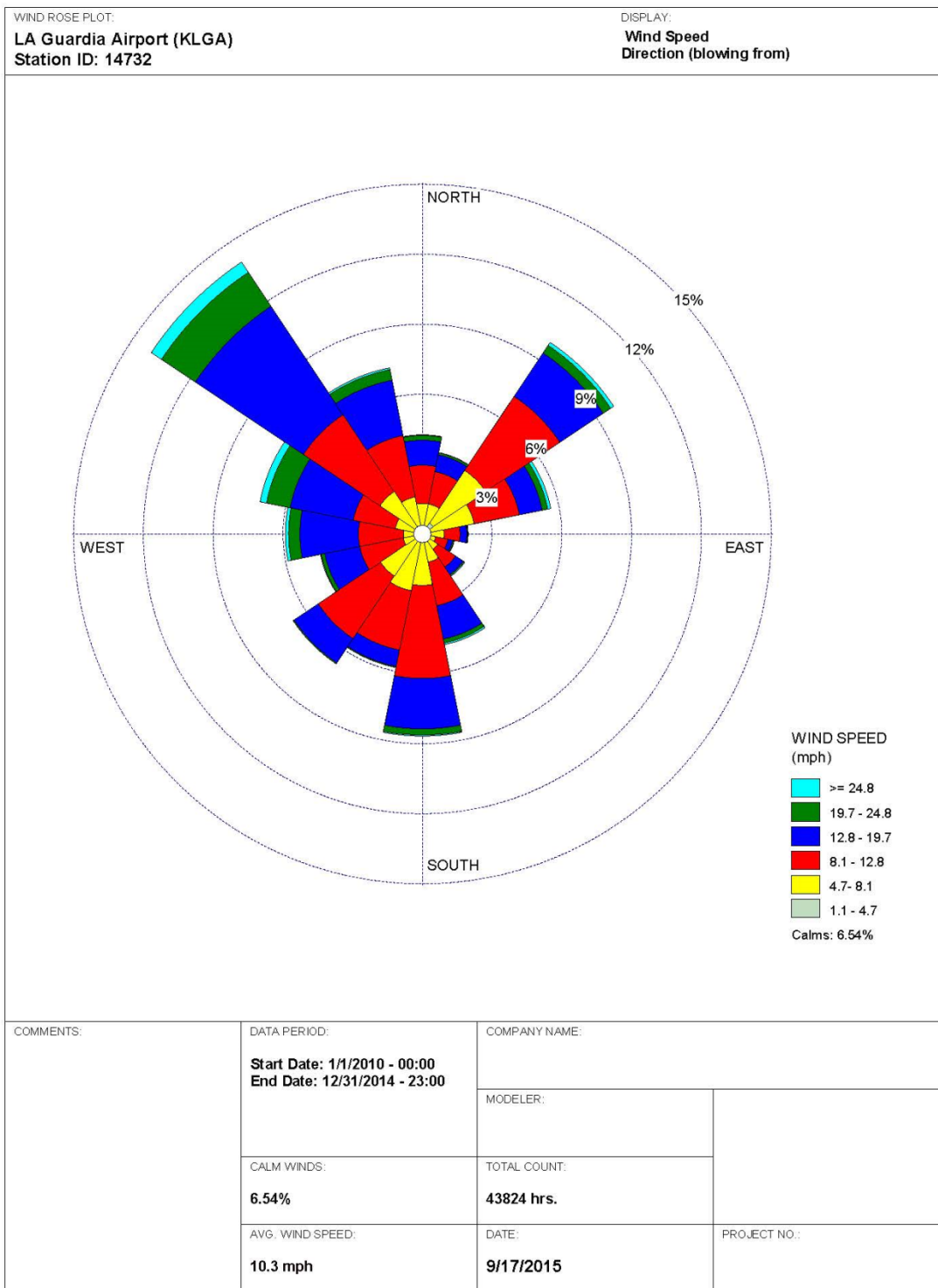


Figure 1-4: Climatological Wind Rose



## 2.0 Alert, Response, and Action Limits

Alert, Response, and Action Limits will be used as a real-time screening tool to manage remediation activities in order to minimize the potential for off-site emissions and/or potential long term health risk. If concentrations greater than the Action Limits are measured during excavation, prompt implementation of operational modifications should be effective in preventing adverse impacts to off-site air quality in the vicinity of the Site.

The Alert, Response and Action Limits shown in **Table 2-1** are consistent with the 15-minute recommended concentrations listed in DER-10. These Action Limits were developed by the DER-10 as a Site management tool used to maintain existing air quality standards and guidelines at the Site perimeter.

The following COI and corresponding Response and Action Limits were developed in accordance with DER-10 and the Alert Limit (TVOC) was developed by National Grid to help manage the Site.

**Table 2-1: Target Concentrations (above Background) and Site Conditions**

Target – units				Site Condition			
	Alert Limit	Response Limit	Action Limit	Operational Condition	Alert Condition (Above Background <sup>1</sup> )	Response Condition (Above Background <sup>1</sup> )	Action Condition (Above Background <sup>1</sup> )
TVOC (PID) – ppm	3.7	5.0	25.0	$[C_{avg}] \leq 3.7$	$3.7 < [C_{avg}] \leq 5.0$	$5.0 < [C_{avg}] \leq 25.0$	$[C_{avg}] > 25.0$
Benzene (GC) – ppm	N/A		1.0	$[C_{avg}] \leq 1.0$	NA	NA	$[C_{avg}] > 1.0$
PM <sub>10</sub> – $\mu\text{g}/\text{m}^3$	NA	100	150	$[C_{avg}] \leq 100$	NA	$100 < [C_{avg}] \leq 150$	$[C_{avg}] > 150$
Odor <sup>2</sup> - n-butanol scale	NA	NA	3	OI $\leq 3$ and No Odor Complaints	NA	NA	OI $> 3$ or Odor Complaints
Odor (naphthalene) – $\mu\text{g}/\text{m}^3$	NA	NA	440	$[C_{avg}] \leq 440$	NA	NA	$[C_{avg}] > 440$
<p>Definitions:</p> <p>TVOC = Total Volatile Organic Compounds</p> <p>PID = Photoionization Detector</p> <p>PM<sub>10</sub> = Inhalable Particulate Matter 10 micrometers or less in diameter</p> <p>ppm = parts per million volume</p> <p><math>\mu\text{g}/\text{m}^3</math> = micrograms per cubic meter</p> <p><math>[C_{avg}]</math> = 15-minute average concentration of target</p> <p>OI = Odor Intensity based on the n-butanol scale adapted from ASTM E544-99. Odor measurements made over a 15-minute interval.</p> <p>NA = Not applicable</p> <p>Notes:</p> <p><sup>1</sup> Background is defined as the current upwind concentration. Background concentrations will be used to calculate the actual Property contributions to TVOC's and PM<sub>10</sub> during the final evaluation of the Site conditions as part of the weekly data summaries.</p> <p><sup>2</sup> Odor intensity observations are based on the n-butanol scale.</p>							

## 3.0 Monitoring and Sampling Procedures

This section of the CAMP presents a detailed description of the air monitoring and sampling procedures that will be used during the Site ground intrusive activities.

Air monitoring activities will be conducted throughout the program to evaluate conditions at the perimeter of the Site (fenceline) and other locations as specified below to ensure that the measures used to control potential fugitive emissions are effective, and to document ambient air quality/conditions at the Site. The monitoring program will consist of the following real-time monitoring and integrated contaminant-specific sampling during active periods of remediation:

- Continuous real-time monitoring for TVOCs and PM<sub>10</sub> will be conducted at four (4) fixed air monitoring stations (AMS) 24-hours per day, 7-days per week;
- Continuous real-time monitoring for TVOCs will be supplemented with an automatic benzene, toluene, ethylbenzene, and xylenes (BTEX) monitoring in the event the Action Level for TVOCs is exceeded at any of the AMS;
- Hand-held and observational monitoring for TVOCs, naphthalene, PM<sub>10</sub>, odor, and visible dust will be conducted, based on the continuous monitoring results and/or at the request of National Grid or the Construction Manager, during periods of ground intrusive activities;
- Integrated sampling for VOCs will be conducted using SUMMA canisters; and
- Continuous meteorological monitoring for wind speed, wind direction, temperature and relative humidity.

### 3.1 Real-Time Air Monitoring

Continuous real-time AM for TVOCs and PM<sub>10</sub> will be conducted upwind and downwind of the work area along the Site perimeter at four (4) fixed AMS. The intent of the real-time AM program is to provide an early detection of short-term emissions and potential offsite migration of remediation related TVOCs and PM<sub>10</sub>. Real-time AMS will operate 24-hours, 7-days per week, during periods of ground intrusive activities. The real-time perimeter AM system consists of fixed AMS, supplemented by routine hand-held and observational air monitoring; one (1) meteorological tower, one (1) central computer system, and one (1) alarm notification system.

#### 3.1.1 Fixed Air Monitoring Stations

The AM consultant will conduct continuous real-time TVOC and PM<sub>10</sub> monitoring at four (4) AMS around the perimeter of the Site. Locations of the AMS are shown in **Figure 1-2**. The AMS will be programmed to measure 15-minute average TVOC and PM<sub>10</sub> concentrations that will be updated continuously every 1-minute. Each AMS will include an in-station Gas Chromatograph (GC) programmed to speciate for individual BTEX compounds when the average 15-minute TVOC concentration exceeds the Response Limit.



Each AMS contains the following:

- Insulated station enclosure;
- Sample manifold system with humidity reduction;
- Photoionization detector (PID) (RAE PID or equivalent) and a separate GC;
- Particulate monitor equipped with a PM<sub>10</sub> particle size separator (DustTrak or equivalent);
- Data logger;
- Wireless radio communications device; and
- Environmental control system (insulated panels, heater, and air conditioning system).

Each monitoring station is housed in a weather-tight NEMA-4 type enclosure.

The PIDs will operate in the TVOC mode to determine the TVOC concentration in ambient air. In TVOC mode, the PIDs will collect and analyze samples at a rate of one sample every 10-seconds, producing 1-minute averages which are then used to make 15-minute data averages. If the 15-minute average TVOC concentration measured at a station reaches the Response Limit then the PID will continue to measure TVOCs and the GC at that station will begin to continuously sample and measure in the compound-specific mode. In the compound-specific mode, concentrations of BTEX compounds in ambient air will be quantified.

Each particulate meter will also be equipped with a PM<sub>10</sub> sampler to monitor particulate matter 10 micrometers or less in diameter. Particulate meters analyze samples once every 10-seconds and produce 1-minute averages. These 1-minute averages will be used to calculate 15-minute data averages.

### **3.1.2 Supplemental Walk-Around Monitoring**

Supplemental perimeter monitoring for TVOC, PM<sub>10</sub>, and odor will occur along the perimeter of the project Site on an as-needed basis. Specific Site conditions that may trigger walk-around perimeter monitoring include:

- Visible dust;
- Odor complaints;
- Detection of TVOCs and/or PM<sub>10</sub> at a AMS where concentrations exceed an Alert, Response and/or Action Limit; and
- Direction by National Grid, the Site CM, or NYSDEC.

When a triggering condition is observed during ground intrusive activity, the supplemental downwind perimeter monitoring will occur continuously until the conditions that triggered the monitoring have subsided.

#### **3.1.2.1 Total Volatile Organic Compounds**

TVOC concentrations will be measured and recorded using a portable real-time PID (RAE PID or equivalent).

### 3.1.2.2 Particulate Matter

PM<sub>10</sub> will be measured and recorded using a portable real-time particulate monitor (DustTrak or equivalent) equipped with a PM<sub>10</sub> impactor.

### 3.1.2.3 Odor Intensity

Odors will be observed based on the n-butanol scale, as adapted from ASTM E544-99. At each monitoring location, the data value, sample time, and sample location will be collected and recorded. Additional temporary monitoring points may be established due to changing Site and/or meteorological conditions.

Naphthalene concentrations will be measured if odor intensity is observed above the Action Limit. A separate GC specific for naphthalene will be installed at a central onsite location for this purpose. Samples will be obtained by collecting an air sample in a tedlar bag and subsequently analyzing the contents for naphthalene. 15-minute average naphthalene concentrations will be compared to the naphthalene Action Limit. The monitoring location, 15-minute average concentration, and the sample time will be recorded as part of the supplemental hand-held monitoring database.

## 3.1.3 Meteorological Monitoring

A Climatronics meteorological monitoring system, or equivalent, will be established on-site. The meteorological system will be located at a central onsite location that is clear of buildings, trees, or other obstructions. The meteorological system will continuously monitor temperature, dew point temperature (or relative humidity), wind speed, and wind direction. Fifteen-minute average values for each meteorological parameter will be stored in the meteorological system and downloaded continuously into the onsite central database.

A Campbell Scientific data logger (or equivalent) provided with the meteorological system also includes a digital standard deviation (sigma) processor which calculates the wind fluctuation (sigma theta). Sigma theta is an important parameter to observe during remediation activity, so that the potential for fugitive emissions to change direction during slow wind periods can be assessed and documented.

## 3.1.4 Central Computer System and Interactive Display

TVOC, individual VOC constituents (BTEX), PM<sub>10</sub>, and meteorological data will be stored in data-loggers located within each monitoring station. Stored data along with system performance data from each station will be sent in real-time, via wireless communication device, to the central computer system located in the central air monitoring trailer. Results will then be sent electronically to the data processing office for validation.

## 3.1.5 Real-Time Alarm Notification System

In the event that concentrations above the Response or Action Limit for TVOC or PM<sub>10</sub> are observed the air monitoring consultant will be notified via a 24/7 phone paging system. The central computer will be equipped with a modem or wireless card that is capable of sending text pages to cell phones. If a PM<sub>10</sub> and/or TVOC Response or Action Limit is reached during non-working hours, the system will be checked remotely and an appropriate response action will be determined.

Equipment calibration will be performed according to the manufacturer's instructions. Each PID will be calibrated once per work day using a certified standard isobutylene gas for TVOC mode. A

certified standard gas mixture for BTEX specific compounds will be used to calibrate the onsite GC daily at each location. Particulate monitors for PM<sub>10</sub> will be zeroed once per work day and a once-per-week upscale check will be performed on each instrument. Hand-held portable equipment will be calibrated before each use, and at a minimum of once per week when not in use.

### 3.2 Integrated Volatile Organic Compound Measurements

Integrated VOC samples (24 hours) will be collected once per week at two (2) air monitoring stations (plus one (1) collocated sample per month). The samples will be collected to demonstrate that the real-time monitoring stations are effective in measuring the concentration of the VOC COI.

Integrated VOC samples will be collected using 6-liter Summa® canisters (or equivalent vacuum canisters) and analyzed using United States Environmental Protection Agency (EPA) Method TO-15 (modified to include naphthalene). An accredited laboratory will perform the analytical testing on the canisters and will provide Category B deliverables as required by the New York Analytical Services Protocol. The data will be validated according to EPA and New York State requirements.

### 3.3 Pre-Construction Baseline Monitoring and Sampling

Pre-construction monitoring and sampling will be performed to establish baseline ambient air concentrations prior to the start of the principle excavation and solidification of MGP impacted media. Baseline conditions will be developed for TVOCs and PM<sub>10</sub> in ambient air using the real-time AMS. In addition, a baseline odor survey plus integrated TO-15 VOC sampling at two (2) locations per day will be completed during the baseline monitoring and sampling period. Monitoring and sample collection and analysis methods will follow those described in **Section 3.0** (Real-Time Air Monitoring).

Pre-construction real-time monitoring will take place at the four (4) AMS stations to determine TVOC and PM<sub>10</sub> baseline conditions. Real-time TVOC and PM<sub>10</sub> data will be recorded 24-hours per day for a minimum of three days.

Pre-construction odors will also be established for 3 days prior to construction activities. Onsite and offsite odor surveys will be conducted using the 8-point n-butanol scale. The onsite odor surveys will be conducted along the perimeter of the Site. The offsite odor surveys will be conducted throughout adjacent neighborhoods.

Monitoring conducted during this period will be conducted in accordance with the specifications and procedures outlined in the CAMP. The complete AM system will be delivered and mobilized to the Site during this period.

## 4.0 Quality Assurance

The CAMP includes several activities related to Quality Assurance and Quality Control (QA/QC) designed to ensure that the field program is being and has been properly conducted and that the analytical results have been reviewed for accuracy and overall quality. Goals of the QA/QC aspect of the program are to assure that the field activities, laboratory results, the associated responses to periods of elevated concentrations, and the data reporting are appropriate and protective of the environment and public health.

### 4.1 Field Documentation

A field log book, measurement device calibration field forms, and monthly data listings will be maintained by the AM consultant throughout the air monitoring program. Information to be recorded by the AM consultant will include:

- Description of remediation activities conducted during the occurrence of elevated data values;
- Daily Site maps showing the locations of each AMS and hand-held monitoring locations for the day;
- Any corrective actions conducted due to elevated real-time air monitoring concentrations such as foaming/watering, covering stockpiles, reduced work pace, etc.;
- Integrated VOC sample media receipt dates, conditions, and numbers;
- Copies of the COC forms;
- Sampling equipment installation, operation, and removal dates;
- Sampling equipment calibration dates and results;
- General field weather conditions on sampling days;
- Any unusual situations which may affect samples or sampling;
- Sample dates; and
- Start and stop times.

General QA/QC procedures related to the collection and analysis of representative field monitoring data and samples are discussed in the following sections.

### 4.2 Instrument Calibration

Instrument calibrations will be performed according to the AM consultant's SOPs and manufacturer's recommendations. Hard copies of the SOPs and the manufacturer's instrument manuals will be kept onsite as part of the project notebook.

The following sections detail the specific calibration frequencies for each type of monitoring. Daily instrument calibration results will be maintained on-site for the duration of the project.

#### **4.2.1 Real-Time Air Monitoring**

Instrumentation associated with the AMS and hand-held activities will be calibrated on a daily basis in accordance with the SOPs and the manufacturers' instructions using either commercially available standards, or internal calibration points. Specific calibration checks may be conducted at the start of daily remediation activities. In certain circumstances similar calibration checks will be conducted at the conclusion of the measurement day. For example: a calibration check will be conducted if a device, such as an analyzer, is suspected to be functioning improperly or a calibration check may be conducted during the operational day if a device is suspected of malfunctioning. There may also be circumstances where a calibration check is conducted in conjunction with a period of elevated concentrations to verify or validate the instrument (device) measurements. This check could be conducted just after the period of elevated concentrations or in certain circumstances during the period of elevated concentrations.

Each PID will be calibrated (zero and upscale concentration) once per work day using a certified standard isobutylene gas for TVOC mode. Particulate monitors for PM<sub>10</sub> will be zeroed once per work day in addition to a once-per-week upscale check that will be performed on each instrument with a dust generator (i.e., smoke tube). Hand-held instrumentation will be calibrated before each use.

Each GC will go through a nightly zero and upscale check of target compounds. Full calibrations will be performed as indicated by the results of the nightly checks.

The meteorological instrumentation will be calibrated during the setup of the project, every six months during the project, and at the time of take down to document the condition of the equipment and assure the quality of the meteorological data recorded. Periodic observations and comparisons to other meteorological stations will be made by a technician to evaluate the overall air flow and weather conditions in the area.

#### **4.3 Integrated VOC Air Monitoring**

The 24-hour integrated VOC samples will be collected in a 6-Liter Summa Canister equipped with a flow control regulator during remediation activities. Spare flow control regulators will be supplied by the laboratory for use on the integrated VOC sample. The flow controllers will be calibrated by the laboratory to collect a sample at a flow rate that will allow the canister to fill over a 24-hour period. The flow controllers will be returned to the laboratory for cleaning and recertification every 3 months, or when routine checks indicate a change in flow rate.

##### **4.3.1 Field Quality Control Samples**

Field duplicate (or collocated) samples will be collected and used to facilitate the evaluation of the precision and accuracy of the results from the laboratory samples. Collocated samples will be collected at a rate of one (1) collocated sample per month (approximately 1 collocated sample will be collected for every 8 samples). The results will be evaluated to determine if the results are reasonable.

## 5.0 Data Management Procedures

This section of the CAMP discusses the data management procedures that will be used during the program. Data will be generated from a variety of sources, including real-time monitoring, hand-held and observational monitoring, and integrated VOC sampling. These data must be reduced, evaluated, verified, and presented to National Grid and the Site CM in a timely manner to facilitate decision-making. The data management process for each source of data is discussed below.

Analytical data generated at each AMS are sent to the central computer system via wireless radio telemetry. The AMS baseline monitoring data will also be downloaded to the project database for data evaluation.

### 5.1 Exceedance Notifications

Monitoring results for TVOCs and PM<sub>10</sub> will be reported verbally as they occur to the CM when Alert, Response and/or Action Limits have been exceeded to allow prompt evaluation and response to potential emissions. The air monitoring technician, together with National Grid and the Site CM, will decide when shut-down and start-up criteria are met.

The AM consultant will generate an email notification to the CM and NYSDEC representative within 2-hours of concentrations greater than the Action Limit occurring during normal work hours. In addition, if there is a period of confirmed concentrations above the Action Limit during off hours, an email notification will be provided within 24 hours of the incident to the NYSDEC.

### 5.2 Weekly Data Summaries

The following weekly data summaries will be prepared and transmitted to National Grid and the Site CM:

- Maximum 15-minute average concentrations of TVOC, PM<sub>10</sub>, and odor intensity;
- Upwind and downwind comparison and discussion of Response and Action Limits reached during the week;
- Average 15-minute wind speed, wind direction, relative humidity, and air temperature data;
- Summary of Site activities; and
- Air monitoring station location maps.

### 5.3 Monthly Summaries

In addition to the weekly data summaries, a monthly data CD will be provided to National Grid, the NYSDEC, and NYSDOH.

### 5.4 Final Air Monitoring Report

At the conclusion of the program, the AM consultant will prepare a summary of the real-time and integrated VOC air monitoring results. The report will include summaries of meteorological data, as well as real-time and integrated VOC data from each air monitoring location. The AM consultant will

prepare up to two (2) hardcopies and one (1) electronic copy of the final report documenting the air monitoring results. Additionally, copies of the analytical data and QA/QC documentation will be provided on CD following the completion of the program. The air monitoring report will be submitted to National Grid for review within 90-days of the project completion.

## 6.0 Contingency Plan

The Contingency Plan is designed to identify potential Site control measures that may be implemented in response to elevated levels of COI or odor measured during ground intrusive activities. In general, a tiered approach to Site conditions with corresponding response actions will be implemented during the air monitoring program.

The four (4) tiers of Site conditions are defined as follows:

- **Operational Condition:** Normal or ambient air-conditions where PM<sub>10</sub> concentrations are less than the Response Limit and TVOC concentrations are less than the Alert Limit;
- **Alert Condition:** Concentration of TVOC is greater than the Alert Limit, but less than the Response Limit;
- **Response Condition:** Concentration of PM<sub>10</sub> or TVOC is greater than the Response Limit, but less than the Action Limit; and
- **Action Condition:** Concentration of PM<sub>10</sub> or TVOC is greater than the Action Limit.

The Contingency Plan will rely on real-time data generated from the AMS, hand-held, odor intensity, and meteorological monitoring. These data sources will be evaluated together in order to make appropriate decisions concerning Site conditions and potential control measures. **Table 2-1** presents the Site Condition decision table that will be used to determine the appropriate Site Condition based on contaminant concentrations. Possible Alert, Response, and Action Condition corrective actions are listed in **Table 6-1** and are presented in detail in the Emissions Control Plan.

Explanations of the notification system, specific conditions, and response actions for TVOCs, PM<sub>10</sub>, and odor are presented in the following sections.



**Table 6-1: Site Conditions and Corrective Actions**

<b>Site Condition</b>	<b>Corrective Action</b>
<b>Operational Condition</b>	<ul style="list-style-type: none"> <li>• Normal Site operations – No Response Action Required.</li> </ul>
<b>Alert Condition</b>	<ul style="list-style-type: none"> <li>• Establish trend of data and determine if evaluation/wait period is warranted;</li> <li>• Apply VOC emission suppressant foam over open excavation areas;</li> <li>• Slow the pace of construction activities;</li> <li>• Cover all or part of the excavation area;</li> <li>• Slow the pace of construction activities;</li> <li>• Change construction process or equipment that minimizes air emissions; and/or</li> <li>• Evaluate Site activities as they relate to COI concentrations.</li> </ul>
<b>Response Condition</b>	<ul style="list-style-type: none"> <li>• Establish trend of data and determine if evaluation/wait period is warranted;</li> <li>• Temporarily stop work;</li> <li>• Temporarily relocate work to an area with potentially lower emission levels;</li> <li>• Apply water to area of activity or haul roads to minimize dust levels;</li> <li>• Reschedule work activities;</li> <li>• Cover all or part of the excavation area;</li> <li>• Apply VOC emission suppressant foam over open excavation areas;</li> <li>• Slow the pace of construction activities; and/or</li> <li>• Change construction process or equipment that minimizes air emissions.</li> </ul>
<b>Action Condition</b>	<ul style="list-style-type: none"> <li>• Assess work activity modifications;</li> <li>• Cease construction activities; and</li> <li>• Re-evaluate CAMP.</li> </ul>
<p>Notes: The bulleted response actions specified under each Site condition can be implemented in any order that is most appropriate under the existing site conditions and are detailed in the Dust Control Plan and Odor Control Plans.</p>	

## 6.1 Total Volatile Organic Compounds

TVOC concentrations in air will be measured and recorded at each AMS. **Table 2-1** presents the TVOC decision table that will be used to determine the appropriate Site Condition based on contaminant concentrations.

### 6.1.1 Operational Condition

**Operational Condition** will be in effect when the 15-minute TVOC concentration from each AMS is less than the Alert Limit of 3.7 ppm.

Under an **Operational Condition**, each PID located at the AMS will operate in the TVOC mode and will collect and analyze a TVOC sample at a frequency of one 15-minute average each minute.

### 6.1.2 Alert Condition

An **Alert Condition** will occur if any 15-minute TVOC concentration measured at an AMS is greater than the Alert Limit (3.7 ppm), but less or equal to the Response Limit (5.0 ppm).

At this time, the upwind and downwind TVOC concentrations will be compared to determine if the preliminary Alert Condition is due to Site activities. If downwind TVOC concentrations are greater than 3.7 ppm above the background concentration, then it will be assumed that the preliminary Site condition is due to Site activities.

### 6.1.3 Response Condition

A **Response Condition** will occur if any 15-minute TVOC concentration measured at an AMS is greater than the Response Limit (5.0 ppm), but less than or equal to the Action Limit (25.0 ppm). Under a Response Condition, the GC at the AMS where the elevated concentration is recorded will automatically begin to analyze for the individual BTEX compounds in the compound-specific mode and the 15-minute concentration for each BTEX compound will be determined.

If the above condition is true, then a Response Condition will be verified. Under a verified Response Condition, a contingency meeting attended by the air monitoring consultant, National Grid, NYSDEC and/or NYSDOH representatives (when possible), and the Site CM will be held to determine appropriate response actions. This meeting will be held within 60 minutes of the Response Condition verification.

### 6.1.4 Action Condition

If average TVOC concentration exceeds the Action Limit of 25.0 ppm or the benzene concentration exceeds 1.0 ppm during the GC speciation mode at any AMS then the Site will enter into an **Action Condition**. An Action Condition will remain in effect if either of the following conditions is true:

- The 15-minute average benzene concentration is greater than 1.0 ppm (Action Limit); and/or
- The 15-minute average TVOC concentration is greater than or equal to 25.0 ppm (Action Limit).

Under an Action Condition, construction activities will be halted. A meeting attended by the air monitoring consultant, NYSDEC and/or NYSDOH representatives (when possible), National Grid, and the Site CM will be held within 60 minutes of the Action Condition notification to determine appropriate corrective actions. Possible Action Condition corrective measures/actions are listed in **Table 6-1**. After appropriate corrective measures/actions are taken, work activities may resume provided that the TVOC concentration at the Site perimeter is no more than 25.0 ppm above background for the 15-minute average and the benzene concentrations are below 1.0 ppm.

### 6.1.5 Evaluating Corrective Actions and Site Conditions

If average TVOC and benzene concentrations fall below the Action Limits, then the Site will be returned to a Response and/or Alert Condition at which time work activities may resume. The appropriate Site Condition can be determined as follows:

- Response Condition - The 15-minute average concentration for TVOC is greater than 5.0 ppm (Response Limit), but less than or equal to 25.0 ppm (Action Limit) above background;
- Alert Condition – The 15-minute average concentration for TVOC is greater than 3.7 ppm (Alert Limit), but less than or equal to 5.0 ppm (Response Limit) above background; and/or
- Operational Condition - The 15-minute average concentration for TVOC is less than or equal to 3.7 ppm (Alert Limit) above background.

Under the Operational Condition, the GCs in each of the AMS' that were in VOC compound-specific (BTEX) sampling mode will be automatically turned off.

Specific TVOC target concentrations for Operational, Alert, Response and Action Conditions are summarized in **Table 2-1**.

## 6.2 Particulate Matter (PM<sub>10</sub>)

PM<sub>10</sub> concentrations in air will be measured and recorded by each AMS. **Table 2-1** presents the PM<sub>10</sub> decision table that will be used to determine the appropriate Site Condition based on the contaminant concentrations.

### 6.2.1 Operational Condition

**Operational Condition** will be in effect when the 15-minute PM<sub>10</sub> concentration from each AMS is less than the Response Limit of 100 µg/m<sup>3</sup> (following an evaluation of background concentrations).

### 6.2.2 Response Condition

A **Response Condition** will occur if any 15-minute PM<sub>10</sub> concentration measured at an AMS is greater than the Response Limit (100 µg/m<sup>3</sup>), but less than or equal to the Action Limit (150 µg/m<sup>3</sup>). At this time, the Site CM and National Grid will be notified of elevated measurements PM<sub>10</sub> concentrations and a possible Response Condition. Under a Response Condition, upwind and downwind PM<sub>10</sub> concentrations will be compared to determine if the Response Condition is due to Site activities. If downwind PM<sub>10</sub> concentrations are greater than 100 µg/m<sup>3</sup> (Response Limit) above the upwind (background) concentrations, then it will be assumed that the Response Condition is due to Site activities.

The Response Condition will remain in effect as long as the 15-minute average PM<sub>10</sub> concentration is greater than or equal to 100 µg/m<sup>3</sup> (Response Limit) above background and less than or equal to 150 µg/m<sup>3</sup> (Action Limit). Under a Response Condition, dust suppression techniques must be implemented. At this point, routine monitoring continues and 15-minute averages continue to be evaluated. Work may continue with dust suppression techniques provided that downwind PM<sub>10</sub> levels do not exceed 150 µg/m<sup>3</sup> above background and provided that no visible dust is migrating offsite from the work area

If the above condition is true, then a Response Condition will be verified. Under a verified Response Condition, a contingency meeting attended by the air monitoring consultant, National Grid, NYSDEC and/or NYSDOH representatives (when possible), and the Site CM will be held to determine appropriate corrective actions. This meeting will be held within 60 minutes of the Response Condition if the elevated concentrations are not mitigated by dust suppression techniques.

### 6.2.3 Action Condition

An **Action Condition** will go into effect if the average 15-minute  $PM_{10}$  concentration exceeds  $150 \mu g/m^3$  (Action Limit) above background. Under an Action Condition, work must be stopped and a meeting attended by the AM consultant, National Grid, the NYSDEC or NYSDOH representatives, and the Site CM will be held within 60 minutes of the Action Condition notification to determine appropriate corrective actions.

### 6.2.4 Evaluating Corrective Actions and Site Conditions

Work may resume provided that dust suppression measures and other controls are successful in reducing the downwind  $PM_{10}$  concentrations below  $150 \mu g/m^3$  above background and in preventing visible dust migration.

Specific  $PM_{10}$  target concentrations for Operational, Response, and Action Conditions are summarized in **Table 2-1**.

## 6.3 Visible Dust

In addition to measured  $PM_{10}$  concentrations, the CAMP requires monitoring of visible dust conditions. If visible airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind  $PM_{10}$  levels do not exceed  $150 \mu g/m^3$  above background and no visible dust is migrating from the work area.

## 6.4 Odor

Odors from MGP sites are generally negligible due to surface soil cover of contaminated materials. However, excavation work may expose these materials and odors may become detectable. Odors may cause concern among the nearby community, visitors to the site, and onsite workers regarding potential health risks. Health risks or the potential for health risks do not rely strictly on detectable odors. A detectable odor does not indicate health risks. However, controlling odor emissions from a site can allay public fears about health risks and provide additional means of controlling nuisance emissions during remediation activities.

For MGP sites, the characteristic odor during remediation has been attributed primarily to naphthalene and indene, although additional compounds may contribute to the overall odor. (Pure naphthalene has the characteristic odor of mothballs). EPA provides a threshold for the initial presentation of naphthalene odors at  $440 \mu g/m^3$  (ATSDR, 1995; Amooore and Hautala, 1983). There is no reported odor threshold for indene. Odors emanating from the site will be monitored for general odor intensity, as described below.

Odor intensity levels will be noted and recorded as needed during perimeter walk-around monitoring. Intensity levels will be based on the n-butanol scale as adapted from ASTM E544-99. **Table 2-1**

summarizes the Site Conditions and Odor Intensity observations. Naphthalene concentrations will be measured and recorded if odor intensity is observed above the Action Limit.

An Operational Condition will remain in effect if the odor intensity, based on the 8-point n-butanol scale, is less than 3 (Action Limit). An Action Condition will go into effect when odor intensities are greater than 3, based on the 8-point n-butanol scale, or there are odor complaints from the public.

If an Action Condition, due to odor, is verified, then a meeting attended by the AM consultant, National Grid, NYSDEC or NYSDOH representatives, and the Site CM will be held within 60 minutes of the Action Condition to determine appropriate corrective actions.