

2016-2017  
Air Monitoring Network Plan

City of Philadelphia  
Department of Public Health  
Air Management Services

July 1, 2016

## Executive Summary

Philadelphia has an air monitoring network of eleven air monitoring stations that house instruments that measure ambient levels of gaseous, solid, and liquid aerosol pollutants. It is operated by the City of Philadelphia's Department of Public Health, Air Management Services (AMS), the local air pollution control agency for the City of Philadelphia. This network is part of a broader network of air monitoring operated by our local states of Pennsylvania, New Jersey, Delaware and Maryland that make up the Philadelphia- Camden- Wilmington, PA-NJ-DE-MD Metropolitan Statistical Area (MSA).

The United States Environmental Protection Agency (US EPA) created regulations on how the air monitoring network is to be set up. These regulations can be found in Title 40 - Protection of Environment in the Code of Federal Regulations (CFR) Part 58 – Ambient Air Quality Surveillance, located online at: <http://www.ecfr.gov/cgi-bin/text-idx?SID=86f79e0c1262e76604e10118aa3cc0ec&mc=true&node=pt40.6.58&rgn=div5>.

Beginning July 1, 2007, and each year thereafter, AMS has submitted to EPA Region III, an Air Monitoring Network Plan (Plan) which assures that the network stations continue to meet the criteria established by federal regulations.

Air monitoring provides critical information on the quality of air in Philadelphia. The objective for much of our network is to measure pollutants in areas that represent high levels of contaminants and high population exposure. Some monitoring is also done to determine the difference in pollutant levels in various parts of the City, provide long term trends, help bring facilities into compliance, provide real-time monitoring and provide the public with information on air quality.

Air monitoring data is submitted to the EPA on a quarterly basis. EPA's AirData website (<http://www.epa.gov/airdata/>) provides access to air quality data collected at the monitors. On May 1<sup>st</sup> of the current year, AMS certifies the prior year's data. The annual data certification process is outlined in 40 CFR Part 58.15.

The proper siting of a monitor requires the specification of the monitoring objective, the types of sites necessary to meet the objective, and the desired spatial scale of representativeness. These are discussed in the section entitled "Definitions".

This Plan is composed of fourteen sections plus Appendix A and B:

- 1. Announcement of Future Changes to the Network** - This section provides information on how the public is made aware of the Plan and where it is available for review.
- 2. Definitions** - This section describes the terms used for air monitoring programs, measurement methods, monitoring objectives, spatial scales, air monitoring areas, pollutants, collection methods, and analysis methods.

3. **Current Network at a Glance** - This section shows the location of the monitoring sites and the pollutants measured at each site.
4. **Current Sites Summary** - This section provides information applicable to our overall network such as population. It also provides a brief overall purpose for each monitoring site.
5. **Direction of Future Air Monitoring** - This section gives a perspective of the major areas and initiatives AMS will be considering during the next few years.
6. **Proposed Changes to the Network** - This section describes changes that may occur within the next 18 months that would modify the network from how it is currently described in the Plan.
7. **NCore Monitoring Network** - This section documents the NCore monitoring network codified in 40 CFR Part 58.10(a)(3) and 40 CFR Appendix D section 3.
8. **Pb Monitoring Network** - This section documents the Pb monitoring network codified in 40 CFR Part 58.10(a)(4) and 40 CFR Appendix D section 4.5.
9. **NO<sub>2</sub> Monitoring Network** - This section documents the NO<sub>2</sub> monitoring network codified in 40 CFR Part 58.10(a)(5) and 40 CFR Appendix D section 4.3.
10. **SO<sub>2</sub> Monitoring Network** - This section documents the SO<sub>2</sub> monitoring network codified in 40 CFR Part 58.10(a)(6) and 40 CFR Appendix D section 4.4.
11. **CO Monitoring Network** - This section documents the CO monitoring network codified in 40 CFR Part 58.10(a)(7) and 40 CFR Appendix D section 4.2.
12. **PM<sub>2.5</sub> Monitoring Network** - This section documents the PM<sub>2.5</sub> monitoring network codified in 40 CFR Part 58.10(a)(8) and 40 CFR Appendix D section 4.7.
13. **O<sub>3</sub> Monitoring Network** - This section documents the O<sub>3</sub> monitoring network codified in 40 CFR Appendix D section 4.4.
14. **Detailed Information on Each Site** - This is the largest section of the Plan. Each monitoring site is separately described in a table, complete with pictures and maps. The material is presented as:
  - A table providing information on the pollutants measured, sampling type, operating schedule, collection method, analysis method, spatial scale, monitoring objective, probe height, and begin date of each monitor;
  - Pictures taken at ground level of the monitoring station;
  - A map of the monitoring site complete with major cross streets and major air emission sources within 3000 meters (almost 2 miles); and
  - An aerial picture providing a north view of the site.

## 15. Appendix A

- **US EPA SO<sub>2</sub> Data Requirements Rule Documentation** - Includes letters to US EPA and Philadelphia Refining Sol Ref/PES

## 16. Appendix B

- **Public notice proof of publication**

AMS has provided a copy of the Plan for public inspection on the City's website at:

<http://www.phila.gov/health/AirManagement/PublicMeetings.html>.

Comments or questions concerning the air monitoring network or this Plan can be directed to:

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## **Announcement of Future Changes to the Network**

Beginning July 1, 2007, and each year thereafter, AMS has submitted to EPA Region III, a Plan assuring that the network stations continue to meet the criteria established by federal regulations. At least 30 days prior to July 1 of each year, AMS announces to the public the availability of the Plan through notices published in the *Philadelphia Daily News* and the *Pennsylvania Bulletin*. Copies of the Plan are available for public inspection on the City's website under the Department of Public Health, Air Management Services at:

<http://www.phila.gov/health/AirManagement/PublicMeetings.html>

and at the AMS office:

Air Management Services  
321 University Avenue, 2nd Floor  
Philadelphia, PA 19104  
Phone – 215-685-7586

Provisions will be made to accommodate comments and questions concerning the air monitoring network or the Plan. If comments are received, they will be considered for incorporation into the Plan.

## Definitions

### Air Monitoring Programs

EPA has established various air monitoring programs for the measurement of pollutants. Some of these are briefly described below. Later in this Plan, air monitoring sites and monitoring equipment are specifically identified relative to these air monitoring programs:

- **NATTS** – National Air Toxics Trends Stations. This network provides ambient levels of hazardous air pollutants. These sites are established with the intent that they will operate over many years and provide both current and historical information.
- **NCore** – National Core multi-pollutant monitoring stations. Monitors at these sites are required to measure particles (PM<sub>2.5</sub>, speciated PM<sub>2.5</sub>, PM<sub>10-2.5</sub>), O<sub>3</sub>, SO<sub>2</sub>, CO, nitrogen oxides (NO/NO<sub>2</sub>/NO<sub>y</sub>), Pb, and basic meteorology. They principally support research in air pollution control.
- **SLAMS** – State or Local Air Monitoring Stations. The SLAMS make up the ambient air quality monitoring sites that are primarily needed for NAAQS comparisons, but may serve other data purposes. SLAMS exclude special purpose monitor (SPM) stations and include NCore, PAMS, Near-road NO<sub>2</sub>/CO and all other State or locally operated stations that have not been designated as SPM stations.
- **PAMS** – Photochemical Assessment Monitoring Stations.
- **STN** – A PM<sub>2.5</sub> speciation station designated to be part of the Speciation Trends Network. This network provides chemical species data of fine particulate. These sites are established with the intent that they will operate over many years and provide both current and historical information.
- **State speciation site** – A supplemental PM<sub>2.5</sub> speciation station that is not part of the speciation trends network.
- **SPM** – Special Purpose Monitor. As the name implies these monitors are placed for purposes of interest to the city of Philadelphia. Often this monitoring is performed over a limited amount of time. Data is reported to the federal Air Quality System (AQS) and is not counted when showing compliance with the minimum requirements of the air monitoring regulations for the number and siting of monitors of various types. The agency may designate a monitor as an SPM after January 1, 2007 only if it is a new monitor or for a monitor included in the monitoring plan prior to January 1, 2007, if the Regional Administrator has approved the discontinuation of the monitor as a SLAMS site.

### Measurement Methods

- **Approved Regional Method (ARM)** – A continuous PM<sub>2.5</sub> method that has been approved specifically within a State or Local air monitoring network for purposes of comparison to the NAAQS and to meet other monitoring objectives.
- **Federal Equivalent Method (FEM)** – A method for measuring the concentration of an air pollutant in the ambient air that has been designated as an equivalent method in accordance with 40 CFR Part 53; it does not include a method for which an equivalent method designation has been canceled in accordance with 40 CFR Part 53.11 or 40 CFR Part 53.16.

- **Federal Reference Method (FRM)** – A method of sampling and analyzing the ambient air for an air pollutant that is specified as a reference method in an appendix to 40 CFR Part 50, or a method that has been designated as a reference method in accordance with this part; it does not include a method for which a reference method designation has been canceled in accordance with 40 CFR Part 53.11 or 40 CFR Part 53.16.

## Monitoring Objectives

The ambient air monitoring networks must be designed to meet three basic monitoring objectives:

- Provide air pollution data to the general public in a timely manner.
- Support compliance with ambient air quality standards and emissions strategy development.
- Assist in the evaluation of regional air quality models used in developing emission strategies, and to track trends in air pollution abatement control measures' impact on improving air quality.

In order to support the air quality management work indicated in the three basic air monitoring objectives, a network must be designed with a variety of different monitoring sites. Monitoring sites must be capable of informing managers about many things including the peak air pollution levels, typical levels in populated areas, air pollution transported into and outside of a city or region, and air pollution levels near specific sources.

## Spatial Scales

The physical siting of the air monitoring station must be consistent with the objectives, site type and the physical location of a particular monitor.

The goal in locating monitors is to correctly match the spatial scale represented by the sample of monitored air with the spatial scale most appropriate for the monitoring site type, air pollutant to be measured, and the monitoring objective.

The spatial scale results from the physical location of the site with respect to the pollutant sources and categories. It estimates the size of the area surrounding the monitoring site that experiences uniform pollutant concentrations. The categories of spatial scale are:

- **Microscale** – Defines concentrations in air volumes associated with area dimensions ranging from several meters up to about 100 meters.
- **Middle scale** – Defines concentration typical of areas up to several city blocks in size with dimensions ranging from about 100 meters to 0.5 kilometer.
- **Neighborhood scale** – Defines concentrations within some extended area of the city that has relatively uniform land use with dimensions in the 0.5 to 4.0 kilometers range. The neighborhood and urban scales listed below have the potential to overlap in applications that concern secondarily formed or homogeneously distributed air pollutants.
- **Urban scale** – Defines concentrations within an area of city-like dimensions, on the order of 4 to 50 kilometers. Within a city, the geographic placement of sources may result in there being no single site that can be said to represent air quality on an urban scale.

- **Regional scale** – Defines usually a rural area of reasonably homogeneous geography without large sources, and extends from tens to hundreds of kilometers.
- **National and global scales** – These measurement scales represent concentrations characterizing the nation and the globe as a whole.

## Air Monitoring Area

- **Core-Based Statistical Area (CBSA)** – Defined by the U.S. Office of Management and Budget, as a statistical geographic entity consisting of the county or counties associated with at least one urbanized area/urban cluster of at least a population of 10,000 people, plus adjacent counties having a high degree of social and economic integration.
- **Metropolitan Statistical Area (MSA)** – A Core-Based Statistical Area (CBSA) associated with at least one urbanized area of a population of 50,000 people or more. The central county plus adjacent counties with a high degree of integration comprise the area.

## Pollutants

Air Management Services monitors for a wide range of air pollutants:

- **Criteria Pollutants** are measured to assess if and how well we are meeting the National Ambient Air Quality Standards (NAAQS) that have been set for each of these pollutants. These standards are set to protect the public's health and welfare.
  - **Ozone (O<sub>3</sub>)**
  - **Sulfur Dioxide (SO<sub>2</sub>)**
  - **Carbon Monoxide (CO)**
  - **Nitrogen Dioxide (NO<sub>2</sub>)**
    - NO means nitrogen oxide.
    - NO<sub>x</sub> means oxides of nitrogen and is defined as the sum of the concentrations of NO<sub>2</sub> and NO.
    - NO<sub>y</sub> means the sum of all total *reactive* nitrogen oxides, including NO, NO<sub>2</sub>, and other nitrogen oxides referred to as NO<sub>z</sub>.
  - **Particulate**
    - PM<sub>2.5</sub> means particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers.
    - PM<sub>10</sub> means particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers.
    - PM Coarse means particulate matter with an aerodynamic diameter greater than 2.5 micrometers and less than 10 micrometers.
    - Ultrafine Particulate Matter means particulate matter with an aerodynamic diameter less than 0.1 micrometers.
  - **Lead (Pb)**
- **BaP** – means Benzo(a)Pyrene, a polycyclic aromatic hydrocarbon that is a product of incomplete combustion or burning organic (carbon-containing) items.
- **Black Carbon** – Black Carbon is a major component of "soot", a complex and most strongly absorbing component of particulate matter (PM), that is formed by the incomplete combustion of fossil fuels, biofuels, and biomass.
- **Speciated PM<sub>2.5</sub>** – PM<sub>2.5</sub> particles are analyzed to identify their makeup (60 components including elements, radicals, elemental carbon, and organic carbon) and help assess the

level of health risk and identify sources that are contributing to the levels of PM<sub>2.5</sub> being measured.

- **Toxics** – Approximately 44 compounds, carbonyls – 7 compounds, and metals - 7 elements are toxic and are measured to assess the risk of cancer and non cancer caused by these pollutants.
- **Volatile Organic Compounds (VOC)** – Approximately 57 of these compounds are monitored to assist in understanding the formation of ozone and how to control this pollutant.

## Collection Methods

### Particulate samples

- **BAM-Beta Attenuation Monitor Met One BAM-1020** – This instrument provides concentration values of particulate each hour. The BAM -1020 uses the principle of beta ray attenuation to provide a simple determination of mass concentration. Beta ray attenuation: A small <sup>14</sup>C element emits a constant source of high-energy electrons, also known as beta particles. These beta particles are efficiently detected by an ultra-sensitive scintillation counter placed nearby. An external pump pulls a measured amount of air through a filter tape. Filter tape, impregnated with ambient dust is placed between the source and the detector thereby causing the attenuation of the measured beta-particle signal. The degree of attenuation of the beta-particle signal may be used to determine the mass concentration of particulate matter on the filter tape and hence the volumetric concentration of particulate matter in ambient air.

**The following instruments provide concentration values of particulate over a 24-hour period. Laboratory analysis is required before the concentration of particulate can be determined.**

- **Hi-Vol** – High-Volume Air Samplers (HVAS) are used to determine the concentration of particulate matter in the air. Without a size-selective inlet (SSI), all collected material is defined as total suspended (in the air) particulates (TSP), including lead (Pb) and other metals. A size-selective inlet is added for PM<sub>10</sub> measurement. A Hi-Volume sampler consists of two basic components: a motor similar to those used in vacuum cleaners and an air flow control system.
- **Hi-Vol-SA/GMW-321-B** – High Volume Sierra Anderson or General Metal Works (GMW) model 321-B PM<sub>10</sub> is a high volume air sampler system which has a selective inlet 203 cm x 254 cm filter.
- **Met One SASS** – Filters used to collect PM measurement of total mass by gravimetry, elements by x-ray fluorescence.
- **R & P PM<sub>2.5</sub>** – Rupprecht & Potashnick PM<sub>2.5</sub> monitors an air sample drawn through a Teflon filter for 24 hours.

### Gaseous / criteria pollutants

- **Instrumental - Data from these instruments is telemetered to a central computer system and values are available in near “real time”.** An analyzer used to measure pollutants such as: carbon monoxide, sulfur dioxide, nitrogen oxides and ozone.

### Toxic and organic (VOC) pollutants

- **SS Canister Pressurized** – Ambient air is collected in stainless-steel canisters, cryogenically concentrated using liquid nitrogen and analyzed for target VOCs and other organic components by GC-FID.

- **Canister Sub Ambient Pressure** – Collection of ambient air into an evacuated canister with a final canister pressure below atmospheric pressure.
- **DNPH-Coated Cartridges** – Cartridges are coated with 2,4-dinitrophenylhydrazine (DNPH). This is used for carbonyl determination in ambient air. High Performance Liquid Chromatography (HPLC) measures the carbonyl.

## Analysis Methods

### Particulate concentration

- **Gravimetric** – The determination of the quantities of the constituents of a compound, describes a set of methods for the quantitative determination of an analyte based on the weight of a solid. Laboratory analysis is needed.
- **BAM-Beta Attenuation** – The principle of beta ray attenuation to provide a simple determination of mass concentration. Instrumental – data is available in near real time.

### Composition/make-up of particulates

- **Atomic Absorption** – This analysis measures the intensity of radiation of a specific wavelength that is absorbed by an atomic vapor.
- **Energy Dispersive XRF** – Energy dispersive x-Ray Fluorescence Spectrometer for the determination of metals including Lead concentration in ambient particulate matter. The method is collected on PM<sub>2.5</sub> filter samples.

### Gaseous / criteria pollutants

- **Nitrogen Oxides – Chemiluminescence** - Emission of light as a result of a chemical reaction at environmental temperatures. This analysis is used for NO, NO<sub>x</sub>, and NO<sub>y</sub>. NO<sub>2</sub> is calculated as NO<sub>x</sub>- NO.
- **Carbon Monoxide – Nondispersive infrared** - A nondispersive infrared (NDIR) gas analyzer is an instrument that measures air samples for CO content.
- **Sulfur Dioxide – Pulsed Fluorescent** - Pulsed fluorescence sulfur dioxide monitor where air is drawn from the outside and passes through the analysis cell, and a high intensity burst of UV light is emitted. The sulfur dioxide responds to the specific UV wavelength generated by absorbing the energy. When the flash lamp shuts off (in a fraction of a second) the SO<sub>2</sub> fluoresces giving off an amount of photons directly proportional to the concentration of sulfur dioxide in the air.
- **Ozone – Ultra Violet** - A light, which supplies energy to a molecule being analyzed. Ozone is analyzed with UV.

### Toxic and volatile organic pollutants

- **Cryogenic Preconcentration GC/FID** – Cryogenic Preconcentration Gas Chromatograph/Flame Ionization Detector - air injection volume for capillary GC combined with low concentrations of analyte require that samples be preconcentrated prior to GC analysis. Sample preconcentration is accomplished by passing a known volume of the air sample through a trap filled with fine glass beads that is cooled to -180°C. With this technique, the volatile hydrocarbons of interest are quantitatively retained in the trap, whereas the bulk constituents of air (nitrogen, oxygen, etc.) are not. The air sample is collected in a vessel of known volume. A portion of this volume is analyzed and used to calculate concentration of each compound in the original air sample after Gas Chromatographic (Flame Ionization Detector, GC-FID) analysis. The sample trapped cryogenically on the glass beads is thermally desorbed into a stream of ultra-pure helium and re-trapped on the surface of a fine stainless steel capillary cooled to -180 °C.

This second cryogenic trapping stage "focuses" the sample into a small linear section of tubing. The cold stainless steel capillary is ballistically heated (by electrical resistance) and the focused sample quickly desorbs into the helium stream and is transferred to the chromatographic column. Cryogen (liquid nitrogen, LN<sub>2</sub>) is used to obtain sub ambient temperatures in the VOC concentration and GC. This analysis is used to determine the concentration of Benzene and other organic compounds and VOC in the atmosphere.

- **GC/MS** – Gas Chromatograph/Mass Spectrometer. Analysis of organic or VOC are conducted using a gas chromatograph (GC) with a mass spectrometer (MS) attached as the detector. Cryogenic preconcentration with liquid nitrogen (LN<sub>2</sub>) is also used to trap and concentrate sample components.
- **Thin Layer Chromatography (TLC)** – TLC is a widely used chromatography technique used to separate chemical compounds. It involves a stationary phase consisting of a thin layer of adsorbent material, usually silica gel, aluminum oxide, or cellulose immobilized onto a flat, inert carrier sheet.
- **High Pressure Liquid Chromatography (HPLC)** – The analytical method used to analyze carbonyl compounds such as acetaldehyde and formaldehyde. Carbonyl compounds are collected on the sampling media as their 2,4-dinitrohydrazine derivatives. The derivatives are separated by liquid chromatography (LC) on a packed column by means of a solvent mixture under high pressure (HPLC) followed by UV detection of each carbonyl derivative.



## Summary of Current Sites

All of our eleven monitoring sites are located in Philadelphia, PA:

State: Pennsylvania

City: Philadelphia

County: Philadelphia

Metropolitan Statistical Area (MSA): Philadelphia – Camden - Wilmington, PA-NJ-DE-MD

MSA number: 37980

Population: 6,069,875 (2015 annual estimate)<sup>1</sup>

EPA Region: III, Philadelphia

Class I area: Brigantine Natural Wildlife Preserve near Atlantic City, NJ

City population: 1,567,442 (2015 annual estimate)<sup>2</sup>

Time zone: EST

UTM zone: 18

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<sup>1</sup> MSA population estimates from: <http://www.census.gov/popest/data/metro/totals/2015/index.html>

<sup>2</sup> Philadelphia County population estimates from:  
<http://factfinder.census.gov/faces/nav/jsf/pages/searchresults.xhtml?refresh=t#none>

**Table 1 – Site Summary Table**

<b>AQS Site Code</b>	<b>AMS Site</b>	<b>Address</b>	<b>Statement of Purpose</b>
<b>421010004</b>	<b>LAB</b>	1501 E. Lycoming St.	Built in 1964, a good site for the assessment of the City’s impact on precursors to the formation of ozone and is a designated PAMS site. It is a good site to test new or complex monitoring methods as laboratory staff are readily available.
<b>421010014</b>	<b>ROX</b>	Eva & Dearnley Sts.	Periphery site.
<b>421010024</b>	<b>NEA</b>	Grant Ave & Ashton Rd.	Periphery site. High Ozone.
<b>421010048</b>	<b>NEW</b>	2861 Lewis St.	Originally sited to measure the impact of Franklin Smelting and Refining (now closed), MDC (now closed), and the waste water treatment plant. In 2013, the NCore site was re-located here.
<b>421010055</b>	<b>RIT</b>	24 <sup>th</sup> & Ritner Sts.	This site was selected to help assess the impact of the petroleum refinery on the local community. The area was identified by air quality modeling.
<b>421010057</b>	<b>FAB</b>	3 <sup>rd</sup> & Spring Garden Sts.	This site was established to represent the highest levels of PM <sub>2.5</sub> in the City based on EPA Region III’s air quality modeling of air toxics in Philadelphia. It shows high levels of PM <sub>2.5</sub> created by vehicle traffic.
<b>421010063</b>	<b>SWA</b>	8200 Enterprise Ave.	This site was established to measure toxics, carbonyls, and metals. EPA Region III modeling analysis showed areas near the airport to have high levels of aldehydes.
<b>421010075</b>	<b>TOR</b>	4901 Grant Ave & James St.	This site was established as the 1 <sup>st</sup> near-road NO <sub>2</sub> monitor in the Philadelphia-Camden-Wilmington, PA-NJ-DE-MD Metropolitan Statistical Area .
<b>421010076</b>	<b>MON</b>	I-76 & Montgomery Drive	This site was established as the 2nd near-road monitor in the Philadelphia-Camden-Wilmington, PA-NJ-DE-MD Metropolitan Statistical Area.
	<b>PHA</b>	3100 Penrose Ferry Road	This site was selected as a Community Scale Air Toxics Monitoring to continuously monitor air toxics pollutants such as benzene and hydrogen fluoride (HF) in the South Philadelphia community.
	<b>VGR</b>	6 <sup>th</sup> & Arch Sts.	EPA’s Village Green Air Monitoring Station. Utilizes solar and wind turbine power as energy sources. Sited to increase community awareness of environmental conditions.

## **Direction of Future Air Monitoring**

The agency will study and assess the overall monitoring program within the City to determine the course of future changes to the air monitoring network.

The agency will focus on the following:

- Maximize the monitoring network to be more efficient (i.e., utilizing continuous equipment to replace filter based equipment, downsize monitoring to reduce overlapping, etc)
  - The agency will re-evaluate the number and monitoring locations for toxics due to decreased EPA funding.
- Improve the understanding of particulate and air toxic pollutants in Philadelphia.
  - The agency plans to pursue negotiations with the port entities in order to implement monitoring and emission inventory efforts in this location.
- Utilize funds from EPA grants to expand the monitoring network.
  - The agency received funding from the EPA (Community Scale Air Toxics Monitoring grant) to install and evaluate a continuous monitor for air toxics in South Philadelphia. This project is ongoing.
  - EPA selected Philadelphia as one of five recipients in the country for the Village Green Air Monitoring Station Grant Award, to increase community awareness of environmental conditions. The station utilizes solar and wind turbine power as its primary energy source. This project is still ongoing.

## Proposed Changes to the Network

Below are changes that are anticipated to occur over the next 18 months to the existing air monitoring network:

- Calendar year 2016 – June 2017
  - CO
    - The CO Monitor will be moved from TOR to MON on 1/1/17.
  - TSP Lead
    - TSP Lead at NEW will be shutdown 1/1/17.
  - AMS plans to establish a monitoring site (PAC) near the Port of Philadelphia.
    - A monitor to measure PM<sub>2.5</sub>, toxics, carbonyls, and metals will be placed to assess the river port.
  
- Per 40 CFR 58.14(a), no modifications will be made to the network based on the 2015 Five Year Network Assessment as per 40 CFR 58.10(d).

## **NCore Monitoring Network**

The requirements for the NCore air monitoring network are codified in 40 CFR Part 58.10(a)(3) and 40 CFR Part 58 Appendix D section 3.

The NCore station is located at NEW.

## **Pb Monitoring Network**

The requirements for the Pb air monitoring network are codified in 40 CFR Part 58.10(a)(4) and 40 CFR Part 58 Appendix D section 4.5.

Philadelphia County has no source oriented Pb sources that emit 0.50 or more tons per year.

## **NO<sub>2</sub> Monitoring Network**

The requirements for the NO<sub>2</sub> air monitoring network are codified in 40 CFR Part 58.10(a)(5) and 40 CFR Part 58 Appendix D section 4.3.

AMS currently operates an NO<sub>2</sub> monitor that meets the area-wide monitoring requirements. The first near-road NO<sub>2</sub> monitor was established at TOR and started operation on January 1, 2014. The second near-road NO<sub>2</sub> monitor is located at MON and started operation on July 20, 2015.

## SO<sub>2</sub> Monitoring Network

The requirements for the SO<sub>2</sub> air monitoring network are codified in 40 CFR Part 58.10(a)(6) and 40 CFR Part 58 Appendix D section 4.4.

Based on the PWEI, two monitors are required for the Philadelphia-Camden-Wilmington, PA-NJDE-MD CBSA. There are two NCore monitors in the Philadelphia CBSA that meet the monitoring requirements. Philadelphia County currently operates two SO<sub>2</sub> monitors.

### SO<sub>2</sub> Data Requirements Rule

On August 21, 2015, US EPA published the SO<sub>2</sub> Data Requirements Rule (DRR) in the Federal Register (80 FR 51052). US EPA developed the SO<sub>2</sub> DRR to address the need for additional air quality data to be used for implementing the must follow to gather air quality data and information in areas around large SO<sub>2</sub> sources, where currently-available data is insufficient to characterize the area as in attainment or nonattainment of the SO<sub>2</sub> NAAQS.

This final rule establishes that, at a minimum, air agencies must characterize air quality around sources that emit 2,000 tons per year (tpy) or more of SO<sub>2</sub>, using either modeling of actual source emissions or using appropriately sited ambient air quality monitors. Alternately, an air agency may avoid the requirement for air quality characterization near a source by adopting enforceable emission limits that ensure that the source will not emit more than 2,000 tpy of SO<sub>2</sub><sup>3</sup>. Under the SO<sub>2</sub> DRR, air agencies will provide additional air quality data characterizing 1-hour peak concentrations and source-oriented impacts.

The procedures to satisfy SO<sub>2</sub> DRR requirements, along with the mandated deadlines are attached in Appendix A.

On January 15, 2016, the Pennsylvania Department of Environmental Protection (PADEP) submitted to the US EPA, a list of SO<sub>2</sub> emitting sources in the Commonwealth which will undergo "air quality characterization" as required under the SO<sub>2</sub> DRR. This list of facilities was updated on March 9, 2016, via a letter from PADEP to US EPA. These facilities and the original letters are attached in Appendix A. In order to determine the list of facilities, the PADEP utilized the 2014 actual SO<sub>2</sub> emission inventory. The SO<sub>2</sub> facilities listed either (1) had 2014 emission rates over 2,000 tpy, or (2) are located in proximity to other SO<sub>2</sub> sources, such that the combined emission from the cluster of sources have the potential to exceed the SO<sub>2</sub> NAAQS.

In a letter dated January 28, 2016, PADEP advised Philadelphia Energy Sol Ref/PES (PES) as being identified as a large source of SO<sub>2</sub> emissions according to the criteria outlined in the SO<sub>2</sub> DRR. PES was identified as a cluster of facilities (including Exelon Power Generation Company/Eddystone, Kimberly-Clark PA LLC, and Convanta Delaware Valley LP – all located in Delaware County, PA) with cumulative 2014 actual emissions greater than or equal to 2000 tpy and was also identified to be located within 5 kilometers of an environmental justice community. Based on the 2014 emission inventory, PES had SO<sub>2</sub> emissions of 355 tpy.

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<sup>3</sup> Fact Sheet, Final Data Requirements Rule for the 2010 1-Hour Sulfur Dioxide (SO<sub>2</sub>) Primary National Ambient Air Quality Standard (NAAQS), EPA, [http://www3.epa.gov/airquality/sulfurdioxide/pdfs/so2\\_drr\\_fs\\_081215.pdf](http://www3.epa.gov/airquality/sulfurdioxide/pdfs/so2_drr_fs_081215.pdf)

The SO<sub>2</sub> DRR requires PADEP to indicate to US EPA by July 1, 2016 whether it will complete its "air quality characterization" by air quality modeling, ambient air monitoring or a federally enforceable emission limitation that will keep the facility wide emission limit below the 2000 tpy threshold.

## **CO Monitoring Network**

The requirements for the CO air monitoring network are codified in 40 CFR Part 58.10(a)(7) and 40 CFR Part 58 Appendix D section 4.2.

The Philadelphia-Camden-Wilmington, PA-NJ-DE-MD CBSA has a CO monitor collocated with the near-road NO<sub>2</sub> monitor at TOR and has been operational since January 1, 2014.

## **PM<sub>2.5</sub> Monitoring Network**

The requirements for the PM<sub>2.5</sub> air monitoring network are codified in 40 CFR Part 58.10(a)(8) and 40 CFR Part 58 Appendix D section 4.7.

The requirement for at least one PM<sub>2.5</sub> monitor to be collocated at a near-road NO<sub>2</sub> station for CBSAs with a population of 1,000,000 or more persons is met at the TOR monitoring site.

## **O<sub>3</sub> Monitoring Network**

The requirements for the O<sub>3</sub> air monitoring network are codified in 40 CFR Part 58 Appendix D section 4.1.

AMS currently operates three O<sub>3</sub> monitors.

## **Detailed Information on Each Site**

The tables that follow provide detailed information for each of the 11 monitoring stations in Philadelphia County. As per 40 CFR § 58.10(a)(1), the siting and operation of each monitor in the 2016-2017 Plan meets the requirements of 40 CFR 58 and Appendices A, C, D, and E of this part where applicable.

**Table 2 - Detailed LAB Information with Monitoring Station Picture**

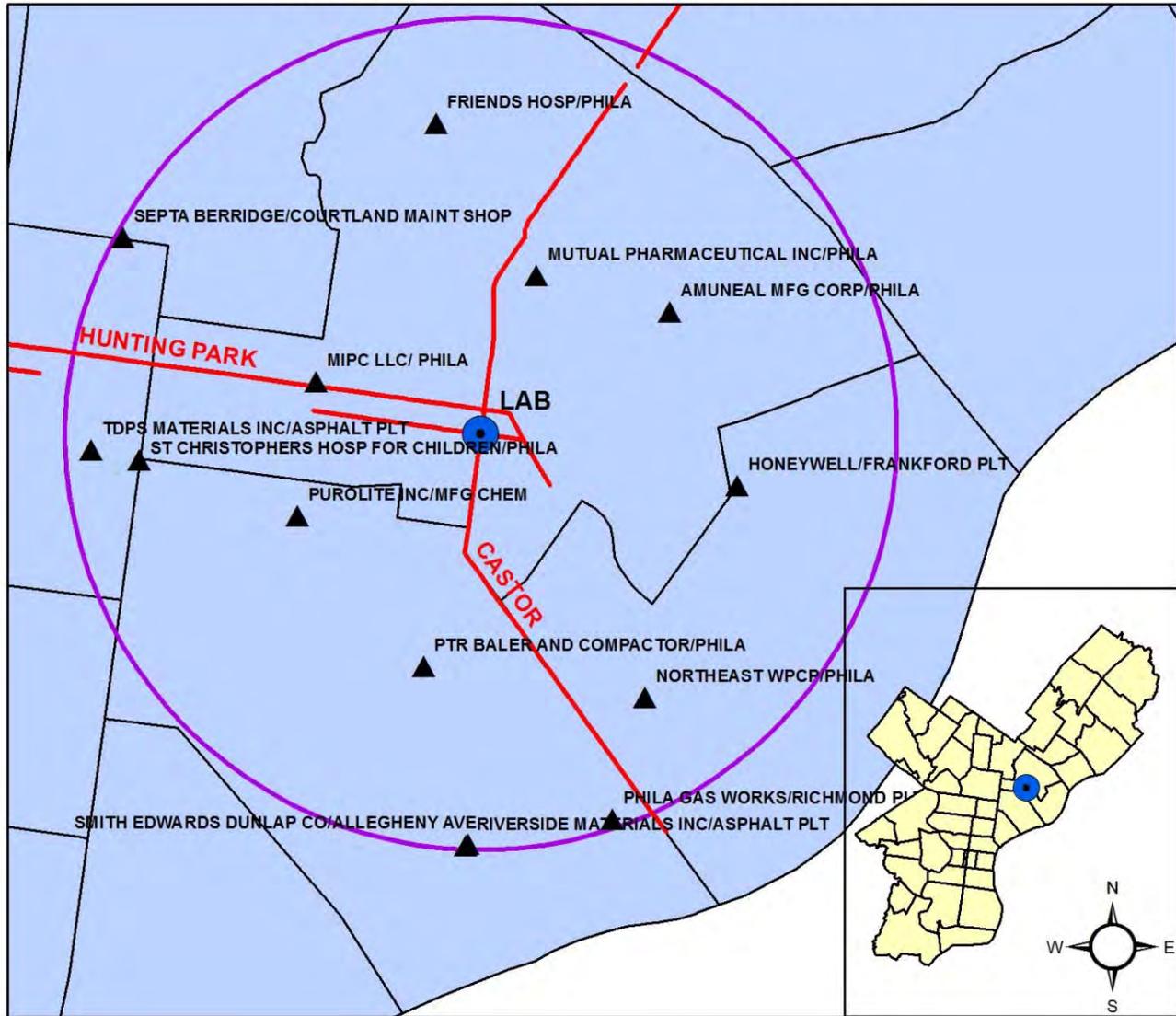
AMS SITE ID: LAB  
 AQS Site ID: 421010004  
 Street Address: 1501 E. Lycoming Street, 19124  
 Geographical Coordinates  
 Latitude: 40.008889  
 Longitude: -75.09778



PARAMETER	MONITORING TYPE	MONITOR NETWORK AFFILIATION	OPERATING SCHEDULE	COLLECTION METHOD	ANALYSIS METHOD	COMMENTS	PARAMETER CODE	POC	AQS METHOD	SPATIAL SCALE	MONITORING OBJECTIVE	PROBE HEIGHT (m)	BEGIN DATE
CO	SLAMS	PAMS	Continuous	Instrumental	Infrared Gas Filter Correlation		42101	1	093	Neighborhood	Population Exposure	7	2/1/1966
Ozone	SLAMS	PAMS	Continuous	Instrumental	Ultraviolet Absorption	Year-round operation	44201	1	087	Neighborhood	Population Exposure	7	1/1/1974
NO2	SLAMS	PAMS	Continuous	Instrumental	Gas Phase Chemiluminescence		42602	3	099	Urban	Population Exposure	7	1/1/1977
NOy	SLAMS	PAMS	Continuous	Low Level Nox Instrumental	TECO 42S Chemiluminescence		42600	1	699	Neighborhood	Population Exposure	7	1/1/1997
NOx	SLAMS	PAMS	Continuous	Instrumental	Gas Phase Chemiluminescence		42603	2	099	Urban	Population Exposure	7	1/1/2014
NO	SLAMS	PAMS	Continuous	Instrumental	Gas Phase Chemiluminescence		42601	2	099	Urban	Population Exposure	7	1/1/2014
PM2.5 FRM	SLAMS		1/3 days	R&P PM2.5	Gravimetric		88101	1	145	Neighborhood	Population Exposure	7	7/1/2014
PM2.5 FRM	SLAMS		1/3 days	R&P PM2.5	Gravimetric		88101	2	145	Neighborhood	Population Exposure	7	1/1/2011
PAMS VOC	SLAMS	PAMS	1/6 days (April, May, Sept, and Oct) - 24-Hr Real Time	SS Canister Pressurized	Cryogenic Preconcentration GC/FID		Vary	2	101	Neighborhood	Source-Oriented	7	Vary
			1/6 days (April-Oct) 24-Hr Collocated	SS Canister Pressurized	Cryogenic Preconcentration GC/FID		Vary	5	101	Neighborhood	Source-Oriented	7	Vary
			Daily from June-Aug, with sample every 3 hrs - 3-Hr Real Time (Continuous)	SS Canister Pressurized	Cryogenic Preconcentration GC/FID		Vary	1	101	Neighborhood	Source-Oriented	7	Vary
			1/6 days (Jun -Aug) - 3-Hr Collocated	SS Canister Pressurized	Cryogenic Preconcentration GC/FID		Vary	4	101	Neighborhood	Source-Oriented	7	Vary
Carbonyls	Other	PAMS/Urban Air Toxics	1/6 days	DNPH-Coated Cartridges	HPLC	Sampled for four 3-hour periods every 3rd day during PAMS season	Vary	2	102	Neighborhood	Highest Concentration	7	Vary
Toxics	Other	Urban Air Toxics	1/6 days	Canister Subambient Pressure	Multi-Detector GC		Vary	3	150	Neighborhood	Highest Concentration	7	Vary

Figure 2 – LAB Monitoring Site Map with Major Streets and Major Emission Sources

## AMS LABORATORY - 1501 E. LYCOMING ST. EPA AIRS CODE: 421010004



Site ID	Facility Site	Address	PB	2014 Emissions (tons)					
				CO	NOX	PM10	PM2.5	SO2	VOC
4210101416	TDPS MATERIALS INC/ASPHALT PLT	3870 N 2ND ST		8.90	1.76	1.85	0.29	0.23	2.17
4210101421	RIVERSIDE MATERIALS INC/ASPHALT PLT	2870 E ALLEGHENY AVE		16.75	3.33	1.80	0.77	0.43	6.10
4210101551	HONEYWELL/FRANKFORD PLT	4700 BERMUDA ST		74.43	238.87	70.62	56.42	51.38	106.27
4210101617	PUROLITE INC/MFG CHEM	3620 G ST		2.21	2.63	0.20	0.20	0.02	3.02
4210102255	SMITH EDWARDS DUNLAP CO/ALLEGHENY AVE	2867 E ALLEGHENY AVE		0.15	0.19	0.01	0.00	0.05	5.14
4210102258	MUTUAL PHARMACEUTICAL INC/PHILA	1100 ORTHODOX ST		2.30	3.03	0.23	0.00	0.01	3.20
4210103506	PTR BALER AND COMPACTOR/PHILA	2207 E ONTARIO ST		0.03	0.13	0.01	0.01	0.01	24.58
4210104172	SEPTA BERRIDGE/COURTLAND MAINT SHOP	200 W WYOMING AVE		1.64	3.57	3.79	3.79	0.01	5.51
4210104922	PHILA GAS WORKS/RICHMOND PLT	3100 E VENANGO ST		3.31	7.98	0.30	0.26	0.02	0.25
4210105004	MIPC LLC/ PHILA	4210 G ST		0.00	0.00	0.00	0.00	0.00	8.21
4210108031	FRIENDS HOSP/PHILA	4641 ROOSEVELT BLVD		1.95	2.36	0.07	0.00	0.02	0.13
4210108576	ST CHRISTOPHERS HOSP FOR CHILDREN/PHILA	ERIE AVE & FRONT ST		2.26	3.15	0.24	0.24	0.06	0.19
4210109513	NORTHEAST WPCP/PHILA	3899 RICHMOND ST		5.40	8.81	1.05	1.05	2.37	13.76
42101T0034	AMUNEAL MFG CORP/PHILA	4737 DARRAH ST		0.00	0.00	0.00	0.00	0.00	0.29

Figure 3 – LAB North Aerial View



**Table 3 - Detailed ROX Information with Monitoring Station Picture**

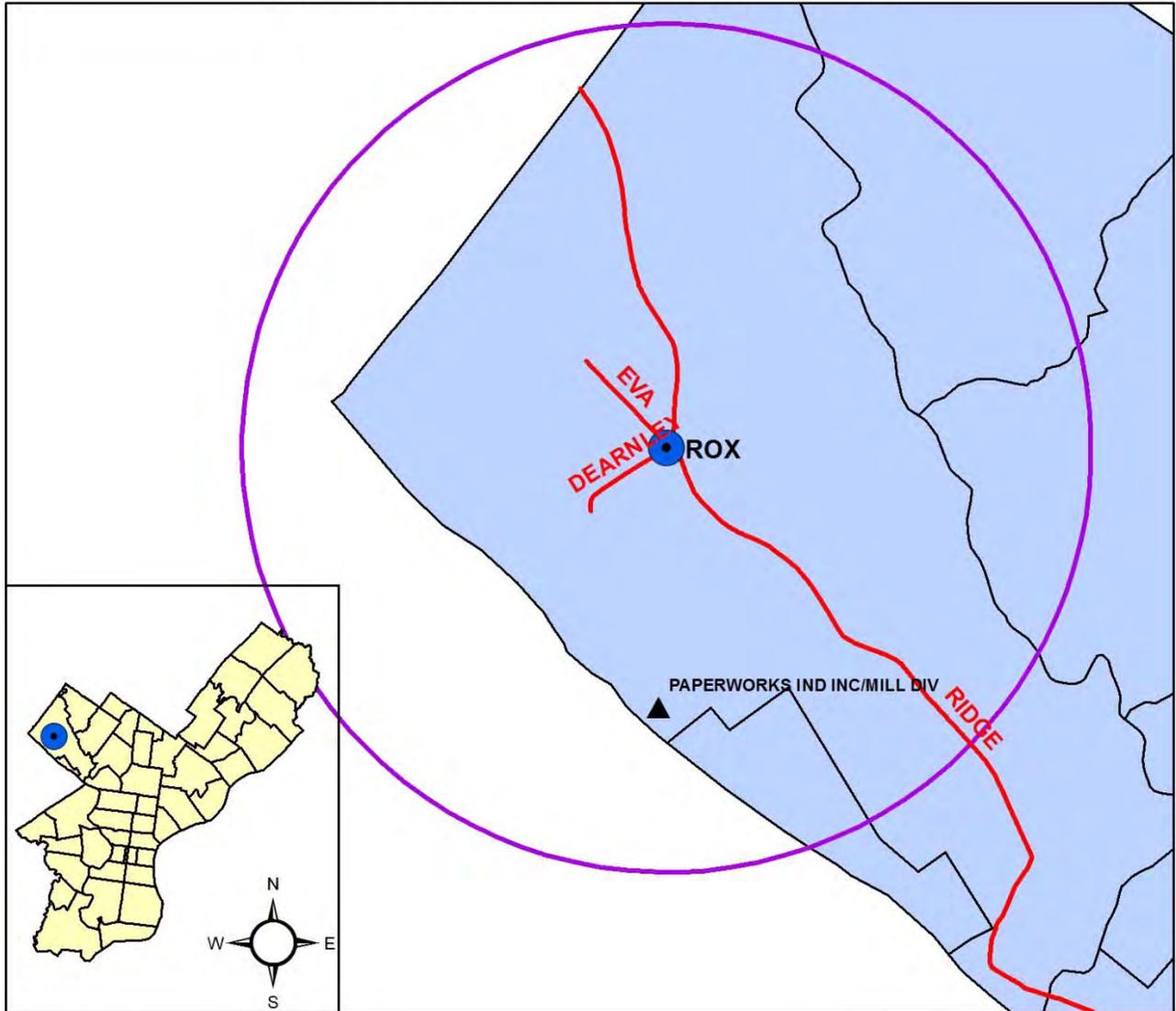
AMS SITE ID: ROX  
 AQS Site ID: 421010014  
 Street Address: EVA & Dearnley Streets  
 Geographical Coordinates  
 Latitude: 40.049604  
 Longitude: -75.241209



PARAMETER	MONITORING TYPE	MONITOR NETWORK AFFILIATION	OPERATING SCHEDULE	COLLECTION METHOD	ANALYSIS METHOD	COMMENTS	PARAMETER CODE	POC	AQS METHOD	SPATIAL SCALE	MONITORING OBJECTIVE	PROBE HEIGHT (m)	BEGIN DATE
Carbonyls	Other	Urban Air Toxics	1/6 days	DNPH-Coated Cartridges	HPLC		Vary	2	102	Neighborhood	Highest Concentration	7	5/7/2003
Toxics	Other	Urban Air Toxics	1/6 days	Canister Subambient Pressure	Multi-Detector GC		Vary	4	150	Neighborhood	Highest Concentration	7	1/1/2004

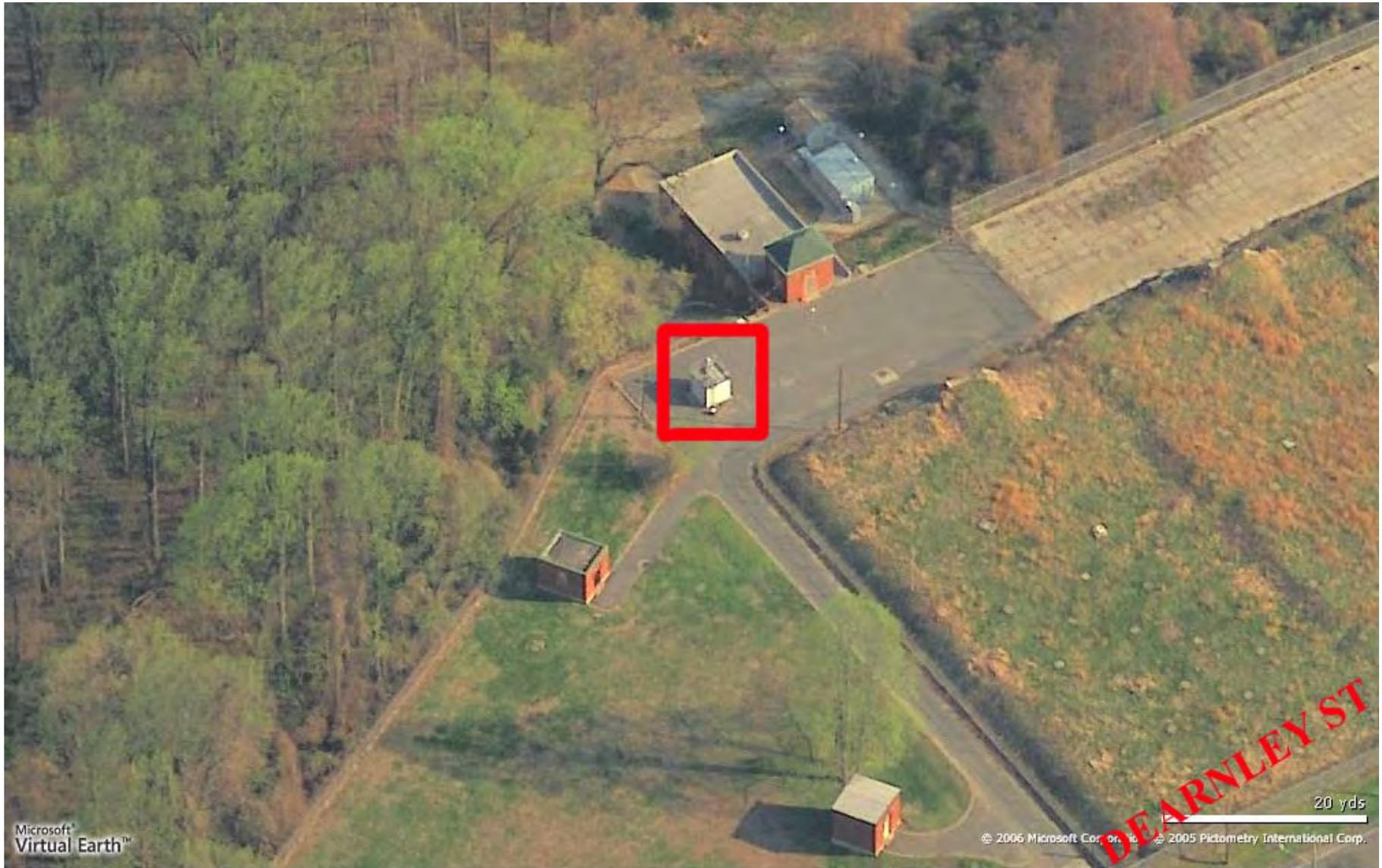
Figure 4 – ROX Monitoring Site Map with Major Streets and Major Emission Sources

## ROXBOROUGH - EVA & DEARNLEY STS. EPA AIRS CODE: 421010014



Site ID	Facility Site	Address	2014 Emissions (tons)						
			PB	CO	NOX	PM10	PM2.5	SO2	VOC
4210101566	PAPERWORKS IND INC/MILL DIV	5000 FLAT ROCK RD		46.46	109.35	4.08	4.08	0.33	8.07

Figure 5 – ROX North Aerial View



**Table 4 - Detailed NEA Information with Monitoring Station Picture**

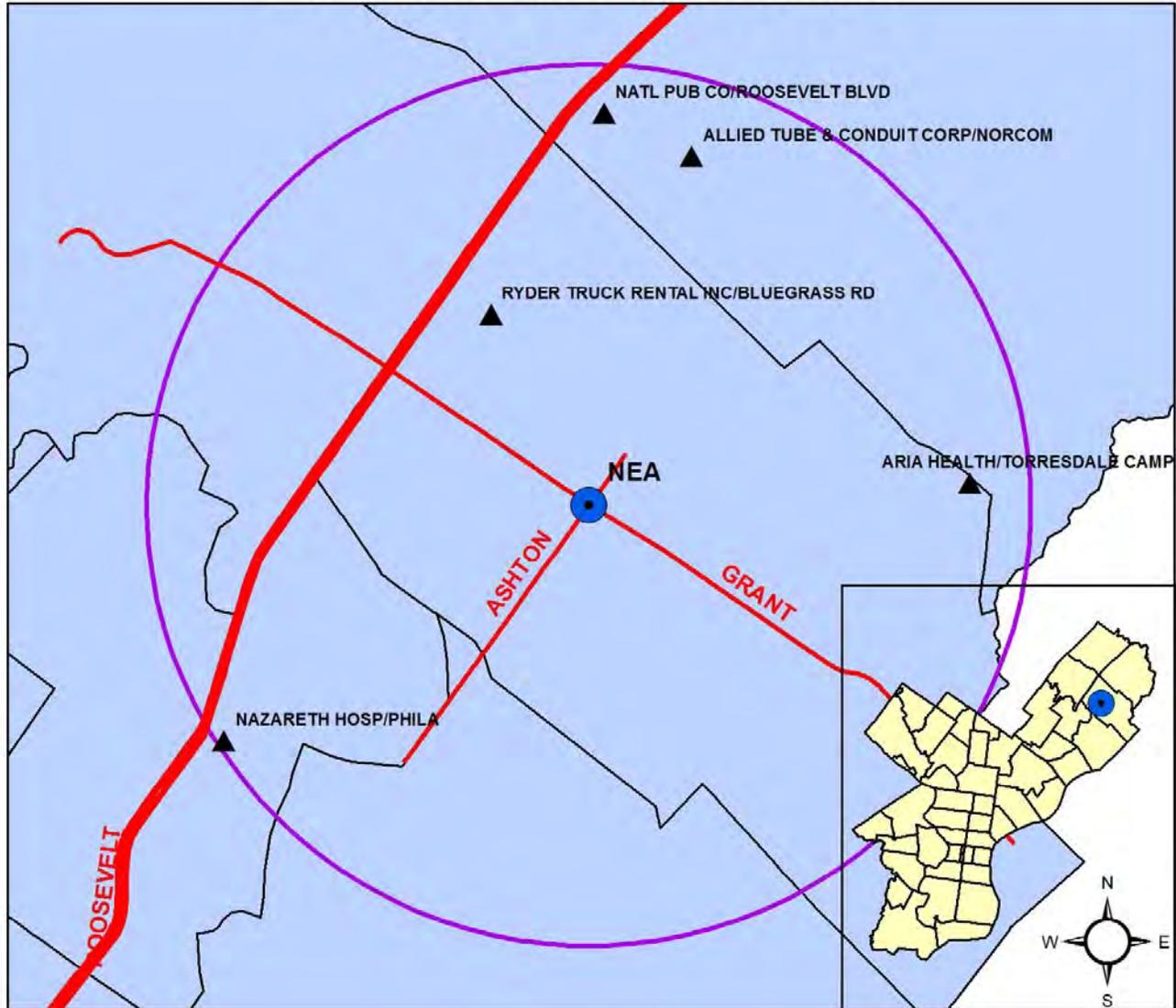
AMS SITE ID: NEA  
 AQS Site ID: 421010024  
 Street Address: Grant Ave & Ashton Rd  
 Geographical Coordinates  
 Latitude: 40.076389  
 Longitude: -75.011944



PARAMETER	MONITORING TYPE	MONITOR NETWORK AFFILIATION	OPERATING SCHEDULE	COLLECTION METHOD	ANALYSIS METHOD	COMMENTS	PARAMETER CODE	POC	AQS METHOD	SPATIAL SCALE	MONITORING OBJECTIVE	PROBE HEIGHT (m)	BEGIN DATE
Ozone	SLAMS		Continuous	Instrumental	Ultraviolet Absorption	Year-round operation	44201	1	087	Neighborhood	Highest concentration	6	1/1/1974
Meteorological	SLAMS		Continuous		Air quality measurements approved instrumentation for wind speed, wind direction, humidity, barometric pressure, rainfall and solar radiation		Vary	1	Vary	N/A	Unknown	Vary	6/1/1993

Figure 6 – NEA Monitoring Site Map with Major Streets and Major Emission Sources

# NORTHEAST AIRPORT - GRANT AVE & ASHTON RD. EPA AIRS CODE: 421010024



Site ID	Facility Site	Address	2014 Emissions (tons)						
			PB	CO	NOX	PM10	PM2.5	SO2	VOC
4210102030	RYDER TRUCK RENTAL INC/BLUEGRASS RD	9751 BLUE GRASS RD		0.02	0.12	0.07	0.07	0.00	0.93
4210103363	ALLIED TUBE & CONDUIT CORP/NORCOM	11350 NORCOM RD		0.74	0.88	1.52	1.52	0.01	41.32
4210103846	NATL PUB CO/ROOSEVELT BLVD	11311 ROOSEVELT BLVD		0.63	0.90	0.03	0.03	0.01	3.77
4210108008	NAZARETH HOSP/PHILA	2601 HOLME AVE		3.06	4.05	0.30	0.30	0.06	0.22
4210108076	ARIA HEALTH/TORRESDALE CAMP	RED LION & KNIGHTS RD		3.00	4.65	0.35	0.35	0.11	0.29

Figure 7 – NEA North Aerial View



**Table 5 - Detailed NEW Information with Monitoring Station Picture**

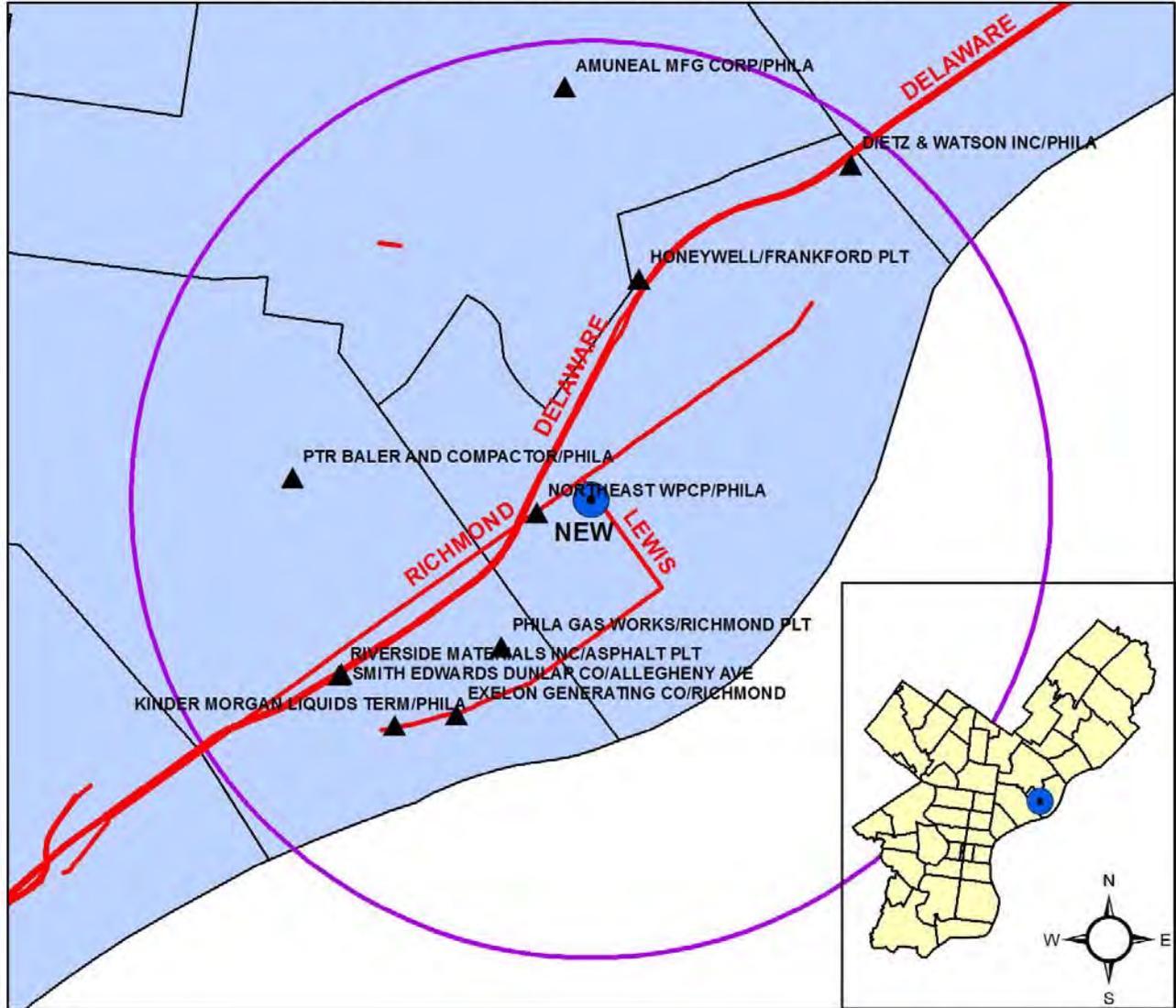
AMS SITE ID: NEW  
 AQS Site ID: 421010048  
 Street Address: 2861 Lewis Street  
 Geographical Coordinates  
 Latitude: 39.991389  
 Longitude: -75.080833



PARAMETER	MONITORING TYPE	MONITOR NETWORK AFFILIATION	OPERATING SCHEDULE	COLLECTION METHOD	ANALYSIS METHOD	COMMENTS	PARAMETER CODE	POC	AQS METHOD	SPATIAL SCALE	MONITORING OBJECTIVE	PROBE HEIGHT (m)	BEGIN DATE
CO (trace)	SLAMS	NCORE	Continuous	Instrumental	Gas Filter Correlation CO Analyzer	High sensitivity	42101	1	093	Neighborhood	Population Exposure	2	1/1/2011, moved 10/2/13
SO2 (trace)	SLAMS	NCORE	Continuous	Instrumental	Ultraviolet Fluorescence	High sensitivity	42401	2	100	Neighborhood	Population Exposure	2	1/1/2011, moved 10/2/13
Ozone	SLAMS	NCORE	Continuous	Instrumental	Ultraviolet Absorption	Year-round operation	44201	1	087	Neighborhood	Population Exposure	2	1/1/2011, moved 10/2/13
NO	SLAMS	NCORE	Continuous	Instrumental	Chemiluminescence Teledyne	High sensitivity external converter mounted at 10m	42601	1	099	Neighborhood	Population Exposure	10	1/1/2011, moved 10/2/13
NOy	SLAMS	NCORE	Continuous	Instrumental	Chemiluminescence Teledyne	High sensitivity external converter mounted at 10m	42600	1	699	Neighborhood	Population Exposure	10	1/1/2011, moved 10/2/13
PM10 Continuous	SLAMS	NCORE	Continuous	Instrumental	BAM =Beta Attenuation Monitor Met One BAM - 1020		81102	1	122	Neighborhood	Population Exposure	2	2/20/2007
PM2.5 Continuous	SLAMS	NCORE	Continuous	Instrumental	BAM =Beta Attenuation Monitor Met One BAM - 1020		88101	3	170	Neighborhood	Population Exposure	2	1/1/2011, moved 10/2/13
PM2.5 Speciated	SLAMS	NCORE, CSN	1/3 days	URG and Met One SASS	Energy Dispersive XRF	Analysis by EPA	Vary	5	811	Neighborhood	Population Exposure	2	1/1/2011, moved 10/2/13
PM2.5 FRM	SLAMS	NCORE	1/3 days	R&P PM2.5	Gravimetric	NEW-D	88101	1	145	Neighborhood	Population Exposure	2	1/1/2011, moved 10/2/13
*PM10 - PM2.5 (PM Coarse)	SLAMS	NCORE	1/3 days	Thermo Scientific Partisol-Plus Model 2025 Sequential Sampler Pair	Paired Gravimetric	NEW-S minus NEW-D is PM Coarse	86101	1	176	Neighborhood	Population Exposure	2	1/1/2011, moved 10/2/13
TSP - Lead Only	SLAMS	NCORE	1/6 days	Hi-Vol	Hot Plate Extraction and ICP-MS analysis	TSP-HVAS sample collected and sent to InterMountain Laboratory (IML)	14129	1	043	Neighborhood	Population Exposure	2	1/1/2011, moved 10/2/13
Meteorological	SLAMS	NCORE	Continuous		Air quality measurements approved instrumentation for wind speed, wind direction, humidity, barometric pressure, rainfall and solar radiation		Vary	1	Vary	Neighborhood	Population Exposure	Vary	6/1/1993

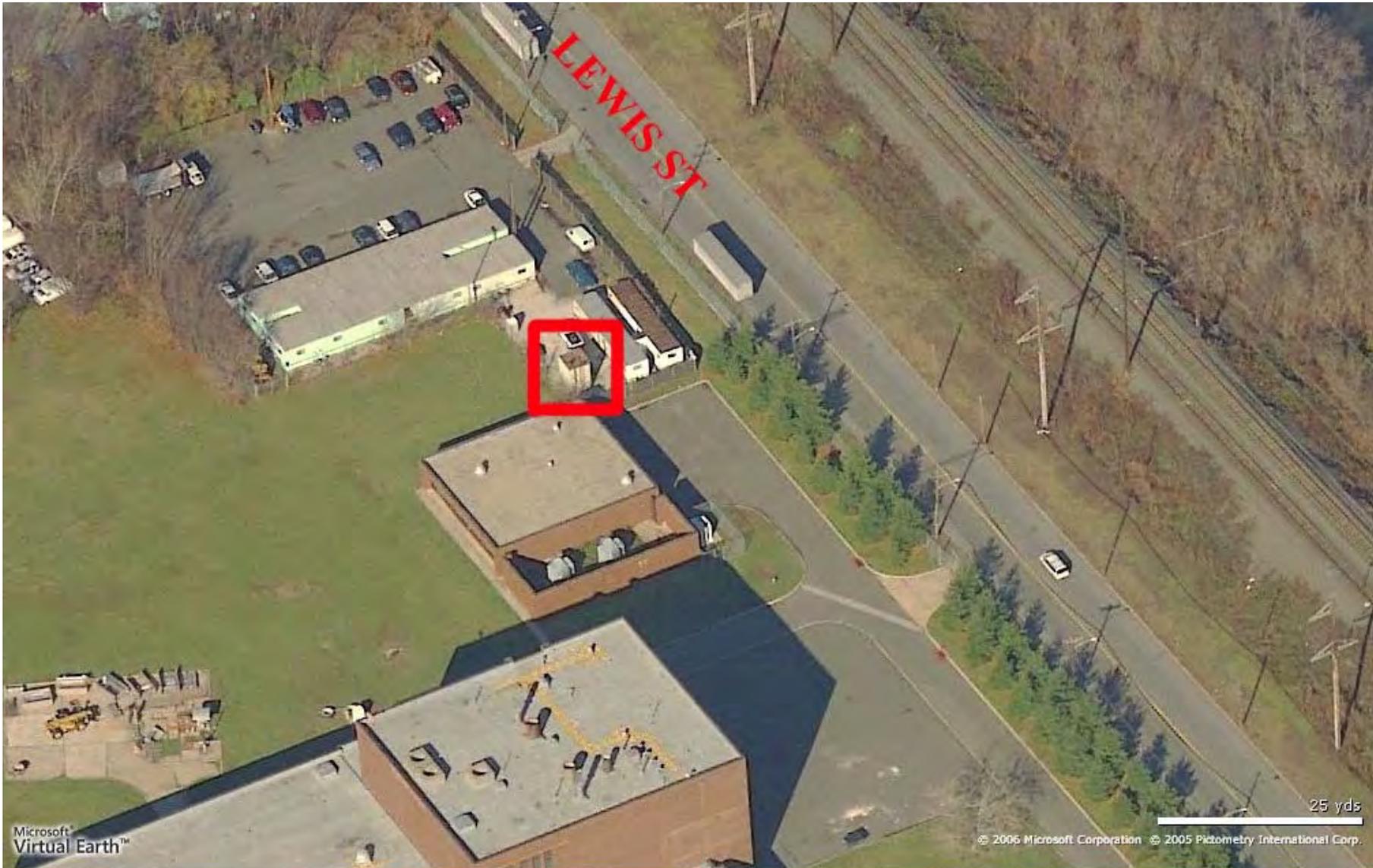
Figure 8 – NEW Monitoring Site Map with Major Streets and Major Emission Sources

## NORTHEAST WASTE - 2861 LEWIS ST. EPA AIRS CODE: 421010048



Site ID	Facility Site	Address	2014 Emissions (tons)						
			PB	CO	NOX	PM10	PM2.5	SO2	VOC
4210101421	RIVERSIDE MATERIALS INC/ASPHALT PLT	2870 E ALLEGHENY AVE		16.75	3.33	1.80	0.77	0.43	6.10
4210101551	HONEYWELL/FRANKFORD PLT	4700 BERMUDA ST		74.43	238.87	70.62	56.42	51.38	106.27
4210102094	DIETZ & WATSON INC/PHILA	5701 TACONY ST		5.93	7.17	0.22	0.00	0.08	0.39
4210102255	SMITH EDWARDS DUNLAP CO/ALLEGHENY AVE	2867 E ALLEGHENY AVE		0.15	0.19	0.01	0.00	0.05	5.14
4210103506	PTR BALER AND COMPACTOR/PHILA	2207 E ONTARIO ST		0.03	0.13	0.01	0.01	0.01	24.58
4210104903	EXELON GENERATING CO/RICHMOND	3901 N DELAWARE AVE	0.0010	0.24	46.87	1.42	0.29	7.47	0.03
4210104922	PHILA GAS WORKS/RICHMOND PLT	3100 E VENANGO ST		3.31	7.98	0.30	0.26	0.02	0.25
4210105003	KINDER MORGAN LIQUIDS TERM/PHILA	3300 N DELAWARE AVE		5.77	5.48	0.37	0.31	0.46	40.11
4210109513	NORTHEAST WPCP/PHILA	3899 RICHMOND ST		5.40	8.81	1.05	1.05	2.37	13.76
42101T0034	AMUNEAL MFG CORP/PHILA	4737 DARRAH ST		0.00	0.00	0.00	0.00	0.00	0.29

Figure 9 – NEW North Aerial View



**Table 6 - Detailed RIT Information with Monitoring Station Picture**

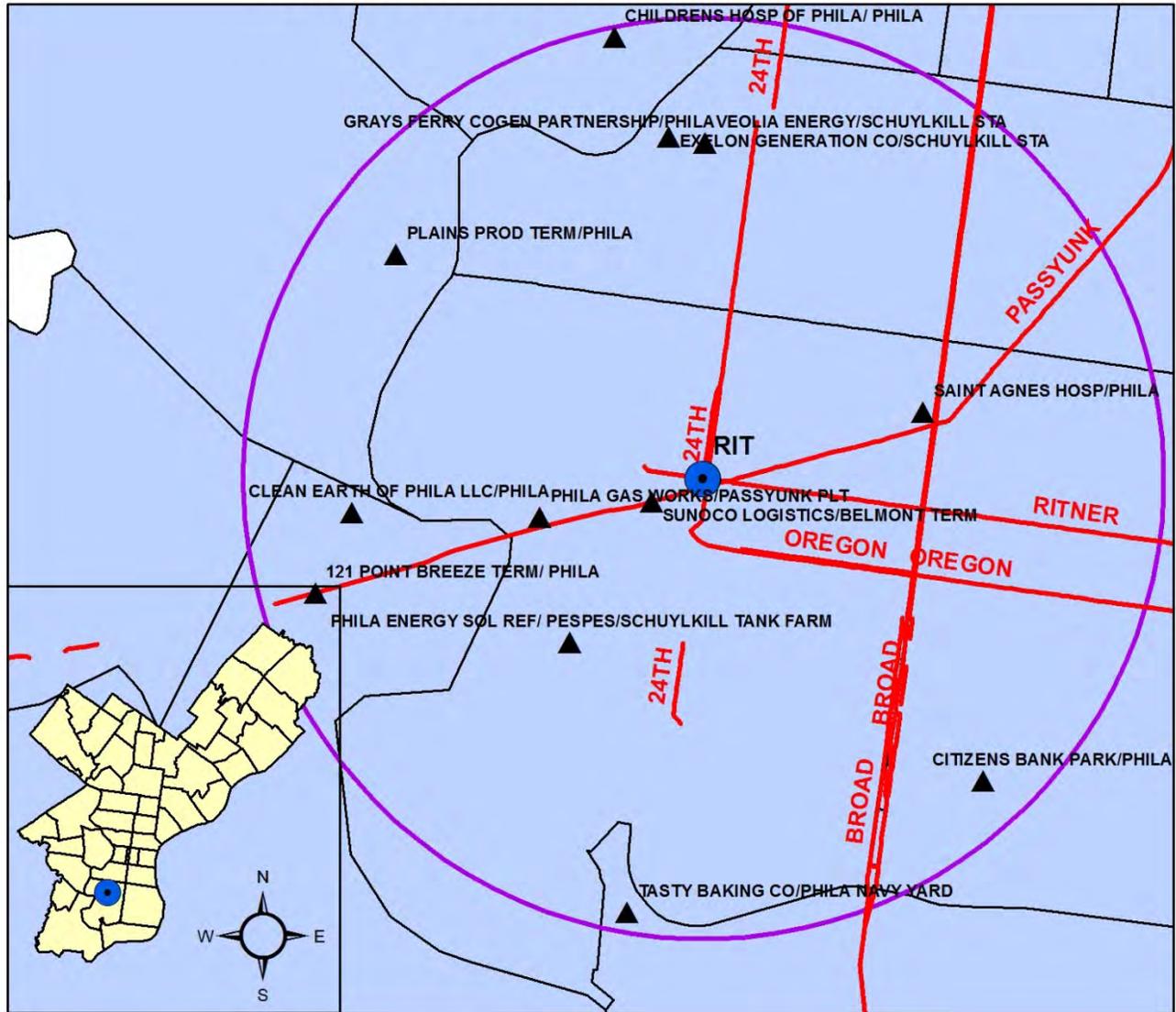
AMS SITE ID: RIT  
 AQS Site ID: 421010055  
 Street Address: 24th & Ritner Streets  
 Geographical Coordinates  
 Latitude: 39.922867  
 Longitude: -75.186921



PARAMETER	MONITORING TYPE	MONITOR NETWORK AFFILIATION	OPERATING SCHEDULE	COLLECTION METHOD	ANALYSIS METHOD	COMMENTS	PARAMETER CODE	POC	AQS METHOD	SPATIAL SCALE	MONITORING OBJECTIVE	PROBE HEIGHT (m)	BEGIN DATE
SO2	SLAMS		Continuous	Instrumental	Ultraviolet Fluorescence		42401	1	100	Neighborhood	Population Exposure	4	11/9/2004
PM2.5 Speciated	SLAMS	CSN	1/3 days	URG and Met One SASS Teflon	Energy Dispersive XRF	Analysis by EPA	88502	5	811	Neighborhood	Population Exposure	N/A	9/1/2005
Metals	Other		1/6 days	Hi-Vol	ICP-MS	Analysis by WV (TSP sampler with quartz)	Vary	1	089	Neighborhood	Population Exposure	7	8/31/2004
Carbonyls	Other	Urban Air Toxics	1/6 days	DNPH-Coated Cartridges	HPLC		Vary	2	102	Neighborhood	Highest Concentration	7	Vary
Toxics	Other	Urban Air Toxics	1/6 days	Canister Subambient Pressure	Multi-Detector GC		Vary	4	150	Neighborhood	Highest Concentration	7	11/1/2004
PM2.5 Continuous	SLAMS		Continuous	Instrumental	BAM =Beta Attenuation Monitor Met One BAM - 1020		88101	3	170	Neighborhood	Population Exposure	4	6/1/2011
Meteorological	SLAMS		Continuous		Air quality measurements approved instrumentation for wind speed, wind direction, humidity, barometric pressure,rainfall and solar radiation		Vary	1	Vary	Neighborhood	Unknown	Vary	4/1/2010

Figure 10 – RIT Monitoring Site Map with Major Streets and Major Emission Sources

## RITNER - 24TH & RITNER STS. EPA AIRS CODE: 421010055



Site ID	Facility Site	Address	2014 Emissions (tons)						
			PB	CO	NOX	PM10	PM2.5	SO2	VOC
4210101501	PHILA ENERGY SOL REF/ PES	3144 W PASSYUNK AVE		1531.76	1458.36	404.55	404.55	354.85	593.32
4210101507	SUNOCO LOGISTICS/BELMONT TERM	2700 W PASSYUNK AVE		24.18	9.69	0.30	0.00	0.10	30.77
4210101517	PES/SCHUYLKILL TANK FARM	3144 W PASSYUNK AVE		1.05	0.21	0.00	0.00	0.00	79.78
4210102148	CLEAN EARTH OF PHILA LLC/PHILA	3201 S 61ST ST		0.11	0.46	0.56	0.15	0.65	5.55
4210104904	EXELON GENERATION CO/SCHUYLKILL STA	2800 CHRISTIAN ST	0.0002	1.46	9.90	0.58	0.06	0.23	0.05
4210104921	PHILA GAS WORKS/PASSYUNK PLT	3100 W PASSYUNK AVE		2.83	3.99	0.30	0.26	0.07	0.22
4210104942	VEOLIA ENERGY/SCHUYLKILL STA	2600 CHRISTIAN ST	0.0005	3.02	62.40	5.18	5.18	16.00	4.56
4210104944	GRAYS FERRY COGEN PARTNERSHIP/PHILA	2600 CHRISTIAN ST	0.0014	4.91	216.09	23.56	23.56	8.22	10.45
4210105009	PLAINS PROD TERM/PHILA	1630 S 51ST ST		0.00	0.00	0.00	0.00	0.00	2.15
4210108016	SAINT AGNES HOSP/PHILA	1930 S BROAD ST		1.38	1.51	0.03	0.00	0.02	0.09
4210108069	CHILDRENS HOSP OF PHILA/ PHILA	34TH & CIVIC CENTER BLVD		22.59	24.55	2.54	2.54	0.81	2.26
4210110029	121 POINT BREEZE TERM/ PHILA	6310 PASSYUNK AVE		5.63	2.25	0.00	0.00	0.00	14.38
4210110236	TASTY BAKING CO/PHILA NAVY YARD	4300 S 26TH ST		2.98	3.61	0.30	0.30	0.00	0.35
4210110147	CITIZENS BANK PARK/PHILA	1001 PATTISON AVE		5.11	3.92	0.25	0.25	0.02	0.92

Figure 11 – RIT North Aerial View



**Table 7 - Detailed FAB Information with Monitoring Station Picture**

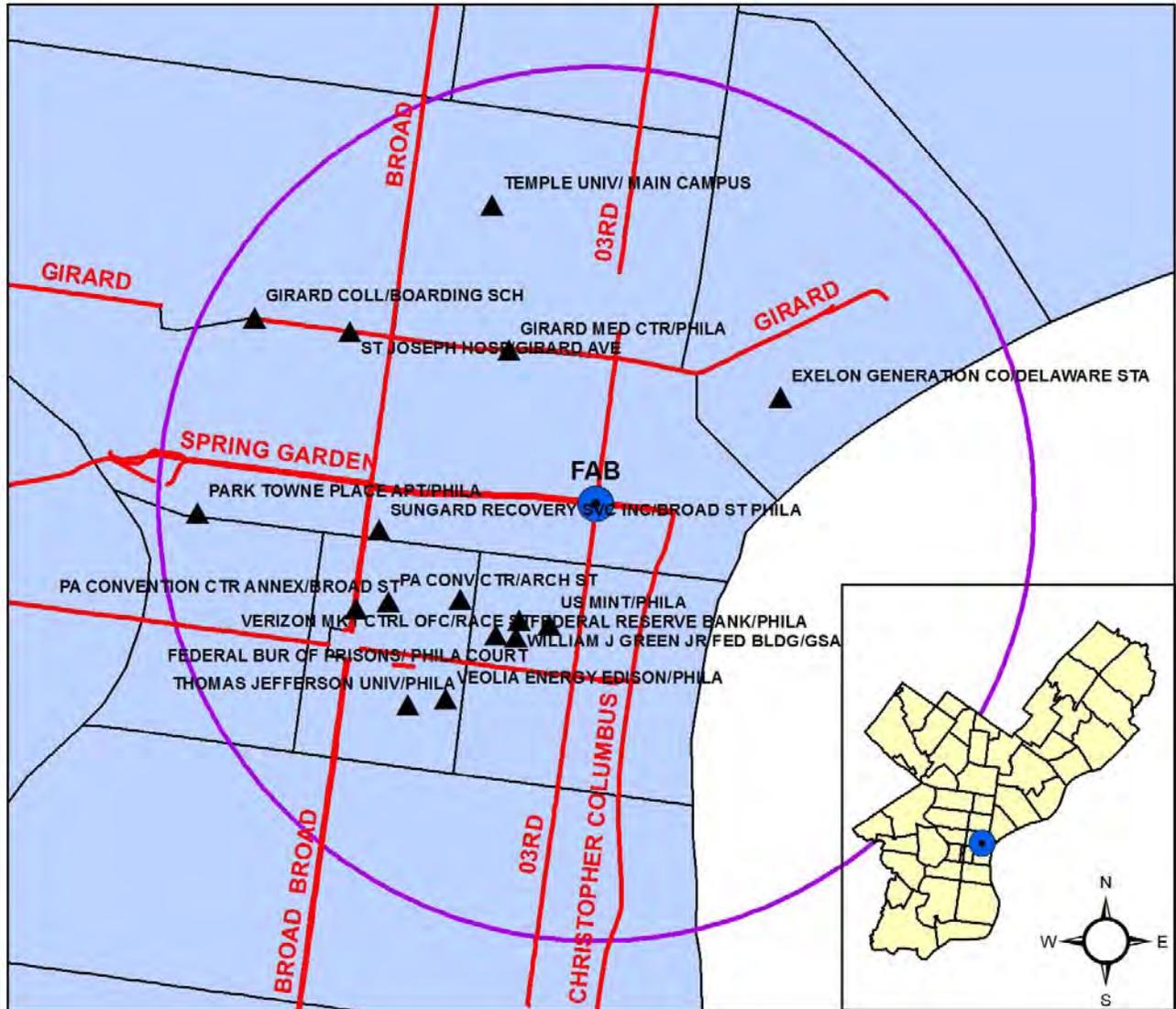
AMS SITE ID: FAB  
 AQS Site ID: 421010057  
 Street Address: 3rd and Spring Garden Sts.  
 Geographical Coordinates  
 Latitude: 39.960048  
 Longitude: -75.142614



PARAMETER	MONITORING TYPE	MONITOR NETWORK AFFILIATION	OPERATING SCHEDULE	COLLECTION METHOD	ANALYSIS METHOD	COMMENTS	PARAMETER CODE	POC	AQS METHOD	SPATIAL SCALE	MONITORING OBJECTIVE	PROBE HEIGHT (m)	BEGIN DATE
PM2.5 Continuous	SLAMS		Continuous	Instrumental	BAM =Beta Attenuation Monitor Met One BAM - 1020		88101	3	170	Neighborhood	Highest Concentration	2	10/1/2012

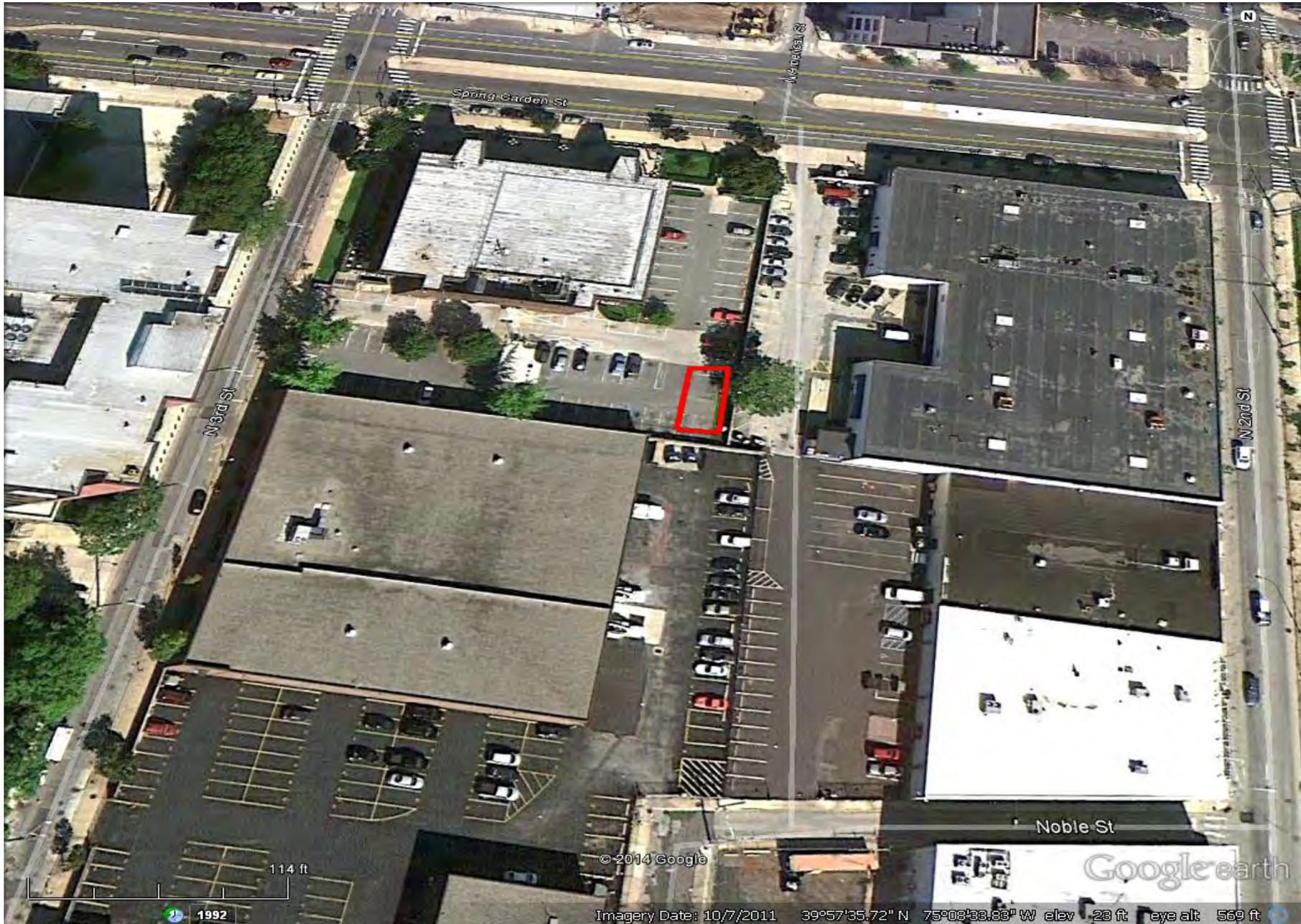
Figure 12 – FAB Monitoring Site Map with Major Streets and Major Emission Sources

## FIRE ADMINISTRATION BUILDING - 3RD & SPRING GARDEN STS. EPA AIRS CODE: 421010057



Site ID	Facility Site	Address	2014 Emissions (tons)						
			PB	CO	NOX	PM10	PM2.5	SO2	VOC
4210101014	VERIZON MKT CTRL OFC/RACE ST	900 RACE ST		0.22	1.85	0.16	0.16	0.15	0.12
4210103321	SUNGARD RECOVERY SVC INC/BROAD ST PHILA	401 N BROAD ST STE 600		0.04	0.07	0.00	0.00	0.02	0.01
4210104901	EXELON GENERATION CO/DELAWARE STA	1325 N BEACH ST	0.0004	2.74	17.85	1.28	0.12	2.09	0.09
4210104902	VEOLIA ENERGY EDISON/PHILA	908 SANSOM ST		3.27	31.23	5.66	3.00	59.98	0.39
4210106020	FEDERAL RESERVE BANK/PHILA	100 N 6TH ST		6.15	10.09	0.74	0.00	0.28	0.55
4210106526	PARK TOWNE PLACE APT/PHILA	2200 BENJAMIN FRANKLIN PKWY		2.03	2.41	0.18	0.18	0.01	0.13
4210108027	ST JOSEPH HOSP/GIRARD AVE	161H & GIRARD		0.76	1.24	0.09	0.09	0.03	0.07
4210108044	GIRARD MED CTR/PHILA	8TH & GIRARD		0.53	1.27	0.12	0.12	0.96	0.05
4210108901	THOMAS JEFFERSON UNIV/PHILA	11 & WALNUT ST		0.40	1.82	0.13	0.13	0.12	0.10
4210108905	TEMPLE UNIV/ MAIN CAMPUS	1009 W MONTGOMERY AVE		16.38	26.83	1.31	1.27	7.21	2.62
4210108918	GIRARD COLL/BOARDING SCH	GIRARD & CORINTHIAN AVE		2.30	2.76	0.21	0.21	0.07	0.15
4210109703	US MINT/PHILA	151 N INDEPENDENCE MALL E		2.90	1.80	0.14	0.14	0.01	1.53
4210109723	WILLIAM J GREEN JR FED BLDG/GSA	600 ARCH ST		2.12	2.94	0.21	0.21	0.06	0.17
4210109726	FEDERAL BUR OF PRISONS/ PHILA COURT	700 ARCH S1	0.0072	1.10	2.04	0.55	0.00	0.02	0.11
4210110092	PA CONV CTR/ARCH ST	1101 ARCH ST	0.4710	2.82	4.10	0.48	0.09	0.02	0.21
4210110353	PA CONVENTION CTR ANNEX/BROAD ST	111 N BROAD ST		1.21	2.64	0.04	0.04	0.02	0.14

Figure 13 – FAB North Aerial View



**Table 8 - Detailed SWA Information with Monitoring Station Picture**

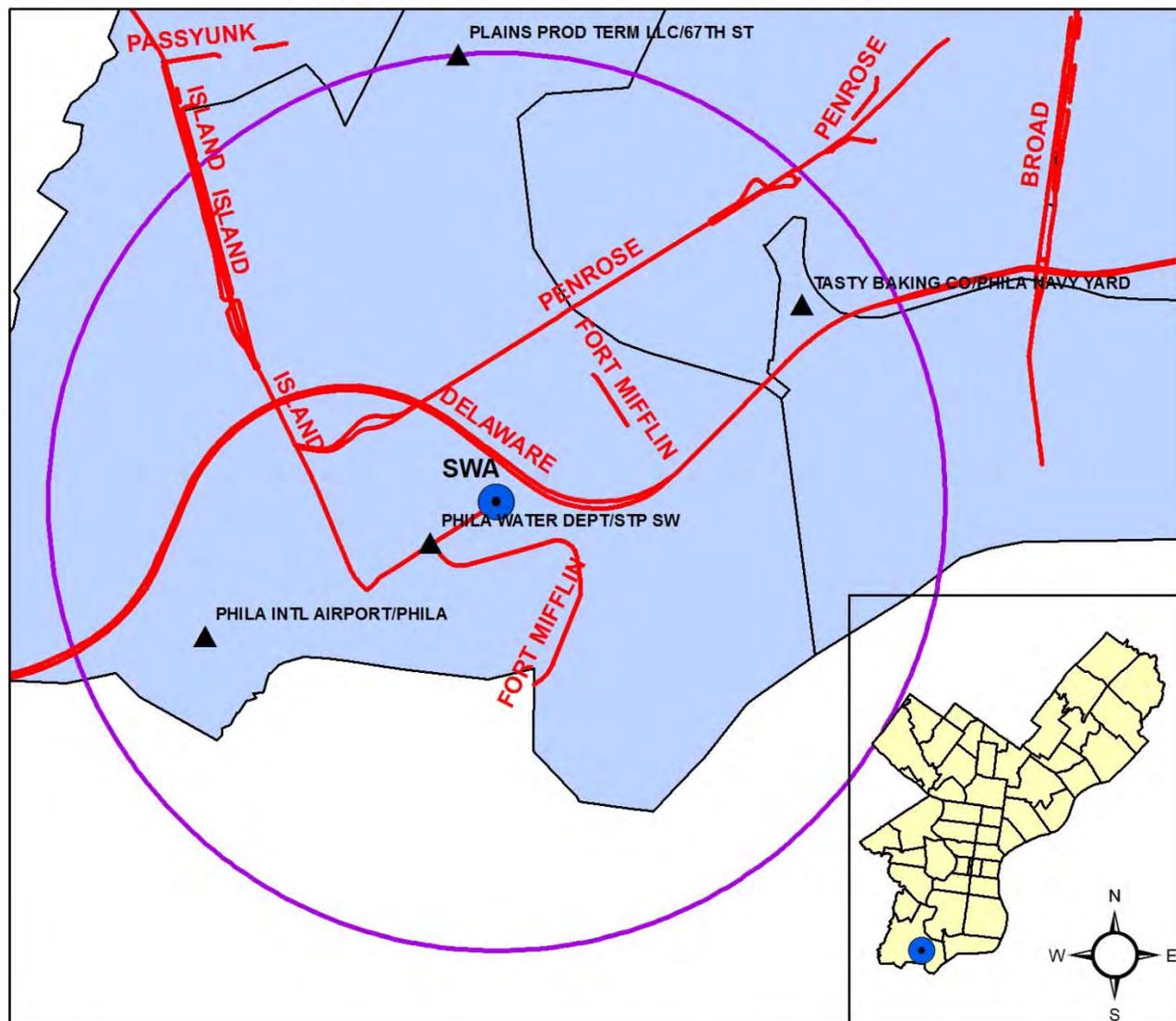
AMS SITE ID: SWA  
 AQS Site ID: 421010063  
 Street Address: 8200 Enterprise Avenue, 19153  
 Geographical Coordinates  
 Latitude: 39.88294  
 Longitude: -75.21965



PARAMETER	MONITORING TYPE	MONITOR NETWORK AFFILIATION	OPERATING SCHEDULE	COLLECTION METHOD	ANALYSIS METHOD	COMMENTS	PARAMETER CODE	POC	AQS METHOD	SPATIAL SCALE	MONITORING OBJECTIVE	PROBE HEIGHT (m)	BEGIN DATE
Carbonyls	Other	Urban Air Toxics	1/6 days	DNPH-Coated Cartridges	HPLC		Vary	2	102	N/A	Source-Oriented	N/A	9/10/2009
Toxics	Other	Urban Air Toxics	1/6 days	Canister Subambient Pressure	Multi-Detector GC		Vary	3	150	N/A	Source-Oriented	N/A	9/10/2009

Figure 14 – SWA Monitoring Site Map with Major Streets and Major Emission Sources

# PHILADELPHIA AIRPORT - 8200 ENTERPRISE AVE. EPA AIRS CODE: 421010063



Site ID	Facility Site	Address	2014 Emissions (tons)						
			PB	CO	NOX	PM10	PM2.5	SO2	VOC
4210105013	PLAINS PROD TERM LLC/67TH ST	3400 S 67TH ST		0.85	1.30	0.09	0.09	0.01	60.61
4210109502	PHILA INTL AIRPORT/PHILA	INDUSTRIAL HWY		8.04	16.74	1.41	1.41	0.11	0.96
4210109515	PHILA WATER DEPT/STP SW	8200 ENTERPRISE AVE		9.44	3.40	1.17	1.17	2.12	4.14
4210110236	TASTY BAKING CO/PHILA NAVY YARD	4300 S 26TH ST		2.98	3.61	0.30	0.30	0.00	0.35

Figure 15 – SWA North Aerial View



**Table 9 - Detailed TOR Information with Monitoring Station Picture**

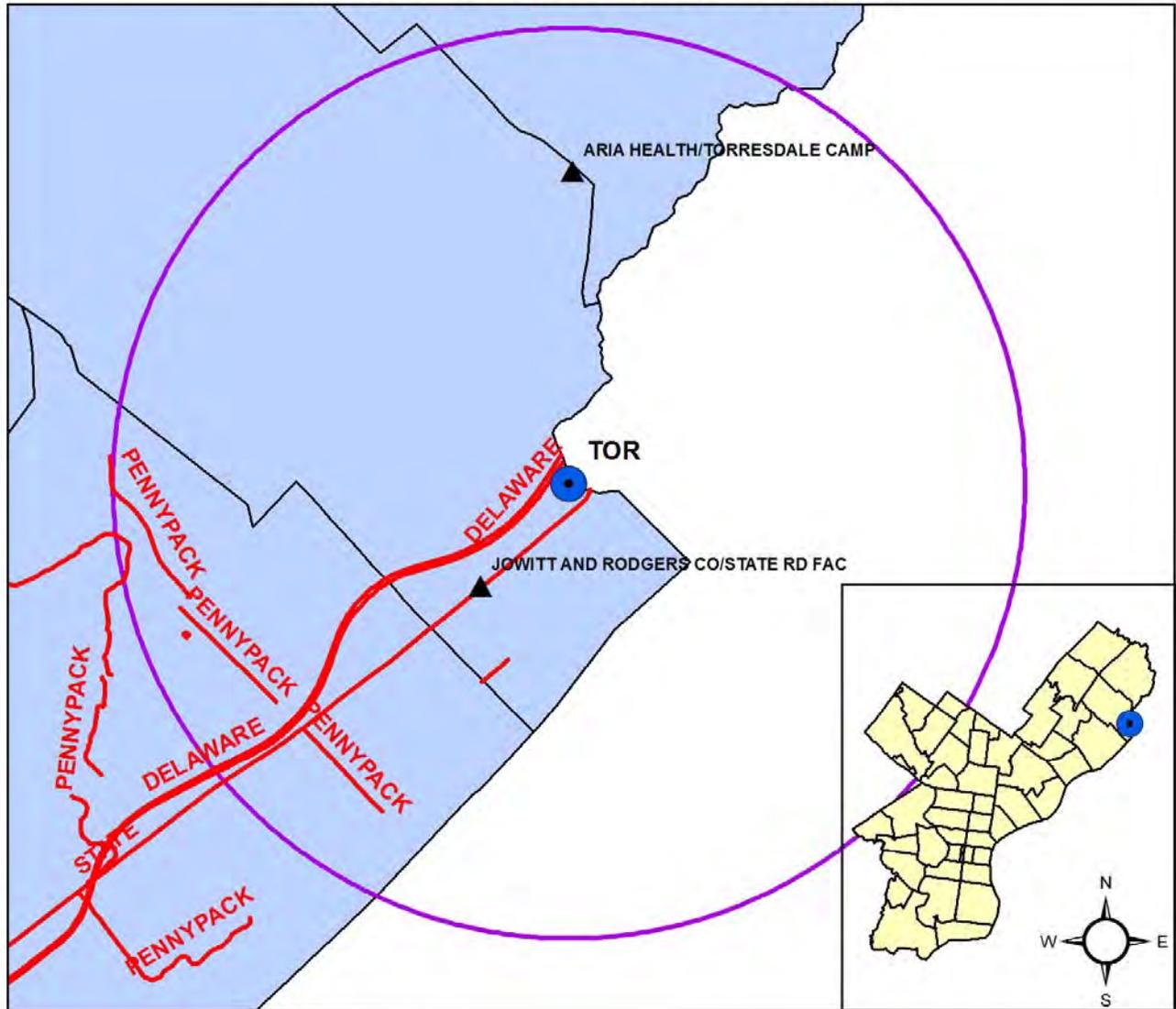
AMS SITE ID: TOR  
 AQS Site ID: 421010075  
 Street Address: 4901 Grant Ave. & James St., 19114  
 Geographical Coordinates  
 Latitude: 40.054171  
 Longitude: -74.985166



PARAMETER	MONITORING TYPE	MONITOR NETWORK AFFILIATION	OPERATING SCHEDULE	COLLECTION METHOD	ANALYSIS METHOD	COMMENTS	PARAMETER CODE	POC	AQS METHOD	SPATIAL SCALE	MONITORING OBJECTIVE	PROBE HEIGHT (m)	BEGIN DATE
CO	SLAMS	Near Road	Continuous	Instrumental	Gas Filter Correlation CO Analyzer		42101	1	093	Microscale	Highest Concentration, Source Oriented	5	1/1/2014
NO2	SLAMS	Near Road	Continuous	Instrumental	Gas Phase Chemiluminescence		42602	1	099	Microscale	Highest Concentration, Source Oriented	5	1/1/2014
NO	SLAMS	Near Road	Continuous	Instrumental	Gas Phase Chemiluminescence		42601	1	099	Microscale	Highest Concentration, Source Oriented	5	1/1/2014
NOx	SLAMS	Near Road	Continuous	Instrumental	Gas Phase Chemiluminescence		42603	1	099	Microscale	Highest Concentration, Source Oriented	5	1/1/2014
PM2.5 Continuous	SLAMS	Near Road	Continuous	Instrumental	BAM =Beta Attenuation Monitor Met One BAM - 1020		88101	1	170	Microscale	Highest Concentration, Source Oriented	5	1/1/2014
Meteorological	SLAMS	Near Road	Continuous		Vaisala 435C RH/AT Sensor		Vary	1	Vary	Microscale	Highest Concentration, Source Oriented	5	1/1/2014

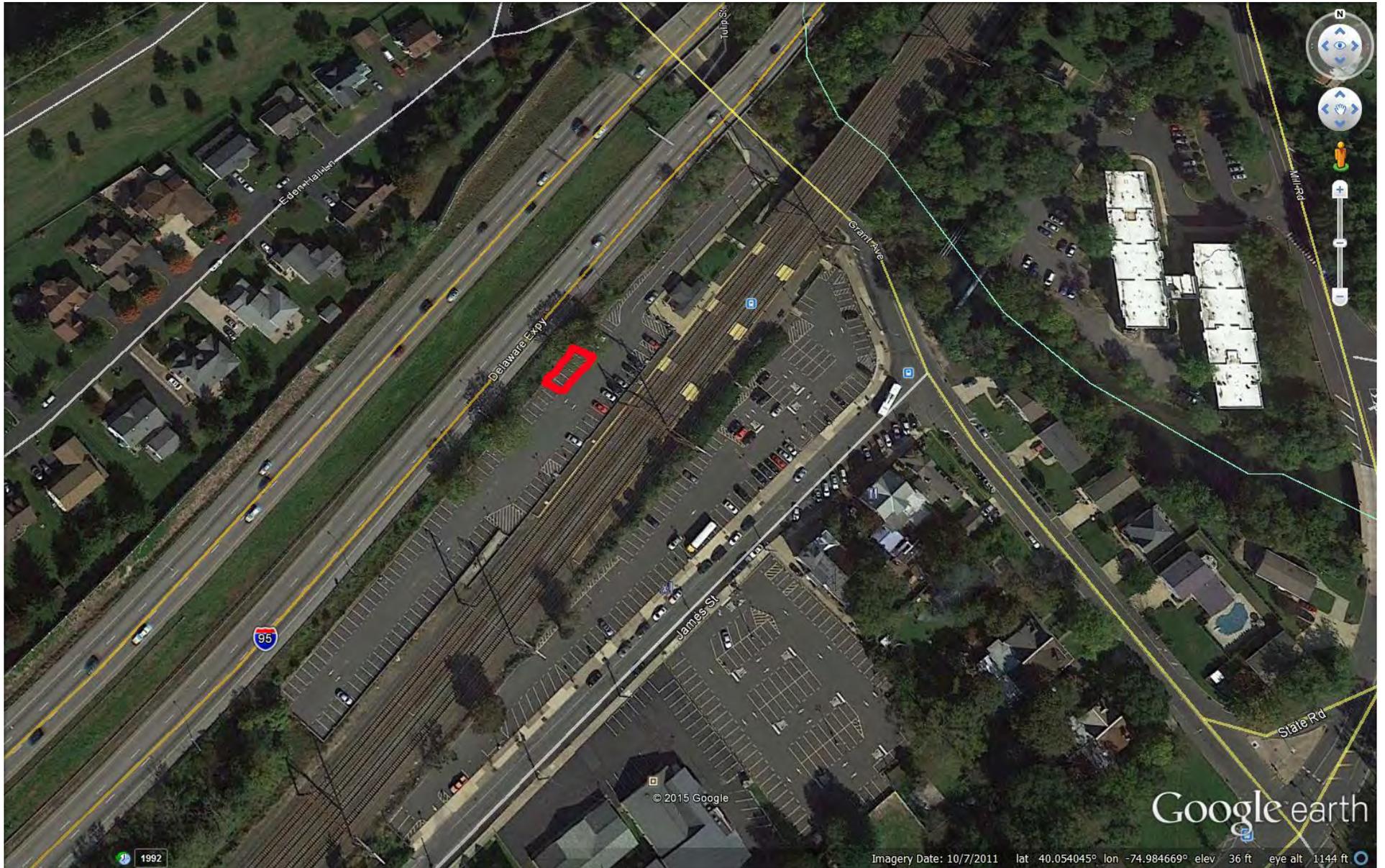
Figure 16 – TOR Monitoring Site Map with Major Streets and Major Emission Sources

## TORRESDALE - 4901 GRANT AVE. & JAMES ST. EPA AIRS CODE: 421010075



Site ID	Facility Site	Address	2014 Emissions (tons)						
			PB	CO	NOX	PM10	PM2.5	SO2	VOC
4210103154	JOWITT AND RODGERS CO/STATE RD FAC	9400 STATE RD		0.03	0.17	0.02	0.01	0.00	9.25
4210108076	ARIA HEALTH/TORRESDALE CAMP	RED LION & KNIGHTS RD		3.00	4.65	0.35	0.35	0.11	0.29

Figure 17 – TOR North Aerial View



**Table 10 - Detailed MON Information with Monitoring Station Picture**

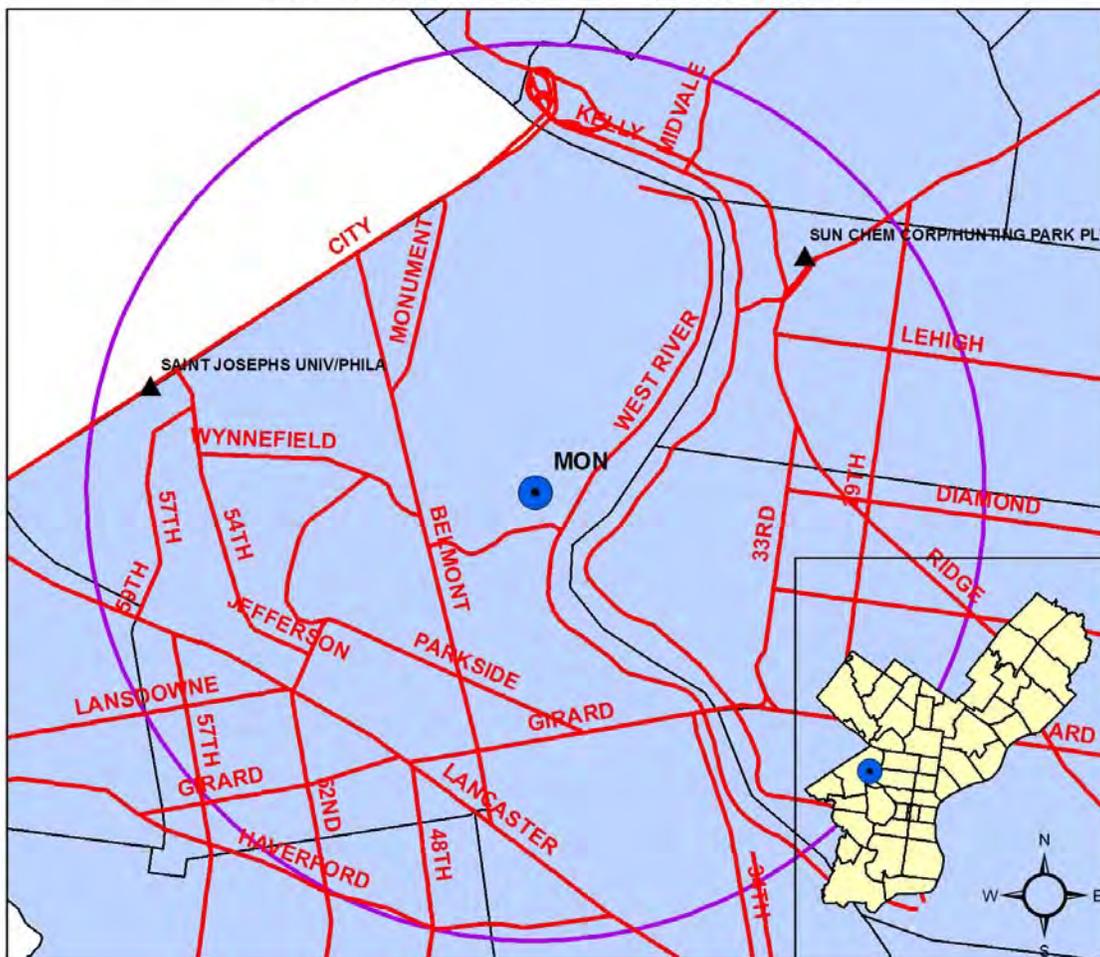
AMS SITE ID: MON  
 AQS Site ID: 421010076  
 Street Address: I-76 & Montgomery Drive, Car Barn OFM Shop 282  
 Geographical Coordinates  
 Latitude: 39.988829  
 Longitude: -75.207205



PARAMETER	MONITORING TYPE	MONITOR NETWORK AFFILIATION	OPERATING SCHEDULE	COLLECTION METHOD	ANALYSIS METHOD	COMMENTS	PARAMETER CODE	POC	AQS METHOD	SPATIAL SCALE	MONITORING OBJECTIVE	PROBE HEIGHT (m)	BEGIN DATE
NO2	SLAMS	Near Road	Continuous	Instrumental	Gas Phase Chemiluminescence		42602	1	099	Microscale	Highest Concentration, Source Oriented	5	7/1/2015
NO	SLAMS	Near Road	Continuous	Instrumental	Gas Phase Chemiluminescence		42601	1	099	Microscale	Highest Concentration, Source Oriented	5	7/1/2015
NOx	SLAMS	Near Road	Continuous	Instrumental	Gas Phase Chemiluminescence		42603	1	099	Microscale	Highest Concentration, Source Oriented	5	7/1/2015
PM2.5 Continuous	SLAMS	Near Road	Continuous	Instrumental	BAM =Beta Attenuation Monitor Met One BAM - 1020		88101	1	170	Microscale	Highest Concentration, Source Oriented	5	7/1/2015
Black Carbon	SLAMS	Near Road	Continuous	Instrumental	Teledyne Model 633			1		Microscale	Highest Concentration, Source Oriented	5	7/1/2015
Ultrafine Particulate	SLAMS	Near Road	Continuous	Instrumental	Teledyne Model 651			1		Microscale	Highest Concentration, Source Oriented	5	7/1/2015
BaP	SLAMS	Near Road	1/6 days	Hi-Vol-SA/GMW-321-B	Gravimetric	Integrated samplers. Weighed by AMS. Analysis by Allegheny County, PA	11101	1	091	Microscale	Highest Concentration, Source Oriented	5	7/1/2015
Metals	Other	Near Road	1/6 days	Hi-Vol	ICP-MS	Analysis by WV (TSP sampler with quartz)	Vary	1	089	Neighborhood	Population Exposure	7	7/1/2015
Meteorological	SLAMS	Near Road	Continuous		Air quality measurements approved instrumentation for wind speed, wind direction, humidity, barometric pressure,rainfall and solar radiation		Vary	1	Vary	Microscale	Highest Concentration, Source Oriented	5	7/1/2015

Figure 18 – MON Monitoring Site Map with Major Streets and Major Emission Sources

## MONTGOMERY - INTERSTATE 76 & MONTGOMERY DR EPA AIRS CODE: 421010076



Site ID	Facility Site	Address	2014 Emissions (tons)						
			PB	CO	NOX	PM10	PM2.5	SO2	VOC
4210102052	SUN CHEM CORP/HUNTING PARK PLT	3301 W HUNTING PARK AVE		0.24	0.28	0.11	0.11	0.00	13.75
4210108904	SAINT JOSEPHS UNIV/PHILA	54TH & CITY AVE		2.98	4.09	0.32	0.32	0.45	0.22

Figure 19 – MON North Aerial View



**Table 11 - Detailed PHA Information with Monitoring Station Picture**

AMS SITE ID: PHA  
 AQS Site ID:  
 Street Address: 3100 Penrose Ferry Road, 19145  
 Geographical Coordinates  
 Latitude: 39.913176  
 Longitude: -75.185409



PARAMETER	MONITORING TYPE	MONITOR NETWORK AFFILIATION	OPERATING SCHEDULE	COLLECTION METHOD	ANALYSIS METHOD	COMMENTS	PARAMETER CODE	POC	AQS METHOD	SPATIAL SCALE	MONITORING OBJECTIVE	PROBE HEIGHT (m)	BEGIN DATE
Toxics	Continuous Open Path		Continuous	UV-DOAS	Infrared				Vary	Neighborhood	Population Exposure	2	2/1/2014

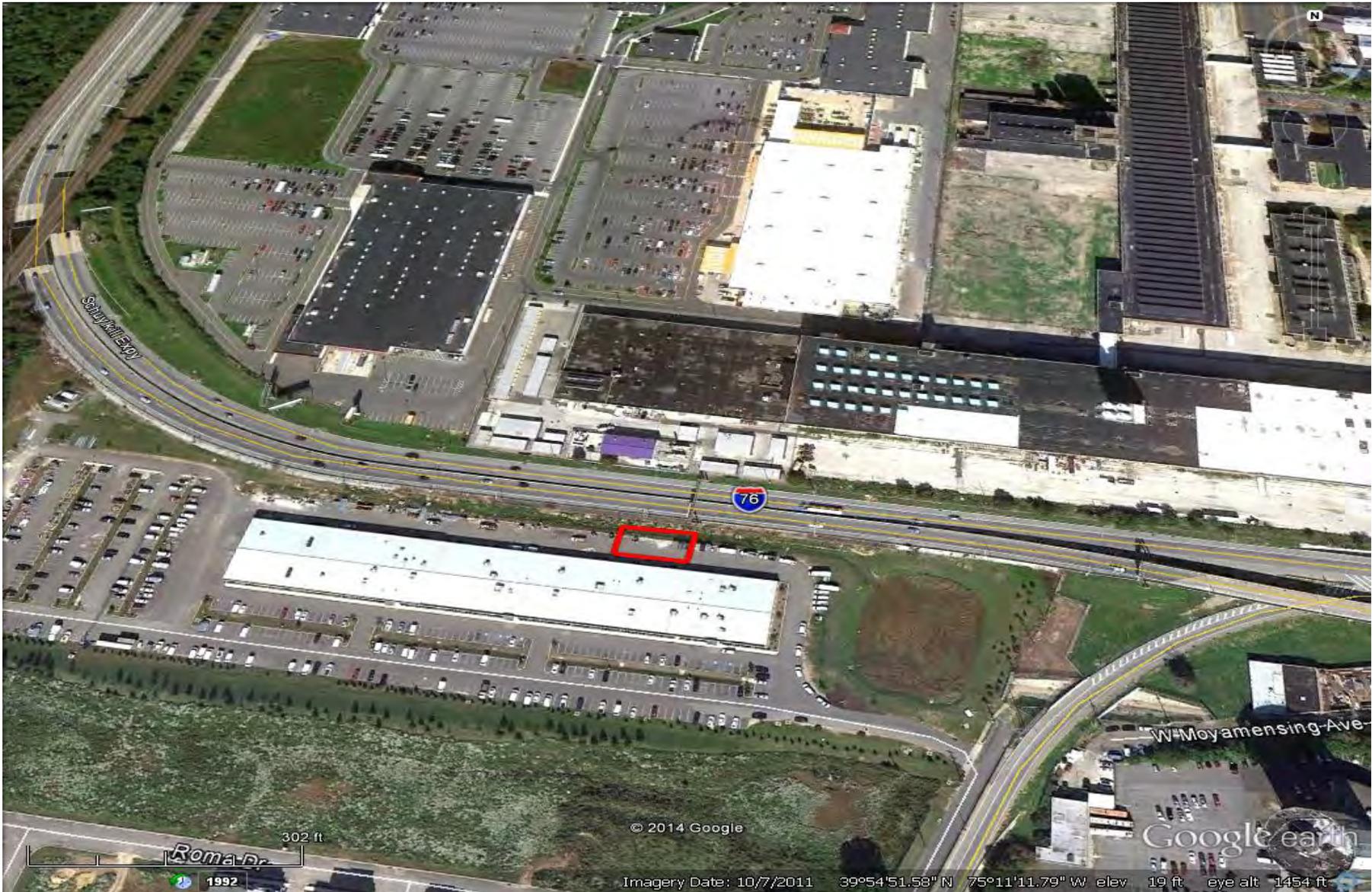
Figure 20 – PHA Monitoring Site Map with Major Streets and Major Emission Sources

## PHILADELPHIA HOUSING AUTHORITY 3100 PENROSE FERRY RD.



Site ID	Facility Site	Address	PB	2014 Emissions (tons)					
				CO	NOX	PM10	PM2.5	SO2	VOC
4210101501	PHILA ENERGY SOL REF/ PES	3144 W PASSYUNK AVE		1531.76	1458.36	404.55	404.55	354.85	593.32
4210101507	SUNOCO LOGISTICS/BELMONT TERM	2700 W PASSYUNK AVE		24.18	9.69	0.30	0.00	0.10	30.77
4210101517	PES/SCHUYLKILL TANK FARM	3144 W PASSYUNK AVE		1.05	0.21	0.00	0.00	0.00	79.78
4210101569	AKER PHILA SHIPYARD/SHIPBUILDING YARD	PHILA NAVAL BUS CTR		2.68	1.59	12.26	12.20	0.02	76.39
4210102148	CLEAN EARTH OF PHILA LLC/PHILA	3201 S 61ST ST		0.11	0.46	0.56	0.15	0.65	5.55
4210104921	PHILA GAS WORKS/PASSYUNK PLT	3100 W PASSYUNK AVE		2.83	3.99	0.30	0.26	0.07	0.22
4210105013	PLAINS PROD TERM LLC/67TH ST	3400 S 67TH ST		0.85	1.30	0.09	0.09	0.01	60.61
4210108016	SAINT AGNES HOSP/PHILA	1930 S BROAD ST		1.38	1.51	0.03	0.00	0.02	0.09
4210109702	NAVAL FOUNDRY AND PROPELLER CTR/PHILA	1701 KITTY HAWK AVE	0.0172	0.48	2.43	11.28	0.00	0.03	1.13
4210109724	NAVAL SURFACE WARFARE CTR/CARDEROCK DIV	5001 S BROAD ST		3.03	23.37	0.48	0.33	4.15	0.55
4210110029	121 POINT BREEZE TERM/ PHILA	6310 PASSYUNK AVE		5.63	2.25	0.00	0.00	0.00	14.38
4210110236	TASTY BAKING CO/PHILA NAVY YARD	4300 S 26TH ST		2.98	3.61	0.30	0.30	0.00	0.35
4210110147	CITIZENS BANK PARK/PHILA	1001 PATTISON AVE		5.11	3.92	0.25	0.25	0.02	0.92

Figure 21 – PHA North Aerial View



**Table 12 - Detailed VGR Information with Monitoring Station Picture**

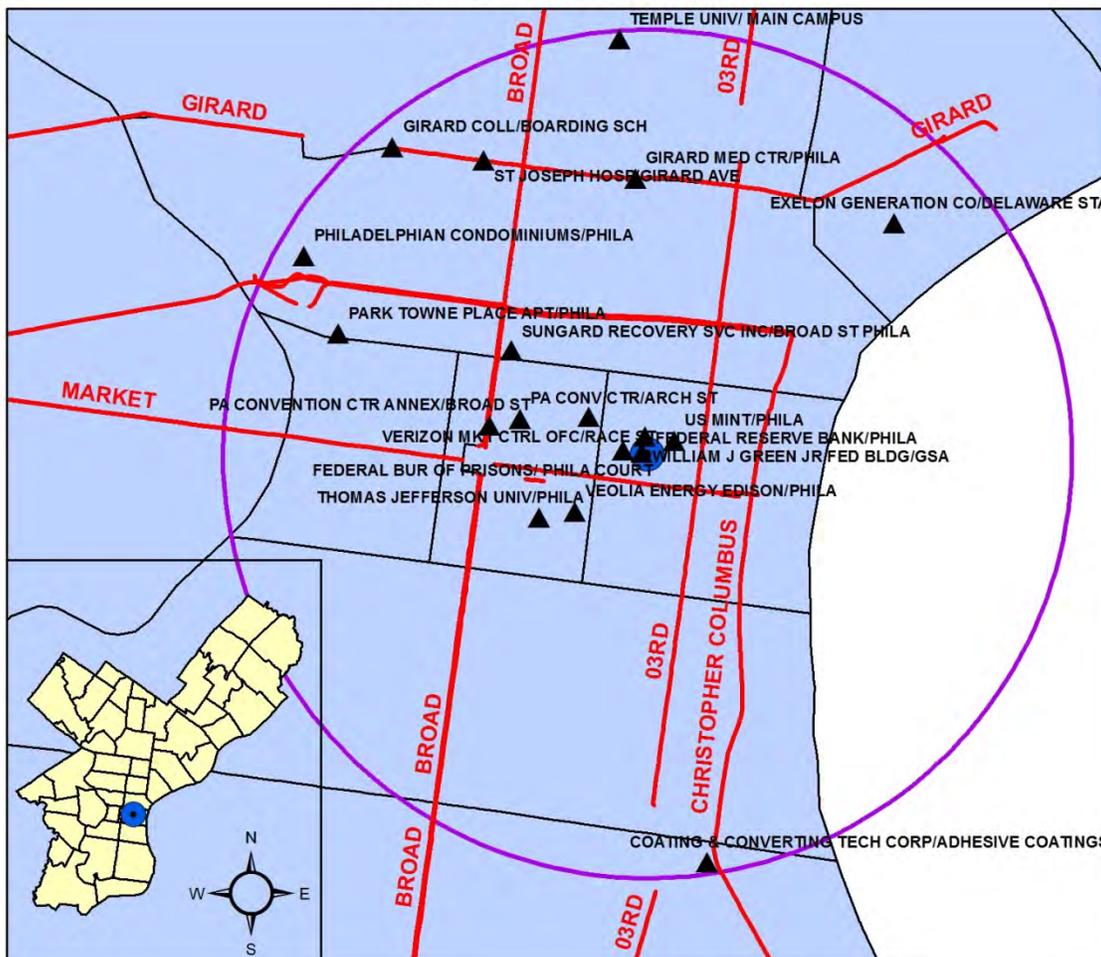
AMS SITE ID: VGR  
 AQS Site ID:  
 Street Address: 6th & Arch Streets  
 Geographical Coordinates  
 Latitude: 39.952608  
 Longitude: -75.149704



PARAMETER	MONITORING TYPE	MONITOR NETWORK AFFILIATION	OPERATING SCHEDULE	COLLECTION METHOD	ANALYSIS METHOD	COMMENTS	PARAMETER CODE	POC	AQS METHOD	SPATIAL SCALE	MONITORING OBJECTIVE	PROBE HEIGHT (m)	BEGIN DATE
Ozone			Continuous	2B Technologies		Not in AQS							3/15/2015
PM2.5 Continuous			Continuous	Thermo		Not in AQS							3/15/2015
Meteorological			Continuous		Wind speed, wind direction, humidity, temperature	Not in AQS							3/15/2015

Figure 22 – VGR Monitoring Site Map with Major Streets and Major Emission Sources

## VILLAGE GREEN 6TH & ARCH STS.



Site ID	Facility Site	Address	2014 Emissions (tons)						
			PB	CO	NOX	PM10	PM2.5	SO2	VOC
4210101014	VERIZON MKT CTRL OFC/RACE ST	900 RACE ST		0.22	1.85	0.16	0.16	0.15	0.12
4210103321	SUNGARD RECOVERY SVC INC/BROAD ST PHILA	401 N BROAD ST STE 600		0.04	0.07	0.00	0.00	0.02	0.01
4210104901	EXELON GENERATION CO/DELAWARE STA	1325 N BEACH ST	0.0004	2.74	17.85	1.28	0.12	2.09	0.09
4210104902	VEOLIA ENERGY EDISON/PHILA	908 SANSOM ST		3.27	31.23	5.66	3.00	59.98	0.39
4210106020	FEDERAL RESERVE BANK/PHILA	100 N 6TH ST		6.15	10.09	0.74	0.00	0.28	0.55
4210106512	PHILADELPHIAN CONDOMINIUMS/PHILA	2401 PENNSYLVANIA AVE		2.11	2.53	0.19	0.19	0.06	0.14
4210106526	PARK TOWNE PLACE APT/PHILA	2200 BENJAMIN FRANKLIN PKWY		2.03	2.41	0.18	0.18	0.01	0.13
4210108027	ST JOSEPH HOSP/GIRARD AVE	16TH & GIRARD		0.76	1.24	0.09	0.09	0.03	0.07
4210108044	GIRARD MED CTR/PHILA	8TH & GIRARD		0.53	1.27	0.12	0.12	0.96	0.05
4210108901	THOMAS JEFFERSON UNIV/PHILA	11 & WALNUT ST		0.40	1.82	0.13	0.13	0.12	0.10
4210108905	TEMPLE UNIV/ MAIN CAMPUS	1009 W MONTGOMERY AVE		16.38	26.83	1.31	1.27	7.21	2.62
4210108918	GIRARD COLL/BOARDING SCH	GIRARD & CORINTHIAN AVE		2.30	2.76	0.21	0.21	0.07	0.15
4210109703	US MINT/PHILA	151 N INDEPENDENCE MALL E		2.90	1.80	0.14	0.14	0.01	1.53
4210109723	WILLIAM J GREEN JR FED BLDG/GSA	600 ARCH ST		2.12	2.94	0.21	0.21	0.06	0.17
4210109726	FEDERAL BUR OF PRISONS/ PHILA COURT	700 ARCH ST	0.0072	1.10	2.04	0.55	0.00	0.02	0.11
4210110092	PA CONV CTR/ARCH ST	1101 ARCH ST	0.4710	2.82	4.10	0.48	0.09	0.02	0.21
4210110353	PA CONVENTION CTR ANNEX/BROAD ST	111 N BROAD ST		1.21	2.64	0.04	0.04	0.02	0.14
4210110114	COATING & CONVERTING TECH CORP/ADHESIVE COATINGS	80 E MORRIS ST		0.27	0.32	0.02	0.02	0.00	17.54

Figure 23 – VGR North Aerial View

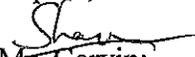


**Appendix A**  
**SO<sub>2</sub> Data Requirements Rule Documentation**



January 15, 2016

Mr. Shawn Garvin  
Regional Administrator  
U.S. Environmental Protection Agency, Region III  
1650 Arch Street (Mail Code: 3RA00)  
Philadelphia, PA 19103-2029

  
Dear Mr. Garvin:

The Pennsylvania Department of Environmental Protection (DEP) is hereby submitting the list of large sulfur dioxide (SO<sub>2</sub>) emitting sources in the Commonwealth of Pennsylvania which will undergo an “air quality characterization” as required under the final Data Requirements Rule (DRR) for the 2010 1-Hour Sulfur Dioxide Primary National Ambient Air Quality Standard (80 FR 51052, August 21, 2015). The DRR requires the permanent list of sources to, at a minimum, include sources with SO<sub>2</sub> emissions greater than 2,000 tons per year (tpy).

DEP based its determination of sources on the most recent inventory of actual emissions available, the 2014 SO<sub>2</sub> emission inventory. The list of sources, outlined below by county, adheres to the guidelines within the DRR and will undergo an additional “air quality characterization.” (see enclosure)

In addition, DEP understands that the DRR is limited in its scope of emission sources that could cause or contribute to nonattainment of the 1-hour SO<sub>2</sub> NAAQS. Due to the short term nature of the SO<sub>2</sub> NAAQS, certain sources with less than 2,000 tpy of actual annual SO<sub>2</sub> emissions but high hourly emissions could cause or contribute to NAAQS violations. In addition, the complex topography in Pennsylvania also poses a risk to demonstrating attainment in certain areas of the commonwealth. To that end, DEP plans to further analyze the SO<sub>2</sub> emission inventory to determine if additional sources, less than 2,000 tpy, should be characterized for attainment purposes.

Should you have any questions or need additional information, please contact Joyce E. Epps, Director, Bureau of Air Quality, by e-mail at [jeepps@pa.gov](mailto:jeepps@pa.gov) or by telephone at 717.787.9702.

Sincerely,

  
John H. Quigley  
Secretary

Enclosure

**Pennsylvania's List of SO<sub>2</sub> Sources Identified Pursuant to the Data Requirements Rule**

County	Facility
Allegheny	NRG Midwest LP/Cheswick Generating Station
Blair	Team Ten/Tyrone Paper Mill
Cambria	Cambria Cogen/ Ebensburg
Cambria	Inter Power Alhcon/Colver Power Plant
Cambria	Ebensburg Power Co/Ebensburg Cogeneration Plant
Carbon	Panther Creek Power OPR LLC/Nesquehoning
Centre	Penn State University
Clearfield	NRG Rema LLC/Shawville Generating Station
Delaware	Kimberly Clark PA LLC
Delaware	Covanta Delaware Valley LP/Delaware Valley Res Rec
Delaware	Exelon Generation Company/Eddystone
Lawrence	NRG Power Midwest LP/ New Castle Power Plant
Lehigh	Lafarge Corp/Whitehall Plant
McKean	American Refuel Group/Bradford
Montour	Talen Energy LL/Montour Power Plant
Northampton	NRG Rema LLC/Portland Generating Station
Northampton	Hercules Cement Company LP/Stockertown
Northampton	Keystone Portland Cement/East Allen
Northampton	ESSROC/Nazareth Lower Cement Plant
Northampton	Northampton Generation Company/Northampton
Philadelphia	Philadelphia Energy Sol Ref/PES
Schuylkill	Schuylkill Energy Res/ St Nicholas Cogen
Schuylkill	Gilberton Power Co/John B. Rich Mem Power Station
Schuylkill	Wheelabrator Frackville/Morea Plant
Schuylkill	Northeastern Power Co/ Mcadoo Cogen
Venango	Scrubgrass Generating CO LP/Kinnerdell Plant
Westmoreland	ArcelorMittal Monessen LLC/Monessen Coke Plant
York	PH Glatfelter Co/Spring Grove
York	Magnesita Refractories/York
York	Talen Energy, LLC/Brunner Island Power Plant



March 9, 2016

Mr. Nikos Singelis  
Acting Director, Air Protection Division  
U.S. Environmental Protection Agency, Region III  
1650 Arch Street (Mail Code: 3AP00)  
Philadelphia, PA 19103-2029

RE: Revised List of SO<sub>2</sub> Sources Identified Pursuant to the Data Requirements Rule

Dear Mr. Singelis

I am writing to request revisions to "Pennsylvania's List of SO<sub>2</sub> Sources Identified Pursuant to the Data Requirements Rule" (hereinafter "PA List of SO<sub>2</sub> Sources") submitted to the U.S. Environmental Protection Agency (EPA) on January 15, 2016. Pursuant to 40 CFR § 51.1203 (relating to air agency requirements) of the Data Requirements Rule for the 2010 1-hour Sulfur Dioxide (SO<sub>2</sub>) Primary National Ambient Air Quality Standard (NAAQS), "[t]his list may be revised by the Regional Administrator after review based on available SO<sub>2</sub> emissions data" (80 FR 51087, August 21, 2016). To this end, the revised PA List of SO<sub>2</sub> Sources is enclosed for EPA's review and consideration.

Based on the Pennsylvania Department of Environmental Protection's (DEP) review of 2015 SO<sub>2</sub> emission data and other relevant information, the following facilities should be removed from the PA List of SO<sub>2</sub> Sources: American Refining Group (previously listed as American Refuel Group/Bradford); ArcelorMittal Monessen LLC/Monessen Coke Plant; Penn State University (PSU); and Scrubgrass Generating CO LP/Kinnerdell Plant. The rationale for the removal of the facilities from the list is provided as follows:

1. American Refining Group, Inc. Actual SO<sub>2</sub> emissions from the American Refining Group facility in Bradford (McKean County), PA declined from 1413 tons per year (tpy) in 2014 to approximately 574 tpy of SO<sub>2</sub> in 2015. The facility's federally enforceable Title V Operating Permit (TVOP No. 420000) also requires the permanent shutdown and replacement of coal-fired Boiler No. 5 with a new gas-fired boiler (Boiler No. 6) by no later than January 31, 2017. The gas-fired boiler, which is expected to emit no more than 2.11 tpy of SO<sub>2</sub>, will assure compliance with the "Boiler MACT" requirements in 40 CFR Part 63, Subpart DDDDD (National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers and Process Heaters). Operation of the gas-fired boiler should also address any potential impacts on the 1-hour SO<sub>2</sub> NAAQS.
2. ArcelorMittal Monessen, LLC. In 2014, the ArcelorMittal Monessen facility in Monessen (Westmoreland County), PA emitted 550 tpy of SO<sub>2</sub> from its coke work

operations. The preliminary review of 2015 emissions data indicates that SO<sub>2</sub> emissions declined to 523 tpy in 2015. However, ArcelorMittal will complete extensive source testing at the Monessen facility including testing of SO<sub>2</sub>-emitting sources by early April 2016, at the request of EPA and DEP. Following a review of the source test results, the agencies will determine if corrective measures including the installation of control technology will be necessary to assure compliance with applicable requirements and to prevent any adverse impacts on the 2010 SO<sub>2</sub> NAAQS.

3. Pennsylvania State University. Pennsylvania State University (PSU) in State College (Centre County), PA emitted approximately 1,018 tpy of SO<sub>2</sub> in 2014 from its centralized heating facility; submission and review of 2015 emissions data is ongoing. However, PSU has commenced a natural gas conversion project at its West Campus Steam Plant (WCSP) in order to comply with the "Boiler MACT" requirements. The WCSP Improvement Project, authorized by DEP under federally enforceable Plan Approval # 14-00003F, includes conditions for converting two coal-fired boilers to burn natural gas and the replacement of two coal-fired boilers with two new natural gas-fired boilers that will be operational by the end of 2016. Following the commencement of operation of the gas-fired boilers, the facility's actual SO<sub>2</sub> emissions will be less than 10 tpy; federally enforceable SO<sub>2</sub> emission limitations will be established by DEP. This natural gas conversion project should address any potential impacts on the 1-hour SO<sub>2</sub> NAAQS.
4. Scrubgrass Generating CO, LP. Actual SO<sub>2</sub> emissions reported to EPA's Clean Air Markets Division for the Scrubgrass facility in Kennerdell (Venango County), PA declined from 1887 tpy in 2010 to 724 tpy in 2015. Additionally, compliance with the Mercury and Air Toxics Standards (MATS) will further reduce SO<sub>2</sub> emissions at the facility. This approach should address any potential impacts on the 1-hour SO<sub>2</sub> NAAQS.

Thank you in advance for your consideration of the revised PA List of SO<sub>2</sub> Sources. We believe that more recent SO<sub>2</sub> emissions data, natural gas conversions and applicability of the Boiler MACT and MATS requirements support the removal of the previously mentioned facilities from the original list of SO<sub>2</sub> sources submitted to EPA on January 15, 2016.

Should you have any questions or need additional information, please contact me by e-mail at [jeepps@pa.gov](mailto:jeepps@pa.gov) or by telephone at 717.787.9702.

Sincerely,



Joyce E. Epps  
Director

Enclosure

**ENCLOSURE****PA's Revised List of SO<sub>2</sub> Sources Identified Pursuant to the Data Requirements Rule**

County	Facility
Allegheny	NRG Midwest LP/Cheswick Generating Station
Blair	Team Ten/Tyrone Paper Mill
Cambria	Cambria Cogen/ Ebensburg
Cambria	Inter Power Alhcon/Colver Power Plant
Cambria	Ebensburg Power Co/Ebensburg Cogeneration Plant
Carbon	Panther Creek Power OPR LLC/Nesquehoning
Clearfield	NRG Rema LLC/Shawville Generating Station
Delaware	Kimberly Clark PA LLC
Delaware	Covanta Delaware Valley LP/Delaware Valley Res Rec
Delaware	Exelon Generation Company/Eddystone
Lawrence	NRG Power Midwest LP/ New Castle Power Plant
Lehigh	Lafarge Corp/Whitehall Plant
Montour	Talen Energy LL/Montour Power Plant
Northampton	NRG Rema LLC/Portland Generating Station
Northampton	Hercules Cement Company LP/Stockertown
Northampton	Keystone Portland Cement/East Allen
Northampton	ESSROC/Nazareth Lower Cement Plant
Northampton	Northampton Generation Company/Northampton
Philadelphia	Philadelphia Energy Sol Ref/PES
Schuylkill	Schuylkill Energy Res/ St Nicholas Cogen
Schuylkill	Gilberton Power Co/John B. Rich Mem Power Station
Schuylkill	Wheelabrator Frackville/Morea Plant
Schuylkill	Northeastern Power Co/ Mcadoo Cogen
York	PH Glatfelter Co/Spring Grove
York	Magnesita Refractories/York
York	Talen Energy, LLC/Brunner Island Power Plant



# pennsylvania

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BUREAU OF AIR QUALITY

January 28, 2016

**CERTIFIED MAIL 7004 1160 0003 8197 0766**

Mr. Charles D. Barksdale, Jr.  
Philadelphia Energy Solutions  
3144 W. Passyunk Ave.  
Philadelphia, PA 19145-5208

Re: Environmental Director  
Philadelphia Energy Solutions  
PES Refining Complex, City of Philadelphia, Philadelphia County

Dear Mr. Barksdale,

The Pennsylvania Department of Environmental Protection (DEP) is writing to advise you that the PES Refining Complex in Philadelphia, Pennsylvania has been identified as a large source of sulfur dioxide (SO<sub>2</sub>) emissions according to criteria outlined in the U.S. Environmental Protection Agency's (EPA) final Data Requirements Rule (DRR) for the 2010 1-Hour Sulfur Dioxide (SO<sub>2</sub>) Primary National Ambient Air Quality Standard (NAAQS) (hereinafter SO<sub>2</sub> DRR; 80 FR 51052, August 21, 2015). In accordance with 40 CFR §§ 51.1202 and 51.1203, the DEP must submit to the EPA by January 15, 2016, a list of applicable sources of SO<sub>2</sub> emissions in Pennsylvania that have annual SO<sub>2</sub> emissions of 2,000 tons per year (tpy) or more. This listing, which is based on the most recently available annual SO<sub>2</sub> emissions data, must also include any additional SO<sub>2</sub> sources and their associated areas identified by the DEP or "the EPA Regional Administrator as requiring further air quality characterization."

To this end, the DEP developed the criteria below to determine which sources of SO<sub>2</sub> emissions in the Commonwealth warrant an "air quality characterization:"

- 1) Facilities whose 2014 SO<sub>2</sub> actual emissions were greater than or equal to 2,000 tpy;
- 2) Cluster of facilities with cumulative 2014 actual emissions greater than or equal to 2,000 tpy;
- 3) Facilities with 2014 SO<sub>2</sub> actual emissions greater than or equal to 500 tpy that are located within 5 kilometers of an environmental justice community;
- 4) Facilities that meet more than one of the criterion above.

For each facility identified in the list of applicable sources of SO<sub>2</sub> emissions due to EPA by January 15, 2016, the SO<sub>2</sub> DRR requires the DEP to indicate to EPA by July 1, 2016 whether it will complete its "air quality characterization" by air quality modeling, ambient air monitoring or a federally enforceable emission limitation that will keep the facility wide emissions below the 2,000 tpy threshold). Documentation of federally enforceable emission limitations must be provided to EPA by January 13, 2017 (40 CFR §§ 51.1203 (b) and 51.1204). The DEP believes

that the best way to decide the approach for the “air quality characterization” is to obtain feedback from the owners and operators of SO<sub>2</sub> DRR impacted facilities. Therefore, the DEP would like PES Refining Complex to develop a plan to achieve one of the three “air quality characterization” methods (i.e., monitoring, modeling, or federally enforceable emission limits) for the applicable SO<sub>2</sub> sources.

In order to facilitate the development of the plan, the DEP would like to discuss with PES Refining Complex representatives as soon as practicable the three options available to satisfy the “air quality characterization” criterion and the best pathway forward for affected sources of SO<sub>2</sub> emissions at your facility. To this end, within five days of receipt of this letter, please contact me to arrange a date, time and location for a meeting to discuss the options available under the DRR to satisfy your 1-hour SO<sub>2</sub> NAAQS obligations.

In addition to the final SO<sub>2</sub> DRR, EPA has developed two technical assistance documents (TADs), which include details with regards to the modeling and monitoring tracks. The modeling TADs should be used when proceeding with the modeling “air quality characterization” option. Conversely, the monitoring TADs should be used when proceeding with the monitoring “air quality characterization” option. The two TADs are available at the following hyperlinks:

Modeling: <http://www3.epa.gov/airquality/sulfurdioxide/pdfs/SO2ModelingTAD.pdf>

Monitoring: <http://www3.epa.gov/airquality/sulfurdioxide/pdfs/SO2MonitoringTAD.pdf>

We look forward to working with you to expeditiously to develop a plan for proceeding with the “air quality characterization” requirement of the SO<sub>2</sub> DRR. Should you have questions or need additional information, please contact me by e-mail at [nlazor@pa.gov](mailto:nlazor@pa.gov) or by telephone at 717.783.9268. You may also contact Sean Nolan by e-mail at [senolan@pa.gov](mailto:senolan@pa.gov) or by telephone at 717.772.3377.

Sincerely,



Nicholas E. Lazor  
Environmental Program Manager  
Division of Air Quality Monitoring

cc: Henry Kim, Philadelphia Department of Public Health  
Krishnan Ramamurthy  
Kirit Dalal  
Sean Nolan  
Andrew Fleck  
Randy Bordner  
DEP Regional Air Program Manager

## SO<sub>2</sub> DDR: Procedures to Satisfy SO<sub>2</sub> Data Requirements Rule

DRR Procedure	Deadline
Submit to US EPA Region III a list of sources exceeding threshold and other sources ( <i>e.g.</i> areas with clusters of sources) for which air quality will be characterized	January 15, 2016
Submit to US EPA Region III the method by which the identified areas will be characterized (monitoring, modeling or establishing an enforceable emissions limit). Include information on any new SO <sub>2</sub> monitoring sites established to meet the DRR in PA DEP's 2016 ANP	July 1, 2016
Begin SO <sub>2</sub> monitoring in areas where a monitoring approach will be used for air quality characterization (SO <sub>2</sub> monitoring sites established to meet the DRR will operate as SLAMS monitors)	January 1, 2017
Submit results of modeling analyses to US EPA Region III, for areas where a modeling approach will be used for air quality characterization	January 13, 2017
Submit documentation of federally-enforceable emission limits and compliance to US EPA Region III, for areas where an emissions limit approach will be used in place of air quality characterization	
Submit state implementation plans for areas designated nonattainment in December 2017 for the 1-hour SO <sub>2</sub> NAAQS (EPA will issue final designations in December 2017 for all areas, except those that are using the monitoring approach and have monitoring networks in operation by January 1, 2017)	August 2019 (expected)
Submit state implementation plans for areas designated nonattainment in December 2020 for the 1-hour SO <sub>2</sub> NAAQS (EPA will issue final designations in December 2020, following the 2017-2019 3-year design value period, for all areas using the monitoring approach)	August 2020 (expected)

**Appendix B**  
**Public Notice Proof of Publication**

Proof of Publication in The Philadelphia Daily News  
Under Act. No 587, Approved May 16, 1929

STATE OF PENNSYLVANIA  
COUNTY OF PHILADELPHIA

Florence Devlin being duly sworn, deposes and says that **The Philadelphia Daily News** is a newspaper published daily, except Sunday, at Philadelphia, Pennsylvania, and was established in said city in 1925, since which date said newspaper has been regularly issued in said County, and that a copy of the printed notice of publication is attached hereto exactly as the same was printed and published in the regular editions and issues of the said newspaper on the following dates:

May 6, 2016

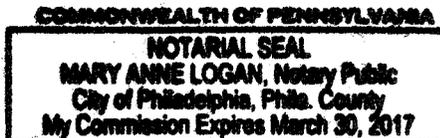
Affiant further deposes and says that she is an employee of the publisher of said newspaper and has been authorized to verify the foregoing statement and that she is not interested in the subject matter of the aforesaid notice of publication, and that all allegations in the foregoing statement as to time, place and character of publication are true.

*Florence Devlin*

Sworn to and subscribed before me this 6<sup>th</sup> day of  
May, 2016.

*Mary Anne Logan*  
Notary Public

My Commission Expires:



Copy of Notice of Publication

**PROPOSED ANNUAL MONITORING NETWORK PLAN FOR PHILADELPHIA**

The Code of Federal Regulations (CFR) Title 40: Protection of Environment, Part 58: Ambient Air Quality Surveillance requires state and local air pollution control agencies to adopt and submit to the Environmental Protection Agency (EPA) Regional Administrator an Annual Monitoring Network Plan (AMNP) by July 1, 2016. The AMNP provides for the establishment and maintenance of an air quality surveillance system that consists of a network of monitoring stations. A proposed AMNP must be made available for public inspection and comment for at least 30 days prior to submission to EPA.

Air Management Services (AMS) is the local air pollution control agency for the City of Philadelphia under the Department of Public Health. Philadelphia has an air monitoring network of 11 air monitoring stations that house instruments that measure ambient levels of air pollutants.

The proposed AMNP is available for public inspection on the City's website at <http://www.phila.gov/health/airmanagement/PublicMeetings.html> and at the office of Air Management Services, 321 University Avenue, 2nd Floor, Philadelphia, PA 19104, during normal business hours. For further information, contact Mr. Henry Kim, Chief of Programs Services at (215) 685-9439.

Written comments on the proposed AMNP should be sent to Mr. Henry Kim, Chief of Program Services, Air Management Services, 321 University Avenue, 2nd Floor, Philadelphia, PA 19104. Only written comments will be accepted. Comments received by facsimile will not be accepted. Persons wishing to file comments on the proposed AMNP must submit comments by June 6, 2016.