

Commonwealth of Pennsylvania Department of Environmental Protection Ambient Air Monitoring Network Plan - 2010

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Edward G. Rendell, Governor Commonwealth of Pennsylvania

John Hanger, Secretary Department of Environmental Protection

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Introduction

In 1970, Congress enacted the Clean Air Act (CAA) authorizing the U.S. Environmental Protection Agency (EPA) to establish National Ambient Air Quality Standards (NAAQS) for pollutants shown to threaten human health and welfare. Primary NAAQS were promulgated according to criteria designed to protect public health, including an adequate margin of safety to protect sensitive populations such as children and asthmatics. Secondary NAAQS were promulgated according to criteria designed to protect public welfare (decreased visibility, damage to crops, vegetation, and buildings, etc.).

EPA has established NAAQS for the following criteria pollutants: ozone (O₃), carbon monoxide (CO), sulfur dioxide (SO₂), nitrogen dioxide (NO₂), particulate matter less than 10 microns (PM₁₀), particulate matter less than 2.5 microns (PM_{2.5}) and lead (Pb). These are commonly called the "criteria" pollutants. When air quality does not meet the NAAQS in an area, the area is designated by EPA as "nonattainment" in accordance with Section 107 of the CAA, 42 U.S. C. section 7407. Table 1 below lists all of the NAAQS for the criteria pollutants.

	Primary (Health Rela	ted)	Secondary (Welfare Related)					
Pollutant	Type of Average	Standard Level Concentration	Type of Average	Standard Level Concentration				
Carbon Monoxide	8-hour Running (not to be exceeded more than once per year)	9 ppm	No Secondary Standard					
	1-hour (not to be exceeded more than once per year)	35 ppm	No Secondary Standard					
Lead	Maximum Running 3-Month Mean (based on 3-year average)	0.15 µg/m ³	Same as Primary Standard					
Nitrogen Dioxide	Annual Arithmetic Mean	0.053 ppm	Same as Primary Standard					
Ozone	Fourth-Highest Daily Maximum 8- hour Running Mean (based on 3- year average)	0.075 ppm	Same as Primary Standard					
PM ₁₀	24-hour (not to be exceeded more than once per year)	150 μg/m ³	Same as Primary Standard					
PM _{2.5}	Annual Arithmetic Mean (based on 3- year average)	15 µg/m ³	Same as Primary Standard					
PM _{2.5}	24-hour (based on 3 year average of 98th percentile)	35 µg/m ³	Same as Primary Standard			Same as Primary Standard		
Sulfur Dioxide	Annual Arithmetic Mean	0.03 ppm	3-hour (block average) (Not to be exceeded more than once per year)	0.50 ppm				
	24-hour (daily mean) (not to be exceeded more than once per year)	0.14 ppm						

Table 1. National Ambient Air Quality Standards

Requirements for Monitoring Network Descriptions

On October 17, 2006, EPA promulgated a final rule entitled "Revisions to Ambient Air Monitoring Regulations" for criteria pollutants (71 FR 61236), EPA stated in the Preamble that "[t]he purpose of the amendments is to enhance ambient air quality monitoring to better serve current and future air quality". Included in the revisions were final regulations concerning state and local agency ambient air monitoring networks. In addition to establishing limited air quality monitoring requirements for thoracic coarse particles in the size range of $PM_{10-2.5}$, EPA also modified the general monitoring network design requirements for ambient air monitoring networks operated and maintained by state and local agencies and changed the minimum requirements for the number of monitors for $PM_{2.5}$ and ozone monitoring networks. Pursuant to 40 CFR sections 58.10(a) and 58.10(b), network plans must include the following for existing and proposed monitoring sites:

- A statement of purpose for each monitor
- Evidence that siting and operation of each monitor meets the requirements of 40 CFR Part 58, Appendices A, C, D, and E where applicable
- The Air Quality System (AQS) site identification number
- The location, including street address and geographical coordinates
- The sampling and analysis method(s) for each measured parameter
- The operating schedules for each monitor
- Any proposals to remove or move a monitoring station within a period of 18 months following plan submittal
- The monitoring objective and spatial scale of representativeness for each monitor
- The identification of any sites that are suitable and sites that are not suitable for comparison against the annual PM2.5 NAAQS, as described in section 58.30
- The Metropolitan Statistical Area (MSA), Core Based Statistical Area (CBSA), Combined Statistical Area (CSA) or other area represented by the monitor

Commonwealth of Pennsylvania Air Monitoring Network

Program History

The Pennsylvania Air Pollution Control Act (APCA), enacted originally on January 8, 1960, established the framework for air pollution control activities in Pennsylvania. As a result of the enactment of the federal Clean Air Act in 1970, states developed state implementation plans (SIPs), which described how they proposed to meet the NAAQS mandated under this Act. When established in 1971, PA DEP (formerly the Department of Environmental Resources) implemented air pollution programs that, with a great deal of success, have since largely addressed major public health and welfare air quality concerns. Significant changes have occurred over the years with the program, notably with the passage of the Clean Air Act Amendments in 1990 as well as implementation of PM_{2.5} monitoring in 1997. Currently, the PA DEP has an extensive monitoring program that not only monitors for the criteria pollutants, but also for air toxics and volatile organic compounds (VOCs).

Ambient Monitoring Network Overview

The monitoring strategy of PA DEP places monitors in areas having high population density and/or high levels of contaminants. The majority of all monitoring efforts take place in the "air basins" of the Commonwealth. Air basins are defined in 25 Pa. Code § 121.1 and consist of thirteen geographical areas:

- Allegheny County Air Basin
- Allentown-Bethlehem-Easton Air Basin
- Erie Air Basin
- Harrisburg Air Basin
- Johnstown Air Basin
- Lancaster Air Basin
- Lower Beaver Valley Air Basin
- Monongahela Valley Air Basin
- Reading Air Basin
- Scranton, Wilkes-Barre Air Basin
- Southeast Pennsylvania Air Basin
- Upper Beaver Valley Air Basin
- York Air Basin

Air monitoring surveillance is conducted in the 13 air basins. The Allegheny County Health Department conducts the majority of the air quality monitoring in the Allegheny County Air Basin. The Philadelphia Department of Public Health, Air Management Services, which is located in the Southeast Pennsylvania Air Basin, conducts air monitoring only for the Philadelphia County portion of the air basin. In addition to the aforementioned 13 air basins, PA DEP conducts surveillance in several non-air basin regions. PA DEP also performs monitoring in Allegheny County at the Carnegie Science Center in Pittsburgh as part of an air quality exhibit. PA DEP continued in 2009 with a cooperative agreement with Pennsylvania State University's (PSU) Department of Plant Pathology to conduct ozone monitoring in four remote areas - Adams County (near Biglerville), Centre County (near State College, Clearfield County (near Moshannon) and Tioga County (near Gleason). The university uses ozone data collected from this cooperative monitoring effort to determine the extent of detrimental effects to Pennsylvania's forests and crops, and to assess ozone transport in rural Pennsylvania.

PA DEP operates the Commonwealth of Pennsylvania Air Monitoring System (COPAMS) as its air monitoring network. The COPAMS network encompasses both continuous and discrete methods of pollutant sampling.

The continuous portion of the COPAMS network is a totally automatic, microprocessor-controlled system that consisted of 52 remote stations throughout the Commonwealth. Continuous methods employ specialized instruments designed to continuously sample and analyze ambient air in situ. The output of these devices is hourly pollutant concentrations. These concentrations are the raw data used to calculate the various pollutant averages needed for NAAQS comparisons. A centralized computer system operated by the Bureau of Air Quality collects the raw data on an hourly basis, enabling real-time monitoring. PA DEP utilizes continuous methods for the following pollutants: ozone, sulfur dioxide, nitrogen dioxide, oxides of nitrogen, carbon monoxide, hydrogen sulfide, PM_{2.5} and PM₁₀. Various meteorological data from many of the COPAMS stations are measured using continuous methods as well, including wind speed, wind direction (vector averaged and sigma theta), ambient temperature, and solar radiation.

The non-continuous portion of the COPAMS network utilizes discrete sampling methods, with analysis of the sample performed off-site. A discrete method is generally a "manual" method of sampling, most commonly using an air filter to trap air pollutants from ambient air for a defined or "discrete" period of time. The filter is then removed from the collection site and analyzed in a DEP-accredited laboratory. The discrete portion of the COPAMS network includes analysis methods for particulate matter 2.5 microns or less in size ($PM_{2.5}$), particulate matter 10 microns or less in size (PM_{10}), total suspended particulate (TSP), lead, sulfates and nitrates.

Description of Local Networks

Allegheny County Health Department

The Allegheny County Health Department's air monitoring section in operates a network of 19 monitoring stations across Allegheny County to collect and assess air quality data on concentrations of particulates, sulfur dioxide, ozone, carbon monoxide, nitrogen oxides, ozone, as well as lead. In addition, air toxics and VOCs are also monitored.

Philadelphia Air Management Services

The main mission of the Philadelphia Health Department's Air Management Services local air pollution control program is to monitor the city's ambient air for pollutants, which are compared to Federal standards. The City of Philadelphia is served by a network of ten (10) air monitoring sites

located throughout the City that measure the criteria pollutants: ozone, carbon monoxide (CO), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), particulate matter (PM₁₀ and PM_{2.5}), and lead. Five of the sites also measure toxics, such as benzene, acetaldehyde, and formaldehyde.

This report does not provide detailed descriptions of the monitoring networks operated by the two county agencies. Detailed descriptions of local networks will be submitted to EPA by the Allegheny County Health Department and the City of Philadelphia Department of Public Health Air Management Services respectively. Full address information on these agencies is located on page 17 of this plan.

Description of Appendix A

The 2009 Pennsylvania Air Monitoring Network consists of the sites and monitors listed in Appendix A, "Monitoring Sites, Equipment, Maps, and Addresses". This appendix details site information, pollutants monitored at each site and detailed maps of sampling sites which are broken down by air basin sites and non-air basin sites. Also detailed are the manufacturers, models and analysis methods used in the monitoring network. This network is maintained and operated by the Pennsylvania Department of Environmental Protection, Bureau of Air Quality, Division of Air Quality Monitoring.

Description of Appendix B

Appendix B, "Pennsylvania Monitoring Network Description" provides a detailed description of the existing network. It presents information related to the location of the site, monitoring parameters at the site, and details about the monitors themselves in order to meet the requirements of 40 CFR Section 58.10 (a) and (b).

The first block, the Site Information Block, contains information identifying the site by both address and latitude and longitude. This block also contains information regarding inclusion of the monitoring site in any metropolitan statistical area.

Following the Site Information Block, there is a series of one or more Sensor Information Block(s), containing information for each monitor at the site. Each sensor block contains the following information:

- Sensor Type The name of the pollutant measured by the sampler.
- Sensor Network Designation The name of the designated network:
 - NCore National Core multipollutant monitoring station. (There are currently no NCore sites planned for PA DEP; Allegheny County Health Department and Philadelphia air Management Services are being funded for one NCore station, each)
 - o PAMS Photochemical Assessment Monitoring Station
 - o SLAMS State or Local Ambient Monitoring Station
 - o STN PM_{2.5} Speciation Trends Network
 - o SPM Special Purpose Monitor

- Sensor Purpose Description– The purpose of the sensor:
 - o Population Exposure, such as the Air Quality Index
 - Regulatory compliance with Federal or State regulation
 - o Research/Scientific Monitoring
 - Specific location characterization
- Sample Frequency Specifies how often a sample is taken.
 - Continuous operates 24/7; applies predominately to gaseous analyzers, although some particulate samplers (TEOM/FDMS and BAMs) operate continuously.
 - Daily a discrete sample is taken every day; applies to manual method particulate samplers.
 - Every Third Day Manual method particulate samplers that run every third day.
 - Every Sixth Day Manual method particulate samplers that run every sixth day.
- 40 CFR section 58 Appendix A QA Assessment A "**YES**" indicates the sensor is maintained in accordance with the Quality Assurance (QA) requirements specified in 40 CFR Part 58 Appendix A.
- 40 CFR section 58 Appendix C Monitoring Classification Each ambient air monitor is classified using the EPA "List of Designated Reference and Equivalent Methods" (see EPA Transfer Technology Network web page link below)
 - Reference or Federal Reference Method (FRM) a method of sampling that is specified in CFR Part 50.
 - Equivalent or Federal Equivalent Method (FEM) a method that is designated as equivalent to the reference method, in accordance with 40 CFR Part 53.
 - Automated after sampling, the analysis results are available immediately.
 - Manual after sampling, a separate analysis at a laboratory is necessary.

In Appendix B, the previously mentioned descriptions are combined into the following groupings.

- o Automated Reference Method,
- o Manual Reference Method,
- o Automated Equivalent Method,
- Manual Equivalent Method, or
- NONE appears where there is no reference or equivalent method.
- 40 CFR section 58 Appendix C Monitoring Method Each ambient air monitor is classified by a specific "method number." These numbers can be found in the EPA "List of Designated Reference and Equivalent Methods" (see EPA Transfer Technology Network web page at http://www.epa.gov/ttn/amtic/files/ambient/criteria/reference-equivalent-methods-list.pdf).
- Monitoring Method Description Each individual ambient air monitor type has a specific method of pollutant detection. Common examples are:
 - $\circ \quad Ozone \ monitors Ultraviolet \ (UV) \ Absorption$
 - o SO₂- UV Fluorescence
 - o CO Non-dispersive Infrared (IR)
 - NO₂ or NOx Chemiluminescence

- \circ PM_{2.5}, PM₁₀ Gravimetric (or gravimetric by TEOM (tapered element micro balance)), or Beta attenuation
- o PAMS Auto GC (Gas Chromatograph), Dual FID (flame ionization detector)
- 40 CFR section 58 Appendix D Design Criteria Appendix D requires a certain number of monitoring samplers per geographic area. A "**YES**" indicates that the number of monitors in that particular area meets or exceeds the requirement of 40 CFR Part 58 Appendix D.
- 40 CFR section 58 Appendix D Scale The specific "spatial scales of representation" describes the physical dimensions of the air parcel around the monitoring station throughout which actual pollutant concentrations are reasonably similar.
 - o Microscale Areas ranging from several meters to about 100 meters,
 - Middle scale Areas ranging from 100 meters to 0.5 kilometers,
 - Neighborhood 0.5 to 4.0 kilometers, and uniform land use,
 - o Urban scale 4 to 50 kilometers, and
 - Regional ten to hundreds of kilometers.
- 40 CFR section 58 Appendix D Objective Describes the purpose/objective for monitoring at a site.
 - Extreme downwind
 - o General/Background concentration
 - Highest concentration
 - Maximum ozone concentration
 - Population exposure
 - Regional transport
 - Source oriented
- 40 CFR section 58 Appendix E Siting Criteria Describes certain criteria applicable to ambient air quality sampling probes and monitoring paths, such as distances from trees, obstructions, traffic lanes, etc. A "**YES**" indicates that the sensor at the given site meets or exceeds the requirements of 40 CFR Part 58 Appendix E.
- Comments The database contains a comments section for each monitor. Appropriate comments, as necessary, are found in this area.

Changes to Monitoring Sites and Samplers

<u>PM_{2.5} Changes</u>: As required by 40 CFR Section 58.12(d), sites that have a design value (3-year period covered from 2006-2008) within plus or minus 5 percent of the daily PM_{2.5} NAAQS must have a Federal Reference Method (FRM) or Federal Equivalent Method (FEM) sampler operate on a daily (everyday) schedule instead of a once-every-three day (1-in-3) schedule. Since this requirement would have left very few PM_{2.5} samplers operating on a 1-in-3 schedule, a request was approved by EPA to

have all $PM_{2.5}$ samplers operate on an everyday (1-in-1) schedule in 2009. This sampling frequency standardization produced resource efficiencies in filter collection and preparation.

In April 2009, PA DEP completed upgrades of several existing continuous PM_{2.5} monitors to meet the requirements of a FEM monitor. The upgraded monitors, Met One Beta-Attenuation (BAM) Model 1020, were installed in Chester, Scranton, Carlisle, Harrisburg, Johnstown, and Charleroi. Continuous monitors that report an ambient concentration every hour are considered to meet the everyday (1-in-1) sampling frequency requirements and will provide a resource savings over the manual FRM samplers. The hourly concentrations are averaged to produce a daily mean for comparison to the PM_{2.5} NAAQS. With the addition of these continuous (automated) PM_{2.5} samplers, the FRM manual samplers at Chester, Scranton, Harrisburg, and Charleroi were approved by EPA to be discontinued. The manual FRM samplers at Carlisle and Johnstown will continue to be operated as the primary monitor for compliance and to provide a comparison to the continuous FEM BAM monitors.

Holbrook, Greene County: At the end of the ozone season, October 2008, PA DEP moved the Holbrook site approximately 1.1 miles to the southeast due to the loss of the lease agreement. Since the monitoring scale, land use, and general purpose of the monitor to study ozone transport has not changed, PA DEP considers the data that will be produced by the new site location to be fundamentally the same as the previous site. Therefore, PA DEP will not be creating a new site record in the EPA Air Quality System (AQS) database. The AQS site identification code will remain as 42-059-0002.

Site and Monitor Activity Anticipated within the Next 18 Months

<u>Air Toxics</u>: As indicated in the 2009 PA DEP monitoring plan, PA DEP will continue its plan to provide a better understanding of VOC air toxics across the Commonwealth. PA DEP will be moving air toxics sampling equipment to the following sites in 2010: Norristown (Montgomery County), Freemansburg (Northampton County), Scranton (Lackawanna County), Harrisburg (Dauphin County), Altoona (Blair County), Beaver Falls (Beaver County), and Greensburg (Westmoreland County). When the data from the 2009 and 2010 initial characterization is done, a more defined monitoring plan will be proposed for 2011.

As part of the routine air toxics sampling network PA DEP currently performs carbonyl monitoring at the Arendtsville, Lancaster and Lewisburg sites and will site two additional carbonyl monitors in 2010. Once acquired, PA DEP will determine the appropriate location for the samplers.

<u>**PM**_{2.5} **Changes:**</u> By January 2010, PA DEP will install the FEM version of the Met One BAM Model 1020 continuous $PM_{2.5}$ particulate at the following sites to replace the current continuous $PM_{2.5}$ Thermo-Fisher TEOM monitor since the data cannot be used for attainment compliance decisions: Freemansburg (Northampton County), Arendtsville (Adams County), Kittanning (Armstrong County). With the installation of the continuous BAM monitors, the manual FRM samplers for $PM_{2.5}$ will be discontinued at Freemansburg and Arendtsville. Kittanning currently has no FRM sampler.

Additional FEM continuous $PM_{2.5}$ monitors will be installed at the following sites by January 2010 to replace some of the manual FRM samplers to save filter collection and preparation resources, such as

manpower and cost: Erie (Erie County), New Garden (Chester County), Florence (Beaver County), and Greensburg (Westmoreland County).

PA DEP intends to purchase five additional FEM versions of the Met One BAM Model 1020 continuous $PM_{2.5}$ monitors for installation in 2010. The monitors will be located at existing sites in Bristol (Bucks County), State College (Centre County), and Altoona (Blair County). The addition of these continuous $PM_{2.5}$ monitors will provide real-time data that will be used in forecasting and the reporting of the Air Quality Index (AQI) to the public. PA DEP will discontinue the use of the manual FRM samplers at Bristol and State College to provide continued resource savings. The Altoona site currently has no FRM sampler.

PA DEP plans on looking at installing FEM PM_{2.5} samplers at new sites in Lebanon County and Monroe County during the 2010 calendar year. Lebanon, which was once part of the Harrisburg-Carlisle Metropolitan Statistical Area (MSA), is now considered a separate MSA with a population of over 125,000 based on 2007 census estimates. The East Stroudsburg area (Monroe County) is a large Micropolitan Statistical Area with a population of 165,000 based on 2007 census estimates.

In accordance with the minimum monitoring requirements in 40 CFR Part 58, Appendix D, Table D-5, the Allentown-Bethlehem-Eastern Metropolitan Statistical Area (MSA), is now required to have at least two PM_{2.5} monitoring sites since the current design value based on 2006-2008 data is greater than 85% of the 24-hour PM_{2.5} NAAQS. Monitoring regulations indicate that for areas when more than one monitoring station is required, a monitoring station should be located in an area of poor air quality. PA DEP intends to install this second PM_{2.5} monitoring site, using a FRM manual sampler operating everyday, adjacent to the Lehigh Valley Hospital – Muhlenberg (Lehigh County). This site which is upwind of a populated area, should be influenced by mobile sources on Rt. 22 and Rt. 378, airport emissions from the Lehigh Valley International Airport. The other existing PM_{2.5} monitoring site in Freemansburg (Northampton County) is located 5 miles southeast of this proposed location.

<u>Ammonia Sampling:</u> Ammonia monitors were purchased and installed in Lancaster (Lancaster County) and York (York County) in 2004 and 2006, respectively, to test the reliability of the equipment. During this time we have found the ammonia monitoring equipment to be troublesome and unstable at the low levels of ammonia found in the ambient air. As a result, both monitors have been returned to the manufacturer for updating of the detection system. Once repaired, these ammonia samplers will be re-deployed to the Lancaster and York sites. PA DEP will also examine the feasibility of installing an ammonia monitor in Berks County after other continuous measurement methods for ammonia are evaluated.

Other Changes: No other monitor additions or deletions to the routine surveillance ambient monitoring network are being considered for 2010, with the exception of lead monitoring as described below.

Lead Particulate Monitoring: On November 12, 2008 EPA substantially strengthened the national ambient air quality standards (NAAQS) for lead. EPA revised the level of the primary (health-based) standard from 1.5 micrograms per cubic meter (μ g/m3) to 0.15 μ g/m3, measured as total suspended particles (TSP) and revised the secondary (welfare-based) standard to be identical in all respects to the primary standard. In conjunction with strengthening the lead NAAQS, EPA identified the need for states to improve existing lead monitoring networks by requiring monitors to be placed in areas with

sources that emit one ton or more per year (tpy) of lead and in urban areas with more than 500,000 people.

Dispersion modeling will be used to determine the area of the maximum running 3-month average concentration for lead around each facility that emits at least one ton per year. The exact location of the TSP/Lead samplers are not available at this time until PA DEP staff have had time to complete the complex task of dispersion modeling and conduct site surveys to determine availability of land and electrical power based on the modeled concentrations. Consideration will also be given to population exposure in the direction of the modeled maximum concentration. The following is a list of facilities around which source-oriented lead monitoring is anticipated:

- 1. Exelon Generation Company Eddystone (Delaware County)
- 2. Schott North America Inc Duyea (Luzerne County)
- 3. East Penn Manufacturing Company Lyons (Berks County)
- 4. Exide Technologies Laureldale (Berks County)
- 5. US Dept of Defense Letterkenny Army Depot (Franklin County)
- 6. Horsehead Corporation Monaca (Beaver County)
- 7. FirstEnergy Generation Corp Bruce Mansfield Plant (Beaver County)
- 8. Reliant Energy Northeast Conemaugh (Indiana County)
- 9. Reliant Energy Northeast Keystone Power Plant (Armstrong County)
- 10. Inmetco Ellwood City (Lawrence County)

In the event that dispersion modeling shows that the maximum running 3-month average concentration is less than 50% of the NAAQS, PA DEP may request a waiver from source-oriented monitoring around the modeled facility.

In addition to the source-oriented monitoring sites, PA DEP is required under 40 CFR Part 58, Appendix D, to monitor in four MSAs with populations greater than 500,000 people. These areas are: Harrisburg-Carlisle MSA, Scranton-Wilkes Barre MSA, Lancaster MSA, and the Allentown-Bethlehem-Easton MSA. With the exception of the Allentown-Bethlehem-Easton MSA, PA DEP plans on deploying the remaining population-oriented sites by the January 1, 2011, as required by federal regulation.

For the Allentown-Bethlehem-Easton MSA, PA DEP will install a lead monitor at the same site as was described above for the $PM_{2.5}$ FRM sampler. The same emission influences would apply for lead particulate as described.

PA DEP intends to terminate the following sites in the current lead monitoring network:

<u>Monessen</u> (Westmoreland County) – there are no lead sources in the area with the potential to cause an exceedance of the lead NAAQS. The current design value (running 3-month average) is 0.07 μ g/m³ for the period of 2006-2008, which is half the revised lead NAAQS.

<u>East Conemaugh</u> (Cambria County) - there are no lead sources in the area with the potential to cause an exceedance of the lead NAAQS. The current design value is $0.07 \ \mu g/m^3$ for the period of 2006-2008, which is half the revised lead NAAQS.

General Description of Criteria Pollutants

Ozone (O₃)

Ground-level ozone, or photochemical smog, is a secondary pollutant. Ozone is generally not emitted directly into the atmosphere as ozone, but rather is formed by chemical reactions between other air pollutants. The primary pollutants involved in these reactions -- volatile organic compounds (VOCs) and oxides of nitrogen (NO_x) -- form ozone in the presence of sunlight and warm temperatures. Thus, sources that emit these ozone precursors are sources of ozone. Nitrogen oxides result from fossil fuel combustion and sources commonly include power plants, industrial boilers, and motor vehicles. VOCs are emitted from a variety of sources, including motor vehicles, chemical plants, refineries and even natural (biogenic) sources. Ozone and the precursor pollutants that cause ozone also can be transported into an area from pollution sources located hundreds of miles away. Because the formation of ozone is boosted by increasing sunlight and temperatures, changing weather patterns contribute to yearly differences in ozone concentrations, with peak concentrations occurring during the summer months. Ground-level ozone is a strong irritant to the eyes and upper respiratory system and can hamper breathing. It also damages vegetation, including forest and agricultural crops, and man-made materials such as monuments and statues.

Ozone is measured by ultraviolet absorption photometry. Air is drawn through a sample cell where ultraviolet light (254 nm wavelength) passes through it. Any light that is not absorbed by the ozone is then converted into an electrical signal proportional to the ozone concentration.

Sulfur Dioxide (SO₂)

Sulfur dioxide is a gaseous pollutant that is emitted primarily by industrial furnaces or power plants burning sulfur-containing coal or oil. The major health effects associated with high exposures to sulfur dioxide include effects on breathing and respiratory illness symptoms. The population most sensitive to sulfur dioxide includes asthmatics and individuals with chronic lung disease or cardiovascular disease. Sulfur dioxide damages vegetation, including forests and agricultural crops, and acts as a precursor to acid rain. Finally, sulfur dioxide can accelerate the corrosion of natural and man-made materials that are used in buildings and monuments, as well as paper, iron-containing metals, zinc, and other protective coatings.

Sulfur dioxide is measured with a fluorescence analyzer. Air is drawn through a sample cell where it is then subjected to high intensity ultraviolet light. This causes in the sulfur dioxide molecules in the air to fluoresce and release light. The fluorescence is detected with a photomultiplier tube and converted to an electrical signal proportional to the SO_2 concentration.

Carbon Monoxide (CO)

Carbon monoxide is a byproduct of the incomplete burning of fuels. Industrial processes contribute to carbon monoxide pollution levels, but the largest man-made source of carbon monoxide is motor vehicle emissions. This pollutant is a health concern in areas of high traffic density or near industrial sources. Peak carbon monoxide concentrations typically occur during the colder months of the year

when automotive emissions are greater and nighttime inversion (a weather-related phenomenon) conditions are more frequent.

Carbon monoxide is a colorless, odorless, poisonous gas that has an affinity for hemoglobin, 210 times that of oxygen. By combining with the hemoglobin in the blood, it inhibits the delivery of oxygen to the body's tissue, thereby causing or shortness of breath, asphyxia and eventually death. The health threat from carbon monoxide is most serious for those who suffer from cardiovascular disease. At much higher levels of exposure, healthy individuals are also affected.

Carbon monoxide is measured by infrared absorption photometry. A continuous flow of air is drawn through a sample cell where infrared light passes through it. The carbon monoxide molecules absorb a portion of the infrared light. This reduces the amount of light getting to the sensor. The light is then converted into an electrical signal related to the concentration of carbon monoxide in the sample cell.

Lead (Pb)

Lead is emitted to the atmosphere by vehicles burning leaded fuel and from certain industrial processes, primarily battery manufacturers and lead smelters. As a result of the reduction in lead in gasoline, metal processing is now the major source of lead emissions.

Lead is a highly toxic metal when ingested or inhaled. It is a suspected carcinogen of the lungs and kidneys and has adverse effects on the cardiovascular, nervous, and renal systems.

The amount of lead in ambient air is measured by laboratory analysis of TSP filters by Inductively Coupled Argon Plasma-Optical Emission Spectrometry.

Nitrogen Dioxide (NO₂)

Nitrogen dioxide is a highly toxic, reddish brown gas that is created primarily from fuel combustion in industrial sources and vehicles. It creates an odorous brown haze that causes eye and sinus irritation, blocks natural sunlight and reduces visibility. It can severely irritate the respiratory system and has been associated with acute effects in individuals diagnosed with respiratory disease. Nitrogen dioxide contributes to the creation of acid rain and plays a key role in nitrogen loading, adversely impacting forests and other ecosystems.

Nitrogen oxides are measured using the chemiluminescence reaction of nitric oxide (NO) with ozone (O_3) . Air is drawn into a reaction chamber where it is mixed with a high concentration of ozone from an internal ozone generator. Any nitric oxide mixes with ozone to produce NO₂. Light from this reaction is detected with a photomultiplier tube and converted to an electrical signal proportional to the nitric oxide concentration. Total nitrogen oxides (NO_x) are measured by passing the air through a converter where any NO₂ in the air is reduced to nitric oxide before the air is passed to the reaction chamber. By alternately passing the air directly to the reaction chamber, and through the converter before the reaction chamber, the analyzer alternately measures nitric oxide and NO_x. Nitrogen dioxide (NO_2) is measured indirectly by a subtraction of the NOx and NO₂ concentrations.

Fine Particulate Matter (PM_{2.5})

Fine particulate emissions result primarily from industrial processes and fuel combustion - including motor vehicles, residential wood burning and forest or agricultural fires.

Fine particles can accumulate in the respiratory system and are associated with numerous adverse health effects including decreased lung function and increased respiratory symptoms and disease. Sensitive groups that appear to be at greatest risk include the elderly, individuals with cardiopulmonary disease such as asthma, and children. $PM_{2.5}$ is the major cause of reduced visibility in parts of the United States. Other environmental impacts occur when particles deposit onto soil, plants, water, or man-made materials such as monuments or statues.

 $PM_{2.5}$ is sampled by drawing air through a specially designed inlet that excludes particles larger than 2.5 microns in diameter. For the manual Federal Reference Method (FRM) sampler, the particles are collected on a TeflonTM Microfiber filter that is weighed to determine the particulate mass. The normal sampling schedule is for a 24-hour sample to be taken everyday. In addition, PA DEP has 17 monitors that record $PM_{2.5}$ data continuously. PA DEP utilizes the Met One Model 1020 Federal Equivalent Method (FEM) and the Thermo-Fisher TEOM-FDMS monitors.

Particulate Matter (PM₁₀)

 PM_{10} (including $PM_{2.5}$) appears to represent essentially all of the particulate emissions from transportation sources and most of the emissions in the other traditional categories (coal-burning power plants, steel mills, mining operations, etc). Although $PM_{2.5}$ is technically included in the definition of PM_{10} , the terms " PM_{10} " or "coarse" particles are commonly used to refer to particles greater than $PM_{2.5}$, but less than 10 micrometers in diameter.

Sources of coarse particles any include dust-producing process, such as crushing or grinding operations, as well as dust stirred up by vehicles traveling on roads. While they are not as much of a health concern as are fine particles, they can aggravate respiratory conditions and irritate the linings of the eyes, nose, throat and lungs. In the environment, PM_{10} contributes to reduced visibility and degradation of man-made materials.

 PM_{10} is sampled continuously using a tapered element oscillating microbalance (TEOM). Air is drawn through a specially designed inlet that excludes particles larger than 10 microns in diameter. Particle accumulation causes changes in the microbalance oscillation that are recorded by the instrument.

Acronyms

APCA	Air Pollution Control Act
AQS	Air Quality System
BAM	Beta Attenuation Monitor
CBSA	Core based statistical area
CSA	Combined Statistical Area
CO	Carbon Monoxide
PA DEP	Pennsylvania Department of Environmental Protection
EPA	U. S. Environmental Protection Agency
FEM	Federal Equivalent Method
FID	Flame Ionization Detector
FRM	Federal Reference Method
GC	Gas Chromatograph
IR	Infrared (radiation)
H_2S	Hydrogen Sulfide
MSA	Metropolitan Statistical Area
NAAQS	National Ambient Air Quality Standards
NCore	National Core multipollutant monitoring stations
nm	nanometers
NO	The gaseous pollutant Nitrogen Oxide
NO_2	The gaseous pollutant Nitrogen Dioxide
NOx	Oxides of Nitrogen
O ₃	The gaseous pollutant Ozone
PAMS	Photochemical Assessment Monitoring Station
Pb	Lead
PM _{2.5}	Particulate matter with an aerodynamic diameter less then or equal to a nominal
	2.5 micrometers
PM_{10}	Particulate matter with an aerodynamic diameter less then or equal to a nominal
	10 micrometers
QA	Quality Assurance
SLAMS	State or Local Air Monitoring Stations
SO_2	The gaseous pollutant Sulfur Dioxide
SPM	Special Purpose Monitor
STN	PM _{2.5} Speciation Trends Network
TSP	Total Suspended Particulate
TTN*	EPA's Technology Transfer Network
TEOM	Tapered Element Oscillating Microbalance
UV	Ultraviolet
VOC's	Volatile Organic Compounds

* http://www.epa.gov/ttn/amtic/

Air Pollution Control Agencies in Commonwealth of Pennsylvania

Allegheny County Health Department 39th Street and Penn Avenue Pittsburgh, PA 15201 (412) 578-8104

> City of Philadelphia Department of Public Health Air Management Services 321 University Avenue Philadelphia, PA 19104 (215) 685-7584

Department of Environmental Protection Bureau of Air Quality Division of Air Quality Monitoring Rachel Carson State Office Building 12th Floor 400 Market Street P.O. Box 8468 Harrisburg, PA 17105-8468 (717) 787-6548

Related environmental information is available electronically via the Internet. Access the DEP website at <u>http://www.depweb.state.pa.us/</u> (DEP Keyword: Air, Air Pollution, Air Quality, Clean Air).

Appendix A--Monitoring Sites, Equipment, Maps, and Addresses

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PARAMETER	MANUFACTURER/INSTRUMENT/MODEL	EPA DESIGNATION
PM ₁₀		
Discrete	Thermo GMW PM ₁₀ High-Volume Air Sampler - Volumetric http://www.thermo.com/com/cda/product/detail/1,1055,23297,00.ht ml	Manual Reference Method: RFPS-1287-063 52 FR 45684, 12/01/87 53FR 1062, 1/15/88
Continuous	Rupprecht & Patashnick (R&P) Tapered Element Oscillating Microbalance (TEOM) Series 1400 Ambient Particulate Monitor http://www.rpco.com/products/ambprod/amb1400/index.htm	Automated Equivalent Method: EQPM-1090-079 55 FR 43406, 10/29/90
PM _{2.5}		
Discrete	R&P Partisol-Plus Model 2025 Sequential Air Sampler http://www.rpco.com/products/ambprod/amb2025/index.htm	Manual Reference Method: RFPS-0498-118 63 FR 18911, 4/16/98
Continuous	R&P TEOM Series 8500a Filter Dynamics Measurement System (FDMS) and TEOM Series 1400ab <u>http://www.rpco.com/products/ambprod/amb8500/index.htm</u>	
	Met One Instruments Beta-Attenuation Mass (BAM) Model 1020 http://www.metone.com/documents/BAM1020Particulate.pdf	
PM _{2.5} Speciation	Met One Instruments SASS PM _{2.5} Ambient Chemical Speciation Air Sampler http://www.metone.com/documents/SASS0301Particulate.pdf	
TSP	Thermo GMW TSP High Volume Air Sampler – Mass Flow http://www.thermo.com/com/cda/product/detail/1,1055,23329,00.ht ml and	Manual Reference Method 40 CFR Part 50, Appendix B 47 FR 54912, 12/6/82
	Thermo GMW TSP High Volume Air Sampler – Volumetric http://www.thermo.com/com/cda/product/detail/1,1055,23328,00.ht ml	48 FR 17355, 4/22/83
Pb	Laboratory analysis of TSP filters by Inductively Coupled Argon Plasma-Optical Emission Spectrometry	Manual Equivalent Method EQL-0592-086 57 FR 20823, 5/15/92
SO ₄ , NO ₃	Laboratory analysis of TSP filters by Ion Chromatography	EPA Method 300.0

Table A1. Ambient Air Monitoring Equipment for Particulate Sampling

PARAMETER	MANUFACTURER/INSTRUMENT/MODEL	EPA DESIGNATION
SO ₂	Teledyne Advanced Pollution Instrumentation Model 100A UV Fluorescence SO ₂ Analyzer <u>http://www.teledyne-api.com/products/100e.asp</u>	Automated Equivalent Method: EQSA-0990-077 55 FR 38149, 9/17/90
NO ₂ /NO _x	Teledyne Advanced Pollution Instrumentation Model 200A Chemiluminescence Nitrogen Oxides Analyzer for Ambient Concentrations <u>http://www.teledyne-api.com/products/200e.asp</u>	Automated Reference Method: RFNA-0691-082 56 FR 27014, 6/12/91
O ₃	Teledyne Advanced Pollution Instrumentation Model 400 Photometric Ozone Analyzer <u>http://www.teledyne-api.com/products/400e.asp</u>	Automated Equivalent Method: EQOA-0992-087 57 FR 44565, 9/28/92 63 FR 31992, 6/11/98 67 FR 57811, 9/12/02
СО	Teledyne Advanced Pollution Instrumentation Model 300 CO Gas Filter Correlation Analyzer http://www.teledyne-api.com/products/300e.asp	Automated Reference Method: RFCA-1093-093 58 FR 58166, 10/29/93

Table A2. Ambient Air Monitoring Equipment for Continuous Gaseous Sampling

PA SITE CODE	SITE NAME	EPA-AIRS SITE CODE	COUNTY	STREET ADDRESS	LATITUDE LONGITUDE
P01	BRISTOL	42-017-0012	BUCKS	Roosevelt Junior High School Rockview Lane	40.107222 -74.882222
P11	CHESTER	42-045-0002	DELAWARE	Front & Norris Streets	39.835556 -75.3725
P21	NORRISTOWN	42-091-0013	MONTGOMERY	State Armory 1046 Belvoir Road	40.112222 -75.309167
P30	NEW GARDEN (TOUGHKENAMON)	42-029-0100	CHESTER	1235 Newark Road New Garden Airport	39.834461 -75.768242

 Table A3-1.
 Southeast Region Air Basin Site Locations

 Table A3-2. Parameters Monitored by Site – Southeast Region Air Basin

PA SITE CODE	SITE NAME	PM ₁₀	PM _{2.5}	PM _{2.5} SPEC	TSP	SULFATES	LEAD	NITRATES	SULFUR DIOXIDE	NITROGEN DIOXIDE	OZONE	CARBON MONOXIDE
P01	BRISTOL		х						х	Х	Х	х
P11	CHESTER	Х	Х		Х		Х		х	Х	Х	
P21	NORRISTOWN		X						Х		х	
P30	NEW GARDEN (TOUGHKENAMON)		Х	Х							х	

Southeast Region. Bucks, Chester, Delaware, Montgomery, and Philadelphia Counties.

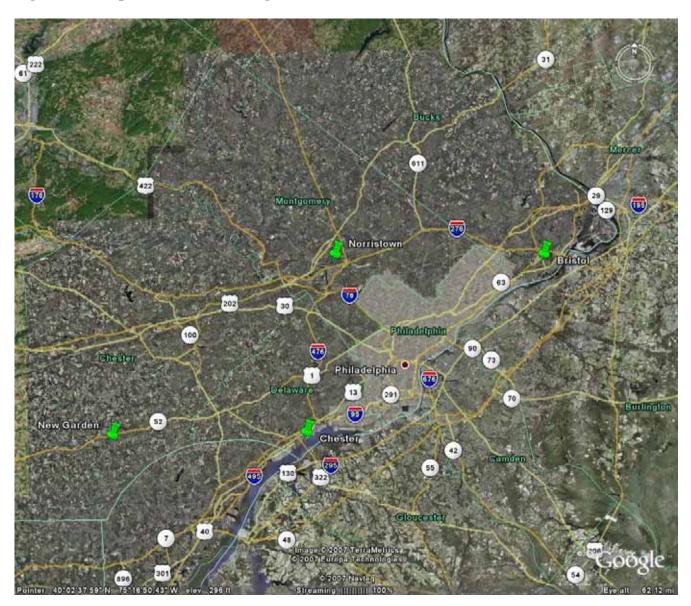


Figure A1. Map of the Southeast Region Air Basin Sites

PA SITE CODE	SITE NAME	EPA-AIRS SITE CODE	COUNTY	STREET ADDRESS	LATITUDE LONGITUDE
A19	ALLENTOWN	42-077-0004	LEHIGH	Allentown State Hospital Rear 1600 Hanover Avenue	40.611944 -75.4325
A20	EASTON	42-095-8000	NORTHAMPTON	17 th & Spring Garden Streets	40.692224 -75.237156
A25	FREEMANSBURG	42-095-0025	NORTHAMPTON	Washington & Cambria Streets	40.628056 -75.341111
A26	NAZARETH	42-095-1000	NORTHAMPTON	South Green & Delaware	40.734449 -75.312389

Table A4-1. Allentown - Bethlehem - Easton Air Basin Site Locations

Table A4-2. Parameters Monitored by Site – Allentown - Bethlehem - Easton Air Basin

PA SITE CODE	SITE NAME	PM ₁₀	PM _{2.5}	PM _{2.5} SPEC	TSP	SULFATES	LEAD	NITRATES	SULFUR DIOXIDE	NITROGEN DIOXIDE	OZONE	CARBON MONOXIDE
A19	ALLENTOWN	х									Х	
A20	EASTON								Х		Х	
A25	FREEMANSBURG		Х	Х						X	Х	х
A26	NAZARETH	Х										

Northeast Region. Carbon, Lackawanna, Lehigh, Luzerne, Monroe, Northampton, Pike, Schuylkill, Susquehanna, Wayne, and Wyoming Counties.

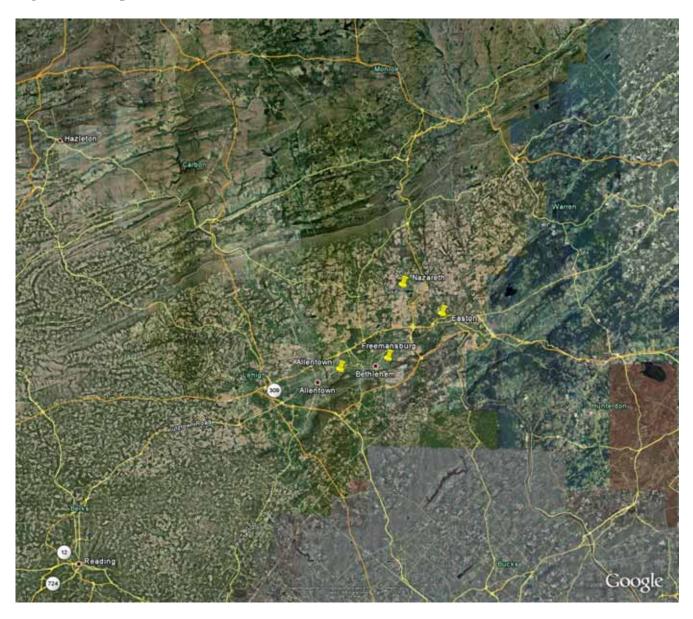


Figure A2. Map of the Allentown - Bethlehem - Easton Air Basin Sites

PA SITE CODE	SITE NAME	EPA-AIRS SITE CODE	COUNTY	STREET ADDRESS	LATITUDE LONGITUDE
S01	SCRANTON	42-069-2006	LACKAWANNA	Behind Penn State Campus George Street	41.442778 -75.623056
S26	NANTICOKE	42-079-1100	LUZERNE	255 Lower Broadway	41.209167 -76.003333
S28	WILKES-BARRE	42-079-1101	LUZERNE	Chilwick & Washington Streets	41.265556 -75.846389
S29	PECKVILLE	42-069-0101	LACKAWANNA	Pleasant Avenue & Erie Street Wilson Fire Company No. 1	41.479116 -75.578186

Table A5-1. Scranton - Wilkes-Barre Air Basin Site Locations

 Table A5-2. Parameters Monitored by Site – Scranton – Wilkes-Barre Air Basin

PA SITE CODE	SITE NAME	PM10	PM _{2.5}	PM _{2.5} SPEC	TSP	SULFATES	LEAD	NITRATES	SULFUR DIOXIDE	NITROGEN DIOXIDE	OZONE	CARBON MONOXIDE
S01	SCRANTON		Х	Х						Х	Х	Х
S29	PECKVILLE										Х	
S26	NANTICOKE										Х	
S28	WILKES-BARRE	Х							Х		Х	

Northeast Region. Carbon, Lackawanna, Lehigh, Luzerne, Monroe, Northampton, Pike, Schuylkill, Susquehanna, Wayne, and Wyoming Counties.

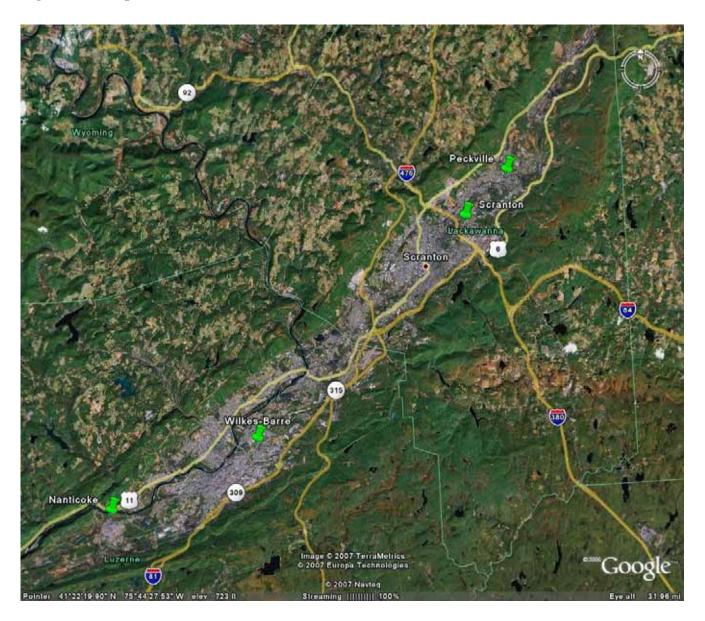


Figure A3. Map of the Scranton - Wilkes-Barre Air Basin Sites

PA SITE CODE	SITE NAME	EPA-AIRS SITE CODE	COUNTY	STREET ADDRESS	LATITUDE LONGITUDE
230	SWIFTWATER/ POCONO	42-089-0002	MONROE	Pocono State Forestry Office Near Rt. 611 & Brookdale Road	41.083060 -75.323280

Table A6-1. Northeast Region Non-Air Basin Site Locations

Table A6-2. Parameters Monitored by Site – Northeast Region Non-Air Basin

PA SITE CODE	SITE NAME	PM ₁₀	PM _{2.5}	PM _{2.5} SPEC	TSP	SULFATES	LEAD	NITRATES	SULFUR DIOXIDE	NITROGEN DIOXIDE	OZONE	CARBON MONOXIDE
230	SWIFTWATER/ POCONO										Х	

Northeast Region. Carbon, Lackawanna, Lehigh, Luzerne, Monroe, Northampton, Pike, Schuylkill, Susquehanna, Wayne, and Wyoming Counties.



Figure A4. Map of Northeast Region Non-Air Basin Sites

PA SITE CODE	SITE NAME	EPA-AIRS SITE CODE	COUNTY	STREET ADDRESS	LATITUDE LONGITUDE
R03	READING AIRPORT	42-011-0011	BERKS	Reading Airport 1059 Arnold Road	40.383350 -75.968600
R10	LAURELDALE	42-011-1717	BERKS	Muhlenberg Township Authority Spring Valley Road Substation	40.377222 -75.914444

Table A7-1. Reading Air Basin Site Locations

Table A7-2. Parameters Monitored by Site – Reading Air Basin

PA SITE CODE	SITE NAME	PM-10	PM-2.5	PM _{2.5} SPEC	TSP	SULFATES	LEAD	NITRATES	SULFUR DIOXIDE	NITROGEN DIOXIDE	OZONE	CARBON MONOXIDE
R03	READING AIRPORT	Х	х	Х					Х	Х	Х	Х
R10	LAURELDALE				Х	Х	Х	Х				

Southcentral Region. Adams, Bedford, Berks, Blair, Cumberland, Dauphin, Franklin, Fulton, Huntingdon, Juniata, Lancaster, Lebanon, Mifflin, Perry, and York Counties.





PA SITE CODE	SITE NAME	EPA-AIRS SITE CODE	COUNTY	STREET ADDRESS	LATITUDE LONGITUDE
L01	LANCASTER	42-071-0007	LANCASTER	Lincoln Junior High School	40.046667 -76.283333
L12	LANCASTER DOWNWIND	42-071-0012	LANCASTER	3545 W. Newport Road	40.043833 -76.1124

Table A8-1. Lancaster Air Basin Site Locations

Table A8-2. Parameters Monitored by Site – Lancaster Air Basin

PA SITE CODE	SITE NAME	PM ₁₀	PM _{2.5}	PM _{2.5} SPEC	TSP	SULFATES	LEAD	NITRATES	SULFUR DIOXIDE	NITROGEN DIOXIDE	OZONE	CARBON MONOXIDE
L01	LANCASTER	Х	Х	Х						Х	Х	
L12	LANCASTER DOWNWIND										Х	

Southcentral Region. Adams, Bedford, Berks, Blair, Cumberland, Dauphin, Franklin, Fulton, Huntingdon, Juniata, Lancaster, Lebanon, Mifflin, Perry, and York Counties.

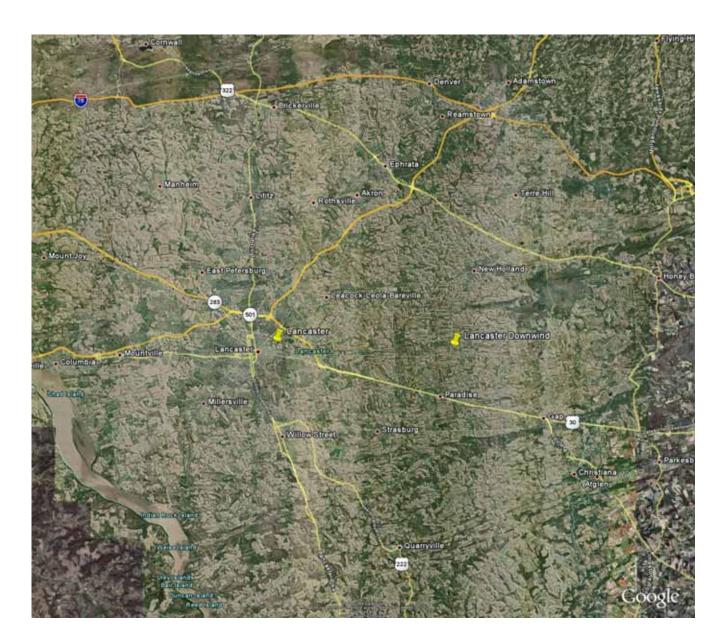


Figure A6. Map of the Lancaster Air Basin Sites

PA SITE CODE	SITE NAME	EPA-AIRS SITE CODE	COUNTY	STREET ADDRESS	LATITUDE LONGITUDE
H11	HARRISBURG	42-043-0401	DAUPHIN	1833 UPS Drive	40.2450 -76.844722

Table A9-1. Harrisburg Air Basin Site Location

Table A9-2. Parameters Monitored by Site – Harrisburg Air Basin

PA SITE CODE	SITE NAME	PM ₁₀	PM _{2.5}	PM _{2.5} SPEC	TSP	SULFATES	LEAD	NITRATES	SULFUR DIOXIDE	NITROGEN DIOXIDE	OZONE	CARBON MONOXIDE
H11	HARRISBURG	Х	х	Х						Х	Х	Х

Southcentral Region. Adams, Bedford, Berks, Blair, Cumberland, Dauphin, Franklin, Fulton, Huntingdon, Juniata, Lancaster, Lebanon, Mifflin, Perry, and York Counties.

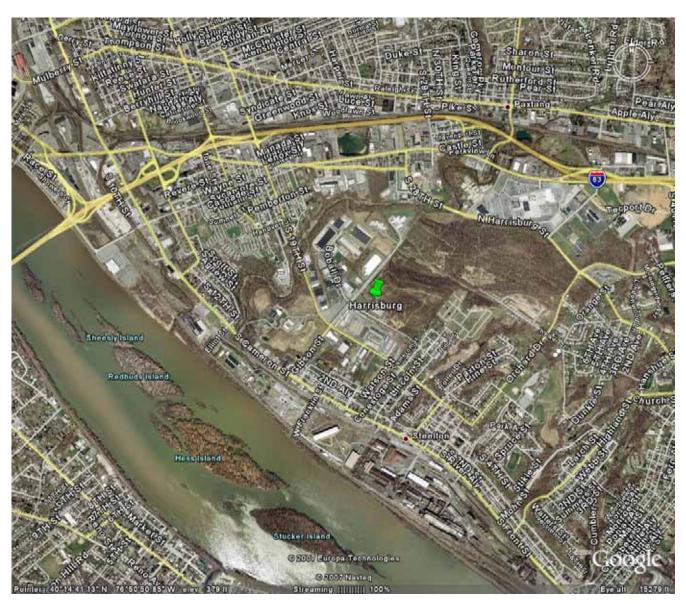


Figure A7. Map of the Harrisburg Air Basin Site

PA SITE CODE	SITE NAME	EPA-AIRS SITE CODE	COUNTY	STREET ADDRESS	LATITUDE LONGITUDE
Y01	YORK	42-133-0008	YORK	Davis Junior High School Hill Street	39.965278 -76.699444
Y11	YORK DOWNWIND	42-133-0011	YORK	2650 Delta Road – Brogue	39.860970 -76.462055

Table A10-1. York Air Basin Site Location

Table A10-2. Parameters Monitored by Site – York Air Basin

PA SITE CODE	SITE NAME	PM ₁₀	PM _{2.5}	PM _{2.5} SPEC	TSP	SULFATES	LEAD	NITRATES	SULFUR DIOXIDE	NITROGEN DIOXIDE	OZONE	CARBON MONOXIDE
¥01	YORK	Х	Х	Х					Х	Х	Х	Х
Y11	YORK DOWNWIND										Х	

Southcentral Region. Adams, Bedford, Berks, Blair, Cumberland, Dauphin, Franklin, Fulton, Huntingdon, Juniata, Lancaster, Lebanon, Mifflin, Perry, and York Counties.

Figure A8. Map of the York Air Basin Site



PA SITE CODE	SITE NAME	EPA-AIRS SITE CODE	COUNTY	STREET ADDRESS	LATITUDE LONGITUDE
301	LYONS EAST	42-011-0717	BERKS	Near State & Kemp Streets	40.476667 -75.759167
305	PERRY COUNTY	42-099-0301	PERRY	ERRY Little Buffalo State Park – Route 34	
306	HERSHEY	42-043-1100	DAUPHIN	Hershey Foods Technical Center Sipe Avenue & Mae Street	40.272222 -76.681389
308	ALTOONA	42-013-0801	BLAIR	Ward Trucking Corporation Second Avenue & Seventh Street	40.535278 -78.370833
311	KUTZTOWN	42-011-0006	BERKS	Kutztown University	40.514080 -75.789721
313	METHODIST HILL	42-055-0001	FRANKLIN	Forest Road and Ridge Road (High Elevation Site)	39.961111 -77.475556
314	ARENDTSVILLE	42-001-0001	ADAMS	Penn State Research Orchard (NARSTO Site)	39.920020 -77.309680
D14	BIGLERVILLE	42-001-0002	ADAMS	University Drive Penn State Research Orchard	39.930 -77.250
316	CARLISLE	42-041-0101	CUMBERLAND	Imperial Court	40.246528 -77.186750
375	LYONS SOUTH	42-011-0005	BERKS	Heffner & Dryville Roads	40.466300 -75.758900

 Table A11-1.
 Southcentral Region Non-Air Basin Site Locations

PA SITE CODE	SITE NAME	PM ₁₀	PM _{2.5}	PM _{2.5} SPEC	TSP	SULFATES	LEAD	NITRATES	SULFUR DIOXIDE	NITROGEN DIOXIDE	OZONE	CARBON MONOXIDE
301	LYONS EAST				Х		Х					
311	KUTZTOWN										Х	
375	LYONS SOUTH				Х		Х					
305	PERRY COUNTY								х	Х	Х	
316	CARLISLE		х									
306	HERSHEY										Х	
313	METHODIST HILL										Х	
314	ARENDTSVILLE		Х	Х						Х	Narsto	Х
D14	BIGLERVILLE										Х	
308	ALTOONA	х							Х		Х	

Table A11-2. Parameters Monitored by Site – Southcentral Region Non-Air Basin

Southcentral Region. Adams, Bedford, Berks, Blair, Cumberland, Dauphin, Franklin, Fulton, Huntingdon, Juniata, Lancaster, Lebanon, Mifflin, Perry, and York Counties.

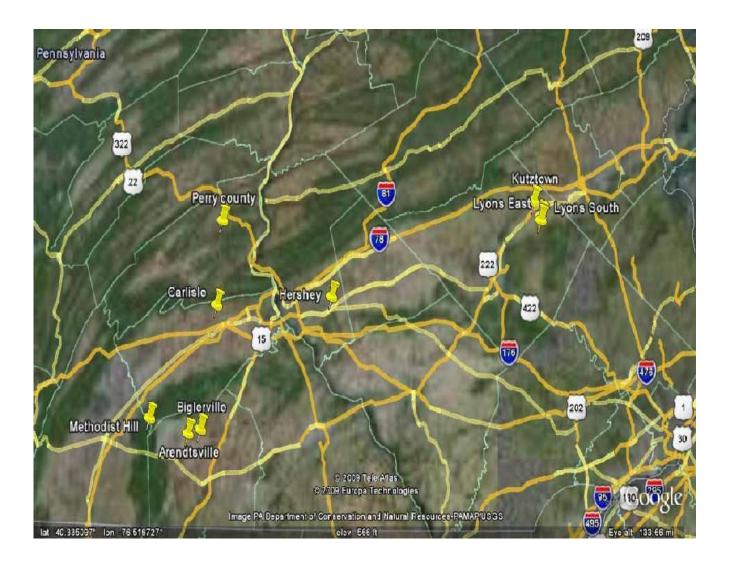


Figure A9. Map of the Southcentral Region Non-Air Basin Sites

PA SITE CODE	SITE NAME	EPA-AIRS SITE CODE	COUNTY	STREET ADDRESS	LATITUDE LONGITUDE
410	MONTOURSVILLE	42-081-0100	LYCOMING	899 Cherry Street Rear Parking Lot of PA State Police	41.25080 -76.92380
409	STATE COLLEGE	42-027-0100	CENTRE	Pennsylvania State University West of Big Hollow Road State College	40.811389 -77.877028
D09	MOSHANNON	42-033-4000	CLEARFIELD	Moshannon State Forest Elliott State Park North of Cessna	41.11750 -78.526194
D13	TIOGA COUNTY	42-117-4000	TIOGA	North of Gleason	41.644722 -76.939167

Table A12-1. Northcentral Region Non-Air Basin Site Locations

 Table A12-2.
 Parameters Monitored by Site – Northcentral Region Non-Air Basin

PA SITE CODE	SITE NAME	PM10	PM _{2.5}	PM _{2.5} SPEC	TSP	SULFATES	LEAD	NITRATES	SULFUR DIOXIDE	NITROGEN DIOXIDE	OZONE	CARBON MONOXIDE
410	MONTOURSVILLE	Х									Х	
409	STATE COLLEGE		Х	Х					Х	Х	Х	
D09	MOSHANNON										Х	
D13	TIOGA COUNTY										Х	

Northcentral Region. Bradford, Cameron, Centre, Clearfield, Clinton, Columbia, Lycoming, Montour, Northumberland, Potter, Synder, Sullivan, Tioga, and Union Counties.



Figure A10. Map of the Northcentral Region Non-Air Basin Sites

PA SITE CODE	SITE NAME	EPA-AIRS SITE CODE	COUNTY	STREET ADDRESS	LATITUDE LONGITUDE
J01	JOHNSTOWN	42-021-0011	CAMBRIA	Miller Auto Body Crafts Shop One Messenger Street	40.309722 -78.91500
108	EAST CONEMAUGH	42-021-0808	CAMBRIA	Recreation Field Citron Alley & First Street	40.348056 -78.882778

 Table A13-1.
 Johnstown Air Basin Site Locations

Table A13-2. Parameters Monitored by Site – Johnstown Air Basin

PA SITE CODE	SITE NAME	PM ₁₀	PM _{2.5}	PM _{2.5} SPEC	TSP	SULFATES	LEAD	NITRATES	SULFUR DIOXIDE	NITROGEN DIOXIDE	OZONE	CARBON MONOXIDE
J01	JOHNSTOWN	Х	Х	Х					х	Х	Х	Х
J08	EAST CONEMAUGH				Х	Х	х	Х				

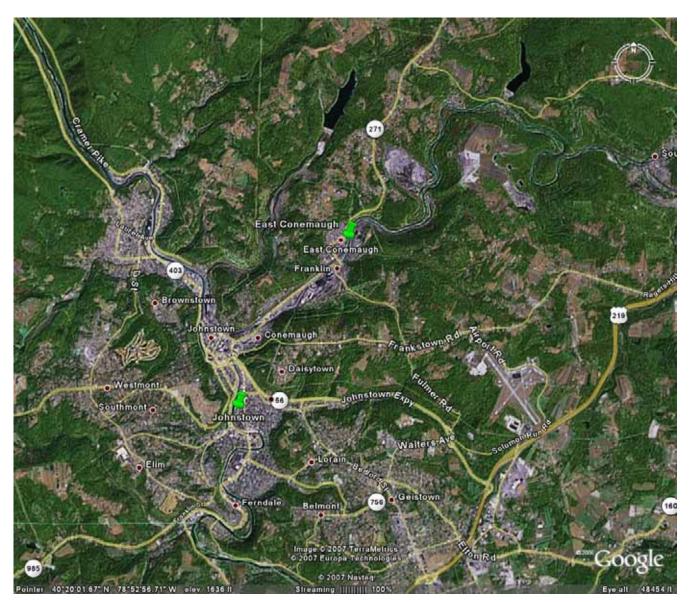


Figure A11. Map of the Johnstown Air Basin Sites

PA SITE CODE	SITE NAME	EPA-AIRS SITE CODE	COUNTY	STREET ADDRESS	LATITUDE LONGITUDE
M01	CHARLEROI	42-125-0005	WASHINGTON	Borough Waste Treatment Plant Front Street	40.146667 -79.902222
M16	MONESSEN	42-129-0007	WESTMORELAND	Monessen Community Center 435 Donner Avenue	40.161777 -79.884666

Table A14-1. Monongahela Valley Air Basin Site Locations

Table A14-2. Parameters Monitored by Site – Monongahela Valley Air Basin

PA SITE CODE	SITE NAME	PM ₁₀	PM _{2.5}	PM _{2.5} SPEC	TSP	SULFATES	LEAD	NITRATES	SULFUR DIOXIDE	NITROGEN DIOXIDE	OZONE	CARBON MONOXIDE
M01	CHARLEROI	Х	Х						Х	Х	Х	Х
M16	MONESSEN				X	Х	X	Х				

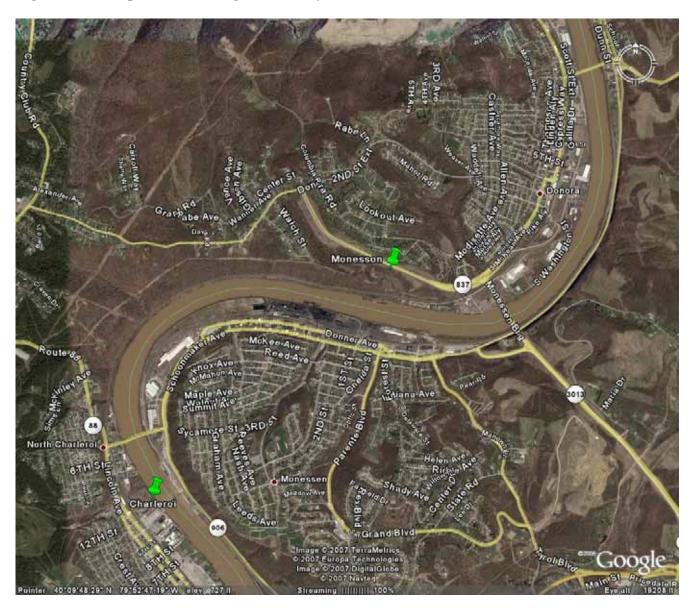


Figure A12. Map of the Monongahela Valley Air Basin Sites

PA SITE CODE	SITE NAME	EPA-AIRS SITE CODE	COUNTY	STREET ADDRESS	LATITUDE LONGITUDE
В05	VANPORT	42-007-0505	BEAVER	Vanport Water Works Tamaqui Drive	40.685019 -80.324775
B11	BEAVER FALLS	42-007-0014	BEAVER	Eighth Street & River Alley	40.747796 -80.316442
B23	HOOKSTOWN	42-007-0002	BEAVER	FAA Microwave Relay Tower Route 168 & Tomlinson Road	40.562520 -80.503948
B27	BRIGHTON TOWNSHIP	42-007-0005	BEAVER	1015 Sebring Road	40.684722 -80.359722

Table A15-1. Lower Beaver Valley Air Basin Site Locations

 Table A15-2. Parameters Monitored by Site – Lower Beaver Valley Air Basin

PA SITE CODE	SITE NAME	PM ₁₀	PM _{2.5}	PM _{2.5} SPEC	TSP	SULFATES	LEAD	NITRATES	SULFUR DIOXIDE	NITROGEN DIOXIDE	OZONE	CARBON MONOXIDE
B05	VANPORT				Х		Х					
B11	BEAVER FALLS	Х	х							Х	Х	
B23	HOOKSTOWN								Х		Х	
B27	BRIGHTON TOWNSHIP								Х		Х	

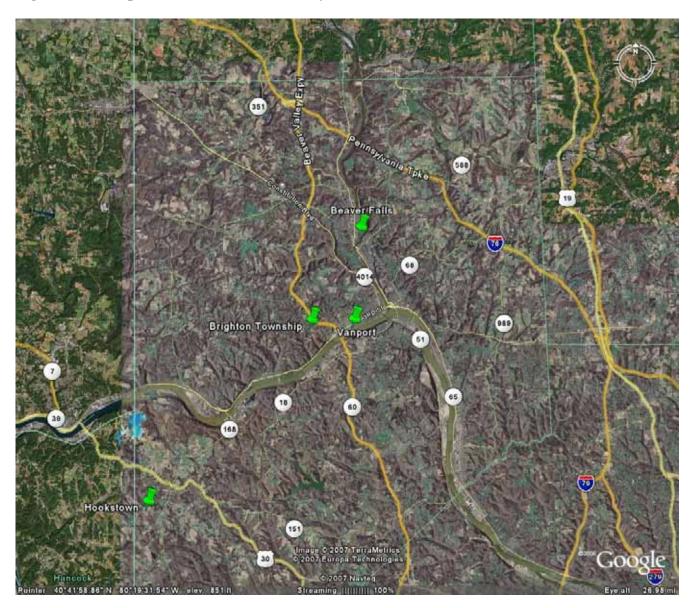


Figure A13. Map of the Lower Beaver Valley Air Basin Sites

PA SITE CODE	SITE NAME	EPA-AIRS SITE CODE	COUNTY	STREET ADDRESS	LATITUDE LONGITUDE
D12	PITTSBURGH	42-003-0010	ALLEGHENY	Carnegie Science Center 1 Allegheny Road	40.445577 -80.016155

Table A16-1. Allegheny County Air Basin Site Location

Table A16-2. Parameters Monitored by Site – Allegheny County Air Basin

PA SITE CODE	SITE NAME	PM ₁₀	PM _{2.5}	TSP	SULFATES	LEAD	NITRATES	SULFUR DIOXIDE	NITROGEN DIOXIDE	OZONE	CARBON MONOXIDE
D12	PITTSBURGH							Х	х	Х	Х

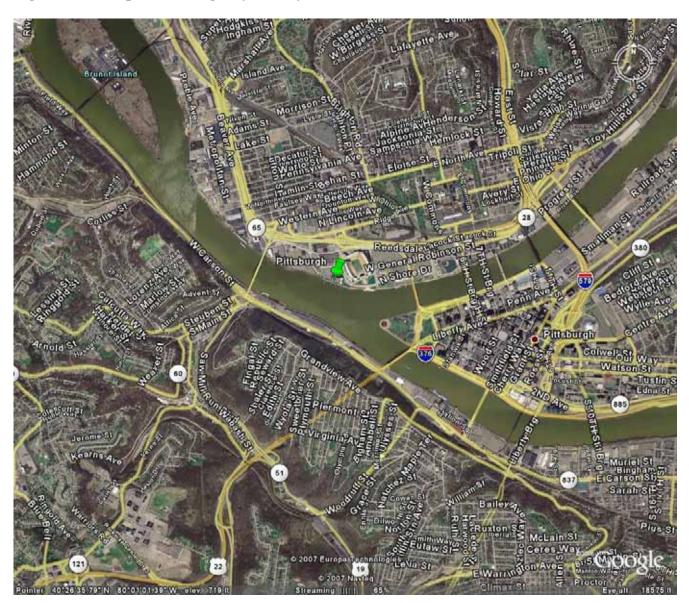


Figure A14. Map of the Allegheny County Air Basin Site

PA SITE CODE	SITE NAME	EPA-AIRS SITE CODE	COUNTY	STREET ADDRESS	LATITUDE LONGITUDE
504	FLORENCE	42-125-5001	WASHINGTON	Hillman State Park Kings Creek Road	40.445278 -80.420833
508	WASHINGTON	42-125-0200	WASHINGTON	McCarrell & Fayette Streets	40.170556 -80.261389
510	MURRYSVILLE	42-129-0006	WESTMORELAND	Murrysville Volunteer Fire Co. Old William Penn Hwy & Sardis Ave.	40.428076 -79.692811
512	KITTANNING	42-005-0001	ARMSTRONG	Glade Drive & Nolte Road PA State Police Barracks	40.814183 -79.564750
513	GREENSBURG	42-129-0008	WESTMORELAND	Donohue Road PA Dept. of Transportation Bldg.	40.304694 -79.505667
514	HOLBROOK	42-059-0002	GREENE	Field 5 km southeast of Holbrook	39.816222 -80.284917
515	STRONGSTOWN	42-063-0004	INDIANA	Rte. 403 PA Dept. of Transportation Bldg.	40.563330 -78.919972

Table A17-1. Southwest Region Non-Air Basin Site Locations

Table A17-2. Parameters Monitored by Site – Southwest Region Non-Air Basin

PA SITE CODE	SITE NAME	PM ₁₀	PM _{2.5}	PM _{2.5} SPEC	TSP	SULFATES	LEAD	NITRATES	SULFUR DIOXIDE	NITROGEN DIOXIDE	OZONE	CARBON MONOXIDE
504	FLORENCE	Х	Х	Х					Х		Х	
508	WASHINGTON		Х								Х	
510	MURRYSVILLE										Х	
512	KITTANNING		Х								Х	
513	GREENSBURG		Х	х							Х	
514	HOLBROOK								Х		Х	
515	STRONGSTOWN								Х		Х	

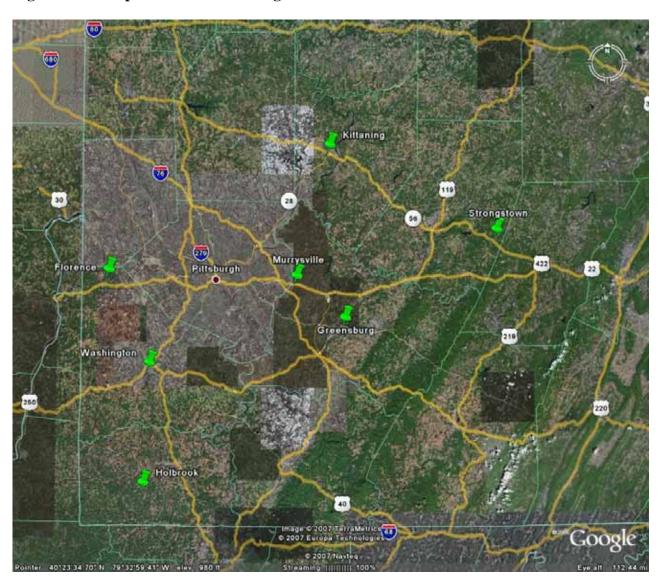


Figure A15. Map of the Southwest Region Non-Air Basin Sites

PA SITE CODE	SITE NAME	EPA-AIRS SITE CODE	COUNTY	STREET ADDRESS	LATITUDE LONGITUDE
B21	NEW CASTLE	42-073-0015	LAWRENCE	Croton Avenue & Jefferson Street	40.995848 -80.346442

Table A18-1. Upper Beaver Valley Air Basin Site Location

Table A18-2. Parameters Monitored by Site – Upper Beaver Valley Air Basin

PA SITE CODE	SITE NAME	PM\10	PM _{2.5}	PM _{2.5} SPEC	TSP	SULFATES	LEAD	NITRATES	SULFUR DIOXIDE	NITROGEN DIOXIDE	OZONE	CARBON MONOXIDE
B21	NEW CASTLE	Х							Х		х	х

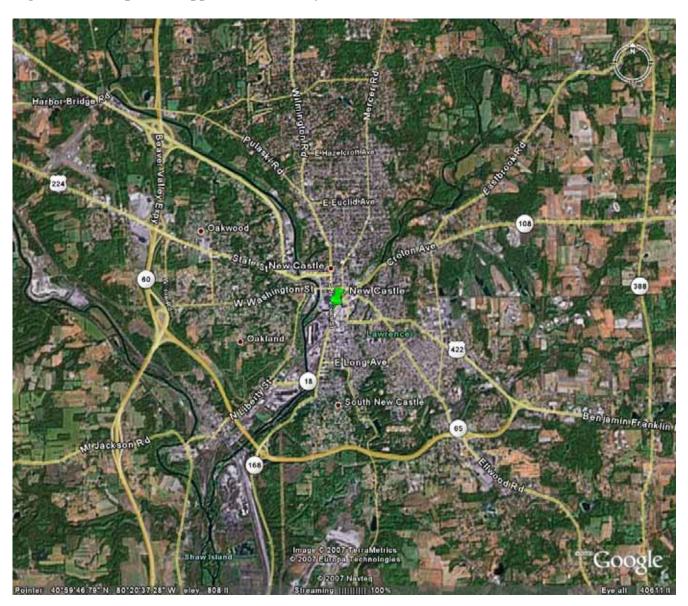


Figure A16. Map of the Upper Beaver Valley Air Basin Sites

PA SITE CODE	SITE NAME	EPA-AIRS SITE CODE	COUNTY	STREET ADDRESS	LATITUDE LONGITUDE
E10	ERIE	42-049-0003	ERIE	East 10th & Marne Streets	42.141750 -80.038611

Table A19-1. Erie Air Basin Site Location

Table A19-2. Parameters Monitored by Site – Erie Air Basin

PA SITE CODE	SITE NAME	PM ₁₀	PM _{2.5}	PM _{2.5} SPEC	TSP	SULFATES	LEAD	NITRATES	SULFUR DIOXIDE	NITROGEN DIOXIDE	OZONE	CARBON MONOXIDE
E10	ERIE	Х	Х	Х					Х	Х	Х	Х

Northwest Region. Butler, Clarion, Crawford, Elk, Erie, Forest, Jefferson, Lawrence, McKean, Mercer, Venango, and Warren Counties.

Figure A17. Map of the Erie Air Basin Site



PA SITE CODE	SITE NAME	EPA-AIRS SITE CODE	COUNTY	STREET ADDRESS	LATITUDE LONGITUDE
606	FARRELL	42-085-0100	MERCER	Farrell High School Field New Castle Road & Mercer Avenue	41.215014 -80.484779
612	WARREN (OVERLOOK)	42-123-0004	WARREN	Overlook Site near Stone Hill Road	41.844722 -79.169722

Table A20-1. Northwest Region Non-Air Basin Sites

Table A20-2. Parameters Monitored by Site – Northwest Region Non-Air Basin

PA SITE CODE	SITE NAME	PM ₁₀	PM _{2.5}	PM _{2.5} SPEC	TSP	SULFATES	LEAD	NITRATES	SULFUR DIOXIDE	NITROGEN DIOXIDE	OZONE	CARBON MONOXIDE
606	FARRELL		Х								Х	
612	WARREN (OVERLOOK)								х			

Northwest Region. Butler, Clarion, Crawford, Elk, Erie, Forest, Jefferson, Lawrence, McKean, Mercer, Venango, and Warren Counties.

Figure A18. Map of Northwest Region Non-Air Basin Sites



SITE NAME	COUNTY	EPA-AIRS SITE CODE	LATITUDE LONGITUDE	VOCs	Carbonyl	TSP/Metals	Mercury
CHESTER	DELAWARE	42-045-0002	39.8356 -75.3728	Х		Х	
MARCUS HOOK	DELAWARE	42-045-0109	39.8178 -75.4142	Х		Х	
SWARTHMORE	DELAWARE		39.8969 -75.3539	Х		Х	
ARENDTSVILLE	ADAMS	42-001-0001	39.9236 -77.3081	Х	Х		
LANCASTER	LANCASTER	42-071-0007	40.0469 -76.2833	Х	Х	Х	Х
READING	BERKS	42-011-0011	40.3835 -75.9686	Х		Х	
LEWISBURG	UNION		40.9552 -76.8819	Х	Х	Х	
ERIE	ERIE		42.1620 -80.1133	Х		Х	

 Table A21. Air Toxics Monitoring Sites and Parameters Measured in Pennsylvania

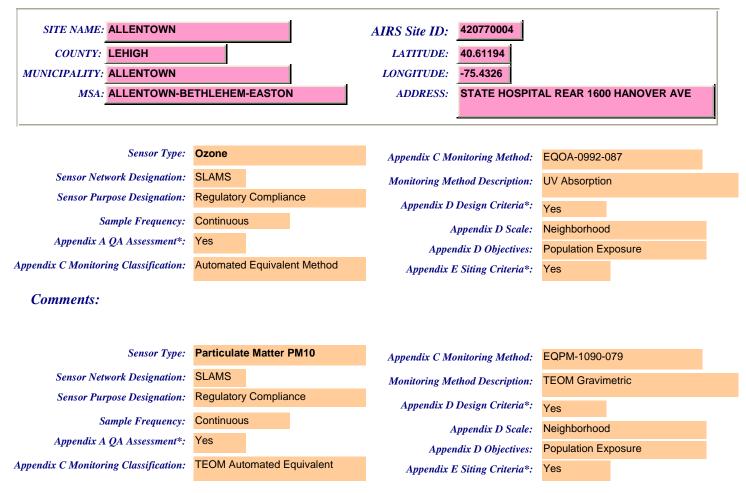


Figure A19. Map of Air Toxics Sites in Pennsylvania

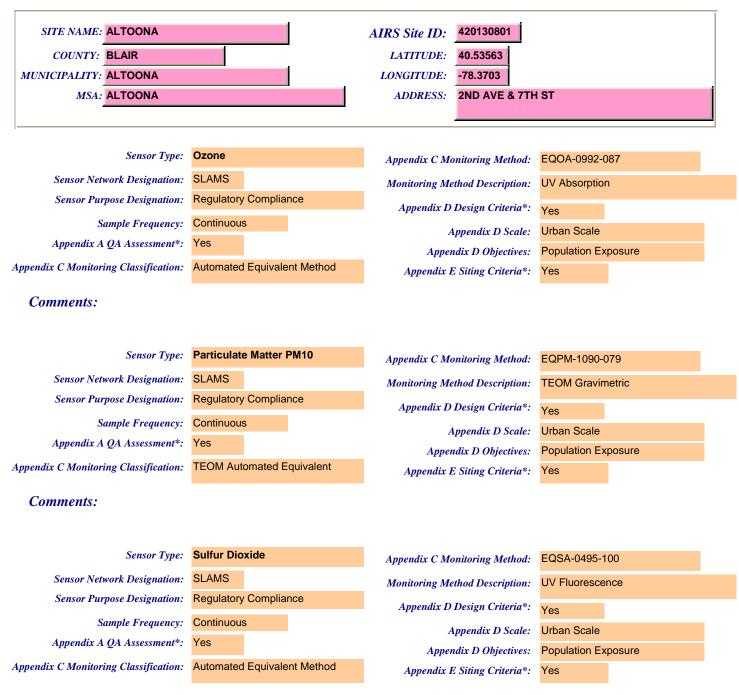
Appendix B — Pennsylvania Monitoring Network Description

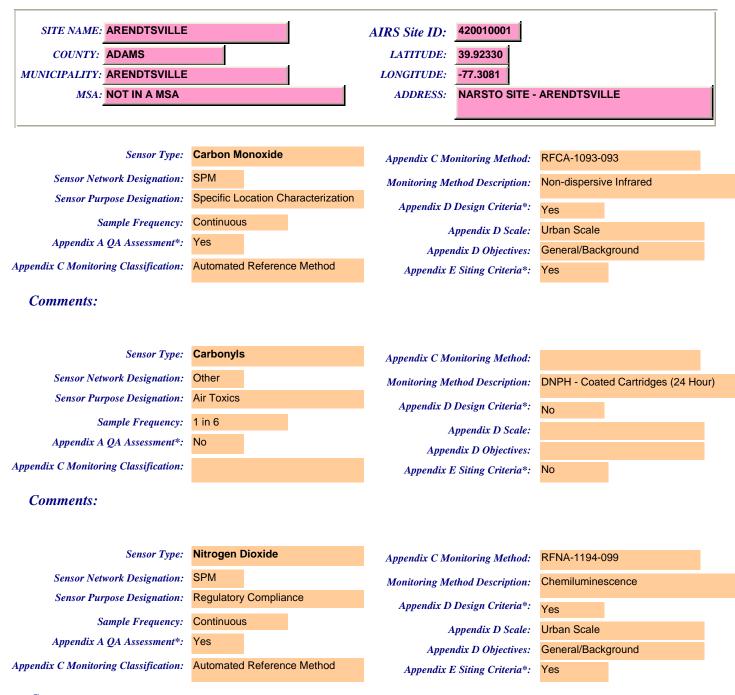
Appendix B

Pennsylvania Monitoring Network Description



Comments:





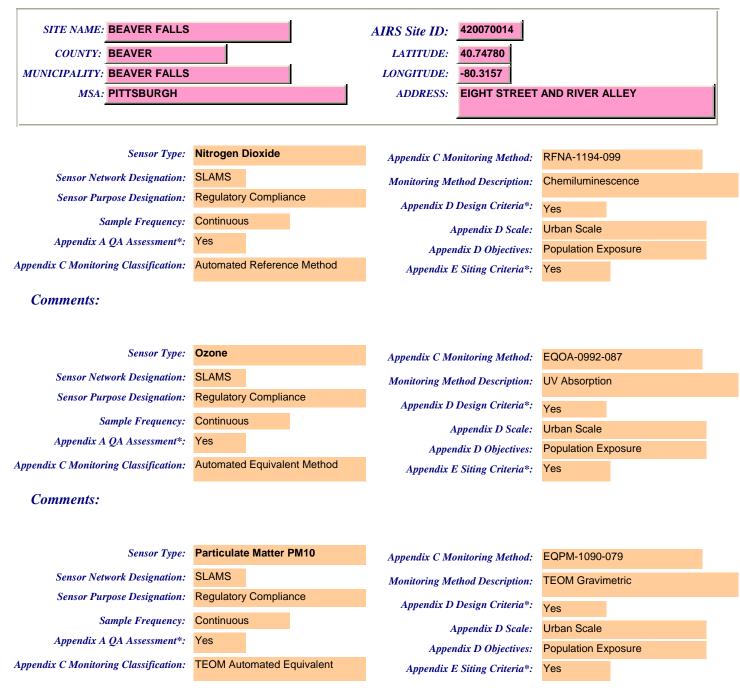
Sensor Type:	PAMS	Appendix C Monitoring Method:	
Sensor Network Designation:	PAMS	Monitoring Method Description:	Perkin Elmer Gas Chromatograph
Sensor Purpose Designation:	Air Toxics	Appendix D Design Criteria*:	No
Sample Frequency:	Continuous	Appendix D Scale:	
Appendix A QA Assessment*:	No	Appendix D Objectives:	
Appendix C Monitoring Classification:		Appendix E Siting Criteria*:	No
Comments:			

Sensor Type:	Particulate Matter PM2.5	Appendix C Monitoring Method:	RFPS-0498-118	
Sensor Network Designation:	SLAMS	Monitoring Method Description:	Gravimetric	
Sensor Purpose Designation:	Regulatory Compliance	Appendix D Design Criteria*:	Yes	
Sample Frequency:	Daily	Appendix D Scale:		
Appendix A QA Assessment*:	Yes	Appendix D Scale: Appendix D Objectives:	General/Background	
Appendix C Monitoring Classification:	Manual Reference Method	Appendix E Siting Criteria*:	3	
Comments:				
Sensor Type:	Particulate Matter PM2.5	Appendix C Monitoring Method:	None	
Sensor Network Designation:	SLAMS	Monitoring Method Description:	Gravimetric	

Sensor Network Designation:	SLAMS	Monitoring Method Description:	Gravimetric
Sensor Purpose Designation:	Population Exposure	Appendix D Design Criteria*:	Voc
Sample Frequency:	Continuous	Appendix D Scale:	
Appendix A QA Assessment*:	Yes	Appendix D Objectives:	
Appendix C Monitoring Classification:	TEOM	Appendix E Siting Criteria*:	

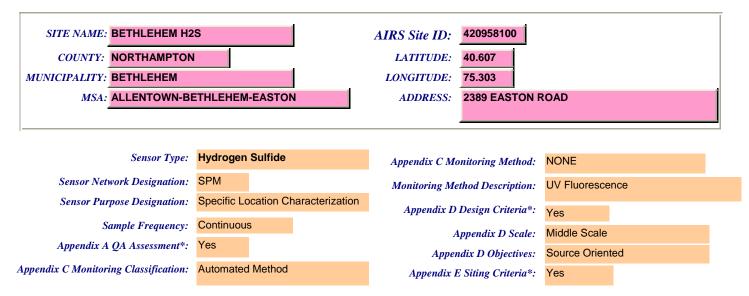
Sensor Type:	PM2.5 Speciation	Appendix C Monitoring Method:	None	
Sensor Network Designation:	STN	Monitoring Method Description:	Gravimetric	
Sensor Purpose Designation:	Research/Scientific Monitoring	Appendix D Design Criteria*:	Yes	
Sample Frequency:	Every 6th day	Appendix D Scale:		
Appendix A QA Assessment*:	Yes	Appendix D Objectives:		
Appendix C Monitoring Classification:	Speciation	Appendix E Siting Criteria*:	Yes	
Comments:				

Sensor Type:	Volatile Organic Compoun	Appendix C Monitoring Method:
Sensor Network Designation:	Other	Monitoring Method Description: Canister (24 Hour)
Sensor Purpose Designation:	Air Toxics	Appendix D Design Criteria*: No
Sample Frequency:	1 in 6	Appendix D Scale:
Appendix A QA Assessment*:	No	Appendix D Objectives:
Appendix C Monitoring Classification:		Appendix E Siting Criteria*: No

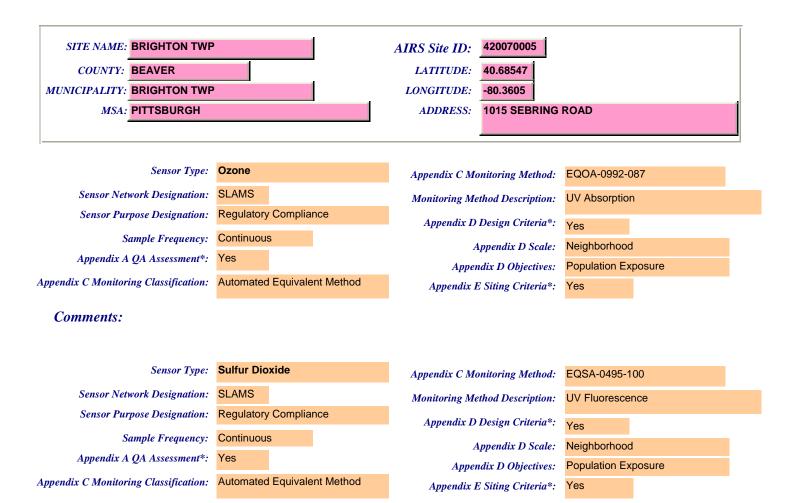


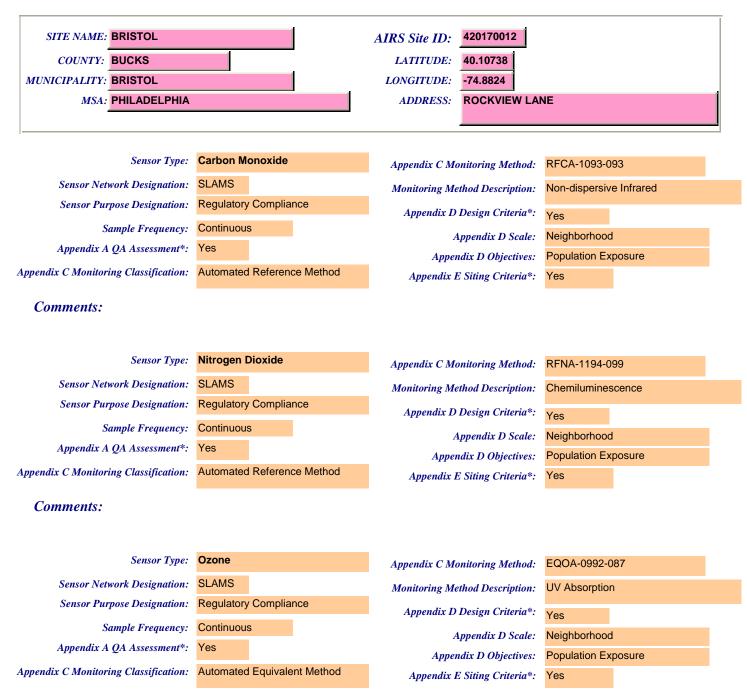
Sensor Type:	Particulate Matter PM2.5	Appendix C Monitoring Method:	None
Sensor Network Designation:	SLAMS	Monitoring Method Description:	Gravimetric
Sensor Purpose Designation:	Population Exposure	Appendix D Design Criteria*:	Yes
Sample Frequency:	Continuous	Appendix D Scale:	
Appendix A QA Assessment*:	Yes	Appendix D Objectives:	
Appendix C Monitoring Classification:	FDMS	11 5	
Comments:			

Sensor Type:	Particulate Matter PM2.5	Appendix C Monitoring Method:	EQPM-0202-145	
Sensor Network Designation:	SLAMS	Monitoring Method Description:	Gravimetric	
Sensor Purpose Designation:	Regulatory Compliance	Appendix D Design Criteria*:	Yes	
Sample Frequency:	Daily	Appendix D Scale:	Urban Scale	
Appendix A QA Assessment*:	Yes	Appendix D Objectives:	Population Exposure	
Appendix C Monitoring Classification:	Manual Equivalent Method	Appendix E Siting Criteria*:	Yes	



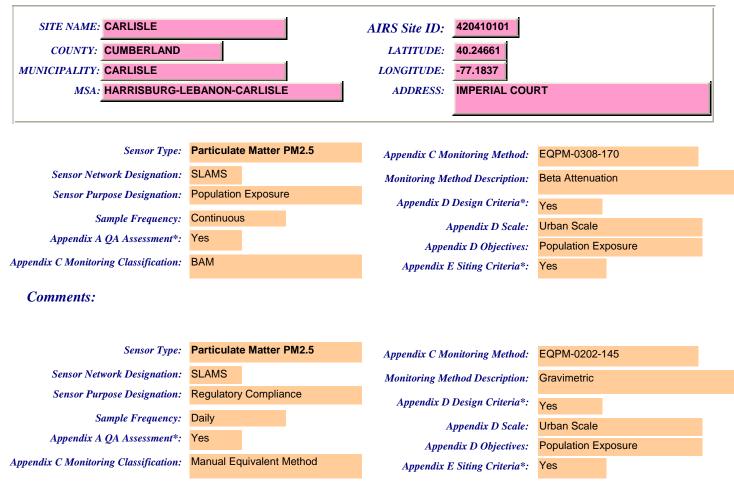
SITE NAME: BIGLERVILLE (PSU)		AIRS Site ID:	420010002			
COUNTY: ADAMS			LATITUDE:	39.93497			
MUNICIPALITY: BIGLERVILLE			LONGITUDE:	-77.2528			
MSA: NOT IN A MSA	NOT IN A MSA		ADDRESS:		RIVE- PENN STATE RESEACH		
				ORCHART			
Sensor Type:	Ozone		Appendix C Me	onitoring Method:	EQOA-0992-0)87	
Sensor Network Designation:	SPM		Monitoring Method Description:		UV Absorption		
Sensor Purpose Designation:	Specific Location Ch	aracterization	Appendix D Design Criteria*: Appendix D Scale: Appendix D Objectives:		Yes		
Sample Frequency:	Continuous				Regional Scal	0	
Appendix A QA Assessment*:	Yes				General/Back		
Appendix C Monitoring Classification:	Automated Equivaler	nt Method		E Siting Criteria*:	Yes	ground	
			- appending 2				

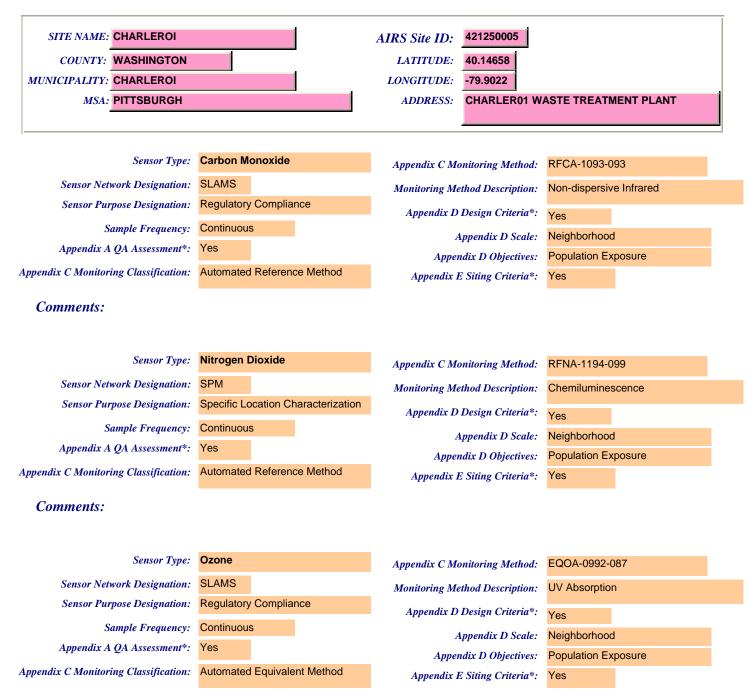




Sensor Type:	Particulate Matter PM2.5	Appendix C Monitoring Method:	RFPS-0498-118
Sensor Network Designation:	SLAMS	Monitoring Method Description:	Gravimetric
Sensor Purpose Designation:	Regulatory Compliance	Appendix D Design Criteria*:	Yes
Sample Frequency:	Daily	Appendix D Scale:	103
Appendix A QA Assessment*:	Yes	Appendix D Objectives:	5
Appendix C Monitoring Classification:	Manual Reference Method	Appendix E Siting Criteria*:	
Comments:			

Sensor Type:	Sulfur Dioxide	Appendix C Monitoring Method:	EQSA-0495-100
Sensor Network Designation:	SLAMS	Monitoring Method Description:	UV Fluorescence
Sensor Purpose Designation:	Regulatory Complia	Appendix D Design Criteria*:	Yes
Sample Frequency:	Continuous	Appendix D Scale:	Neighborhood
Appendix A QA Assessment*:	Yes	Appendix D Objectives:	Population Exposure
Appendix C Monitoring Classification:	Automated Equivale	nt Method Appendix E Siting Criteria*:	Yes



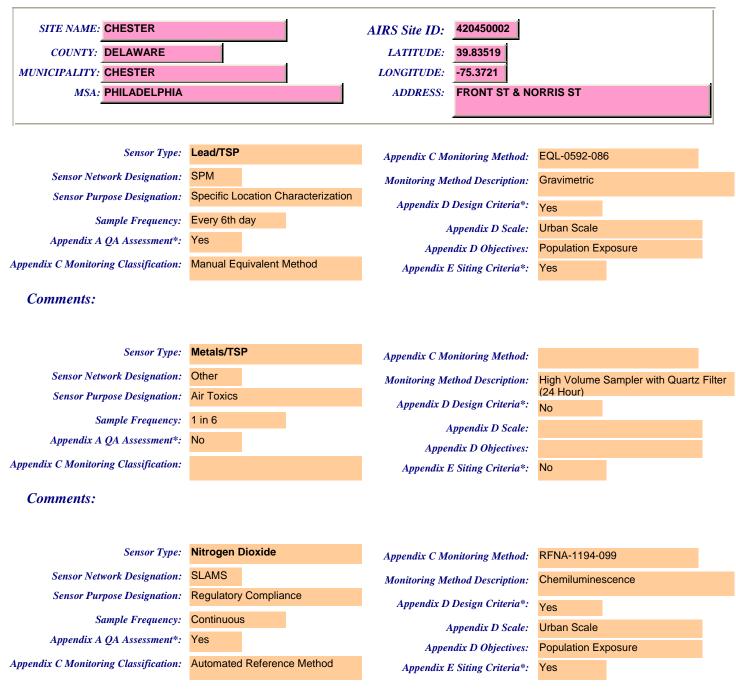


Sensor Type:	Particulate Matter PM10	Appendix C Monitoring Method:	RFPS-1287-063
Sensor Network Designation:	SLAMS	Monitoring Method Description:	Gravimetric
Sensor Purpose Designation:	Regulatory Compliance	Appendix D Design Criteria*:	Yes
Sample Frequency:	Every 6th day	Appendix D Scale:	Middle Scale
Appendix A QA Assessment*:	Yes	Appendix D Objectives:	
Appendix C Monitoring Classification:	Manual Reference Method	Appendix E Siting Criteria*:	Yes
Sensor Type:	Particulate Matter PM2.5		EQPM-0308-170
Sensor Network Designation:		Appendix C Monitoring Method:	
Sensor Purpose Designation:	Population Exposure	Monitoring Method Description: Appendix D Design Criteria*:	Beta Attenuation Yes
Sample Frequency:	Continuous	Appendix D Scale:	Neighborhood
Appendix A QA Assessment*:	Yes	Appendix D Objectives:	Population Exposure
Appendix C Monitoring Classification:	BAM	Appendix E Siting Criteria*:	Yes

Sensor Type:	Sulfur Dioxide	Appendix C Monitoring Method:	EQSA-0495-100
Sensor Network Designation:	SLAMS	Monitoring Method Description:	UV Fluorescence
Sensor Purpose Designation:	Regulatory Compliance	Appendix D Design Criteria*:	Yes
Sample Frequency:	Continuous	Appendix D Scale:	
Appendix A QA Assessment*:	Yes	Appendix D Objectives:	
Appendix C Monitoring Classification:	Automated Equivalent Method	Appendix E Siting Criteria*:	Yes

*The Pennsylvania Department of Environmental Protection, Bureau of Air Quality, maintains its ambient air monitoring network in accordance with the quality assurance requirements of 40 CFR Part 58, Appendix A, designs its network in accordance with Appendix D, and locates it sites to meet all requirements of Appendix E. Detailed Appendix A, D and E requirements appear at <u>http://www.gpoaccess.gov/cfr/index.html</u>

Comments:



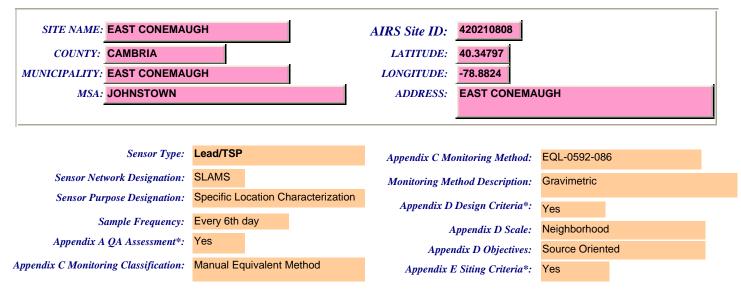
Sensor Type:	Ozone	Appendix C Monitoring Method:	EQOA-0992-087
Sensor Network Designation:	SLAMS	Monitoring Method Description:	UV Absorption
Sensor Purpose Designation:	Regulatory Compliance	Appendix D Design Criteria*:	Yes
Sample Frequency:	Continuous	Appendix D Scale:	Urban Scale
Appendix A QA Assessment*:	Yes	Appendix D Objectives:	Population Exposure
Appendix C Monitoring Classification:	Automated Equivalent Method	Appendix E Siting Criteria*:	
Comments:			
Comments: Sensor Type:	Particulate Matter PM10	Appendix C Monitoring Method:	EQPM-1090-079
	Particulate Matter PM10 SLAMS	Appendix C Monitoring Method: Monitoring Method Description:	
Sensor Type:		Monitoring Method Description:	TEOM Gravimetric
Sensor Type: Sensor Network Designation: Sensor Purpose Designation: Sample Frequency:	SLAMS Regulatory Compliance Continuous		
Sensor Type: Sensor Network Designation: Sensor Purpose Designation:	SLAMS Regulatory Compliance	Monitoring Method Description: Appendix D Design Criteria*:	TEOM Gravimetric Yes

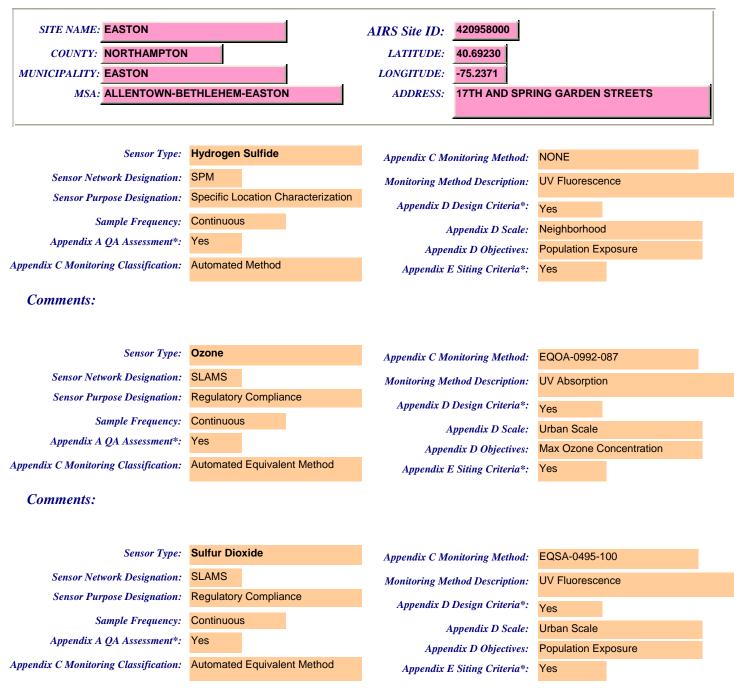
Sensor Type:	Particulate Matter PM2.5	Appendix C Monitoring Method:	EQPM-0308-170
Sensor Network Designation:	SLAMS	Monitoring Method Description:	Beta Attenuation
Sensor Purpose Designation:	Population Exposure	Appendix D Design Criteria*:	Yes
Sample Frequency:	Continuous	Appendix D Scale:	
Appendix A QA Assessment*:	Yes	Appendix D Objectives:	
Appendix C Monitoring Classification:	BAM	Appendix E Siting Criteria*:	

Comments:

Sensor Type:	Sulfur Dioxide	Appendix C Monitoring Method:	EQSA-0495-100
Sensor Network Designation:	SLAMS	Monitoring Method Description:	UV Fluorescence
Sensor Purpose Designation:	Regulatory Compliance	Appendix D Design Criteria*:	Yes
Sample Frequency:	Continuous	Appendix D Scale:	Urban Scale
Appendix A QA Assessment*:	Yes	Appendix D Objectives:	Population Exposure
Appendix C Monitoring Classification:	Automated Equivalent Method	Appendix E Siting Criteria*:	Yes
Comments:			

51	Appendix C Monitoring Method:	
Sensor Network Designation: Other	Monitoring Method Description:	Canister (24 Hour)
Sensor Purpose Designation: Air Toxics	Appendix D Design Criteria*:	No
Sample Frequency: 1 in 6	Appendix D Scale:	
Appendix A QA Assessment*: No	Appendix D Objectives:	
Appendix C Monitoring Classification:	Appendix E Siting Criteria*:	No





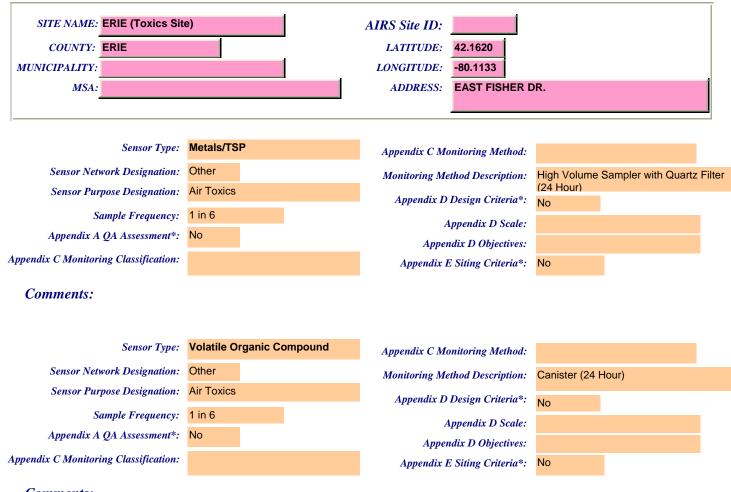
SITE NAME: ERIE		AIRS Site ID: 420490003	
COUNTY: ERIE		<i>LATITUDE</i> : 42.14197	
MUNICIPALITY: ERIE		<i>LONGITUDE:</i> -80.0386	
MSA: ERIE		ADDRESS: 10TH AND MAR	RNE STREETS
Sensor Type:	Carbon Monoxide	Appendix C Monitoring Method:	RFCA-1093-093
Sensor Network Designation.	SLAMS	Monitoring Method Description:	Non-dispersive Infrared
Sensor Purpose Designation:	Regulatory Compliance	Appendix D Design Criteria*:	Yes
Sample Frequency:	Continuous	Appendix D Scale:	Neighborhood
Appendix A QA Assessment*:	Yes	Appendix D Objectives:	Population Exposure
ppendix C Monitoring Classification:	Automated Reference Method	Appendix E Siting Criteria*:	Yes
Comments:			
Sensor Type:	Nitrogen Dioxide	Appendix C Monitoring Method:	RFNA-1194-099
Sensor Network Designation.	SLAMS	Monitoring Method Description:	Chemiluminescence
Sensor Purpose Designation:	Regulatory Compliance	Appendix D Design Criteria*:	Yes
Sample Frequency:	Continuous		163
	Continuous	Annendix D Scale	Neighborhood
Appendix A QA Assessment*:		Appendix D Scale: Appendix D Objectives:	Neighborhood Population Exposure
Appendix A QA Assessment*: ppendix C Monitoring Classification:	Yes	Appendix D Scale: Appendix D Objectives: Appendix E Siting Criteria*:	Neighborhood Population Exposure Yes
ppendix C Monitoring Classification:	Yes	Appendix D Objectives:	Population Exposure
	Yes	Appendix D Objectives:	Population Exposure
ppendix C Monitoring Classification:	Yes Automated Reference Method	Appendix D Objectives: Appendix E Siting Criteria*:	Population Exposure Yes
ppendix C Monitoring Classification: Comments: Sensor Type:	Yes Automated Reference Method Ozone	Appendix D Objectives: Appendix E Siting Criteria*: Appendix C Monitoring Method:	Population Exposure Yes EQOA-0992-087
ppendix C Monitoring Classification.	Yes Automated Reference Method Ozone SLAMS	Appendix D Objectives: Appendix E Siting Criteria*: Appendix C Monitoring Method: Monitoring Method Description:	Population Exposure Yes
ppendix C Monitoring Classification: Comments: Sensor Type: Sensor Network Designation: Sensor Purpose Designation:	Yes Automated Reference Method Ozone SLAMS Regulatory Compliance	Appendix D Objectives: Appendix E Siting Criteria*: Appendix C Monitoring Method:	Population Exposure Yes EQOA-0992-087
ppendix C Monitoring Classification: Comments: Sensor Type: Sensor Network Designation:	Yes Automated Reference Method Ozone SLAMS Regulatory Compliance Continuous	Appendix D Objectives: Appendix E Siting Criteria*: Appendix C Monitoring Method: Monitoring Method Description:	Population Exposure Yes EQOA-0992-087 UV Absorption

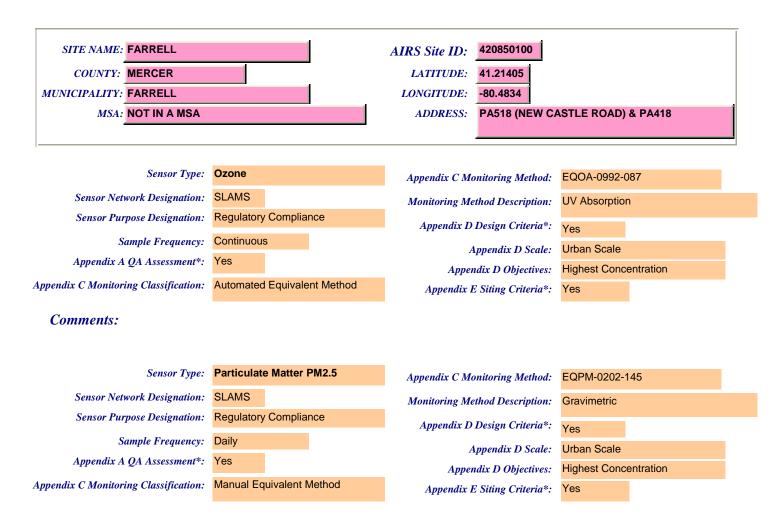
Sensor Type:	Particulate Matter PM10	Appendix C Monitoring Method:	EQPM-1090-079
Sensor Network Designation:	SLAMS	Monitoring Method Description:	TEOM Gravimetric
Sensor Purpose Designation:	Regulatory Compliance	Appendix D Design Criteria*:	Yes
Sample Frequency:	Continuous	Appendix D Scale:	Neighborhood
Appendix A QA Assessment*:	Yes	Appendix D Scale.	Population Exposure
Appendix C Monitoring Classification:	TEOM Automated Equivalent	Appendix E Siting Criteria*:	Yes
Comments:			
Comments: Sensor Type:	Particulate Matter PM2.5	Appendix C Monitoring Method:	EQPM-0202-145
Sensor Type: Sensor Network Designation:	SLAMS	Appendix C Monitoring Method: Monitoring Method Description:	EQPM-0202-145 Gravimetric
Sensor Type:			
Sensor Type: Sensor Network Designation: Sensor Purpose Designation: Sample Frequency:	SLAMS Regulatory Compliance Daily	Monitoring Method Description:	Gravimetric
Sensor Type: Sensor Network Designation: Sensor Purpose Designation:	SLAMS Regulatory Compliance	Monitoring Method Description: Appendix D Design Criteria*:	Gravimetric Yes

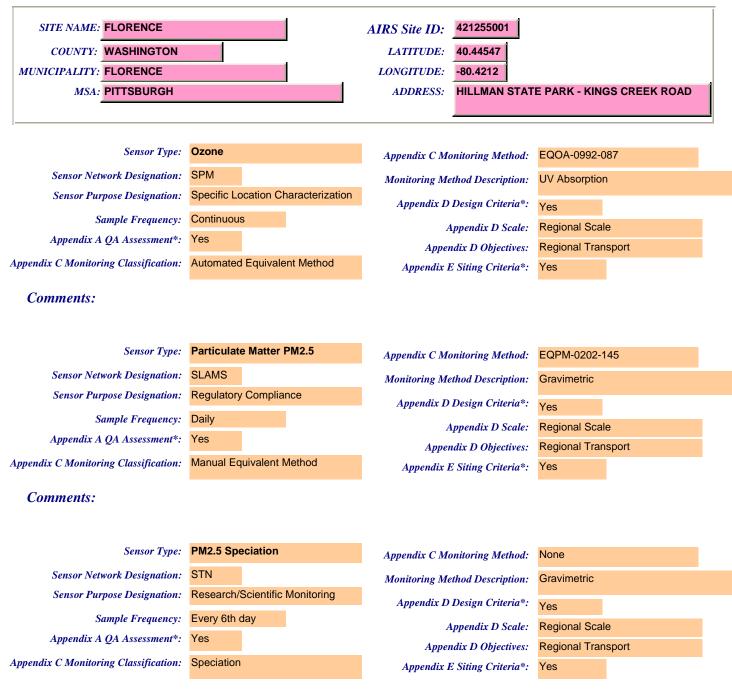
Sensor Type:	PM2.5 Speciation	Appendix C Monitoring Method:	None
Sensor Network Designation:	STN	Monitoring Method Description:	Gravimetric
Sensor Purpose Designation:	Research/Scientific Monitoring	Appendix D Design Criteria*:	Yes
Sample Frequency:	Every 6th day	Appendix D Scale:	
Appendix A QA Assessment*:	Yes	Appendix D Objectives:	-
Appendix C Monitoring Classification:	Speciation	Appendix E Siting Criteria*:	Yes

Comments:

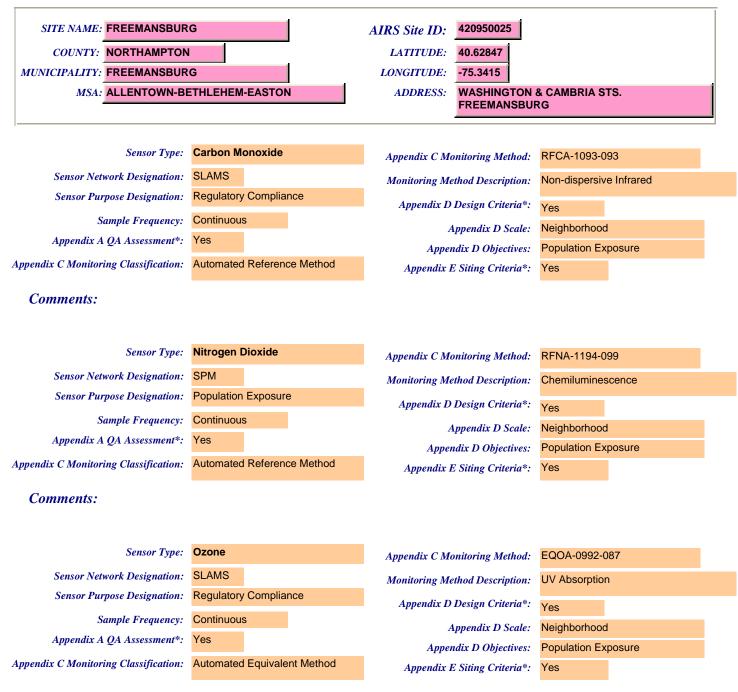
Sensor Type:	Sulfur Dioxide	Appendix C Monitoring Method:	EQSA-0495-100
Sensor Network Designation:	SLAMS	Monitoring Method Description:	UV Fluorescence
Sensor Purpose Designation:	Regulatory Compliance	Appendix D Design Criteria*:	Yes
Sample Frequency:	Continuous	Appendix D Scale:	
Appendix A QA Assessment*:	Yes	Appendix D Objectives:	Population Exposure
Appendix C Monitoring Classification:	Automated Equivalent Method	Appendix E Siting Criteria*:	Yes







Sensor Type:	Sulfur Dioxide	Appendix C Monitoring Method:	EQSA-0495-100
Sensor Network Designation:	SPM	Monitoring Method Description:	UV Fluorescence
Sensor Purpose Designation:	Specific Location Characterization	Appendix D Design Criteria*:	Yes
Sample Frequency:	Continuous	Appendix D Scale:	
Appendix A QA Assessment*:	Yes	Appendix D Objectives:	Regional Transport
Appendix C Monitoring Classification:	Automated Equivalent Method	Appendix E Siting Criteria*:	Yes
		•	



Sensor Type:	Particulate Matter PM2.5	Appendix C Monitoring Method:	EQPM-0202-145
Sensor Network Designation:	SLAMS	Monitoring Method Description:	Gravimetric
Sensor Purpose Designation:	Regulatory Compliance	Appendix D Design Criteria*:	Yes
Sample Frequency:	Daily	Appendix D Scale:	
Appendix A QA Assessment*:	Yes	Appendix D Scale: Appendix D Objectives:	5
Appendix C Monitoring Classification:	Manual Equivalent Method	Appendix E Siting Criteria*:	
Comments:		1	
Sensor Type:	Particulate Matter PM2.5	Appendix C Monitoring Method:	None

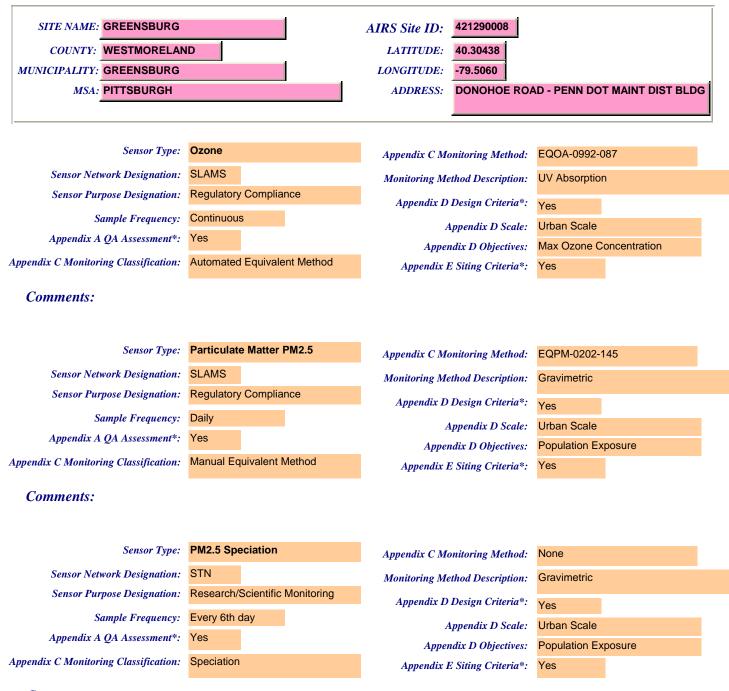
Sensor Network Designation:	SLAMS	Monitoring Method Description:	Gravimetric
Sensor Purpose Designation:	Population Exposure	Appendix D Design Criteria*:	Yes
Sample Frequency:	Continuous	Appendix D Scale:	Neighborhood
Appendix A QA Assessment*:	Yes		5
		Appendix D Objectives:	Population Exposure
Appendix C Monitoring Classification:	ТЕОМ	Appendix E Siting Criteria*:	Yes
Comments:			
Comments: Sensor Type:	PM2.5 Speciation	Appendix C Monitoring Method:	None
	PM2.5 Speciation	Appendix C Monitoring Method:	None
Sensor Type: Sensor Network Designation:	STN	Appendix C Monitoring Method: Monitoring Method Description:	None Gravimetric
Sensor Type:			
Sensor Type: Sensor Network Designation:	STN	Monitoring Method Description: Appendix D Design Criteria*:	Gravimetric Yes
Sensor Type: Sensor Network Designation: Sensor Purpose Designation:	STN Research/Scientific Monitoring Every 6th day	Monitoring Method Description:	Gravimetric

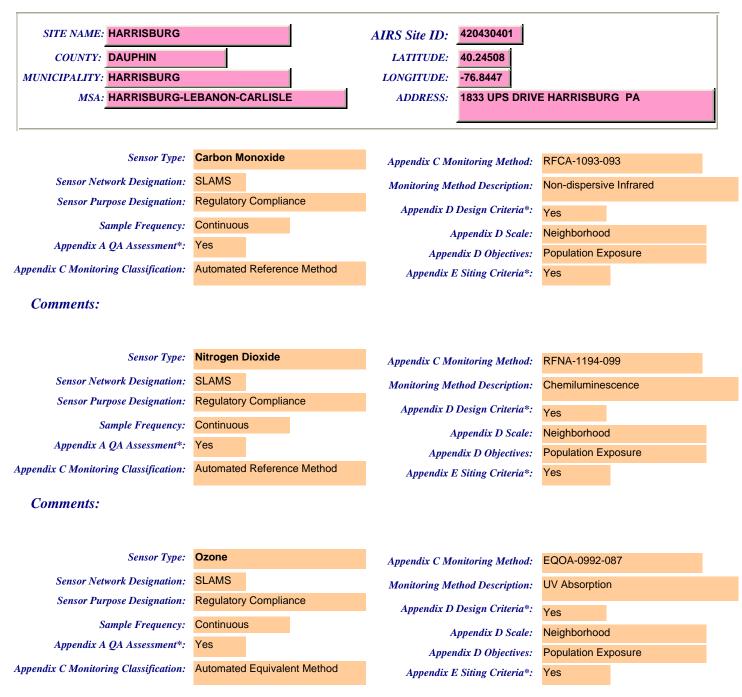
Appendix E Siting Criteria*: Yes

Appendix C Monitoring Classification: Speciation

~

Comments:





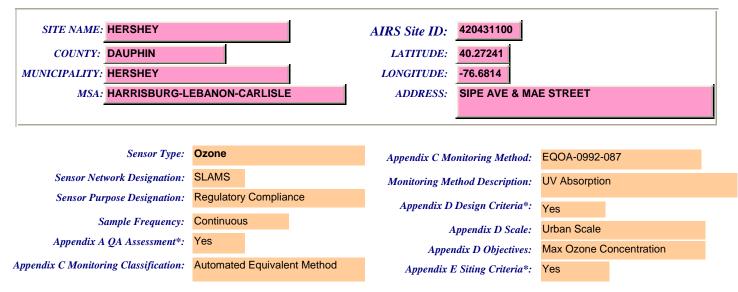
Sensor Type:	Particulate Matter PM10	Appendix C Monitoring Method:	EQPM-1090-079
Sensor Network Designation:	SLAMS	Monitoring Method Description:	TEOM Gravimetric
Sensor Purpose Designation:	Regulatory Compliance	Appendix D Design Criteria*:	Yes
Sample Frequency:	Continuous	Appendix D Scale:	Neighborhood
Appendix A QA Assessment*:	Yes	Appendix D Objectives:	Population Exposure
Appendix C Monitoring Classification:	TEOM Automated Equivalent	Appendix E Siting Criteria*:	Yes
Comments:			
C T	Destinute Metter DMO 5		
Sensor Type:	Particulate Matter PM2.5	Appendix C Monitoring Method:	EQPM-0308-170
Sensor Network Designation:	SLAMS	Monitoring Method Description:	Beta Attenuation

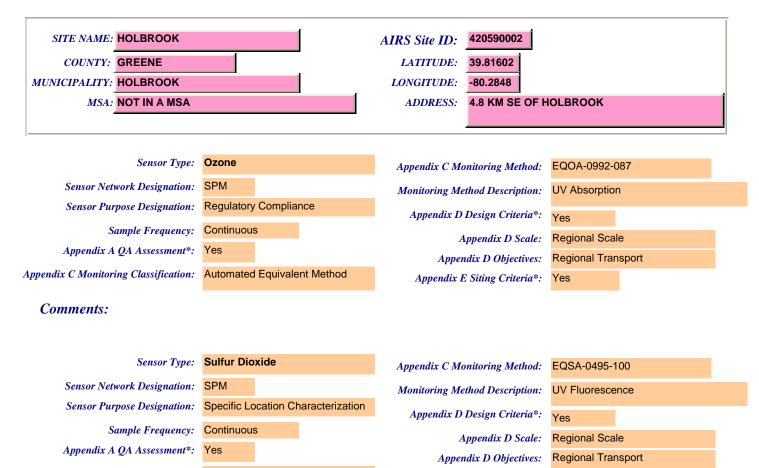
Sensor Purpose Designation:	Population Exposure	2			
1 0			Appendix D Design Criteria*:	Yes	
Sample Frequency:	Continuous		Appendix D Scale:	Neighborhood	1
Appendix A QA Assessment*:	Yes		Appendix D Objectives:	Population Ex	posure
Appendix C Monitoring Classification:	BAM		Appendix E Siting Criteria*:	Yes	
Comments:					
Sensor Type:	PM2.5 Speciation		Appendix C Monitoring Method:	None	
Sensor Network Designation:	STN		Monitoring Method Description:	Gravimetric	
Sensor Purpose Designation:	Research/Scientific	Monitoring	Appendix D Design Criteria*:	Yes	

Description F

				Monuoring Methoa Description:	Gravimetric	
Sensor Purpose Designation:	Research/S	Scientific	Monitorina			
			J	Appendix D Design Criteria*:	Yes	
Sample Frequency:	Every 6th o	day		A man and the D. C. aller	Naighborhood	1
	Voo			Appendix D Scale:	Neighborhood	
Appendix A QA Assessment*:	Tes			Appendix D Objectives:	Population Ex	posure
Appendix C Monitoring Classification:	Speciation			Appendix E Siting Criteria*:	Yes	

Comments:



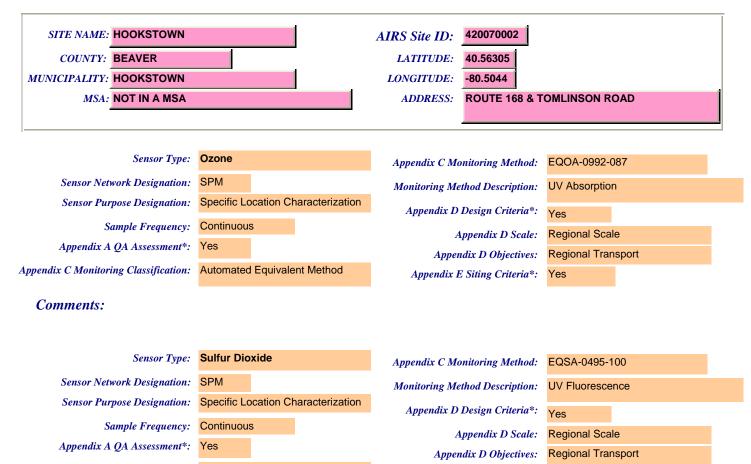


Appendix E Siting Criteria*:

Yes

Appendix C Monitoring Classification: Automated Equivalent Method

Comments:

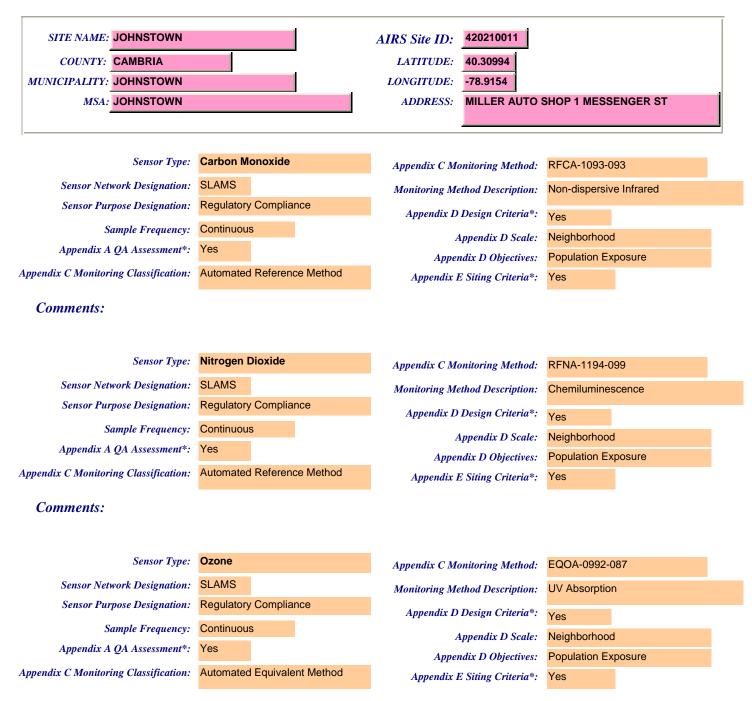


Appendix E Siting Criteria*:

Yes

Appendix C Monitoring Classification: Automated Equivalent Method

Comments:



Sensor Type:	Particulate Matter PM10	Appendix C Monitoring Method:	EQPM-1090-079
Sensor Network Designation:	SLAMS	Monitoring Method Description:	TEOM Gravimetric
Sensor Purpose Designation:	Regulatory Compliance	Appendix D Design Criteria*:	Yes
Sample Frequency:	Continuous	Appendix D Scale:	Neighborhood
Appendix A QA Assessment*:	Yes		Population Exposure
Appendix C Monitoring Classification:	TEOM Automated Equivalent	Appendix D Objectives:	
		Appendix E Siting Criteria*:	Yes
Comments:			
Comments:			
Comments:			
Comments: Sensor Type:	Particulate Matter PM2.5	Appendix C Monitoring Method:	EQPM-0308-170
	Particulate Matter PM2.5	Appendix C Monitoring Method: Monitoring Method Description:	EQPM-0308-170 Beta Attenuation
Sensor Type:		Monitoring Method Description:	Beta Attenuation
Sensor Type: Sensor Network Designation:	SLAMS	Monitoring Method Description: Appendix D Design Criteria*:	Beta Attenuation Yes
Sensor Type: Sensor Network Designation: Sensor Purpose Designation:	SLAMS Population Exposure Continuous	Monitoring Method Description:	Beta Attenuation

Comments:

Appendix C Monitoring Classification: BAM

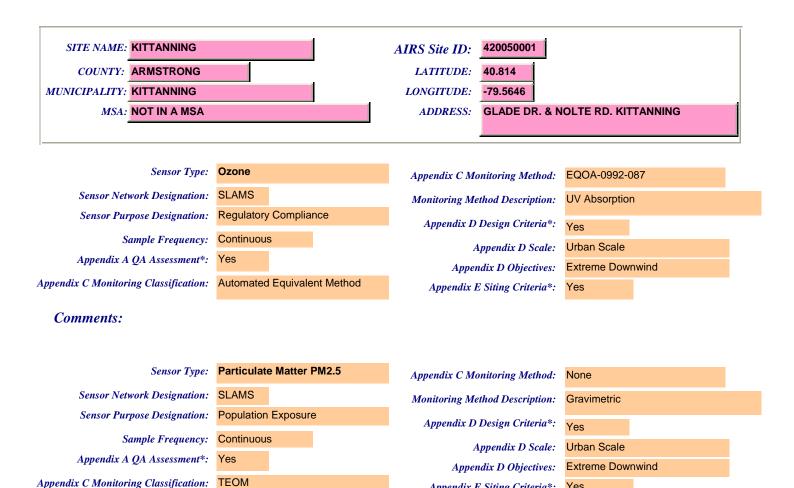
Sensor Type: Particulate	Aatter PM2.5	Appendix C Monitoring Method:	RFPS-0498-118
Sensor Network Designation: SLAMS		Monitoring Method Description:	Gravimetric
Sensor Purpose Designation: Regulatory C	ompliance	Appendix D Design Criteria*:	Yes
Sample Frequency: Daily		Appendix D Scale:	
Appendix A QA Assessment*: Yes		Appendix D Objectives:	
Appendix C Monitoring Classification: Manual Refe	rence Method	Appendix E Siting Criteria*:	Yes

Appendix E Siting Criteria*: Yes

Sensor Type:	PM2.5 Speciation	Appendix C Monitoring Method:	None
Sensor Network Designation:	STN	Monitoring Method Description:	Gravimetric
Sensor Purpose Designation:	Research/Scientific Monitoring	Appendix D Design Criteria*:	Yes
Sample Frequency:	Every 6th day	Appendix D Scale:	
Appendix A QA Assessment*:	Yes	Appendix D Objectives:	Population Exposure
Appendix C Monitoring Classification:	Speciation	Appendix E Siting Criteria*:	Yes

Sensor Type:	Sulfur Dioxide	Appendix C Monitoring Method:	EQSA-0495-1	00
Sensor Network Designation:	SLAMS	Monitoring Method Description:	UV Fluoresce	nce
Sensor Purpose Designation:	Regulatory Complia	Appendix D Design Criteria*:	Yes	
Sample Frequency:	Continuous	Appendix D Scale:		ł
Appendix A QA Assessment*:	Yes	Appendix D Objectives:	Population Ex	posure
Appendix C Monitoring Classification:	Automated Equivale	Appendix E Siting Criteria*:	Yes	

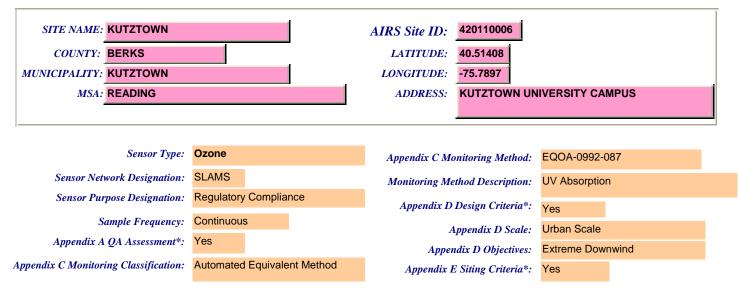
Comments:

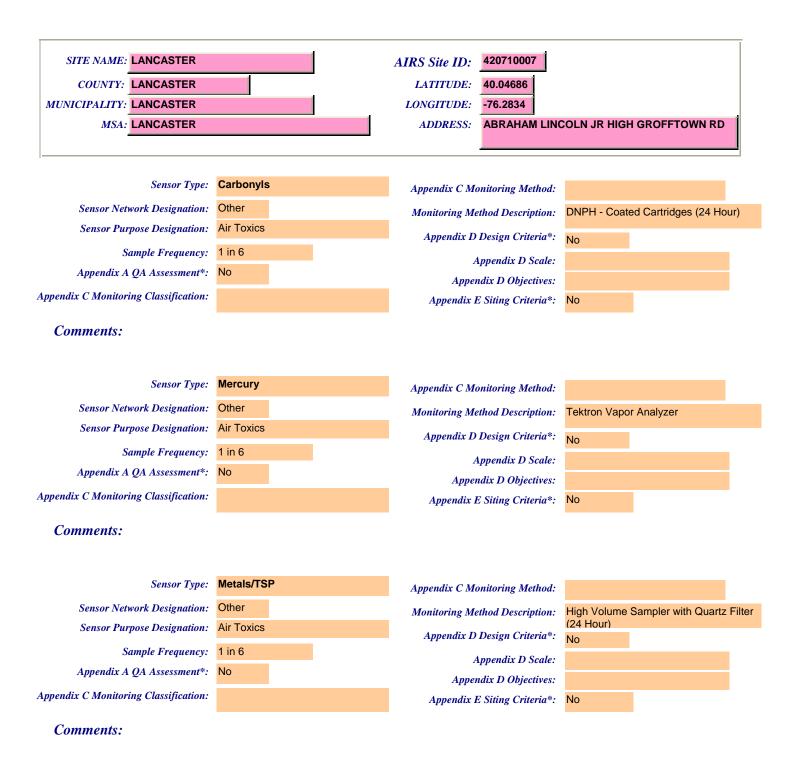


Appendix E Siting Criteria*:

Yes

Comments:





Sensor Type:	Nitrogen Dioxide	Appendix C Monitoring Method:	RFNA-1194-099
Sensor Network Designation:	SLAMS	Monitoring Method Description:	Chemiluminescence
Sensor Purpose Designation:	Regulatory Compliance	Appendix D Design Criteria*:	Yes
Sample Frequency:	Continuous	Appendix D Scale:	Neighborhood
Appendix A QA Assessment*:	Yes	Appendix D Scale.	Population Exposure
Appendix C Monitoring Classification:	Automated Reference Method	Appendix E Siting Criteria*:	
Comments:			
Sensor Type:	Ozone	Appendix C Monitoring Method:	EQOA-0992-087
Sensor Network Designation:	SLAMS	Monitoring Method Description:	UV Absorption
Sensor Purpose Designation:	Regulatory Compliance	Annendix D Design Criteria*:	

Sample Frequency: Continuous

Appendix C Monitoring Classification: Automated Equivalent Method

Yes

Appendix A QA Assessment*:

Comments:

Comments:

*The Pennsylvania Department of Environmental Protection, Bureau of Air Quality, maintains its ambient air monitoring network in accordance with the quality assurance requirements of 40 CFR Part 58, Appendix A, designs its network in accordance with Appendix D, and locates it sites to meet all requirements of Appendix E. Detailed Appendix A, D and E

Sensor Type: Particulate Matter PM10 Appendix C Monitoring Method: EQPM-1090-079 Sensor Network Designation: **SLAMS** Monitoring Method Description: **TEOM Gravimetric** Sensor Purpose Designation: **Regulatory Compliance** Appendix D Design Criteria*: Yes Sample Frequency: Continuous Appendix D Scale: Neighborhood Appendix A QA Assessment*: Yes Appendix D Objectives: **Population Exposure TEOM** Automated Equivalent Appendix C Monitoring Classification: Appendix E Siting Criteria*: Yes

Appendix D Design Criteria*:

Appendix D Scale:

Appendix D Objectives:

Appendix E Siting Criteria*:

Yes

Yes

Neighborhood

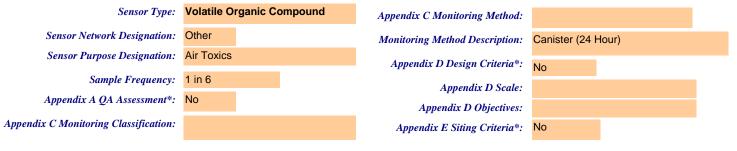
Population Exposure

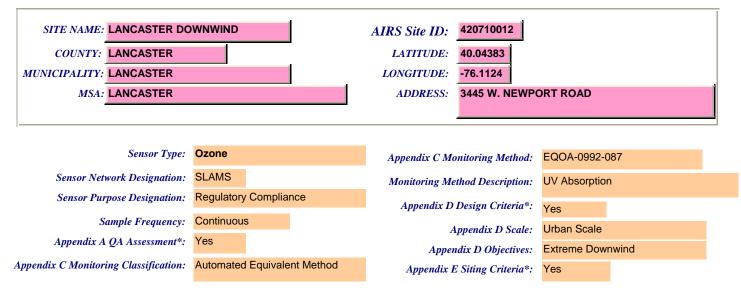
requirements appear at <u>http://www.gpoaccess.gov/cfr/index.html</u>

Sensor Type:	Particulate	e Matter PM2.5	Appendix C Monitoring Method:	None
Sensor Network Designation:	SLAMS		Monitoring Method Description:	Gravimetric
Sensor Purpose Designation:	Population	Exposure	Appendix D Design Criteria*:	Yes
Sample Frequency:	Continuous	S	Appendix D Scale:	Neighborhood
Appendix A QA Assessment*:	Yes		**	5
Appendix C Monitoring Classification:	FDMS		Appendix E Siting Criteria*:	Yes
Comments:			I	

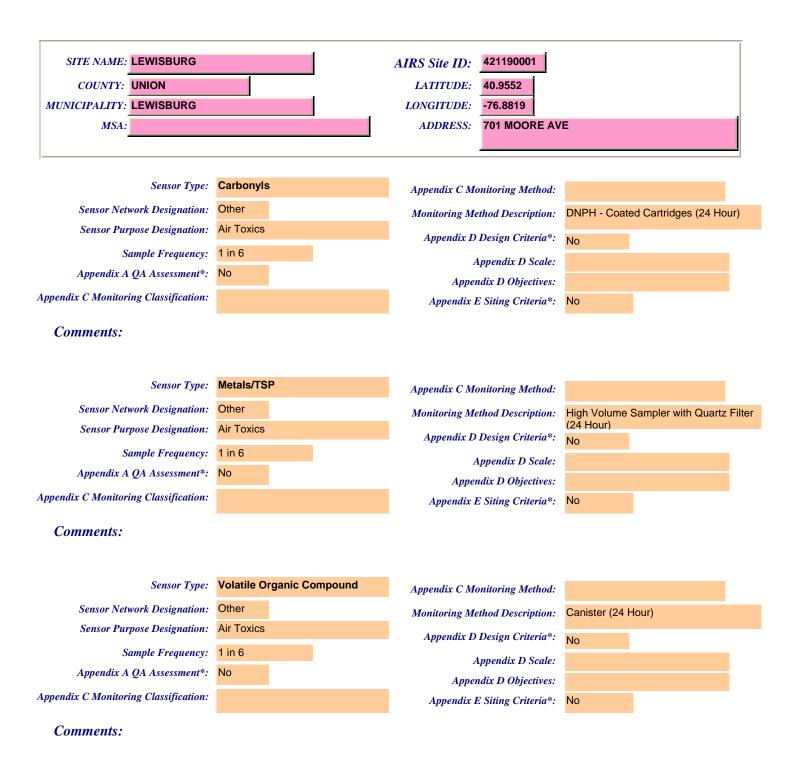
Sensor Type:	Particulate Matter PM2.5	Appendix C Monitoring Method:	RFPS-0498-118
Sensor Network Designation:	SLAMS	Monitoring Method Description:	Gravimetric
Sensor Purpose Designation:	Regulatory Compliance	Appendix D Design Criteria*:	Yes
Sample Frequency:	Daily	Appendix D Scale:	Neighborhood
Appendix A QA Assessment*:	Yes	Appendix D Objectives:	Population Exposure
Appendix C Monitoring Classification:	Manual Reference Method	Appendix E Siting Criteria*:	Yes
Comments:			
Sensor Type:	PM2.5 Speciation	Appendix C Monitoring Method:	None

Sensor Network Designation:	STN		Monitoring Method Description:	Gravimetric	
Sensor Purpose Designation:	Research/Scientific	Monitoring	Appendix D Design Criteria*:	Yes	
Sample Frequency:	Every 6th day		Appendix D Scale:		
Appendix A QA Assessment*:	Yes		Appendix D Objectives:	Population Exposure	
Appendix C Monitoring Classification:	Speciation		Appendix E Siting Criteria*:	Yes	

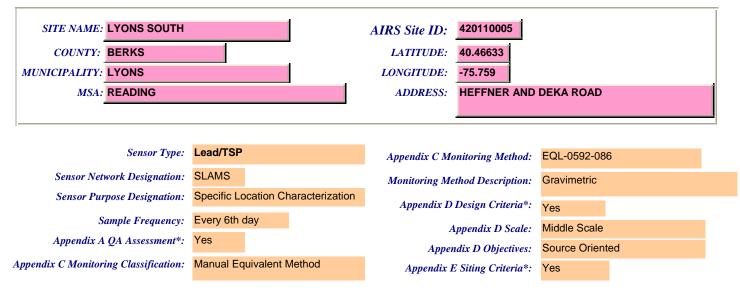


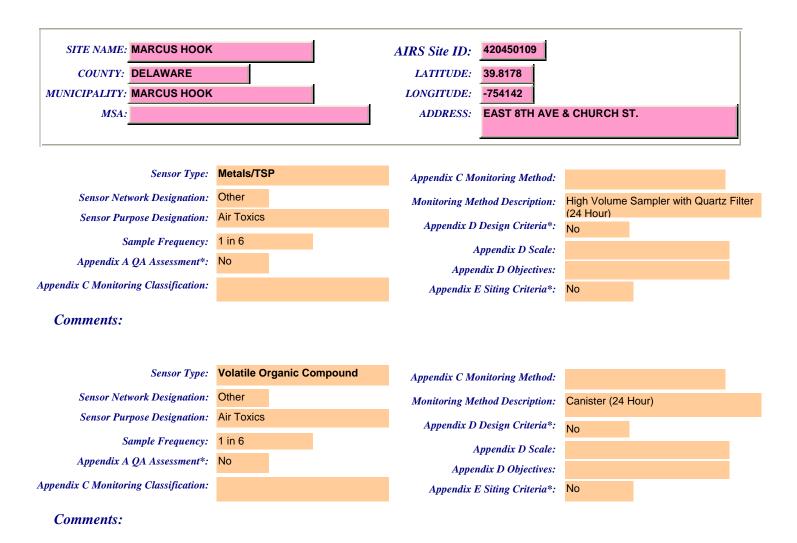


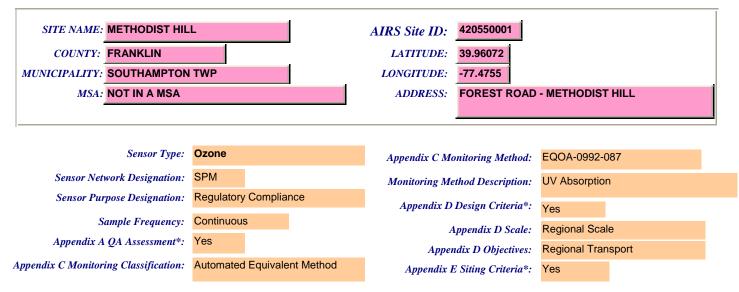
SITE NAME: LAURELDALE S	OUTH	AIRS Site ID:	420111717		
COUNTY: BERKS		LATITUDE:	40.37730		
MUNICIPALITY: LAURELDALE S	OUTH	LONGITUDE:	-75.9145		
MSA: READING		ADDRESS:	SPRING VALLE	YROAD	
]					
Sensor Type:	Lead/TSP	Appendix C M	onitoring Method:	EQL-0592-086	6
Sensor Network Designation:	SPM	Monitoring M	ethod Description:	Gravimetric	
Sensor Purpose Designation:	Specific Location Characterizatio	n Appendix D	Design Criteria*:	Yes	
Sample Frequency:	Every 6th day		Appendix D Scale:	Middle Scale	
Appendix A QA Assessment*:	Yes				
		Appe	ndix D Objectives:	Source Orient	ea
Appendix C Monitoring Classification:	Manual Equivalent Method	Appendix	E Siting Criteria*:	Yes	

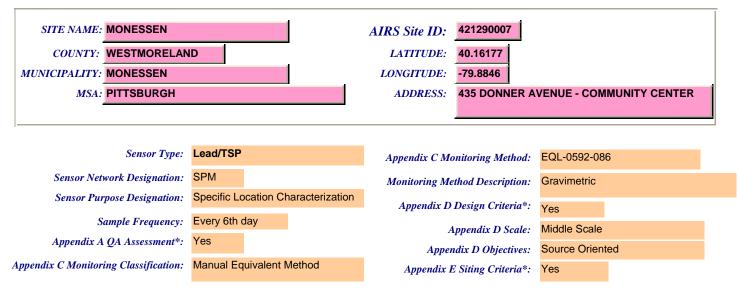


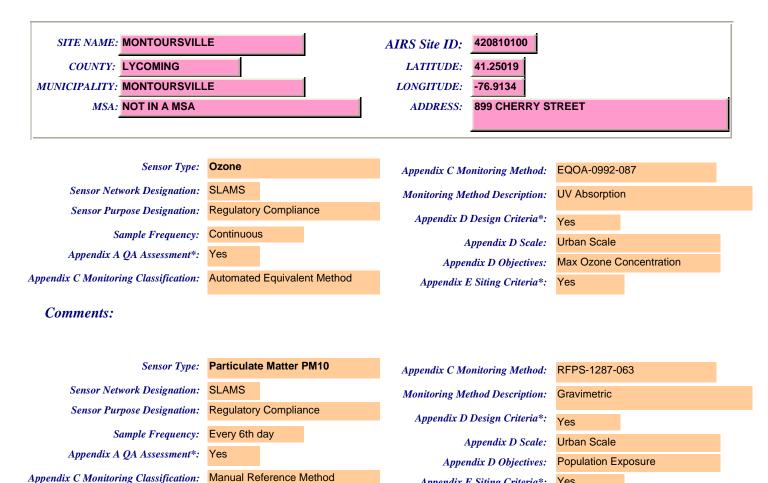
SITE NAME: LYONS EAST		AIDC CHA ID.	420110717		
SITE NAME. LIONS EAST		AIRS Site ID:	420110/17		
COUNTY: BERKS		LATITUDE:	40.47683		
MUNICIPALITY: LYONS		LONGITUDE:	-75.7585		
MSA: READING		ADDRESS:	LYONS STATIO	N PO BOX	
Sensor Type:	Lead/TSP	Annoudin C M	anitaring Mathada	EOL 0502 086	_
Sensor Type:	Lead/TSP	Appendix C Me	onitoring Method:	EQL-0592-086	
Sensor Type: Sensor Network Designation:		**	onitoring Method: ethod Description:	EQL-0592-086 Gravimetric	
	SPM	Monitoring Me	ethod Description:	Gravimetric	
Sensor Network Designation: Sensor Purpose Designation:	SPM Specific Location Characterization	Monitoring Me	0		
Sensor Network Designation:	SPM Specific Location Characterization	Monitoring Me Appendix D	ethod Description:	Gravimetric	
Sensor Network Designation: Sensor Purpose Designation:	SPM Specific Location Characterization Every 6th day	Monitoring Me Appendix D	ethod Description: Design Criteria*:	Gravimetric Yes	









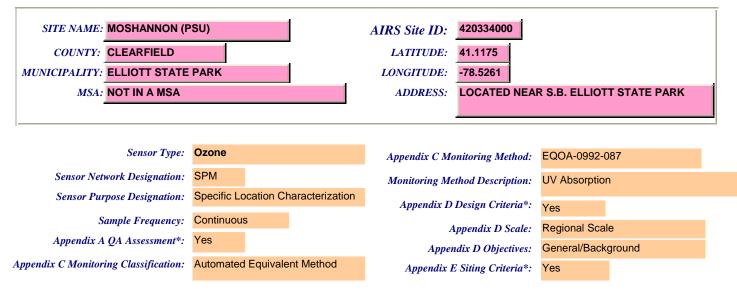


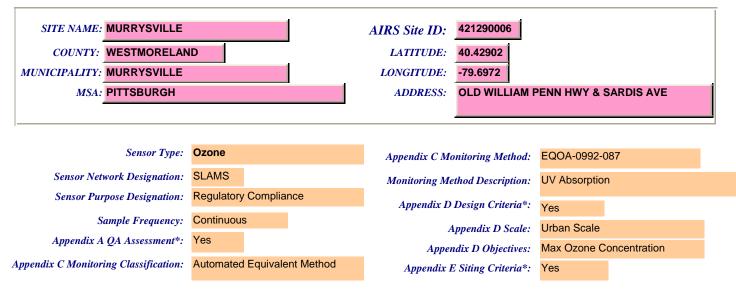
Appendix E Siting Criteria*:

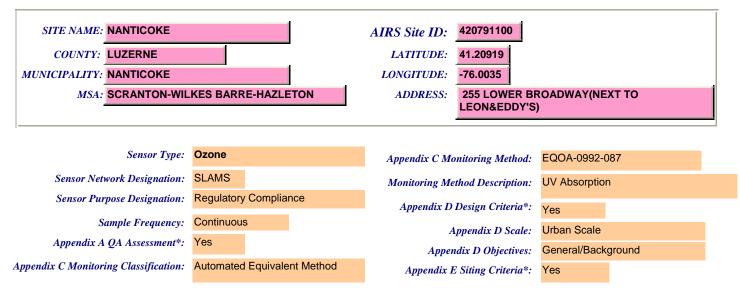
Yes

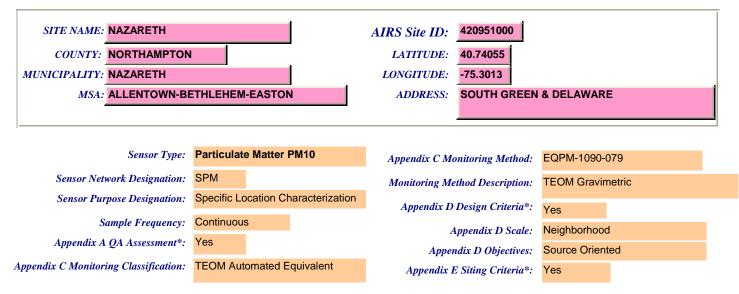
Appendix C Monitoring Classification:

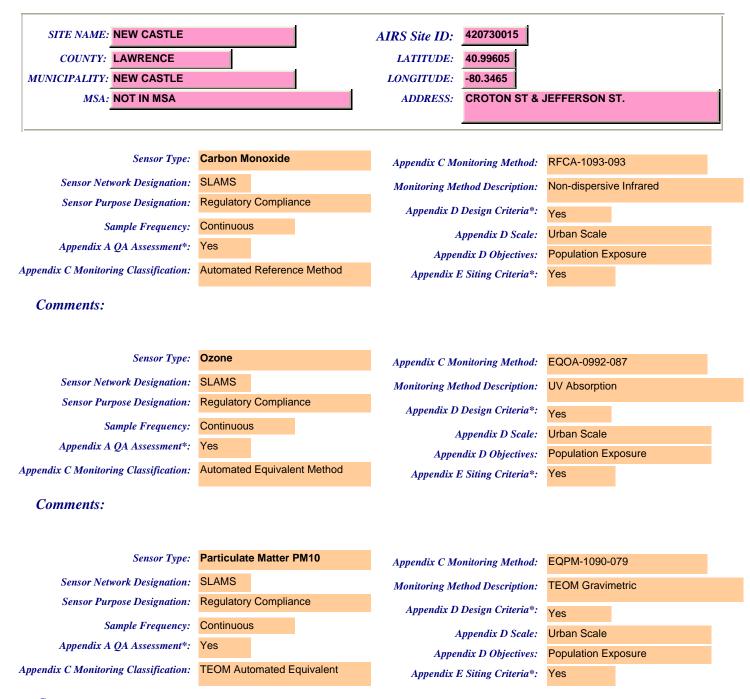
Comments:



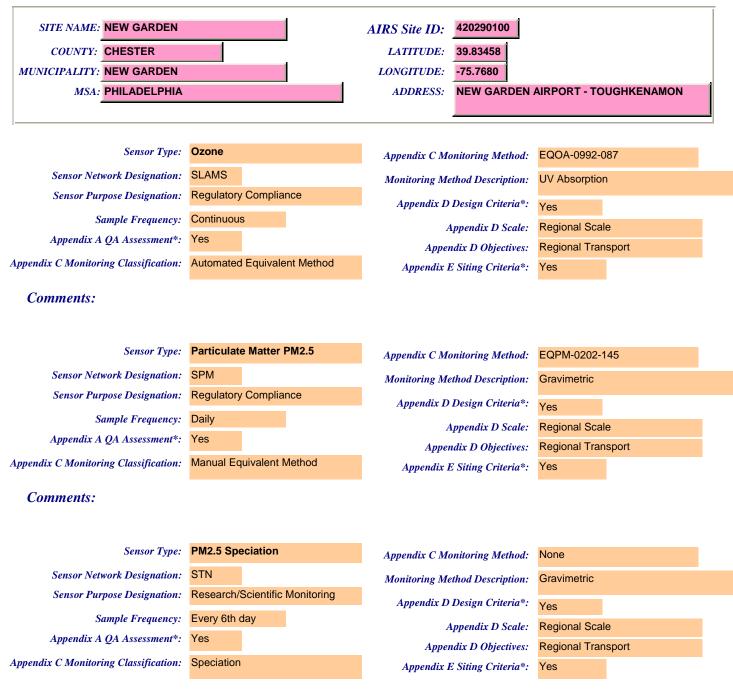


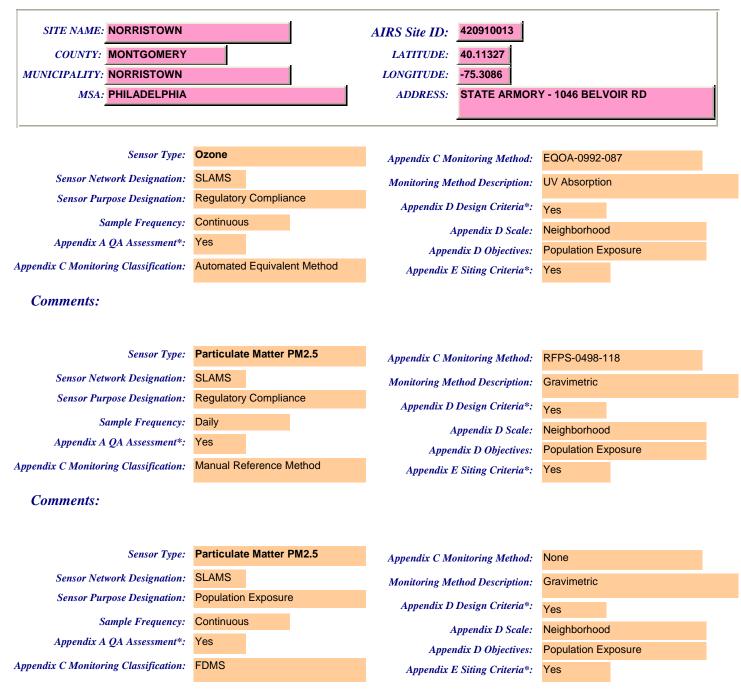




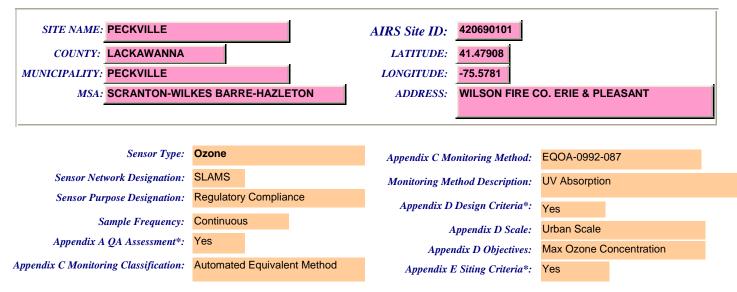


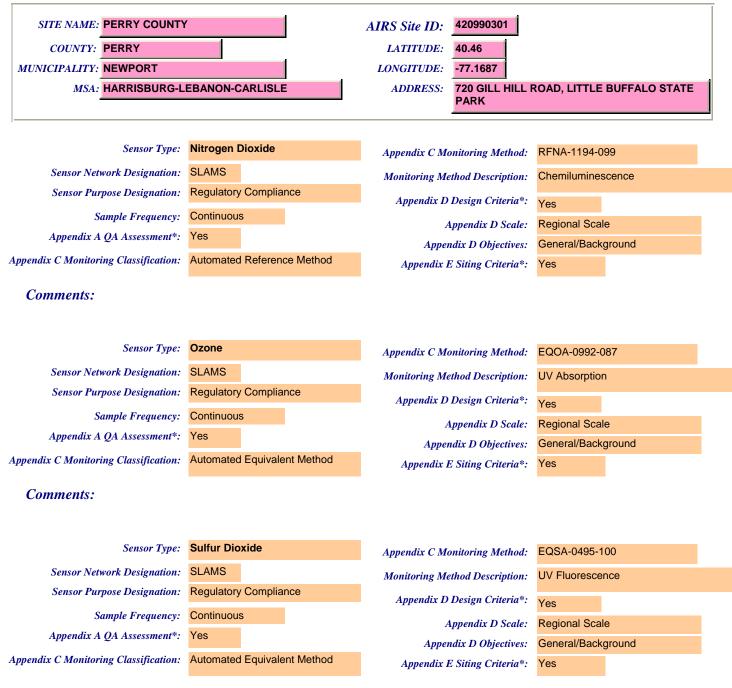
Sensor Type:	Sulfur Dioxide	Appendix C Monitoring Method:	EQSA-0495-100
Sensor Network Designation:	SLAMS	Monitoring Method Description:	UV Fluorescence
Sensor Purpose Designation: F	Regulatory Compliance	Appendix D Design Criteria*:	Yes
Sample Frequency: C	Continuous	Appendix D Scale:	
Appendix A QA Assessment*: Y	Yes	Appendix D Objectives:	
Appendix C Monitoring Classification:	Automated Equivalent Method	Appendix E Siting Criteria*:	Yes

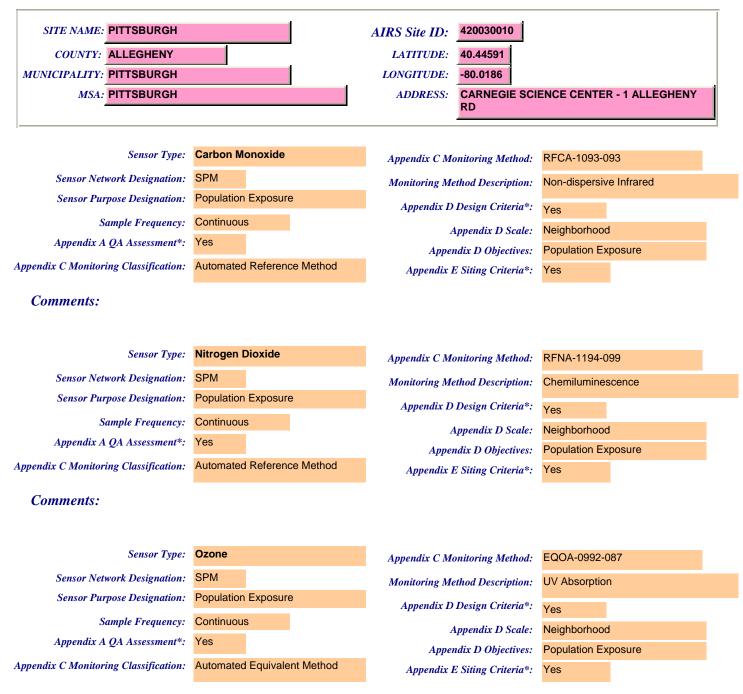




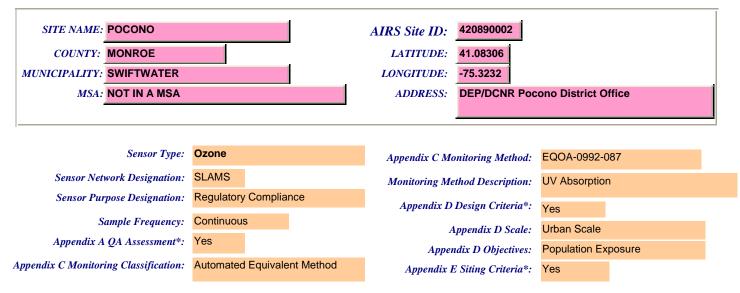
Sensor Type:	Sulfur Dioxide	Appendix C Monitoring Method:	EQSA-0495-100
Sensor Network Designation:	SLAMS	Monitoring Method Description:	UV Fluorescence
Sensor Purpose Designation:	Regulatory Compliance	Appendix D Design Criteria*:	Yes
Sample Frequency:	Continuous	Appendix D Scale:	
Appendix A QA Assessment*:	Yes	Appendix D Objectives:	Population Exposure
Appendix C Monitoring Classification:	Automated Equivalent Method	Appendix E Siting Criteria*:	Yes

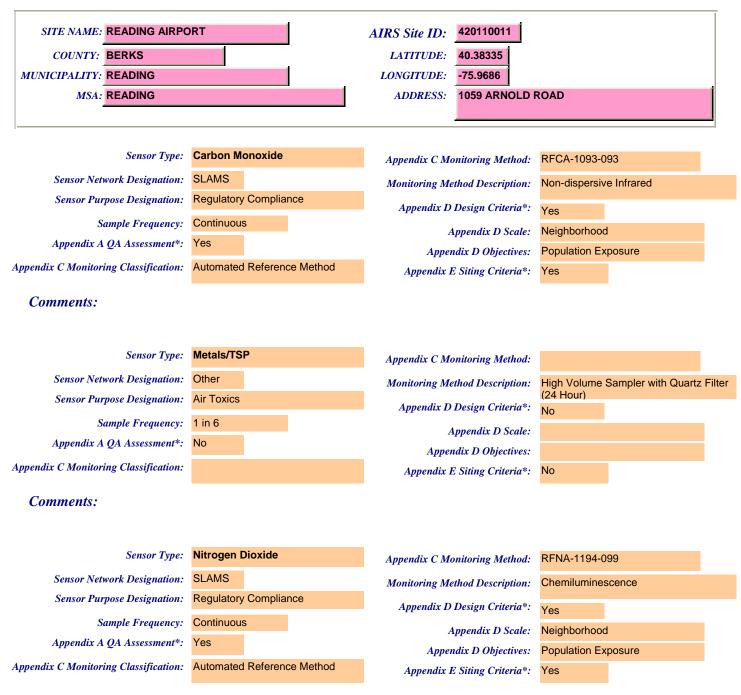






Sensor Type:	Sulfur Dioxide	Appendix C Monitoring Method:	EQSA-0495-100
Sensor Network Designation:	SPM	Monitoring Method Description:	UV Fluorescence
Sensor Purpose Designation:	Population Exposure	Appendix D Design Criteria*:	Yes
Sample Frequency:	Continuous	Appendix D Scale:	
Appendix A QA Assessment*:	Yes	Appendix D Objectives:	Ŭ
Appendix C Monitoring Classification:	Automated Equivalent Method	Appendix E Siting Criteria*:	Yes





Sensor Type:	Ozone	Appendix C Monitoring Method:	EQOA-0992-087
Sensor Network Designation:	SLAMS	Monitoring Method Description:	UV Absorption
Sensor Purpose Designation:	Regulatory Compliance	Appendix D Design Criteria*:	Yes
Sample Frequency:	Continuous	Appendix D Scale:	Neighborhood
Appendix A QA Assessment*:	Yes	Appendix D Objectives:	Population Exposure
Appendix C Monitoring Classification:	Automated Equivalent Method	Appendix E Siting Criteria*:	Yes
Comments:			
Comments: Sensor Type:	Particulate Matter PM10	Appendix C Monitoring Method:	EQPM-1090-079
	Particulate Matter PM10 SLAMS	Appendix C Monitoring Method: Monitoring Method Description:	
Sensor Type:		Monitoring Method Description:	TEOM Gravimetric
Sensor Type: Sensor Network Designation:	SLAMS		
Sensor Type: Sensor Network Designation: Sensor Purpose Designation:	SLAMS Regulatory Compliance	Monitoring Method Description: Appendix D Design Criteria*:	TEOM Gravimetric Yes

Sensor Type:	Particulate Matter PM2.5	Appendix C Monitoring Method:	None
Sensor Network Designation:	SLAMS	Monitoring Method Description:	Gravimetric
Sensor Purpose Designation:	Population Exposure	Appendix D Design Criteria*:	Yes
Sample Frequency:	Continuous	Appendix D Scale:	
Appendix A QA Assessment*:	Yes		-
Appendix C Monitoring Classification:	FDMS	Appendix E Siting Criteria*:	Yes

Comments:

Sensor Type:	Particulate Matter PM2.5	Appendix C Monitoring Method:	RFPS-0498-118
Sensor Network Designation:	SLAMS	Monitoring Method Description:	Gravimetric
Sensor Purpose Designation:	Regulatory Compliance	Appendix D Design Criteria*:	Yes
Sample Frequency:	Daily	Appendix D Scale:	
Appendix A QA Assessment*:	Yes	Appendix D Objectives:	Population Exposure
Appendix C Monitoring Classification:	Manual Reference Method	Appendix E Siting Criteria*:	Yes
Comments:			
Sensor Type:	PM2.5 Speciation	Annendir C Manitoring Method:	None

Sensor Type:	PM2.5 Speciation	Appendix C Monitoring Method:	None
Sensor Network Designation:	STN	Monitoring Method Description:	Gravimetric
Sensor Purpose Designation:	Research/Scientific Monitoring	Appendix D Design Criteria*:	Yes
Sample Frequency:	Every 6th day	Appendix D Scale:	Neighborhood
Appendix A QA Assessment*:	Yes	Appendix D Scale: Appendix D Objectives:	Population Exposure
Appendix C Monitoring Classification:	Speciation	Appendix E Siting Criteria*:	
Comments:			
Sensor Type.	Sulfur Dioxide		
Sensor Type.			
Sensor Network Designation:		Appendix C Monitoring Method:	EQSA-0495-100
		Appendix C Monitoring Method: Monitoring Method Description:	EQSA-0495-100 UV Fluorescence
Sensor Purpose Designation:	SLAMS	Monitoring Method Description:	UV Fluorescence
Sensor Purpose Designation: Sample Frequency:	SLAMS Population Exposure	Monitoring Method Description: Appendix D Design Criteria*:	UV Fluorescence Yes
	SLAMS Population Exposure Continuous	Monitoring Method Description:	UV Fluorescence Yes Neighborhood

Appendix D Objectives: Population Exposure

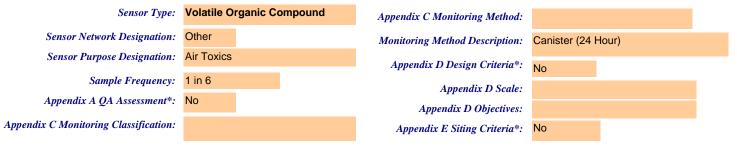
Yes

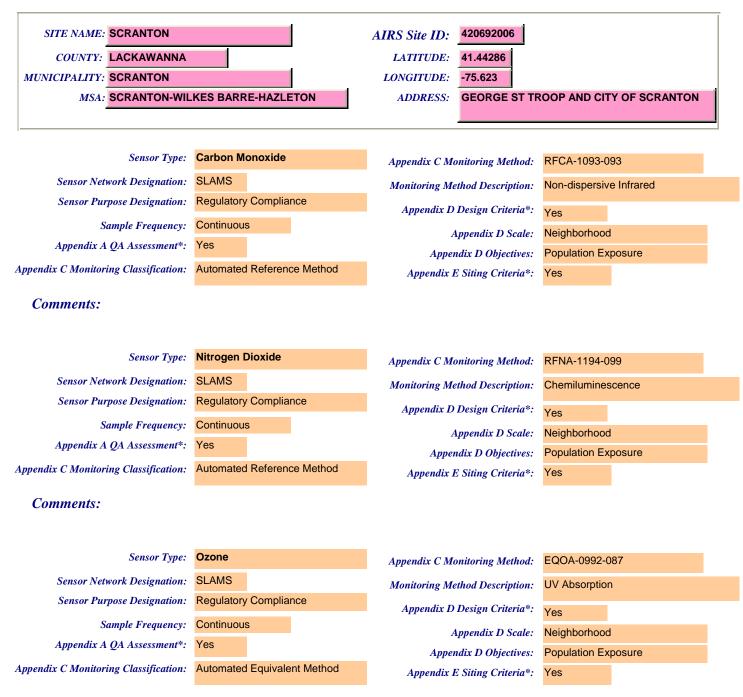
Appendix E Siting Criteria*:

*The Pennsylvania Department of Environmental Protection, Bureau of Air Quality, maintains its ambient air monitoring network in accordance with the quality assurance requirements of 40 CFR Part 58, Appendix A, designs its network in accordance with Appendix D, and locates it sites to meet all requirements of Appendix E. Detailed Appendix A, D and E requirements appear at <u>http://www.gpoaccess.gov/cfr/index.html</u>

Appendix C Monitoring Classification: Automated Equivalent Method

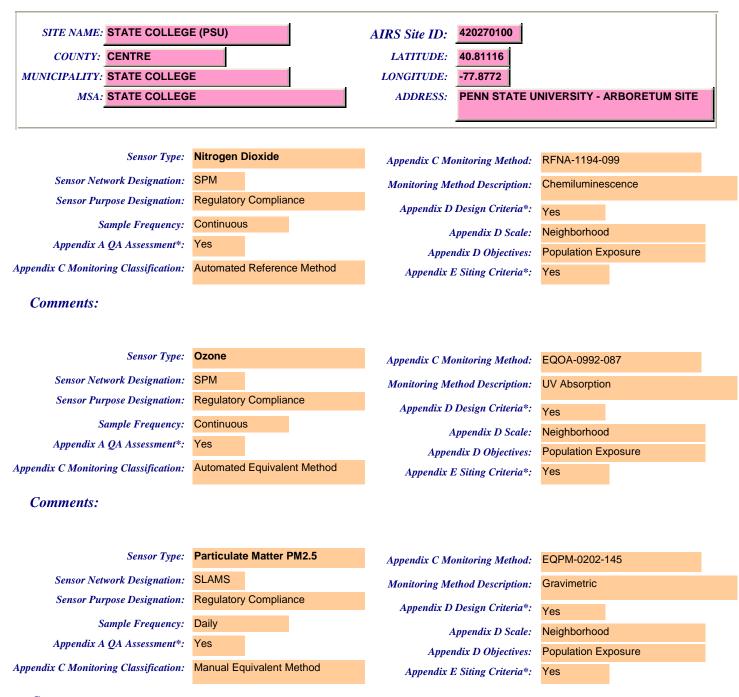
Comments:





Sensor Type:	Particulate Matter PM2.5	Appendix C Monitoring Method:	EQPM-0308-170
Sensor Network Designation:	SLAMS	Monitoring Method Description:	Beta Attenuation
Sensor Purpose Designation:	Population Exposure	Appendix D Design Criteria*:	Yes
Sample Frequency:	Continuous		103
Appendix A QA Assessment*:	Yes	11	
Appendix C Monitoring Classification:	BAM	Appendix E Siting Criteria*:	
Comments:			

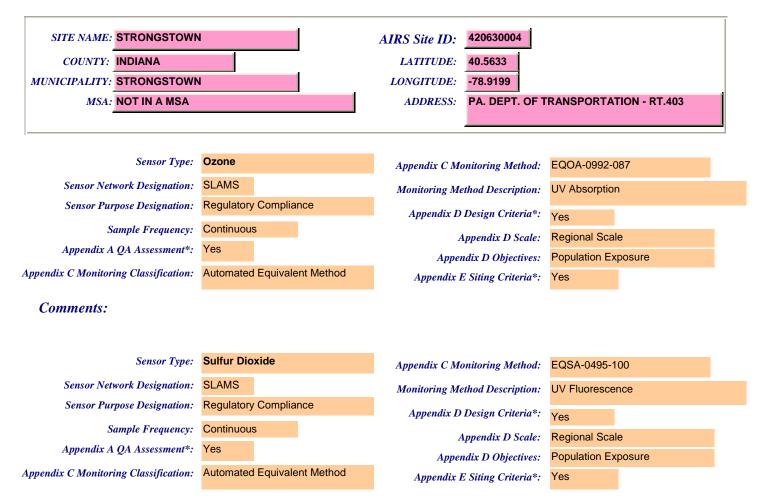
Sensor Type:	PM2.5 Speciation	Appendix C Monitoring Method:	None
Sensor Network Designation:	STN	Monitoring Method Description:	Gravimetric
Sensor Purpose Designation:	Research/Scientific Monitoring	Appendix D Design Criteria*:	Yes
Sample Frequency:	Every 6th day	Appendix D Scale:	
Appendix A QA Assessment*:	Yes	Appendix D Objectives:	U U U U U U U U U U U U U U U U U U U
Appendix C Monitoring Classification:	Speciation	Appendix E Siting Criteria*:	Yes

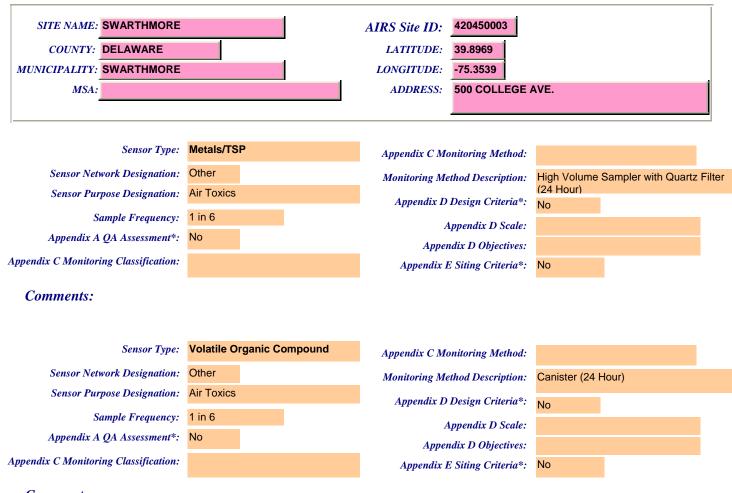


Sensor Type:	PM2.5 Speciation	Appendix C Monitoring Method:	None
Sensor Network Designation:	STN	Monitoring Method Description:	Gravimetric
Sensor Purpose Designation:	Research/Scientific Monitoring	Appendix D Design Criteria*:	Yes
Sample Frequency:	Every 6th day	Appendix D Scale:	
Appendix A QA Assessment*:	Yes	Appendix D Objectives:	Population Exposure
Appendix C Monitoring Classification:	Speciation	Appendix E Siting Criteria*:	Yes
C			

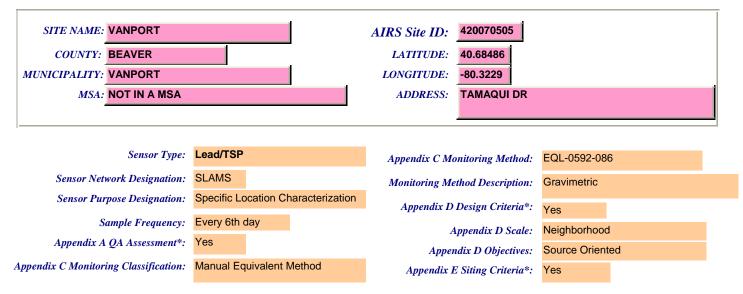
Sensor Type:	Sulfur Dioxide	Appendix C Monitoring Method:	EQSA-0495-100	
Sensor Network Designation:	SPM	Monitoring Method Description:	UV Fluorescence	
Sensor Purpose Designation:	Regulatory Complian	Appendix D Design Criteria*:	Yes	
Sample Frequency:	Continuous	Appendix D Scale:		
Appendix A QA Assessment*:	Yes	Appendix D Objectives:	Population Exposure	
Appendix C Monitoring Classification:	Automated Equivale	Appendix E Siting Criteria*:	: Yes	

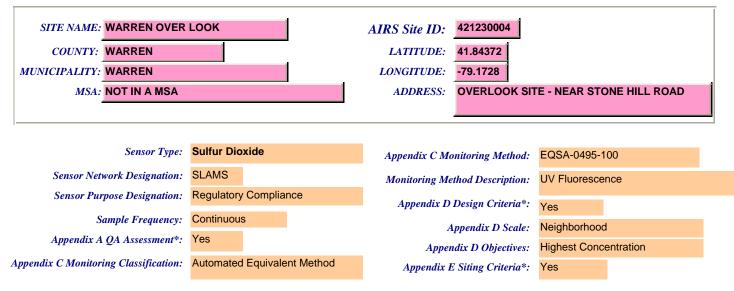
Comments:

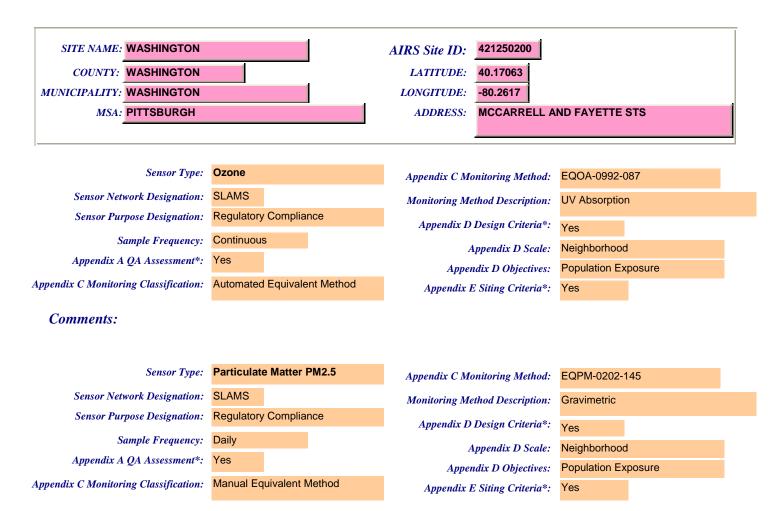


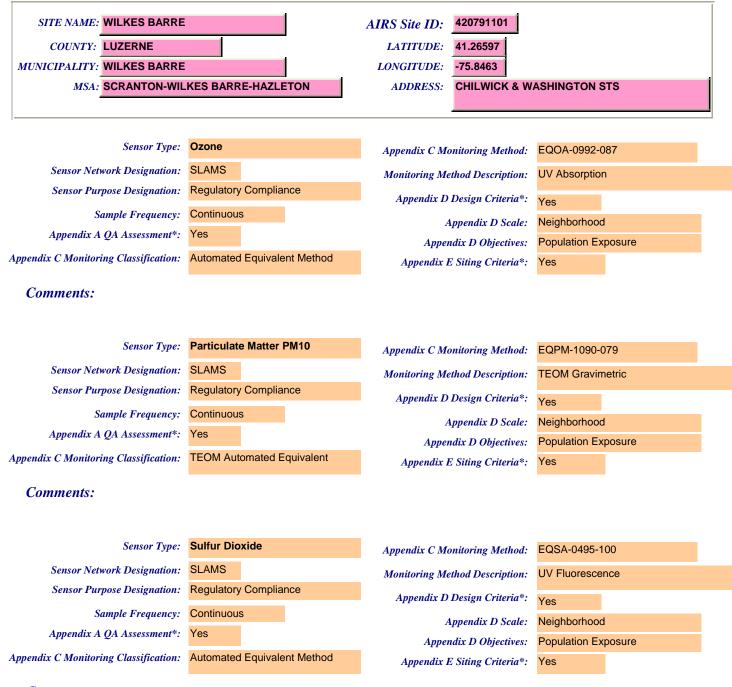


SITE NAME: TIOGA COUNTY	′ (PSU)		AIRS Site ID:	421174000		
COUNTY: TIOGA			LATITUDE:	41.64558		
MUNICIPALITY: GLEASON			LONGITUDE:	-76.9379		
MSA: NOT IN A MSA			ADDRESS:	TIOGA		
Sensor Type:	Ozone		Appendix C Mo	onitoring Method:	EQOA-0992-0	087
Sensor Network Designation:	SPM		Monitoring Me	ethod Description:	UV Absorption	n
Sensor Purpose Designation:	Specific Location Ch	naracterization	Appendix D	Design Criteria*:	Yes	
Sample Frequency:	Continuous			Appendix D Scale:		
Appendix A QA Assessment*:	Yes					
ppendix C Monitoring Classification:	Automated Equivale	nt Method		ndix D Objectives:	Yes	giouna
			Appenaix I	E Siting Criteria*:	165	









SITE NAME: YORK		AIRS Site ID: 421330008	
COUNTY: YORK		<i>LATITUDE:</i> 39.96552	
MUNICIPALITY: YORK		<i>LONGITUDE:</i> <u>-76.6995</u>	
MSA: YORK		ADDRESS: HILL ST.	
Sensor Typ	2: Carbon Monoxide	Appendix C Monitoring Method:	RFCA-1093-093
Sensor Network Designation	a: SLAMS	Monitoring Method Description:	Non-dispersive Infrared
Sensor Purpose Designation	a: Regulatory Compliance	Appendix D Design Criteria*:	Yes
Sample Frequenc	continuous	Appendix D Scale:	
Appendix A QA Assessment	*: Yes	Appendix D Objectives:	
ppendix C Monitoring Classification	a: Automated Reference Method	Appendix E Siting Criteria*:	
Comments:			
Comments.			
Comments.			
Sensor Typ	z: Nitrogen Dioxide	Appendix C Monitoring Method:	RFNA-1194-099
		Appendix C Monitoring Method: Monitoring Method Description:	
Sensor Typ	I: SLAMS	Monitoring Method Description:	Chemiluminescence
Sensor Typ Sensor Network Designatio	a: SLAMS a: Regulatory Compliance	Monitoring Method Description: Appendix D Design Criteria*:	Chemiluminescence Yes
Sensor Typ Sensor Network Designatio Sensor Purpose Designatio	a: SLAMS a: Regulatory Compliance b: Continuous	Monitoring Method Description: Appendix D Design Criteria*: Appendix D Scale:	Chemiluminescence Yes Urban Scale
Sensor Typ Sensor Network Designatio Sensor Purpose Designatio Sample Frequenc	a: SLAMS a: Regulatory Compliance b: Continuous b: Yes	Monitoring Method Description: Appendix D Design Criteria*:	Chemiluminescence Yes Urban Scale Population Exposure
Sensor Typ Sensor Network Designatio Sensor Purpose Designatio Sample Frequenc Appendix A QA Assessment Appendix C Monitoring Classificatio	a: SLAMS a: Regulatory Compliance b: Continuous b: Yes	Monitoring Method Description: Appendix D Design Criteria*: Appendix D Scale: Appendix D Objectives:	Chemiluminescence Yes Urban Scale Population Exposure
Sensor Typ Sensor Network Designatio Sensor Purpose Designatio Sample Frequenc Appendix A QA Assessment	a: SLAMS a: Regulatory Compliance b: Continuous b: Yes	Monitoring Method Description: Appendix D Design Criteria*: Appendix D Scale: Appendix D Objectives:	Chemiluminescence Yes Urban Scale Population Exposure
Sensor Typ Sensor Network Designatio Sensor Purpose Designatio Sample Frequenc Appendix A QA Assessment Appendix C Monitoring Classificatio Comments:	 a: SLAMS a: Regulatory Compliance b: Continuous b: Yes a: Automated Reference Method 	Monitoring Method Description: Appendix D Design Criteria*: Appendix D Scale: Appendix D Objectives: Appendix E Siting Criteria*:	Chemiluminescence Yes Urban Scale Population Exposure Yes
Sensor Typ Sensor Network Designation Sensor Purpose Designation Sample Frequency Appendix A QA Assessment Appendix C Monitoring Classification Comments: Sensor Typ	 sLAMS Regulatory Compliance Continuous Yes Automated Reference Method 	Monitoring Method Description: Appendix D Design Criteria*: Appendix D Scale: Appendix D Objectives:	Chemiluminescence Yes Urban Scale Population Exposure Yes
Sensor Typ Sensor Network Designatio Sensor Purpose Designatio Sample Frequence Appendix A QA Assessment Appendix C Monitoring Classificatio Comments: Sensor Typ Sensor Network Designatio	 SLAMS Regulatory Compliance Continuous Yes Automated Reference Method 	Monitoring Method Description: Appendix D Design Criteria*: Appendix D Scale: Appendix D Objectives: Appendix E Siting Criteria*:	Chemiluminescence Yes Urban Scale Population Exposure Yes EQOA-0992-087
Sensor Typ Sensor Network Designatio Sensor Purpose Designatio Sample Frequence Appendix A QA Assessment Appendix C Monitoring Classificatio Comments: Sensor Typ Sensor Network Designatio Sensor Purpose Designatio	 SLAMS Regulatory Compliance Continuous Yes Automated Reference Method SLAMS Regulatory Compliance 	Monitoring Method Description: Appendix D Design Criteria*: Appendix D Scale: Appendix D Objectives: Appendix E Siting Criteria*: Appendix C Monitoring Method:	Chemiluminescence Yes Urban Scale Population Exposure Yes EQOA-0992-087 UV Absorption
Sensor Typ Sensor Network Designatio Sensor Purpose Designatio Sample Frequence Appendix A QA Assessment Appendix C Monitoring Classificatio Comments: Sensor Typ Sensor Network Designatio Sensor Purpose Designatio Sample Frequence	 SLAMS Regulatory Compliance Continuous Yes Automated Reference Method SLAMS SLAMS Regulatory Compliance Continuous 	Monitoring Method Description: Appendix D Design Criteria*: Appendix D Scale: Appendix D Objectives: Appendix E Siting Criteria*: Appendix C Monitoring Method: Monitoring Method Description:	Chemiluminescence Yes Urban Scale Population Exposure Yes EQOA-0992-087 UV Absorption Yes
Sensor Typ Sensor Network Designatio Sensor Purpose Designatio Sample Frequence Appendix A QA Assessment Appendix C Monitoring Classificatio Comments: Sensor Typ Sensor Network Designatio Sensor Purpose Designatio	 SLAMS Regulatory Compliance Continuous Yes Automated Reference Method SLAMS SLAMS Regulatory Compliance Continuous 	Monitoring Method Description: Appendix D Design Criteria*: Appendix D Scale: Appendix D Objectives: Appendix E Siting Criteria*: Appendix C Monitoring Method: Monitoring Method Description: Appendix D Design Criteria*:	Chemiluminescence Yes Urban Scale Population Exposure Yes EQOA-0992-087 UV Absorption Yes Urban Scale

Sensor Type:	Particulate Matter PM10	Appendix C Monitoring Method:	EQPM-1090-079
Sensor Network Designation:	SLAMS	Monitoring Method Description:	TEOM Gravimetric
Sensor Purpose Designation:	Regulatory Compliance	Appendix D Design Criteria*:	Yes
Sample Frequency:	Continuous	Appendix D Scale:	Urban Scale
Appendix A QA Assessment*:	Yes	Appendix D Objectives:	Population Exposure
Appendix C Monitoring Classification:	TEOM Automated Equivalent	Appendix E Siting Criteria*:	Yes
Comments:			
Comments: Sensor Type:	Particulate Matter PM2.5	Appendix C Monitoring Method:	RFPS-0498-118
		Appendix C Monitoring Method: Monitoring Method Description:	RFPS-0498-118 Gravimetric
Sensor Type:			
Sensor Type: Sensor Network Designation:	SLAMS Regulatory Compliance	Monitoring Method Description:	Gravimetric
Sensor Type: Sensor Network Designation: Sensor Purpose Designation:	SLAMS Regulatory Compliance	Monitoring Method Description: Appendix D Design Criteria*:	Gravimetric Yes

Sensor Type:	Particulate Matter PM2.5	Appendix C Monitoring Method:	None
Sensor Network Designation:	SLAMS	Monitoring Method Description:	Gravimetric
Sensor Purpose Designation:	Population Exposure	Appendix D Design Criteria*:	Yes
Sample Frequency:	Continuous	Appendix D Scale:	
Appendix A QA Assessment*:	Yes	Appendix D Objectives:	
Appendix C Monitoring Classification:	FDMS	Appendix E Siting Criteria*:	Yes

Comments:

Sensor Type:	PM2.5 Speciation	Appendix C Monitoring Method:	None	
Sensor Network Designation:	STN	Monitoring Method Description:	Gravimetric	
Sensor Purpose Designation:	Research/Scientific Monitoring	Appendix D Design Criteria*:	Yes	
Sample Frequency:	Every 6th day	Appendix D Scale:		
Appendix A QA Assessment*:	Yes	Appendix D Objectives:	Population Exposure	
Appendix C Monitoring Classification:	Speciation	Appendix E Siting Criteria*:	Yes	

Sensor Type:	Sulfur Dioxide	Appendix C Monitoring Method:	EQSA-0495-100	
Sensor Network Designation:	SLAMS	Monitoring Method Description:	UV Fluorescence	
Sensor Purpose Designation:	Regulatory Compliance	Appendix D Design Criteria*:	Yes	
Sample Frequency:	Continuous	Appendix D Scale:		
Appendix A QA Assessment*:	Yes	Appendix D Objectives:	Population Exposure	
Appendix C Monitoring Classification:	Automated Equivalent Method	Appendix E Siting Criteria*:	Yes	

Comments:

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SITE NAME:	YORK DOWNWII	ND			AIRS Site ID:	421330011		
COUNTY:	YORK				LATITUDE:	39.86097		
MUNICIPALITY:	YORK				LONGITUDE:	-76.4620		
MSA:	YORK			ADDRESS:	2650 DELTA RC	OAD		
-								
I								
	Sensor Type:	Ozone			Appendix C M	onitoring Method:	EQOA-0992-0	087
Sensor Netw	vork Designation:	SLAMS			Monitoring Mo	ethod Description:	UV Absorption	n
Sensor Purp	pose Designation:	Regulatory	Complia	nce	Appendix D	Design Criteria*:	Yes	
Sa	ample Frequency:	Continuous	S			0	Urban Scale	
Appendix A	QA Assessment*:	Yes		-		Appendix D Scale:		and the set
	-				Appe	ndix D Objectives:	Extreme Down	nwind
Appendix C Monitoria	ng Classification:	Automated	l Equivale	ent Method	Appendix i	E Siting Criteria*:	Yes	

This and related environmental information are available electronically via the Internet. For more information, visit us through the DEP web site at <u>http://www.depweb.state.pa.us/</u>(DEP Keyword: Air, Air Pollution, Air Quality, Clean Air).