



pennsylvania
DEPARTMENT OF ENVIRONMENTAL
PROTECTION

*Commonwealth of Pennsylvania
Department of Environmental Protection
2017 Annual Ambient Air Monitoring
Network Plan*

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**Tom Wolf, Governor
Commonwealth of Pennsylvania**

**Patrick McDonnell, Secretary
Department of Environmental Protection**

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List of Acronyms

APCA	Air Pollution Control Act
AQS	Air Quality System
BAM	Beta Attenuation Monitor
CAA	Clean Air Act
CBSA	Core based statistical area
CFR	Code of Federal Regulations
CSA	Combined Statistical Area
CSN	Chemical Speciation Network
CO	Carbon Monoxide
COPAMS	Commonwealth of Pennsylvania's Air Monitoring System
DRR	Data Requirements Rule
FEM	Federal Equivalent Method
FRM	Federal Reference Method
H ₂ S	Hydrogen Sulfide
MSA	Metropolitan Statistical Area
NAAQS	National Ambient Air Quality Standards
NCore	National Core multipollutant monitoring stations
NO	The gaseous pollutant Nitrogen Oxide
NO ₂	The gaseous pollutant Nitrogen Dioxide
NO _x	Oxides of Nitrogen
O ₃	The gaseous pollutant Ozone
PA DEP	Pennsylvania Department of Environmental Protection
PAMS	Photochemical Assessment Monitoring Station
Pb	Lead
PM _{2.5}	Particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers
PM ₁₀	Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
PSD	Prevention of Significant Deterioration
PWEI	Population Weighted Emissions Index
QA/QC	Quality Assurance/Quality Control
QAPP	Quality Assurance Project Plan
RA-40	NO ₂ Monitoring Sites Required by U.S. EPA Regional Administrator
SIP	State Implementation Plan
SLAMS	State or Local Air Monitoring Stations
SO ₂	The gaseous pollutant Sulfur Dioxide
SPM	Special Purpose Monitor
TSP	Total Suspended Particulate
TEOM	Tapered Element Oscillating Microbalance
U.S. EPA	U.S. Environmental Protection Agency
UV	Ultraviolet
VOC	Volatile Organic Compounds

Introduction

The Federal Air Pollution Control Act of 1955 was the first federal legislation enacted by Congress to provide research and technical assistance to state and local governments responsible for controlling air pollution. This Act appropriated \$5 million each fiscal year from July 1955 to June 30, 1960, for the U.S. Department of Health, Education and Welfare to carry out the functions of the Act. The Clean Air Act of 1963 was the first federal legislation establishing a federal air pollution control program within the U.S. Public Health Service and authorized research into techniques for monitoring and controlling air pollution. In 1967, the Air Quality Act was enacted in order to expand federal government activities. In accordance with this law, enforcement proceedings were initiated in areas subject to interstate air pollution transport. As part of these proceedings, the federal government for the first time conducted extensive ambient monitoring studies and stationary source inspections.¹

In 1970, Congress enacted the Clean Air Act (CAA) authorizing the U.S. Environmental Protection Agency (U.S. EPA) to establish National Ambient Air Quality Standards (NAAQS) for pollutants shown to threaten human health and welfare. Primary NAAQS were promulgated by EPA according to criteria designed to protect public health, including an adequate margin of safety to protect sensitive populations including children, asthmatics and the elderly. The secondary NAAQS were promulgated by EPA according to criteria designed to protect public welfare (decreased visibility, damage to crops, vegetation, and buildings, etc.). U.S. EPA has promulgated NAAQS for the following 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 pollutants are commonly called the “criteria” pollutants. Table 1 on the following page lists all of the NAAQS for the criteria pollutants and is available at <https://www.epa.gov/criteria-air-pollutants/naaqs-table>.

In accordance with Section 107 of the CAA, 42 U.S.C. section 7407, after U.S. EPA establishes or revises a primary and/or secondary NAAQS, U.S. EPA designates areas as “attainment,” “nonattainment,” or “unclassifiable” areas upon review of certified and quality assured ambient air monitoring data collected by state, local and tribal governments. For areas with nonattainment designations, the state and local agencies must develop and submit to U.S. EPA revisions to State Implementation Plans (SIPs) outlining how areas will attain and maintain the standards by reducing air pollutant emissions.

¹ http://www.epa.gov/air/caa/caa_history.html

Table 1. National Ambient Air Quality Standards (NAAQS)

Pollutant [final rule cite]	Primary/ Secondary	Averaging Time	Level	Form	
Carbon Monoxide [76 FR 54294, Aug 31, 2011]	primary	8 hours	9 ppm	Not to be exceeded more than once per year	
		1 hour	35 ppm		
Lead [73 FR 66964, Nov 12, 2008]	primary and secondary	Rolling 3 month period	0.15 µg/m ³ ⁽¹⁾	Not to be exceeded	
Nitrogen Dioxide [75 FR 6474, Feb 9, 2010] [61 FR 52852, Oct 8, 1996]	primary	1 hour	100 ppb	98 th percentile of 1-hour daily maximum concentrations, averaged over 3 years	
	primary and secondary	1 year	53 ppb ⁽²⁾	Annual Mean	
Ozone [80 FR 65292, Oct 26, 2015]	primary and secondary	8 hours	0.070 ppm ⁽³⁾	Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years	
Particle Pollution Dec 14, 2012 [78 FR 3086, Jan 15, 2013]	PM _{2.5}	primary	1 year	12.0 µg/m ³	annual mean, averaged over 3 years
		secondary	1 year	15.0 µg/m ³	annual mean, averaged over 3 years
		primary and secondary	24 hours	35 µg/m ³	98 th percentile, averaged over 3 years
	PM ₁₀	primary and secondary	24 hours	150 µg/m ³	Not to be exceeded more than once per year on average over 3 years
Sulfur Dioxide [75 FR 35520, Jun 22, 2010] [38 FR 25678, Sep 14, 1973]	primary	1 hour	75 ppb ⁽⁴⁾	99 th percentile of 1-hour daily maximum concentrations, averaged over 3 years	
	secondary	3 hours	0.5 ppm	Not to be exceeded more than once per year	

(1) In areas designated nonattainment for the Pb standards prior to the promulgation of the current (2008) standards, and for which implementation plans to attain or maintain the current (2008) standards have not been submitted and approved, the previous standards (1.5 µg/m³ as a calendar quarter average) also remain in effect.

(2) The level of the annual NO₂ standard is 0.053 ppm. It is shown here in terms of ppb for the purposes of clearer comparison to the 1-hour standard level.

(3) Final rule signed October 1, 2015, and effective December 28, 2015. The previous (2008) O₃ standards additionally remain in effect in some areas. Revocation of the previous (2008) O₃ standards and transitioning to the current (2015) standards will be addressed in the implementation rule for the current standards.

(4) The previous SO₂ standards (0.14 ppm 24-hour and 0.03 ppm annual) will additionally remain in effect in certain areas: (1) any area for which it is not yet 1 year since the effective date of designation under the current (2010) standards, and (2) any area for which implementation plans providing for attainment of the current (2010) standard have not been submitted and approved and which is designated nonattainment under the previous SO₂ standards or is not meeting the requirements of a SIP call under the previous SO₂ standards (40 CFR 50.4(3)). A SIP call is an EPA action requiring a state to resubmit all or part of its State Implementation Plan to demonstrate attainment of the require NAAQS.

The Pennsylvania Air Pollution Control Act (APCA), enacted originally on January 8, 1960, 35 P.S. Section 4001 et seq., established the framework for the Commonwealth’s Air Pollution Control Program. The Declaration of Policy set forth in Section 2 of the APCA, 35 P.S. Section 4002, provides as set forth below.

It is hereby declared to be the policy of the Commonwealth of Pennsylvania to protect the air resources of the Commonwealth to the degree necessary for the (i) protection of public health, safety and well-being of its citizens; (ii) prevention of injury to plant and animal life and to property; (iii) protection of the comfort and convenience of the public and the protection of the recreational resources of the Commonwealth; (iv) development, attraction and expansion of industry, commerce and agriculture; and (v) implementation of the provisions of the Clean Air Act in the Commonwealth.

Section 4 of the APCA empowers the Pennsylvania Department of Environmental Protection (formerly the Department of Environmental Resources and hereafter referred to as the PA DEP) to implement the provisions of the Clean Air Act in the Commonwealth. 35 P.S. Section 4004(1).

Since its establishment in 1971, the PA DEP has implemented air pollution control programs to protect the air resources of the Commonwealth that, with a great deal of success, have 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 the adoption and implementation of PM_{2.5} NAAQS requirements in 1997. Currently, PA DEP has an extensive air quality monitoring program that monitors not only for criteria pollutants but also for air toxics and volatile organic compounds (VOCs). A general description of air pollutants is provided in Appendix A of this document.

Ambient Air Monitoring Network Plan Requirements

On March 28, 2016, the United States Environmental Protection Agency (U.S. EPA) promulgated a final rule titled “Revisions to Ambient Monitoring Quality Assurance and Other Requirements” for criteria pollutants. In the preamble, U.S. EPA stated that the purpose for the revisions was “to provide clarifications to existing requirements and to reduce the compliance burden of monitoring agencies operating ambient monitoring networks.” These revisions focused on the network design and quality assurance requirements set forth in 40 CFR Part 58, “Ambient Air Quality Surveillance,” and its associated appendices. Changes to the network design requirements included revisions to required PM_{2.5} sampling frequencies, as well as revisions to requirements for annual network plan, annual data certification and data submission to U.S. EPA. Changes to quality assurance requirements included a reformatting of the quality assurance requirements appendix (40 CFR Part 58, Appendix A), revisions to precision check and performance audit concentration levels, revisions to the comparison threshold for collocated lead monitors, as well as revisions to the requirements for the submission of quality assurance data to U.S. EPA.

As revised in March 2016, 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 whether the operation of each monitor meets the requirements of 40 CFR Part 58, Appendices A, B, 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 PM_{2.5} NAAQS, as described in 40 CFR § 58.30;
- The Metropolitan Statistical Area (MSA), Core Based Statistical Area (CBSA), Combined Statistical Area (CSA), or other area represented by the monitor;
- The designation of lead monitors as source-oriented or non-source-oriented;
- Any lead monitor for which a waiver has been requested or granted by U.S. EPA to use Pb-PM₁₀ monitoring in lieu of Pb-TSP monitoring; and
- The identification of NO₂ monitors as near-road, area-wide or vulnerable or susceptible population monitors in accordance with 40 CFR Appendix D, §4.3 “Nitrogen Dioxide (NO₂) Design Criteria”

The “Commonwealth of Pennsylvania Department of Environmental Protection 2016 Annual Ambient Air Monitoring Network Plan” has been developed to meet these requirements. The body of this document describes the PA DEP Ambient Air Network and includes network modifications. Appendix C of this document outlines the fulfilment of network design and quality assurance requirements set forth in the appendices of 40 CFR Part 58. Appendix D of this document provides site and monitor details for all monitoring sites in the PA DEP Ambient Air Monitoring Network.

Description of PA DEP's Ambient Air Monitoring Network

Ambient air quality monitoring in Pennsylvania is performed by the PA DEP and local air pollution control agencies in Philadelphia and Allegheny Counties. The Pennsylvania Department of Environmental Protection is primarily responsible for air monitoring in the Commonwealth of Pennsylvania. PA DEP has approved local monitoring agencies to perform monitoring independently in the two most populous counties in the Commonwealth. The Allegheny County Health Department (ACHD) performs ambient air monitoring in Allegheny County, while the City of Philadelphia Health Department's Air Management Services (AMS) performs ambient air monitoring in Philadelphia County. In addition to monitoring performed in the Commonwealth by PA DEP, ACHD and AMS, EPA's Clean Air Markets Division operates ozone monitors at five locations in Pennsylvania, as part of the Clean Air Status and Trends Network (CASTNET) program. Contact information for all three ambient air monitoring agencies in Pennsylvania, as well as the CASTNET program, is listed in Table 2.

Table 2. Ambient Air Monitoring Agencies in Pennsylvania

Organization	Address and Phone	Internet
Commonwealth of Pennsylvania 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	http://www.dep.pa.gov/Business/Air/BAQ/Pages/default.aspx
Allegheny County Health Department	39th Street and Penn Ave. Pittsburgh, PA 15201 (412) 578-8104	http://www.achd.net/air/index.html
City of Philadelphia Department of Public Health Air Management Services	321 University Avenue Philadelphia, PA 19104 (215) 685-7584	http://www.phila.gov/health/airmanagement/
CASTNET	US EPA Clean Air Markets Division 1200 Pennsylvania Avenue, NW Mail Code 6204M Washington, DC 20460 (202) 343-9790	http://epa.gov/castnet/javaweb/index.html

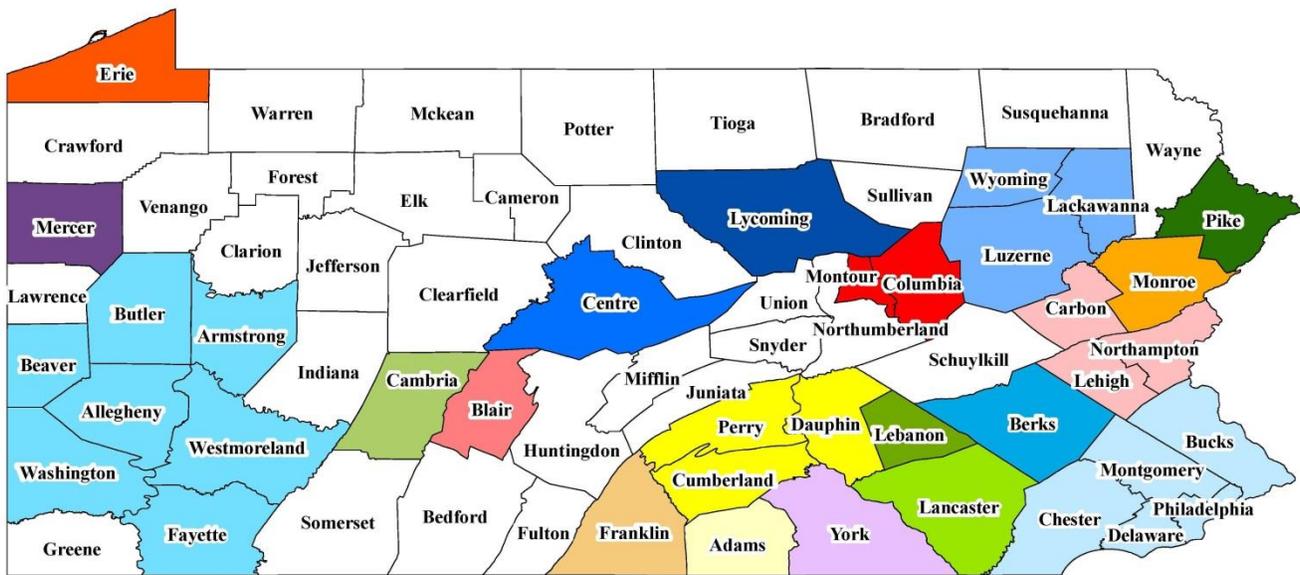
This document does not provide detailed descriptions of the monitoring networks operated and maintained by the PA DEP- approved local air pollution control programs in Philadelphia and Allegheny Counties. ACHD operates a network of fourteen ambient air monitoring stations, including one multi-pollutant NCore site, throughout Allegheny County. Philadelphia AMS operates a network of eleven air monitoring sites, including one multi-pollutant NCore site and two community-based monitoring sites, located throughout Philadelphia County. In addition to criteria pollutant monitoring, these agencies also conduct monitoring for air toxics and chemical speciation of PM_{2.5} at selected sites. Detailed descriptions of local networks and plans are submitted to EPA by the local agencies, and may be obtained directly from the agencies, using the contact information listed in Table 2 of this document.

PA DEP's monitoring strategy generally requires the installation of monitors in areas under PA DEP's jurisdiction having high population density and/or high levels of contaminants, based on EPA guidance

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and population information from the U.S. Office of Management and Budget (OMB). The OMB defines urbanized areas of concentrated population of 50,000 or greater as Metropolitan Statistical Areas (MSA). The Commonwealth of Pennsylvania encompasses twenty MSAs, either wholly or in part. Figure 1 displays the geographical boundaries of MSAs and population estimates for 2016 available at <http://www.census.gov>. Note that several MSAs include populations outside the Commonwealth, as indicated by the inclusion of one or more state abbreviations in the MSA name. The Code of Federal Regulations (CFR) sets forth minimum monitoring requirements based at least in part on population statistics for ozone, sulfur dioxide, nitrogen dioxide and particulate matter (PM) monitoring networks. PA DEP conducts air monitoring surveillance in both MSA and non-MSA regions. Appendix B of this document contains maps of PA DEP monitoring site locations, for each MSA and non-MSA region.

Figure 1. Map of Metropolitan Statistical Areas (MSA) in Pennsylvania

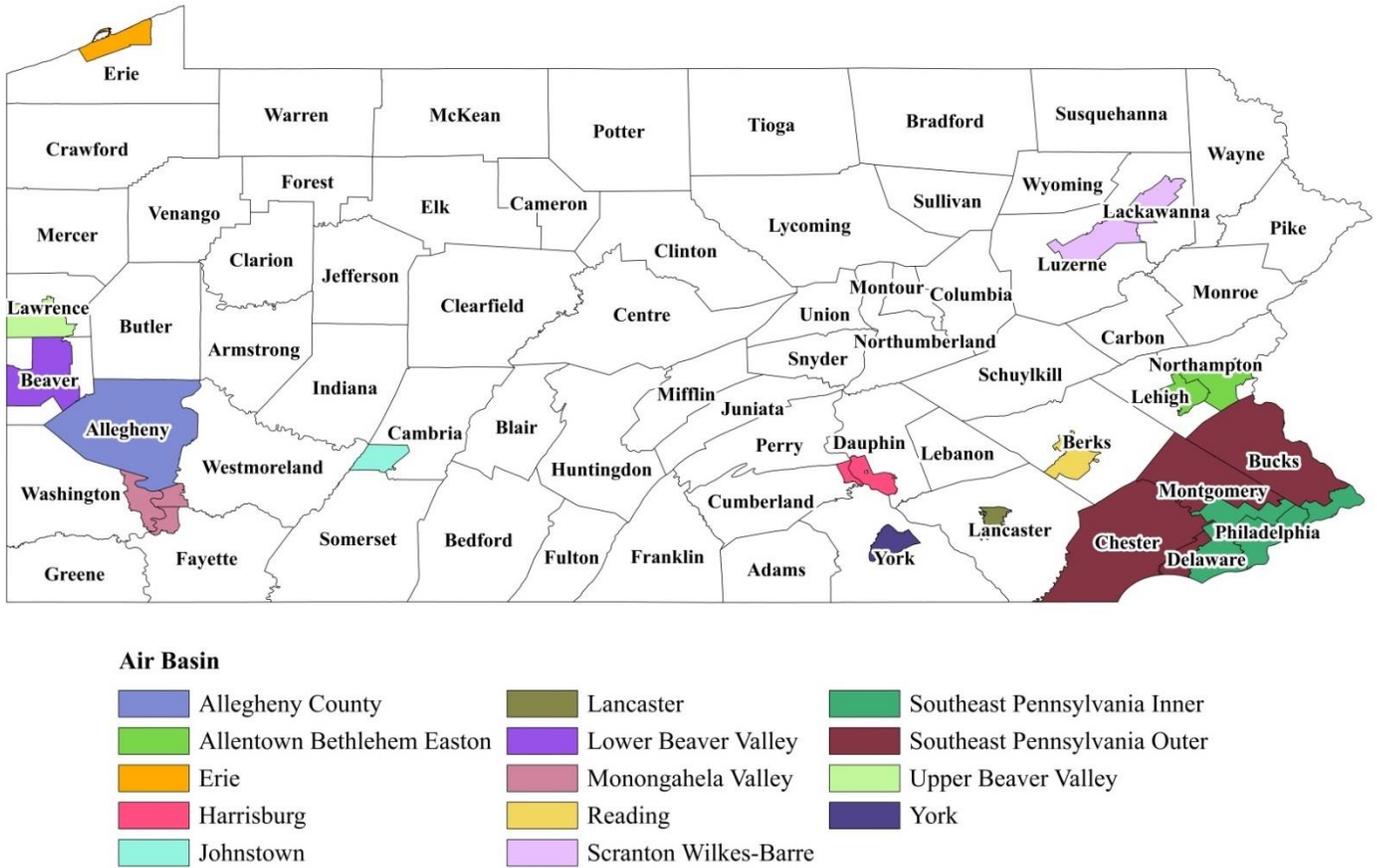


Legend:

MSA	Population	MSA	Population
Allentown-Bethlehem-Easton, PA-NJ	835,652	New York-Newark-Jersey City, NY-NJ-PA	20,153,634
Altoona, PA	124,650	Philadelphia-Camden-Wilmington, PA-NJ-DE-MD	6,070,500
Bloomsburg-Berwick, PA	84,763	Pittsburgh, PA	2,342,299
Chambersburg-Waynesboro, PA	153,851	Reading, PA	418,812
East Stroudsburg, PA	166,098	Scranton--Wilkes-Barre--Hazleton, PA	555,225
Erie, PA	276,207	State College, PA	161,464
Gettysburg, PA	102,180	Williamsport, PA	115,248
Harrisburg-Carlisle, PA	568,033	York-Hanover, PA	443,744
Johnstown, PA	134,732	Youngstown-Warren-Boardman, OH-PA	544,746
Lancaster, PA	538,500	Non-MSA Regions	
Lebanon, PA	138,863		

In addition to conducting monitoring in the federally defined MSA, almost half of the PA DEP air monitoring stations are located in the “air basins” of the Commonwealth. Air basins as defined in 25 Pa. Code § 121.1 consist of thirteen geographical areas. Figure 2 displays the geographical boundaries of these areas. PA DEP conducts air monitoring surveillance in both air basin and non-air basin regions.

Figure 2. Map of Pennsylvania Air Basins



Commonwealth of Pennsylvania's Air Monitoring Network – Sites and Pollutants

The planned 2017-2018 PA DEP Air Monitoring Network consists of 75 air monitoring stations, located in 41 of the 67 counties in Pennsylvania, and includes ambient air monitoring sites for criteria pollutants, hydrogen sulfide, and air toxics, including VOCs. Descriptions of air pollutants are provided in Appendix A of this document. The PA DEP Air Monitoring Network utilizes both continuous and discrete methods of pollutant sampling.

The continuous portion of the PA DEP Air Monitoring Network utilizes a totally automatic, microprocessor-controlled system of 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 near real-time monitoring. PA DEP utilizes continuous methods for the criteria pollutants ozone, sulfur dioxide, nitrogen dioxide, oxides of nitrogen, carbon monoxide, PM_{2.5}, and PM₁₀, as well as for hydrogen sulfide and mercury. Various meteorological data from many of the monitoring 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 PA DEP Air Monitoring Network utilizes discrete sampling methods for criteria and air toxic pollutants, with analysis of the sample performed off-site at the PA DEP Bureau of Laboratories. A discrete method is generally defined as a “manual” method of sampling for a defined or “discrete” period of time. Discrete sampling includes both filter-based and canister-based sampling. For filter-based sampling, air is actively pumped through a filter substrate, onto which air pollutants are trapped. Canister sampling utilizes vacuum pressure to fill a sampling canister over time. After sampling, the filter or canister is removed from the collection site and analyzed by the PA DEP Bureau of Laboratories in Harrisburg, PA. PA DEP utilizes discrete methods for the criteria pollutants PM_{2.5} and lead, as well as air toxics, including heavy metals and VOCs. In addition, PA DEP conducts filter-based PM_{2.5} speciation monitoring at selected sites. Speciation analysis provides a breakdown of PM_{2.5} constituent compounds. Speciation analysis is performed at the Research Triangle Institute (RTI) laboratory in Research Triangle Park, NC.

The map shown in Figure 3 displays the site locations of all ambient air monitoring stations in the PA DEP Air Monitoring Network. Table 3 provides a listing of the parameters monitored at each location.

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Table 3. PA DEP Air Monitoring Network Sites and Parameters Monitored, 2017-2018

Site Name	Criteria Pollutants							Non-criteria	Air Toxics				
	Ozone	Sulfur Dioxide	Nitrogen Dioxide	Carbon Monoxide	PM _{2.5}	PM _{2.5} Speciation	PM ₁₀	Lead	H ₂ S	VOC	Carbonyls	Metals	Mercury
Allentown	X				X		X						
Altoona	X	X			X		(disc)						
Arendtsville	X	X	X	X	X	X				X	X		
Beaver Falls	X		X		X		X			X			
Beaver Valley								X				X	
Brighton Twp	X	X											
Bristol	X												
Carlisle					X								
Charleroi	X	X	X		X					X			
Chester	X	(disc)	X		X	(disc)*		X		X		X	
Collegeville										X			
Conemaugh								X					
Duryea								X					
Easton (disc)	(disc)	(disc)							(disc)				
Ellwood City								X				X	
Erie	X		X	X	X		X						
Evansburg United Methodist										X			
Farrell	X				X								
Florence	X	X			X	X							
Freemansburg	X	(add)	X		X								
Greensburg	X				X	X				X			
Harrisburg	X				X								
Hershey	X						X						
Holbrook	X				X								
Hookstown	X	X											
Houston			X							X	X		
Johnstown	X	X	X	X	X	X	X						
Kittanning	X				X								
Kutztown	X												
Lancaster	X				X	X	X			X	X	X	X
Lancaster Downwind	X				X	X							
Laureldale North								X					
Laureldale South								X					
Lebanon	X				X	(add)							
Lewisburg										X		X	
Lyons Boro								X					
Lyons Park								X					
Marcus Hook					X	(disc)*				X			
Mehoopany (disc)										(disc)			
Methodist Hill	X												
Montoursville	X						(disc)						
Moshannon	X												

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Table 3. PA DEP Air Monitoring Network Sites and Parameters Monitored, 2017-2018 (cont.)

Site Name	Criteria Pollutants								Non-criteria	Air Toxics			
	Ozone	Sulfur Dioxide	Nitrogen Dioxide	Carbon Monoxide	PM _{2.5}	PM _{2.5} Speciation	PM ₁₀	Lead	H ₂ S	VOC	Carbonyls	Metals	Mercury
Mt Joy								X					
New Castle	X	(disc)											
New Garden	X				X	X							
Norristown	X				X								
Palmerton								X					
Palmerton Electric												X	
Peckville	X												
Potter Township								X					
Presque Isle										X		X	
Reading Airport	X	X			X					X		X	
Ridley Park (disc)								(disc)					
Scranton	X		X	X	X								
Shelocta								X					
Spring Grove		X											
Springville (disc)										(disc)			
State College	X	X	X		X								
Strongstown	X	X											
Swarthmore (disc)										(disc)		(disc)	
Swiftwater	X				(disc)								
Tioga County	X		X		X								
Towanda	X		X		X								
Upper Strasburg								X					
Vanport								X					
Warren East		X							X				
Warren Overlook		X											
Washington (disc)	(disc)				(disc)								
Wilkes Barre	X	X					X						
York	X	X	X	(disc)	X					X			
York Downwind	X												
Clarion County					(add)								
Fayette County	(add)		(add)		(add)					(add)	(add)		
Jefferson County					(add)								
Susquehanna County					(add)					(add)	(add)		
Wyoming County					(add)					(add)	(add)		
Totals	41	16	14	4	33	9	7	15	1	17	6	8	1

(disc) = Site/Monitor will be discontinued in 2017-2018 (add) = Site/Monitor will be added in 2017-2018

(disc)* = One of either the Chester or Marcus Hook PM_{2.5} speciation monitors will be discontinued in 2017-2018

Changes to Monitoring Sites and Monitors in 2016-2017

PA DEP completed several modifications to its air monitoring network during 2016-2017. The changes are described briefly in Table 4.

Table 4. Summary of Changes to the PA DEP Air Monitoring Network, 2016-2017

Site Terminations
1) Discontinued lead monitoring sites at Shelocta (Indiana County) and Upper Strasburg (Franklin County)
Discontinued Monitors in Criteria Pollutant Monitoring Networks
1) Discontinued SO ₂ monitoring at Bristol (Bucks County), Norristown (Montgomery County), Erie (Erie County) and Holbrook (Greene County)
Modifications to the PM_{2.5} Network
1) Installed PM _{2.5} monitor at the Norristown (Montgomery County) site*
Modifications to the PM_{2.5} Speciation Network
1) Discontinued PM _{2.5} speciation monitoring at the Freemansburg (Northampton County) site
2) Installed PM _{2.5} speciation monitor at the Lancaster Downwind (Lancaster County) site
Modifications to the Air Toxics Network
1) Relocated VOC monitor from Beaver Falls (Beaver County) to Beaver Valley (Beaver County) monitoring site.
2) Replaced TSP-based monitor with PM ₁₀ -based monitor at Ellwood City (Lawrence County) for metals sampling
3) Discontinued Slippery Rock (Butler County) monitoring site – VOC and metals
4) Discontinued VOC sampling at Freemansburg (Northampton County)
5) Established Palmerton Electric (Carbon County) air toxics monitoring site for metals sampling

*As stated in the 2016 Annual Network Plan, PA DEP planned to close the Norristown (Montgomery County) ozone monitoring site. However, PA DEP has retained this site.

Site Terminations

Following U.S. EPA approvals, PA DEP discontinued the lead monitoring sites at Shelocta (Indiana County) and Upper Strasburg (Franklin County) sites were well below the relevant NAAQS, and not required to support NAAQS compliance, air quality modeling or air quality forecasting activities. PA DEP discontinued these monitors March 31, 2017. Detailed rationales for these monitor removals were included in PA DEP's 2016 Annual Air Monitoring Network Plan.

Discontinued Monitors in Criteria Pollutant Monitoring Networks

Following U.S. EPA approvals, PA DEP discontinued the following SLAMS monitors in 2016:

- SO₂ monitoring at Bristol (Bucks County), Norristown (Montgomery County), Erie (Erie County) and Holbrook (Greene County)

Pollutant concentrations measured at these sites were well below the relevant NAAQS, and not required to support NAAQS compliance, air quality modeling or air quality forecasting activities. PA DEP discontinued these monitors September 30, 2016. With the discontinuation of these monitors, PA DEP remains able to adequately characterize the regions or MSAs formerly containing these monitors. Detailed rationales for these monitor removals were included in PA DEP's 2016 Annual Air Monitoring Network Plan.

Modifications to the PM_{2.5} Network

As stated in the 2016 Annual Network Plan, PA DEP planned to close the Norristown (Montgomery County) ozone monitoring site. However, PA DEP's contracted forecaster for the Philadelphia area, Penn State University, heavily utilizes the information generated at the Norristown site to increase the accuracy of their forecasts. Beginning January 2017, in addition to ozone monitoring, PA DEP re-established PM_{2.5} monitoring at the site to provide additional ambient PM_{2.5} spatial data (i.e., 3-dimensional) in the southeastern Pennsylvania region.

Modifications to the PM_{2.5} Speciation Network

Following U.S. EPA approvals, PA DEP discontinued PM_{2.5} speciation monitoring at Freemansburg (Northampton County), and began PM_{2.5} speciation monitoring at the Lancaster Downwind (Lancaster County) site, to assist in determining local source impacts. PA DEP discontinued speciation monitoring at Freemansburg on October 31, 2016 and began monitoring at the Lancaster Downwind site on November 1, 2016. Detailed rationales for these changes were included in PA DEP's 2016 Annual Air Monitoring Network Plan.

Modifications to the Air Toxics Network

In April 2017, PA DEP discontinued VOC sampling at Beaver Falls (Beaver County) and relocated the VOC monitor to the existing Beaver Valley (Beaver County) site. VOC sampling commenced at Beaver Valley on April 1, 2017.

In April 2016, PA DEP installed a PM₁₀ monitor at its Ellwood City (Beaver County) monitoring site, to provide samples for metals analysis. Results from previous toxics metals screening methods performed at this site showed elevated levels of cadmium. PA DEP installed the more analytically-precise quartz filters and PM₁₀ sampling method better characterize the levels of cadmium measured at

this site. The PM₁₀ samplers collect smaller-sized particles (less than 10 microns in diameter) and better represent the respirable size fraction that more directly impacts human health. In addition, using quartz filters allows PA DEP to receive results from the lab that have a lower limit of quantification and reporting than the TSP samplers and glass filters used for the screening method.

On July 29, 2016, PA DEP discontinued monitoring for VOCs and metals (TSP) at its Slippery Rock University (Butler County) toxics monitoring site. Monitoring was terminated due to the lack of appreciable sample results and a diminishing budget.

On December 31, 2016, PA DEP discontinued monitoring for VOCs at its Freemansburg (Northampton County) toxics monitoring site. Monitoring was terminated due to low ambient concentrations of pollutants.

Detailed rationales for the changes listed above were included in PA DEP's 2016 Annual Air Monitoring Network Plan.

PA DEP's Northeast Regional office has operated a special study site at the Palmerton Electric substation site in Palmerton (Carbon County) since April 1998 to better characterize local particulate emissions. As part of our efforts to standardize sampling, AQM has assumed operational responsibility for this location and converted the sampling efforts to the statewide metals sampling suite. The start date for this site was January 1, 2017. The site name is "Palmerton Electric." A site location overview is included in Appendix D of this document.

Site and Monitoring Activity Anticipated within the Next 18 Months

PA DEP is making numerous changes to its air monitoring network over the next eighteen months. These changes are summarized below in Table 5.

Table 5. Summary of Changes to the PA DEP Air Monitoring Network, 2017-2018

Changes Relating to Natural Gas Extraction and Processing Activities in Marcellus Shale Regions
1) Establish new SLAMS monitoring sites in Clarion, Fayette, Jefferson, Lycoming, Susquehanna and Wyoming Counties
Changes Relating to the Annual Assessment of the Ambient Air Quality Monitoring Network
Cancellation of Planned Near-road NO₂ Monitoring Sites
1) Cancel planned near-road NO ₂ monitors, due to revision of the NO ₂ monitoring rule
Site Terminations
1) Discontinue Easton (Northampton County) monitoring station (ozone, H ₂ S, SO ₂)
2) Discontinue lead monitoring at Ridley Park (Delaware County)
3) Discontinue Washington (Washington County) monitoring station (ozone, PM _{2.5})
Modifications to the SO₂ Network
1) Discontinue SO ₂ monitoring at Chester (Delaware County) and New Castle (Lawrence County) sites
2) Install SO ₂ monitoring at Freemansburg (Northampton County) site
Modifications to the CO Network
1) Discontinue CO monitoring at the York (York County) site
Modifications to the PM_{2.5} Network
1) Discontinue PM _{2.5} monitoring at the Swiftwater (Monroe County) site
Modifications to the PM_{2.5} Speciation Network
1) Discontinue PM _{2.5} speciation monitoring at either the Chester or Marcus Hook site (Delaware County)
2) Install PM _{2.5} speciation monitor at the Lebanon (Lebanon County) site
Modifications to the PM₁₀ Network
1) Discontinue PM ₁₀ monitoring at the Altoona (Blair County) site
2) Discontinue PM ₁₀ monitoring at the Montoursville (Lycoming County) site
Modifications to the Air Toxics Network
1) Discontinue Swarthmore (Delaware County) VOC and metals monitoring site
2) Relocate VOC sampling from Springville (Susquehanna County) and Mehoopany (Wyoming County) and add Carbonyl sampling to each of these sites
3) Replace all TSP-based metals sampling with PM ₁₀ -based method; Add Antimony, Selenium and Cobalt to analyte suite
Changes Currently Being Evaluated by PA DEP*
New Ozone Sites
1) Establish ozone monitoring sites in Gettysburg (Adams County) and Chambersburg (Franklin County)
2) Relocate Moshannon (Clearfield County) site to a location more representative of Marcellus Shale activity
3) Relocate York Downwind (York County) site to a location actually downwind of York City
New PM_{2.5} Site
1) Relocate Lancaster Downwind (Lancaster County) site to a location not influenced by local sources

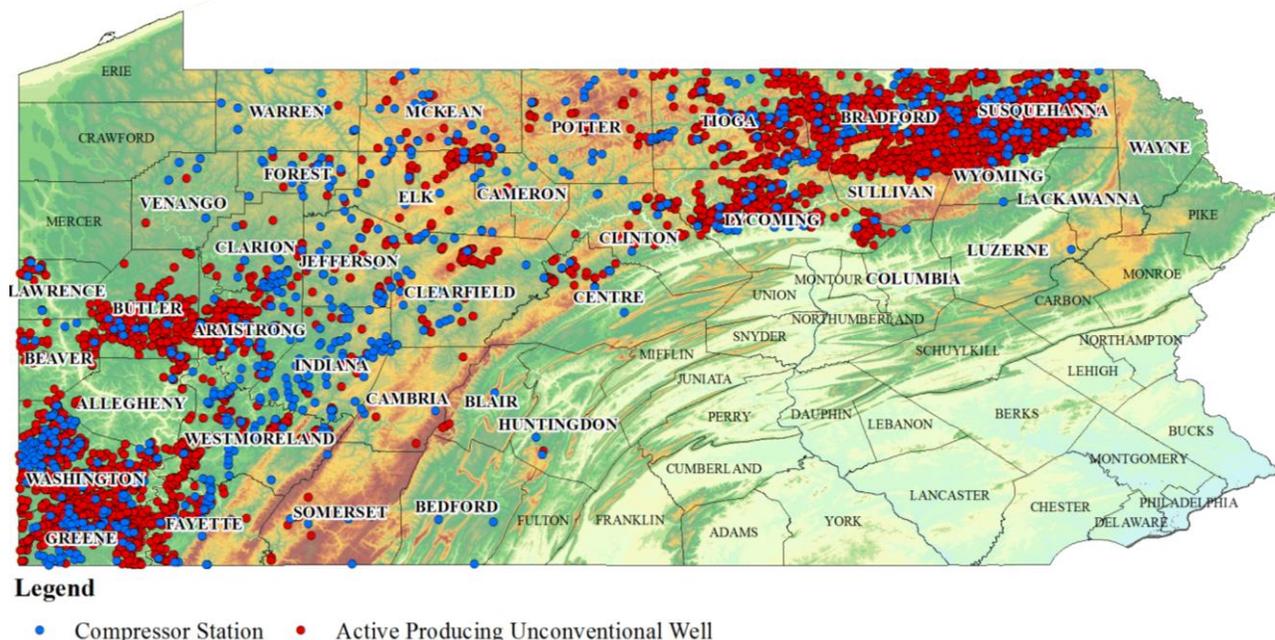
*PA DEP has provided detailed relevant considerations regarding these monitoring network changes in previous Annual Network Plans. PA DEP continues to consider these changes, but does not anticipate any installation/relocation activities will occur during 2017-2018. PA DEP will again include details in a future Annual Network Plan, when such network design changes are proposed.

Modifications to Air Monitoring Network: Marcellus Shale Development

The Marcellus Shale Formation, which extends from New York into Pennsylvania, Maryland, Ohio, Virginia, and West Virginia, and covers approximately 95,000 square miles, is the most expansive shale gas play in the United States. The Marcellus play located within the borders of Pennsylvania is one of the most active shale plays in terms of drilling, with operations primarily in the southwest, northcentral and northeast portions of the state.

The extraction and processing of natural gas from Marcellus Shale involves many stages and provides many opportunities for the release of air pollutants during the process. The major stages and infrastructure involved in natural gas extraction and processing include: pad, impoundment and road construction; drilling; fracturing; flaring; condensate tanks; compressor stations; and gas processing facilities. In recent years, the number of Marcellus Shale wells drilled in Pennsylvania has rapidly increased. In 2008, the number of wells drilled to tap Marcellus Shale gas was 195. Figure 4, which was produced using the most up-to-date data available, displays an overview of active producing unconventional gas wells in 2016 compared to compressor station locations in 2015 across Pennsylvania. Unconventional gas wells in Pennsylvania numbered well over 10,000 in 2016 while 400 compressor stations existed in 2015.

Figure 4. Active Unconventional Gas Wells (in 2016) and Compressor Stations (in 2015), Pennsylvania Statewide



Over the past several years, PA DEP has received multiple public comments on its annual air monitoring network plans, expressing concern over short-term exposure to pollutants in relation to shale gas activities and the effect on susceptible populations including children, or those with respiratory difficulties. In addition, there has been an increase in the number of complaints to PA DEP's regional offices concerning Marcellus Shale operations.

In response to the growing development of Marcellus shale gas activities and concerns about the impact of these activities on air quality, PA DEP continues to increase its ambient air monitoring in regions of growing natural gas extraction and production related to the Marcellus Shale formation. PA DEP plans to establish new monitoring sites in active Marcellus Shale regions of the state. Table 6 displays the counties in which new monitoring sites will be established, along with the planned site configuration and estimated installation date.

Table 6. Schedule for Expansion of PA DEP Monitoring Network in Marcellus Shale Region

Sites to be Established During 2017-2018		
County	Parameters Monitored	Estimated Start Date
Clarion	PM _{2.5}	January 1, 2018
Fayette	Ozone, NO ₂ , PM _{2.5} , Carbonyls, VOC	January 1, 2018
Jefferson	PM _{2.5}	January 1, 2018
Susquehanna	PM _{2.5}	January 1, 2018
Wyoming	PM _{2.5} , Carbonyls	January 1, 2018
Sites to be Established During 2018-2019		
County	Parameters Monitored	Estimated Start Date
Indiana	PM _{2.5}	January 1, 2019
Lycoming	PM _{2.5} , Carbonyls	July 1, 2018
McKean	PM _{2.5}	January 1, 2019

PA DEP intends to site these new monitoring locations in areas downwind of active natural gas compressor stations. Compressor stations are facilities which receive, process and transport natural gas through pipelines. Compressor stations are so named because they regulate the flow of gas by “compressing” it. These facilities also have the potential to contribute emissions to an area, which could be reflected in ambient air sampling results.

PA DEP is reviewing reported data from compressor stations in Marcellus Shale counties, including reported air pollutant emissions and engine size, and has identified several facilities as candidates for siting a downwind ambient air monitoring station. Preliminary siting locations are discussed in the following sections. PA DEP is requesting public comment to assist in site selection. After public comments to this annual network plan are received and all factors considered, PA DEP will contact the property owners at the most suitable locations to determine their willingness to host a long-term air monitoring station.

PA DEP will install all new monitoring locations to meet SLAMS siting criteria set forth in 40 CFR Appendix E. Chosen monitoring locations must be able to meet electrical power availability needs for all continuous PM_{2.5} monitors, datalogging, meteorological and air toxics monitoring equipment housed in the shelter, as well as provide safe and adequate access for the site operator to maintain the site. Other considerations include site suitability due to elevation, as well as distance to roads or obstructions, such as buildings, which can block the monitoring path, or trees, which can absorb or “scavenge” emitted pollutants.

The sections below present information on potential monitoring locations for the first five counties listed in Table 6. PA DEP has scouted potential PM_{2.5} monitoring sites in these areas counties after research using satellite image mapping and site visits with Regional Department inspectors.

Clarion County

PA DEP intends to establish a PM_{2.5} monitoring site in southcentral Clarion County, by the end of 2017. Within this county, PA DEP has identified potential suitable sampling location areas in the prevailing downwind direction of three compressor stations. Figure 5 displays a topographical county-wide overview of compressor station locations in Clarion County, along the region of siting interest for the establishment of a new ambient air monitoring station.

Figure 5. Overview of Natural Gas Compressor Stations and Potential Site Location in Clarion County

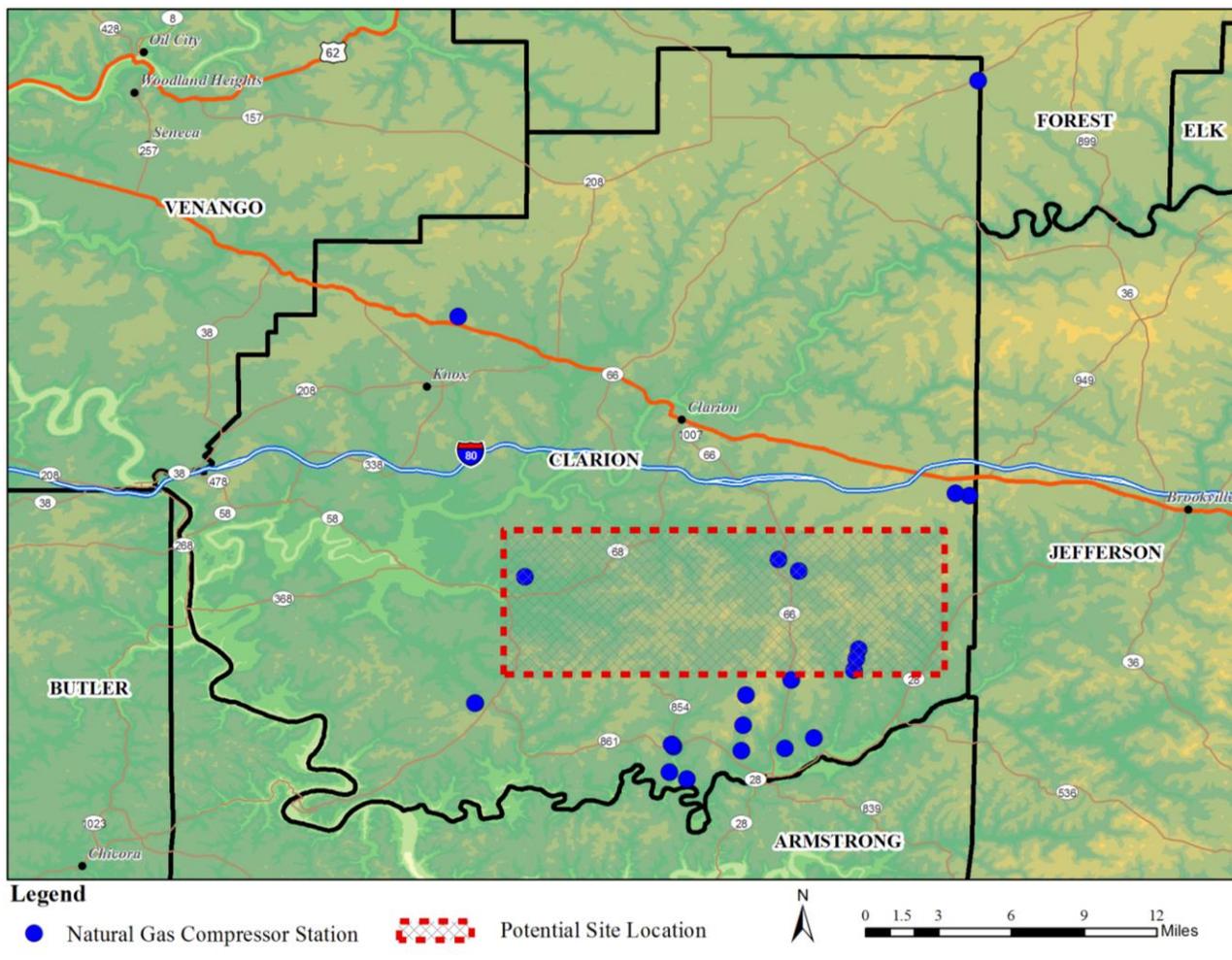
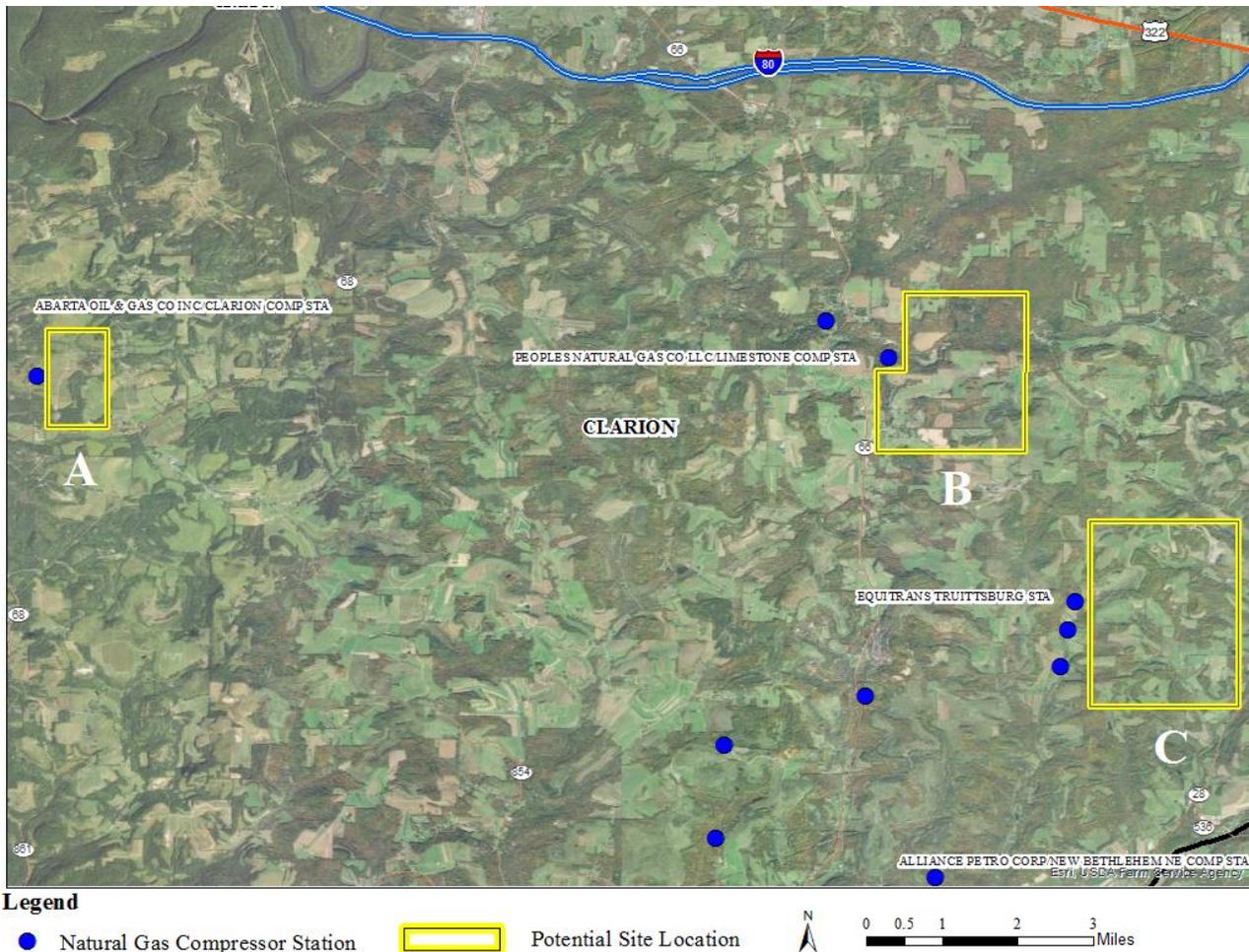


Figure 6 displays a zoomed-in satellite view of three compressor station regions, along with an indication of potential site locations.

Figure 6. Natural Gas Compressor Stations and Potential Site Locations in Clarion County



Region A in Figure 6 is the area downwind of the Clarion compressor station owned by Abarta Oil & Gas Co. Inc, located in Piney Township. This facility reported 2015 PM_{2.5} emissions of 0.62 tons per year (tpy). Region B in Figure 6 is the area downwind of the Limestone compressor station owned by Peoples Natural Gas, located in Limestone Township. This facility reported 2015 PM_{2.5} emissions of 0.47 tpy. Region C in Figure 6 is the area downwind of the Truitt compressor station owned by Equitrans LP, located in Redbank Township. This facility also reported 2015 PM_{2.5} emissions of 0.47 tpy. These three facilities have reported the highest PM_{2.5} emissions from natural gas compressor stations located in Clarion County. In addition, the engines used at these three facilities are the largest in the county. PA DEP requests public input to assist in siting the planned monitoring station in Clarion County.

Fayette County

As outlined in its 2016 Annual Ambient Air Monitoring Network Plan, PA DEP intends to establish a new multi-pollutant ambient air monitoring site in Fayette County, west of Uniontown, PA. This location west of the elevated terrain of the Chestnut Ridge bifurcation should allow for the capture of air quality impacts originating from the western portion of Fayette County, where gas production is concentrated. PA DEP intends to establish this site by the end of 2017. The current planned equipment configuration includes monitors for ozone, NO₂, PM_{2.5}, carbonyls and VOC.

Figure 7 displays a topographical county-wide overview of compressor station locations in Fayette County, along the region of siting interest for the establishment of a new ambient air monitoring station.

Figure 7. Overview of Natural Gas Compressor Stations and Potential Site Location in Fayette County

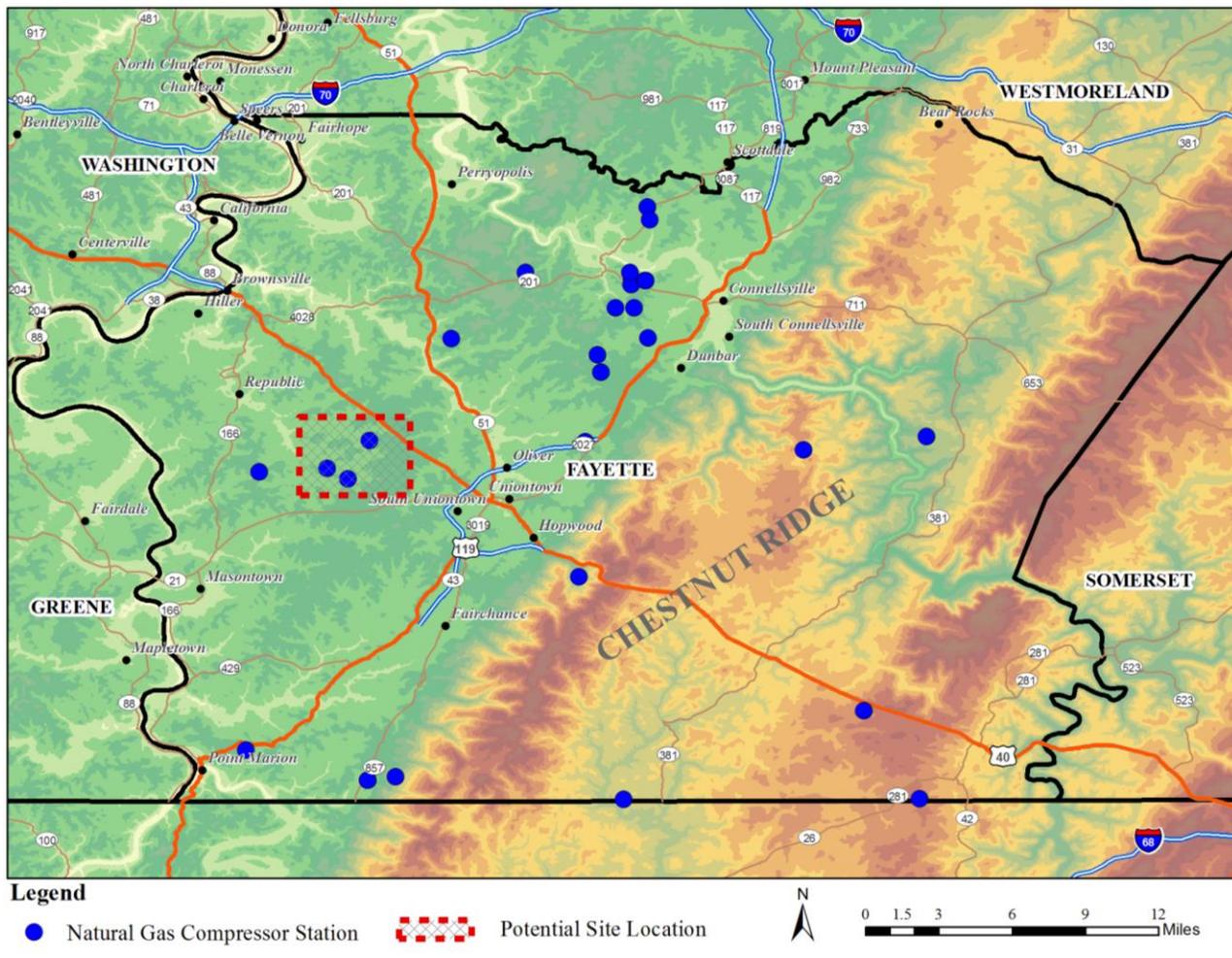
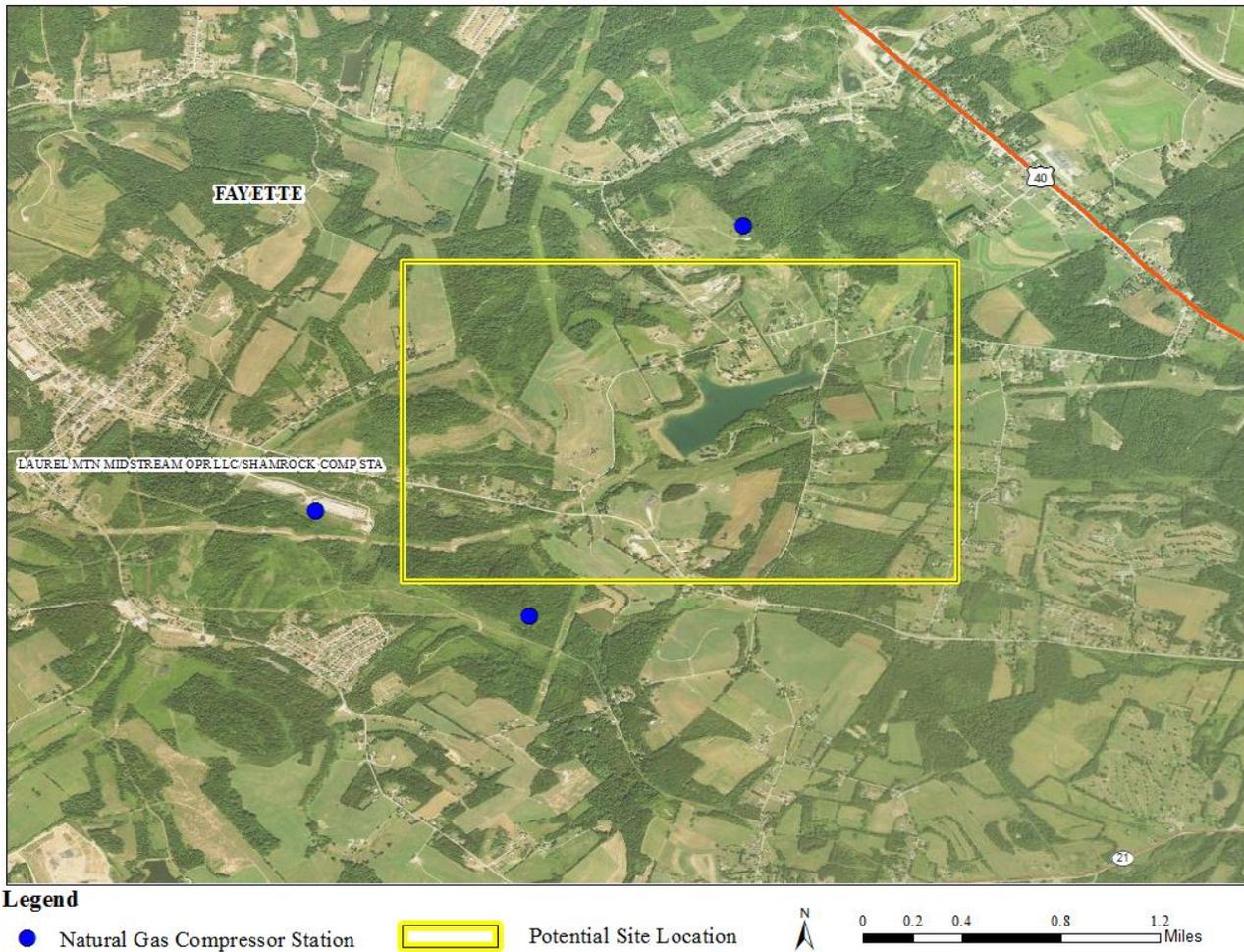


Figure 8 displays a zoomed-in satellite view of indicated compressor station region, along with an indication of potential site locations.

Figure 8. Natural Gas Compressor Stations and Potential Site Locations in Fayette County

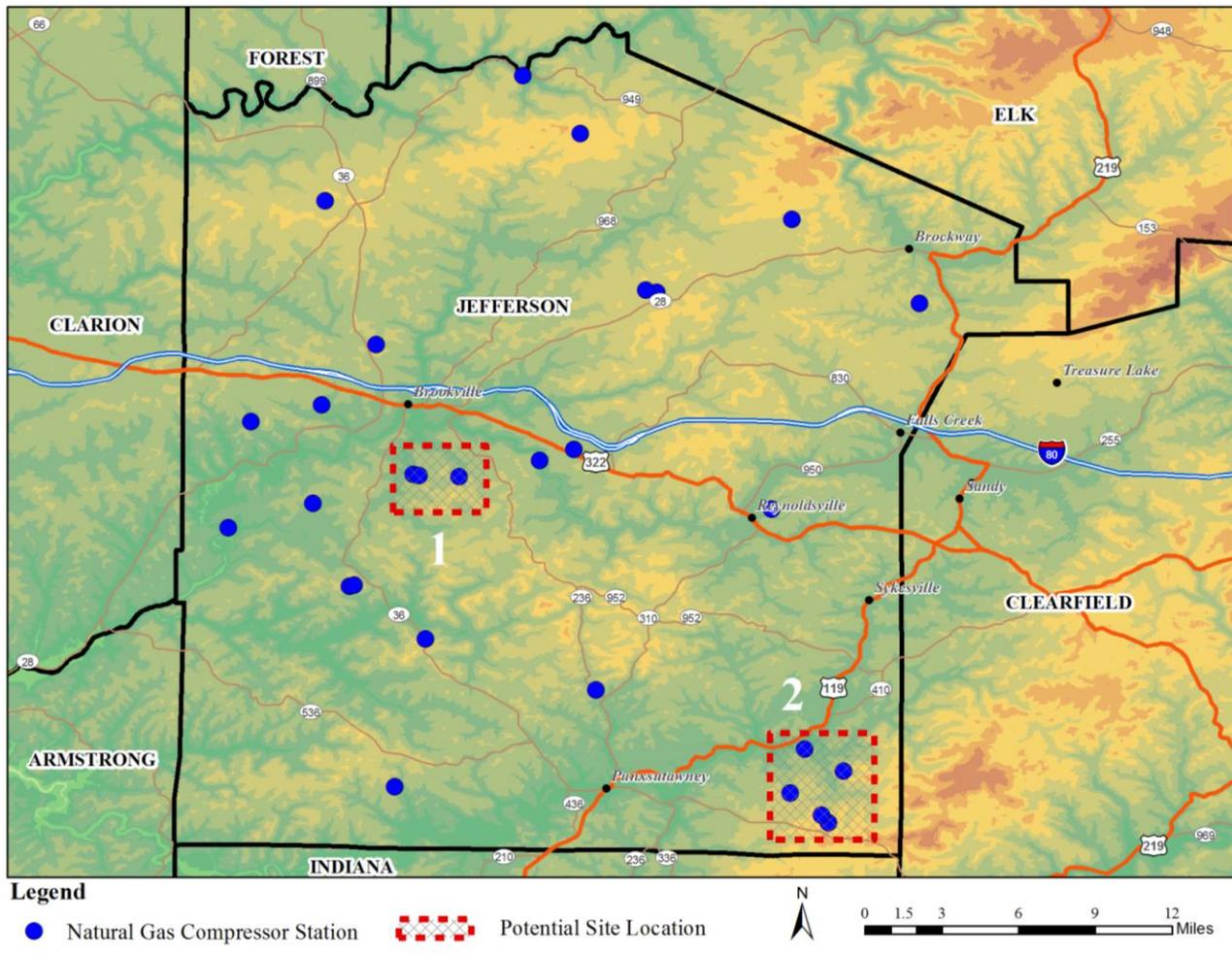


The potential site location region in Figure 8 is the area downwind of the Shamrock compressor station owned by Laurel Mountain Midstream LLC, located in German Township. This facility reported 2015 PM_{2.5} emissions of 5.24 tpy. This facility reported the highest PM_{2.5} emissions from natural gas compressor stations located in Fayette County. In addition, the number and size of engines used at these three facilities are among the largest in the county. PA DEP requests public input to assist in siting the planned monitoring station in Fayette County.

Jefferson County

PA DEP intends to establish a PM_{2.5} monitoring site in southeast Jefferson County, by the end of 2017. Within this county, PA DEP has identified potential suitable sampling location areas in the prevailing downwind direction of three compressor station regions. Figure 9 displays a topographical county-wide overview of compressor station locations in Jefferson County, along the region of siting interest for the establishment of a new ambient air monitoring station.

Figure 9. Overview of Natural Gas Compressor Stations and Potential Site Location in Jefferson County



Figures 10 and 11 display zoomed-in satellite views of the compressor station regions, along with an indication of potential site locations.

Figure 10. Natural Gas Compressor Stations and Potential Site Locations in Clarion County (Region 1)

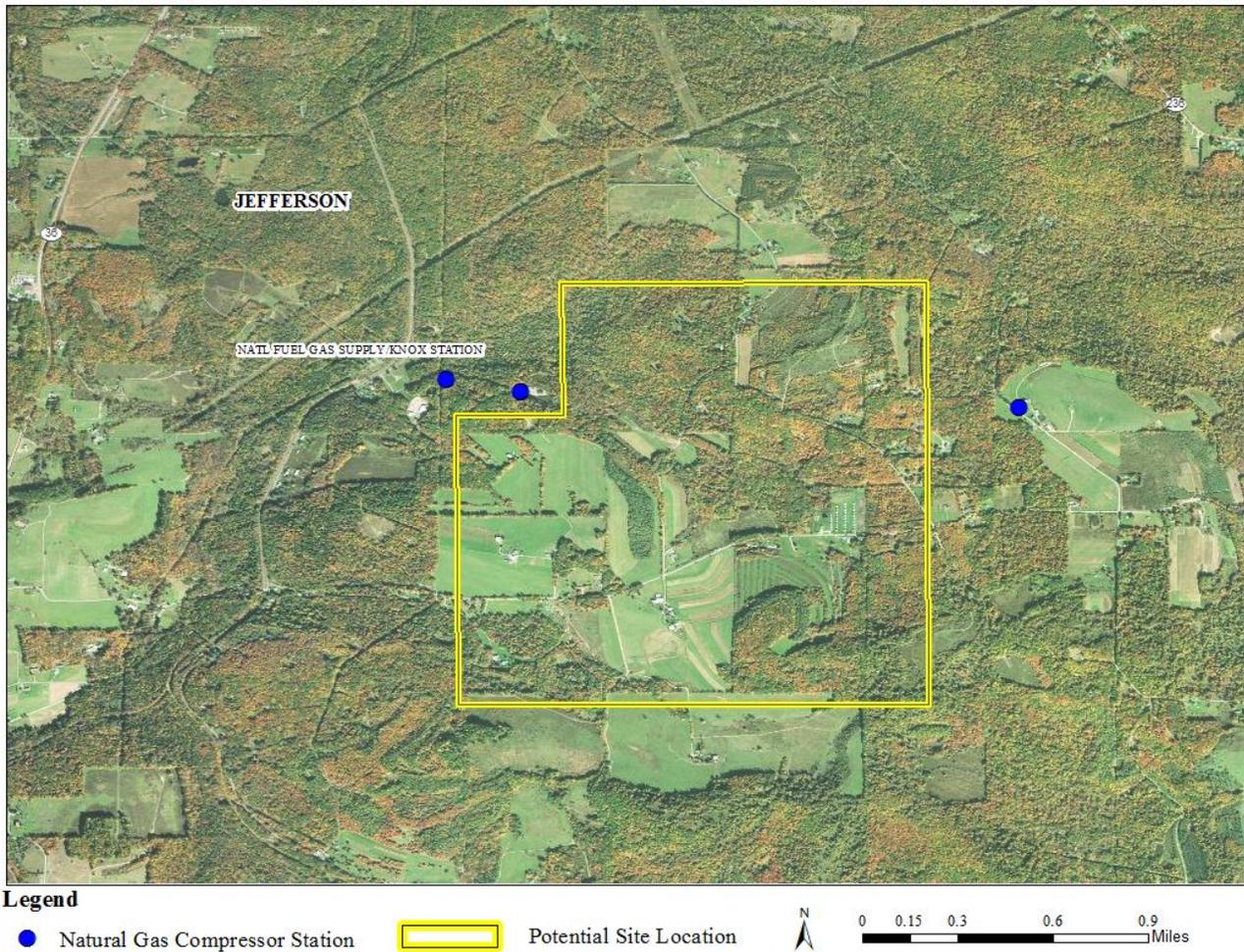


Figure 10 is a zoomed-in view of Region 1 in Figure 9. The potential site location in this area is downwind of the Knox compressor station owned by Natural Fuel Gas Co., located in Knox Township. This facility reported 2015 PM_{2.5} emissions of 1.04 tpy, the highest PM_{2.5} emissions from natural gas compressor stations located in Jefferson County. This facility also has the greatest number of engines located at a single compressor station in the county

Figure 11. Natural Gas Compressor Stations and Potential Site Locations in Jefferson County (Region 2)

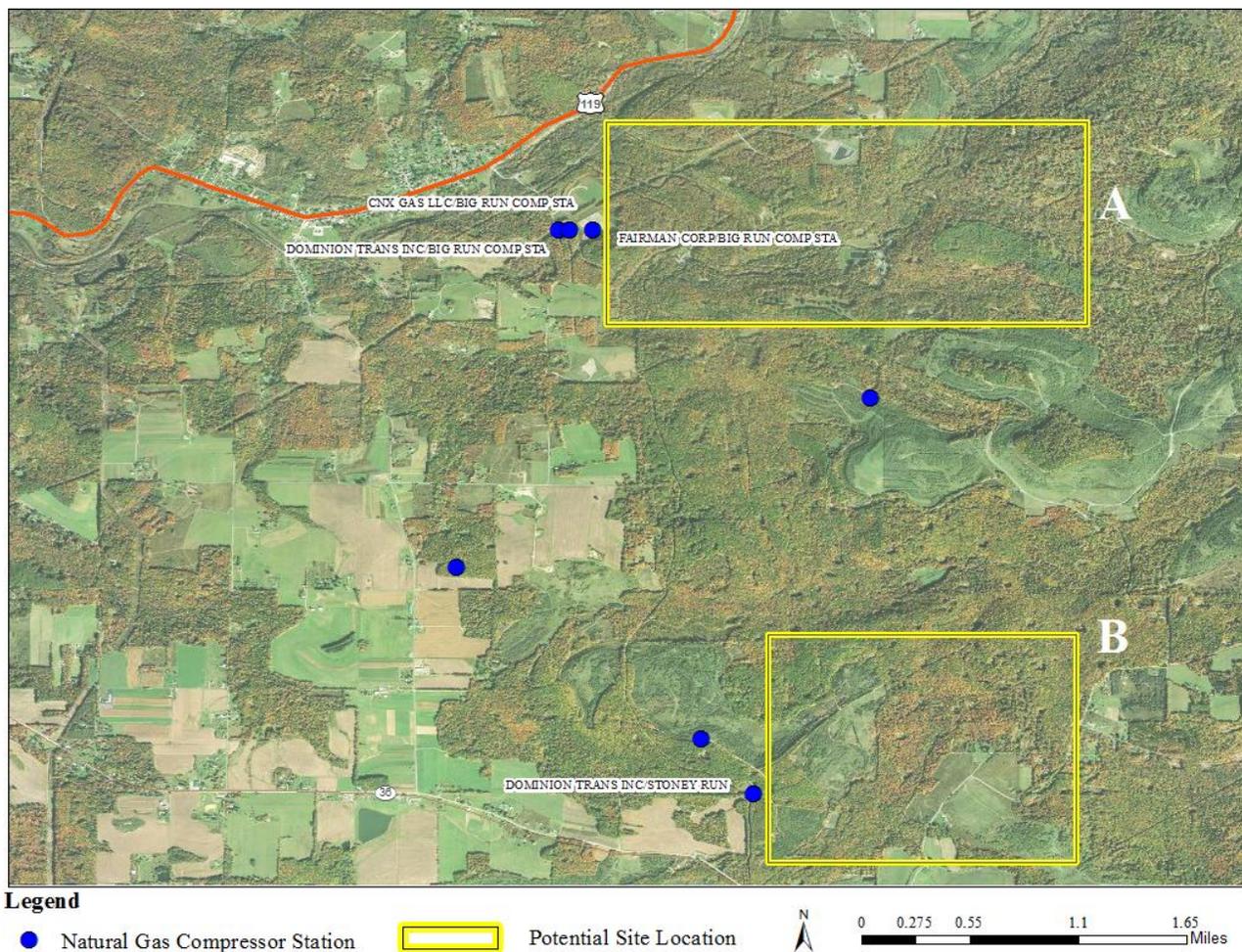


Figure 11 is a zoomed-in view of Region 2 in Figure 9. Region A in Figure 11 is the area downwind of group of compressor stations located in Gaskill Township, near Big Run, PA:

- The Big Run compressor station owned by Fairman Corp – This facility reported 2015 PM_{2.5} emissions of 0.55 tpy;
- The Big Run compressor station owned by Dominion Transmission, Inc – This facility reported 2015 PM_{2.5} emissions of 0.33 tpy;
- The Big Run compressor station owned by CNX Gas Co, LLC – This facility reported 2015 PM_{2.5} emissions less than 0.01 tpy;

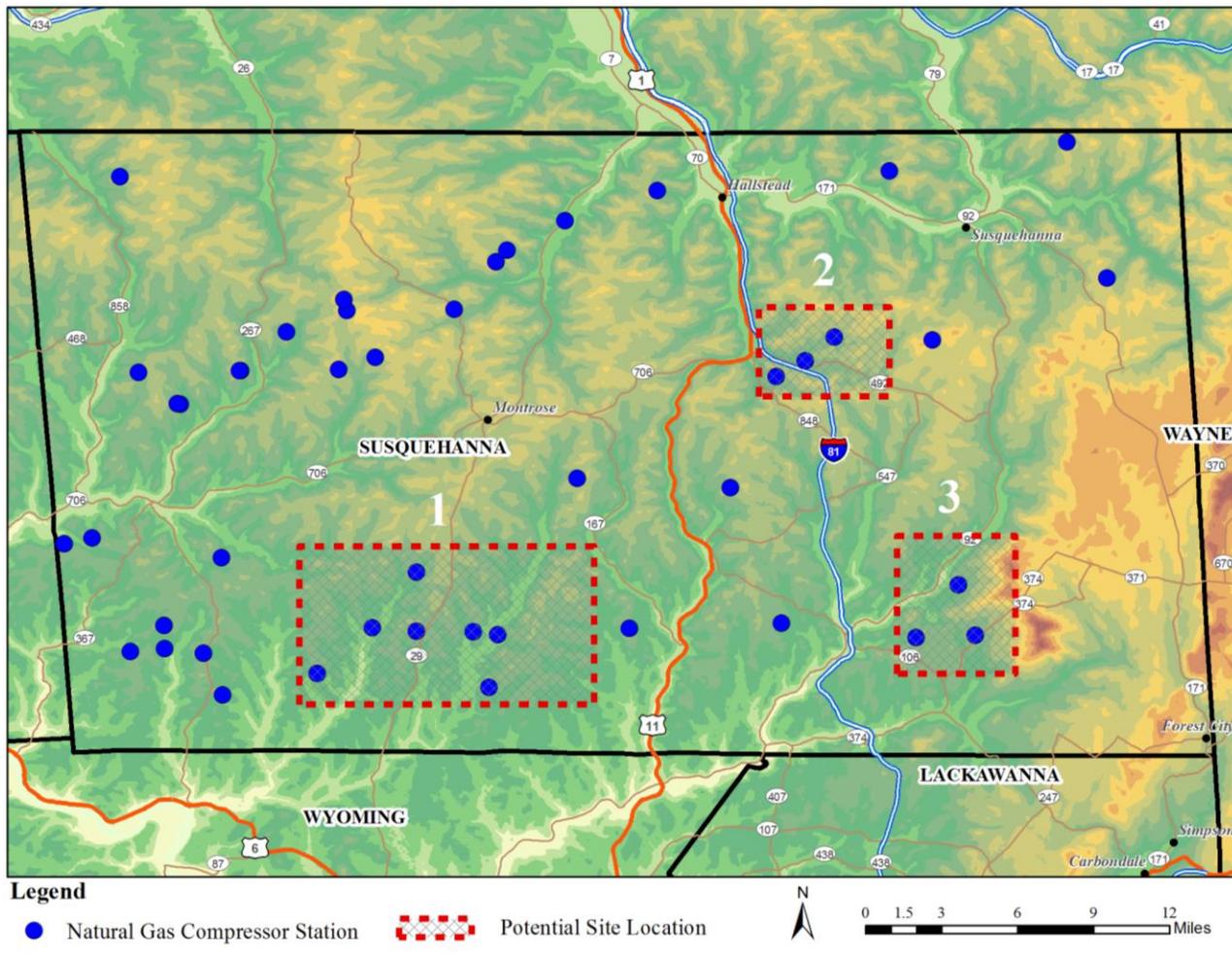
Region B in Figure 11 is the area downwind of the Stoney Run compressor station owned by Dominion Transmission, Inc. This facility, also located in Gaskill Township, reported 2015 PM_{2.5} emissions of 0.82 tpy, and has the second highest number of engines located at a single compressor station in the county. PA DEP requests public input to assist in siting the planned monitoring station in Jefferson County.

Susquehanna County

PA DEP intends to establish a monitoring site in Susquehanna County, by the end of 2017. Within this county, PA DEP has identified potential suitable sampling location areas in the prevailing downwind direction of three compressor station regions. The current planned equipment configuration includes monitors for PM_{2.5} and carbonyls.

Figure 12 displays a topographical county-wide overview of compressor station locations in Susquehanna County, along the region of siting interest for the establishment of a new ambient air monitoring station.

Figure 12. Overview of Natural Gas Compressor Stations and Potential Site Location in Susquehanna County



Figures 13, 14 and 15 display zoomed-in satellite views of the compressor station regions, along with an indication of potential site locations.

Figure 13. Natural Gas Compressor Stations and Potential Site Locations in Susquehanna County (Region 1)

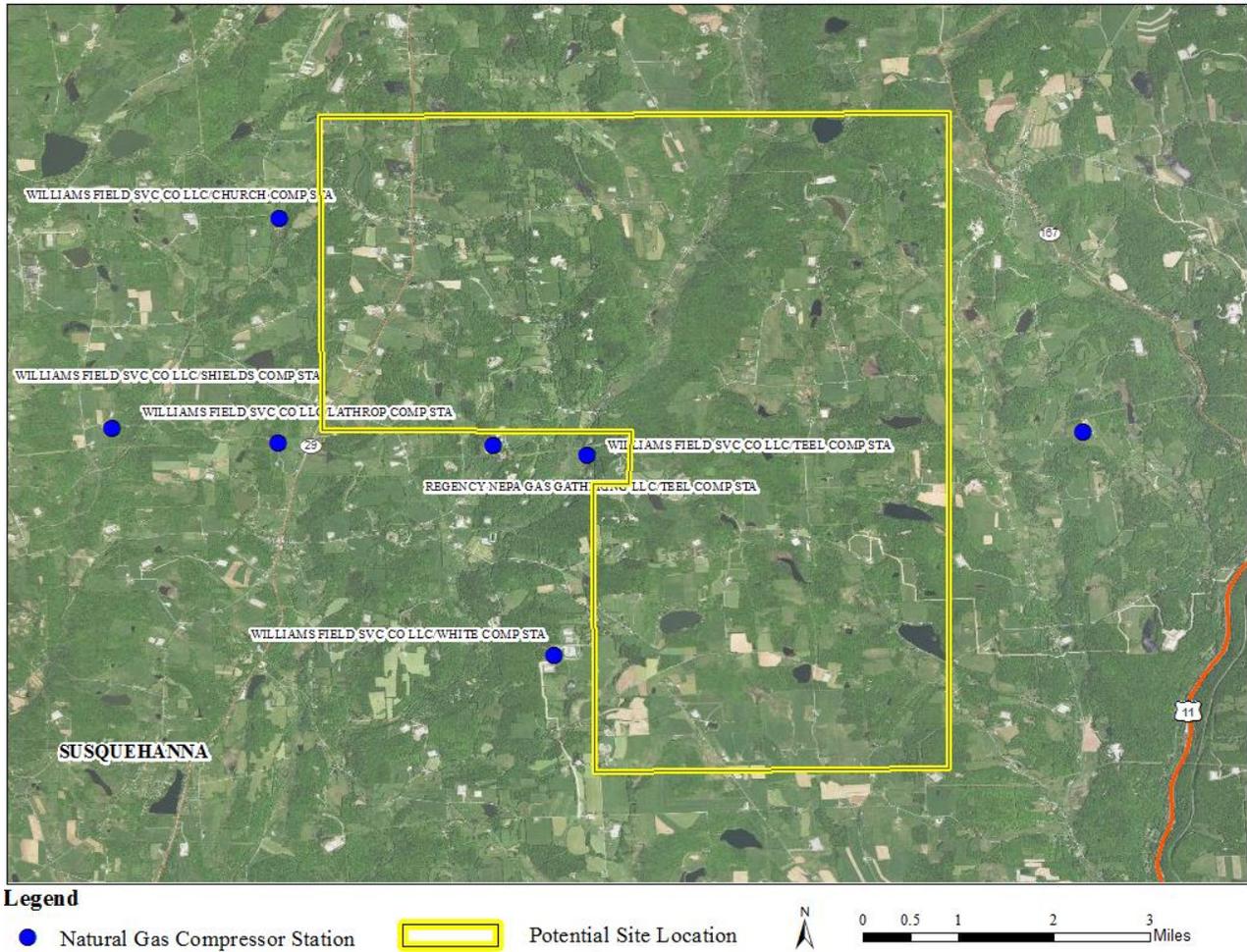


Figure 13 is a zoomed-in view of Region 1 in Figure 12. The potential site location in this area is downwind of a grouping of several large compressor stations located in southwestern Susquehanna County. Most of the compressor stations in this area contain multiple engines of substantial size. The following compressor stations are displayed in Figure 13:

- The White compressor station in Springville Township, owned by Williams Field Services Co, LLC – This facility reported 2015 PM_{2.5} emissions of 4.60 tpy;
- The Church compressor station in Dimock Township, owned by Williams Field Services Co, LLC – This facility reported 2015 PM_{2.5} emissions of 3.55 tpy;
- The Lathrop compressor station in Springville Township, owned by Williams Field Services Co, LLC – This facility reported 2015 PM_{2.5} emissions of 2.68 tpy;
- The Shields compressor station in Dimock Township, owned by Williams Field Services Co, LLC – This facility reported 2015 PM_{2.5} emissions of 2.04 tpy;

- The Teel compressor station in Springville Township, owned by Williams Field Services Co, LLC – This facility reported 2015 PM_{2.5} emissions of 1.03 tpy;
- The Teel compressor station in Springville Township, owned by Regency NEPA Gas Gathering, LLC – This facility reported 2015 PM_{2.5} emissions of 0.01 tpy

Figure 14. Natural Gas Compressor Stations and Potential Site Locations in Susquehanna County (Region 2)

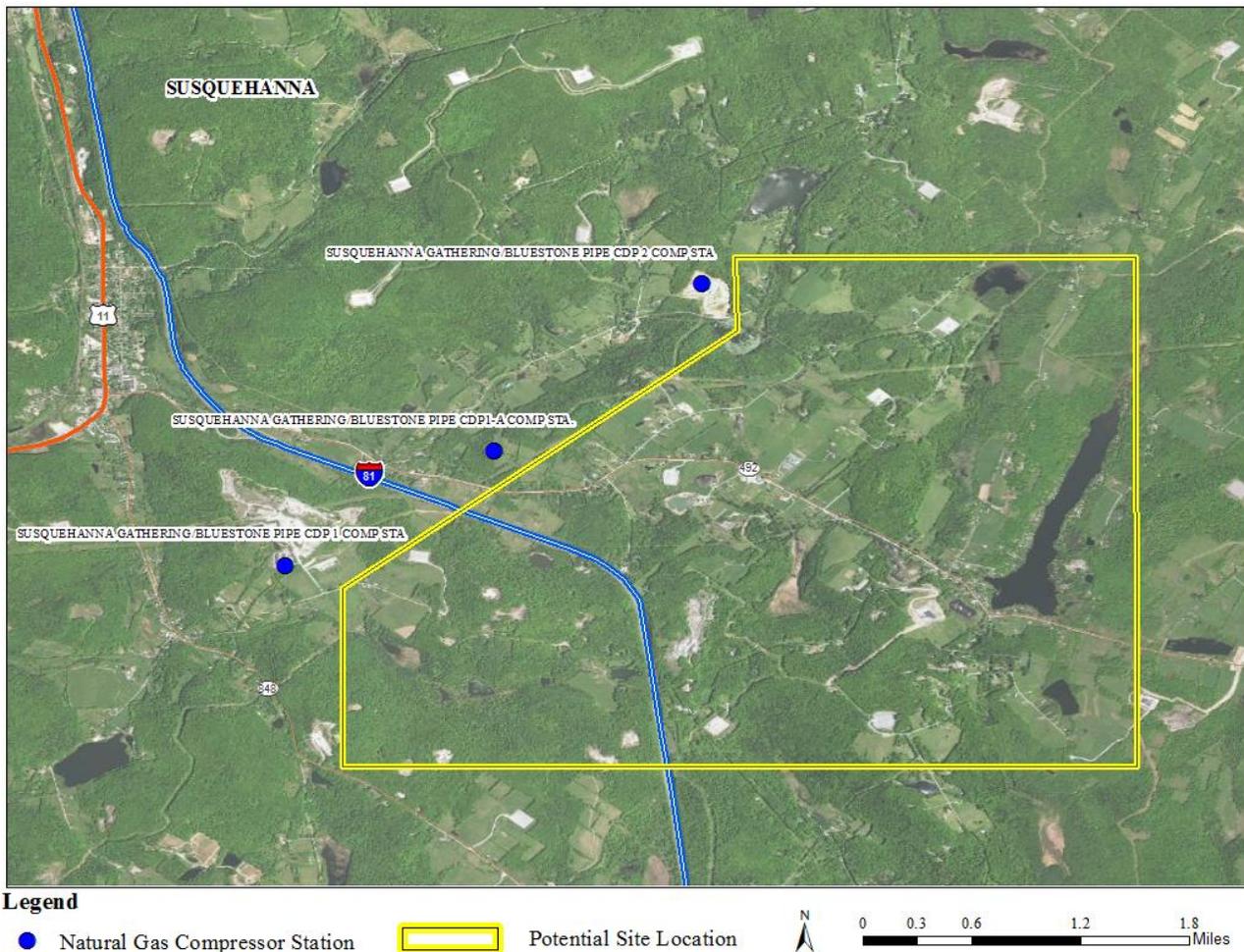


Figure 14 is a zoomed-in view of Region 2 in Figure 12. The potential site location in this area is downwind of a grouping of several large compressor stations owned by Bluestone Pipeline Co, located in New Milford Township in northeastern Susquehanna County. Each of these three stations house multiple engines of comparable size, reporting 2015 PM_{2.5} emissions between 0.10 – 0.15 tpy. PA DEP is considering this area in response to received public comments received on previous annual network plans, expressing concerns over shale gas activity impacts in this region.

Figure 15. Natural Gas Compressor Stations and Potential Site Locations in Susquehanna County (Region 3)

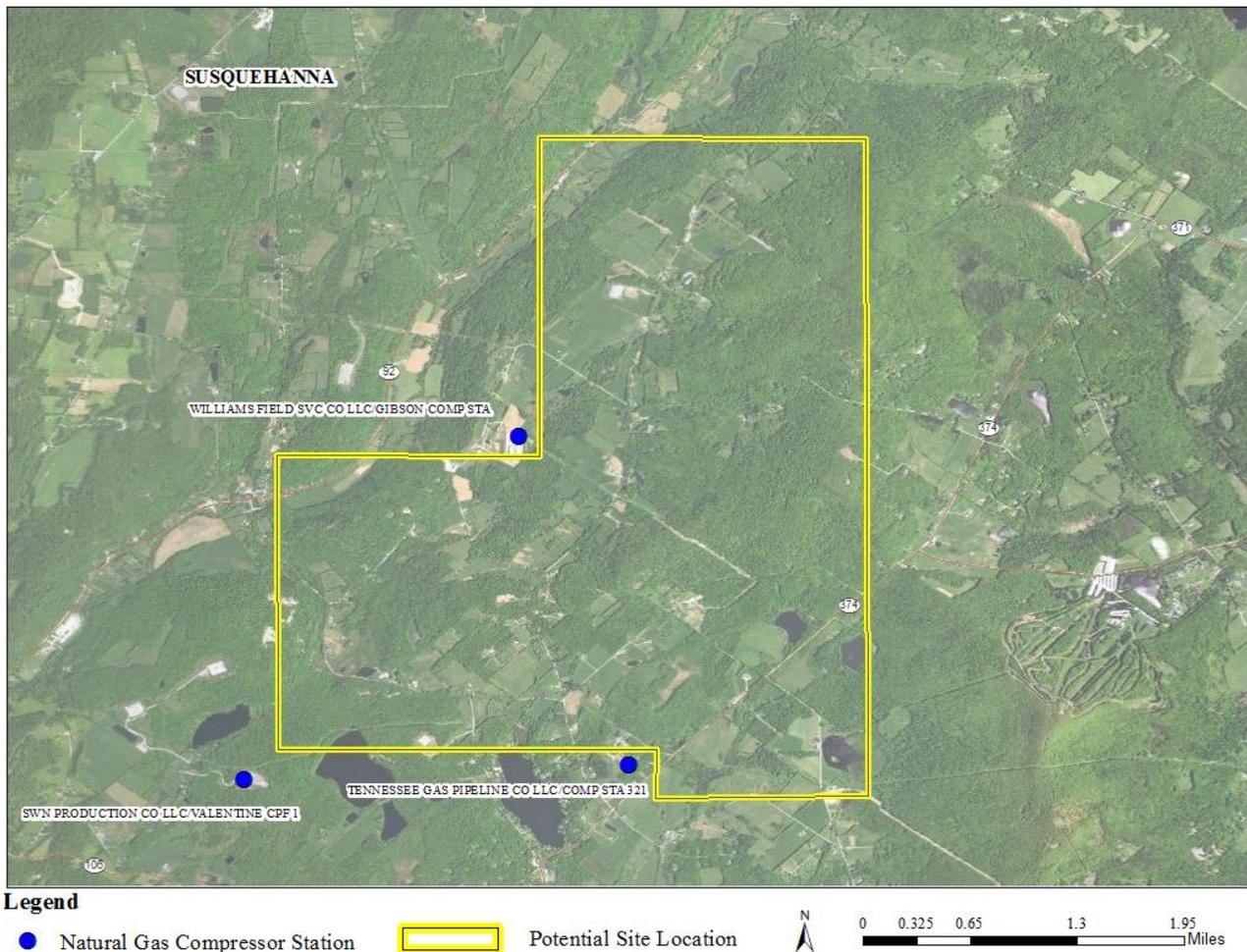


Figure 15 is a zoomed-in view of Region 3 in Figure 12. The potential site location in this area is downwind of a grouping of several large compressor stations located in southeastern Susquehanna County. Most of the compressor stations in this area contain multiple engines of substantial size. The following compressor stations are displayed in Figure 15:

- The Gibson compressor station in Gibson Township, owned by Williams Field Services Co, LLC – This facility reported 2015 PM_{2.5} emissions of 4.33 tpy;
- The #321 compressor station in Clifford Township, owned by Tennessee Gas Pipeline Co, LLC – This facility reported 2015 PM_{2.5} emissions of 1.87 tpy;
- The Valentine compressor station in Clifford Township, owned by SWN Production Co, LLC – This facility reported 2015 PM_{2.5} emissions of 0.94 tpy;

PA DEP requests public input to assist in siting the planned monitoring station in Susquehanna County.

Wyoming County

PA DEP intends to establish a monitoring site in northcentral or northeast Wyoming County, by the end of 2017. Within this county, PA DEP has identified potential suitable sampling location areas in the prevailing downwind direction of three compressor stations. The current planned equipment configuration includes monitors for PM_{2.5} and carbonyls.

Figure 16 displays a topographical county-wide overview of compressor station locations in Wyoming County, along the region of siting interest for the establishment of a new ambient air monitoring station.

Figure 16. Overview of Natural Gas Compressor Stations and Potential Site Location in Wyoming County

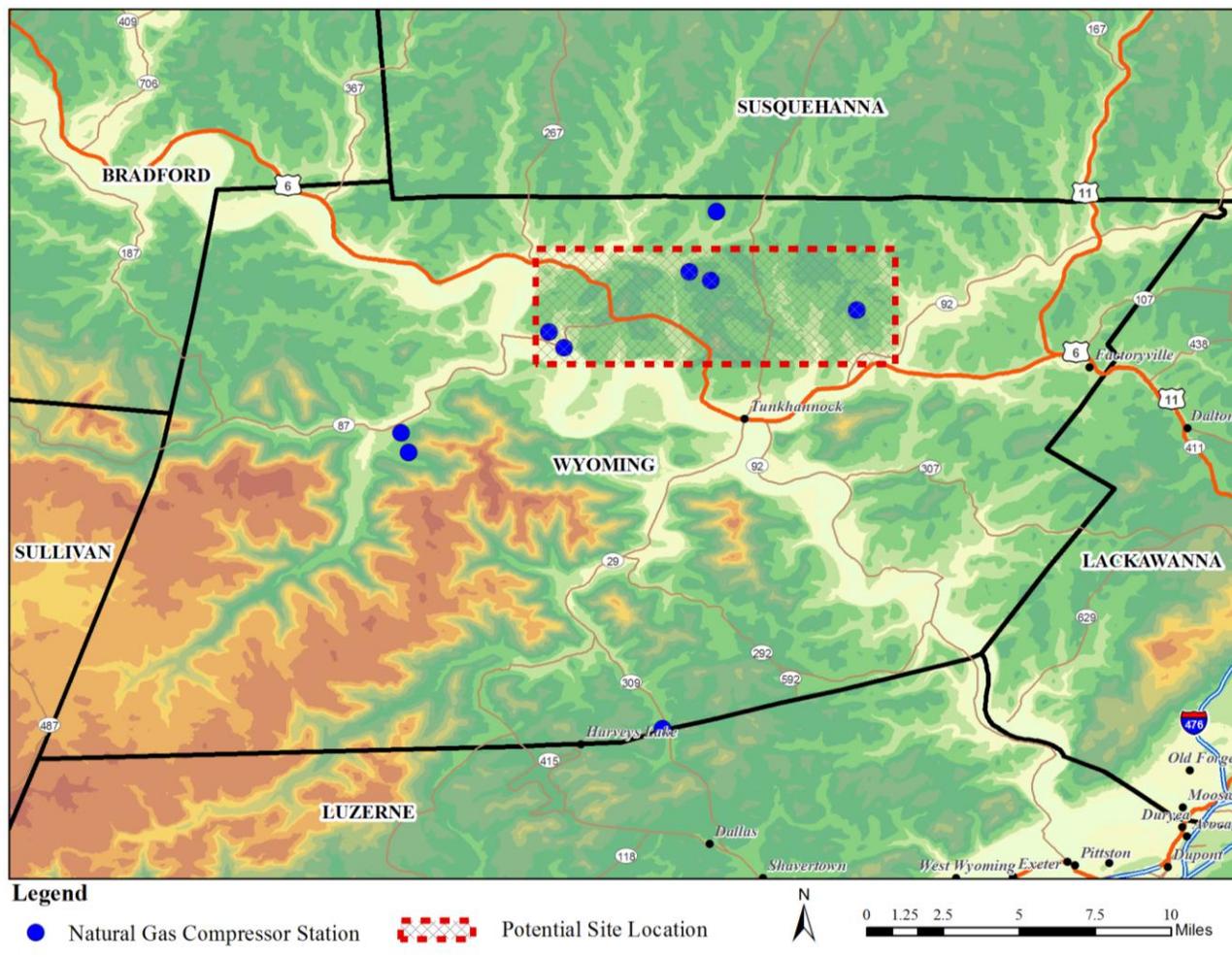
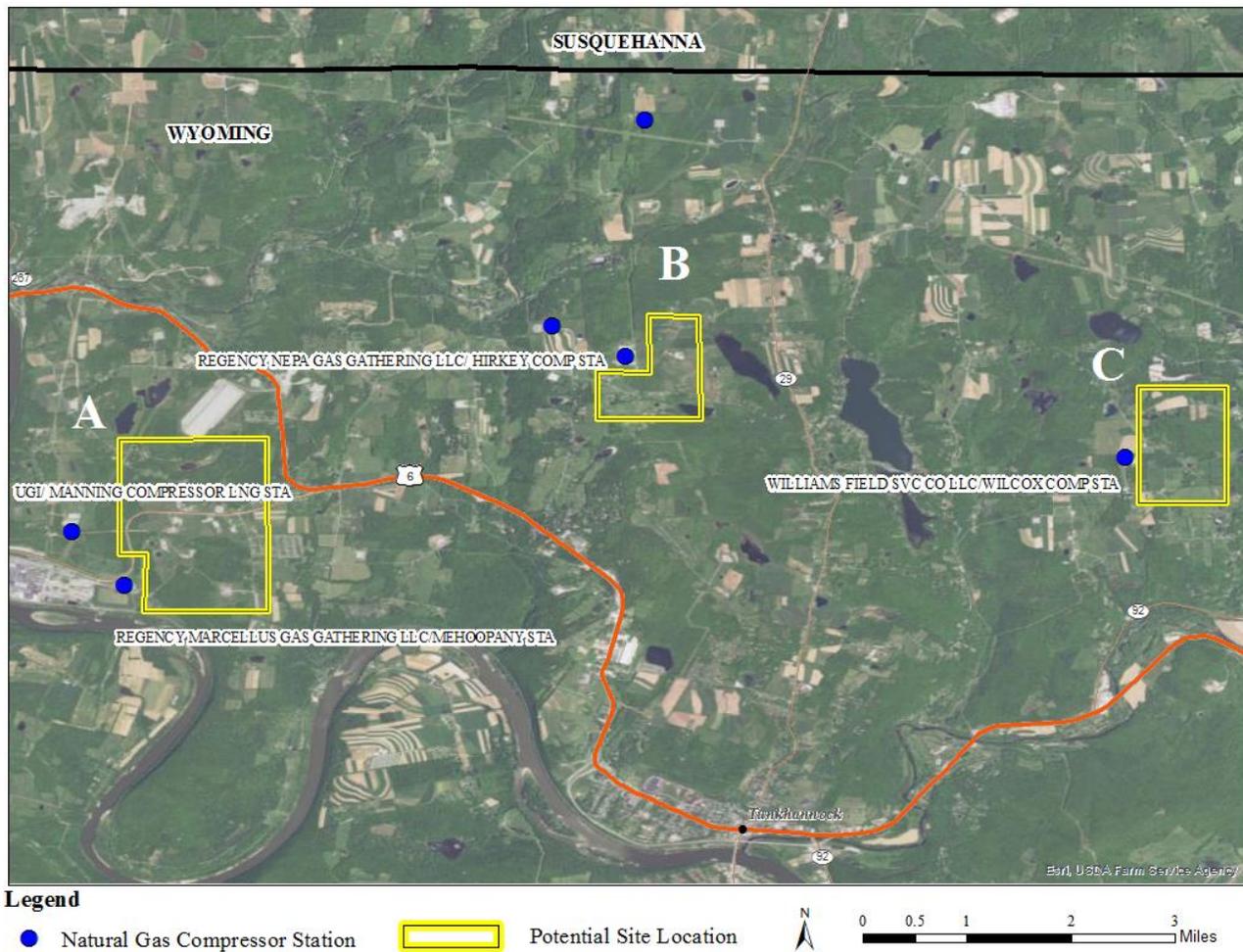


Figure 17 displays a zoomed-in satellite view of three compressor station regions, along with an indication of potential site locations.

Figure 17. Natural Gas Compressor Stations and Potential Site Locations in Wyoming County



Region A in Figure 17 is the area downwind of two compressor stations in Washington Township:

- The Mehoopany compressor station owned by Regency Marcellus Gas Gathering LLC – This facility reported 2015 PM_{2.5} emissions of 0.66 tpy;
- The Manning compressor station owned by UGI Energy Services, LLC – This facility reported 2015 PM_{2.5} emissions of 0.02 tpy

Together, these two facilities operate the greatest number of engines in a concentrated area in Wyoming County.

Region B in Figure 17 is the area downwind of the Hirkey compressor station owned by Regency NEPA Gas Gathering, LLC, also in Washington Township. This facility reported 2015 PM_{2.5} emissions of 0.04 tpy, and also has a large number of engines concentrated at the station.

Region C in Figure 17 is the area downwind of the Wilcox compressor station owned by Williams Field Services Co, LLC, located in Tunkhannock Township. This facility reported 2015 PM_{2.5} emissions of 1.13 tpy, the highest PM_{2.5} emissions from natural gas compressor stations located in Wyoming County. In addition, this facility operates the largest size engines in the county. PA DEP requests public input to assist in siting the planned monitoring station in Wyoming County.

Cancellation of Near-road NO₂ Site Installation Plan

On February 9, 2010, the U.S. EPA strengthened the National Ambient Air Quality Standards for nitrogen dioxide by establishing a new one-hour NO₂ NAAQS of 100 ppb based on the 3-year average of the 98th percentile of yearly maximum concentration (75 FR 6474). In addition to making the NAAQS more stringent, the 2010 NO₂ NAAQS requires NO₂ monitors to be installed in regions containing high populations and/or heavily-traveled roads or highways.² To meet minimum monitoring requirements, at least one near-road NO₂ monitor is required in MSAs with populations exceeding 500,000. MSAs with populations greater than 2,500,000 persons, or with populations greater than 500,000 and containing a road segment with an Average Annual Daily Traffic (AADT) count of 250,000 or greater, are required to have more than one near-road NO₂ monitor.

On December 22, 2016, U.S. EPA finalized revisions to the minimum monitoring requirements for near-road NO₂ monitors. The revision removes the existing requirement for near-road NO₂ monitoring stations in Core Based Statistical Areas (CBSAs) having populations between 500,000 and 1,000,000 persons. These monitors were due to have been installed and operational by January 1, 2017 (81 FR 96381). Current near-road NO₂ monitoring data in more-heavily populated areas nationwide have indicated NO₂ concentrations well below the NO₂ NAAQS. Due to the relationship between population, traffic, and expected NO₂ concentrations in the near-road environment, U.S. EPA has determined that near-road NO₂ concentrations measured in less populated areas, would likely result in even lower concentrations than what is being measured in larger urban areas. For this reason, U.S. EPA has revoked the requirement for near-road NO₂ monitoring stations in CBSAs having populations between 500,000 and 1 million persons. This means the near road NO₂ monitors proposed for the MSA's under PA DEP's jurisdiction (Harrisburg, Lancaster, Scranton-Wilkes Barre, and Allentown) will not be installed.

² 40 CFR Part 58, Appendix D §4.3

Site Terminations

- 1) Discontinue Easton (Northampton County) monitoring site – Ozone, SO₂ and H₂S
- 2) Discontinue Ridley Park (Delaware County) site – Lead
- 3) Discontinue Washington (Washington County) monitoring site – Ozone and PM_{2.5}

40 CFR Part 58.14 allows for monitoring site discontinuation at the discretion of the U.S. EPA Regional Administrator as follows:

(c) State, or where appropriate, local agency requests for SLAMS monitor station discontinuation, subject to the review of the Regional Administrator [...] may also be approved on a case-by-case basis if discontinuance does not compromise data collection needed for implementation of a NAAQS and if the requirements of appendix D to this part, if any, continue to be met.

Discontinue Easton (Northampton County) Monitoring Site

PA DEP intends to discontinue the Easton site. PA DEP will relocate the SO₂ monitor to its Freemansburg monitoring site, while discontinuing the ozone and H₂S monitors altogether. The ozone data collected from this site is either redundant or well below other monitors in the MSA, and not needed to support NAAQS compliance. There are no federal minimum monitoring requirements for H₂S.

Easton Ozone Monitoring

The Easton monitoring site is located within the Allentown-Bethlehem-Easton, PA-NJ MSA. Ozone minimum monitoring criteria set forth in 40 CFR Part 58 Appendix D require a minimum of three ozone monitors to be located within the Allentown-Bethlehem-Easton MSA. Table 7 provides the ozone minimum monitoring requirement and ozone monitoring sites within the Allentown-Bethlehem-Easton MSA. The discontinuation of the Easton monitoring site is reflected in the 2017-18 changes, shown in parentheses in the table.

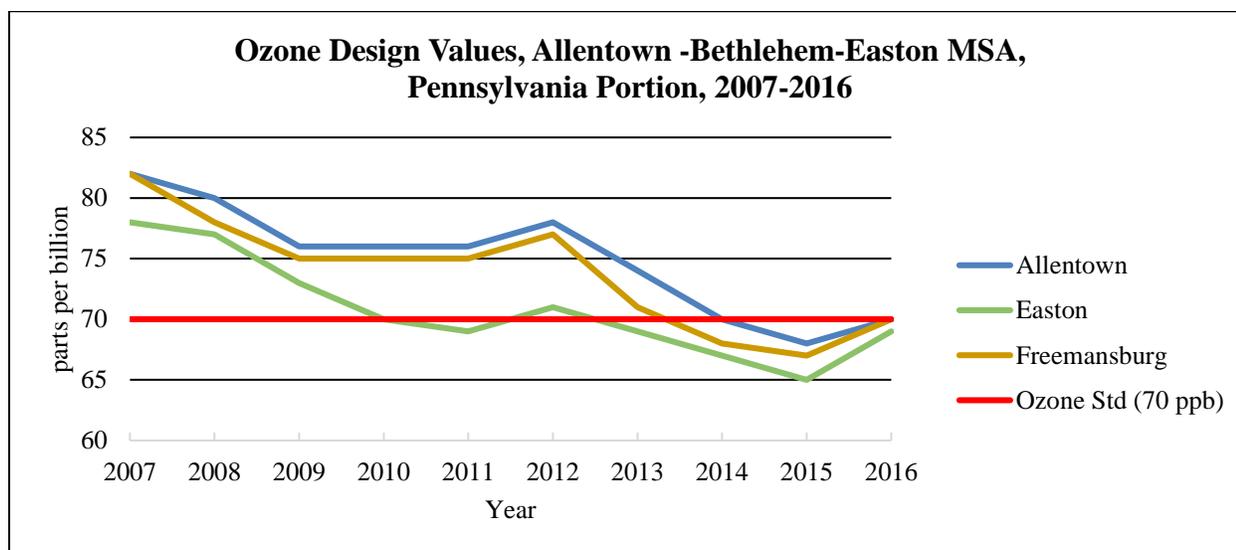
Table 7. Ozone Monitoring Requirements and Monitors in the Allentown-Bethlehem-Easton MSA

MSA	2016 Population Estimate	Maximum 2016 Design Value in MSA	No. of Monitors Required	PA DEP SLAMS Monitors (2017-18)	Other SLAMS Monitors	Total SLAMS Monitors (2017-18)
Allentown-Bethlehem-Easton, PA-NJ MSA	835,652	70	3	3 (2)	NJ-1	4 (3)

The Allentown-Bethlehem-Easton MSA contains three counties in Pennsylvania – Carbon, Lehigh and Northampton – as well as Warren County in New Jersey. PA DEP currently operates three ozone monitoring sites within the Pennsylvania portion of the Allentown-Bethlehem-Easton MSA: Allentown (Lehigh County), Freemansburg (Northampton County), and Easton. NJ DEP operates one ozone monitor in the MSA in the Columbia Wildlife Management Area. With the discontinuation of the Easton monitoring site, a total of three ozone monitoring sites remain in the Allentown-Bethlehem-Easton MSA; as such, the minimum ozone monitoring requirement remains satisfied.

On July 20, 2012 U.S. EPA designated the Allentown-Bethlehem-Easton, PA Ozone Nonattainment Area to include the Pennsylvania portion of the Allentown-Bethlehem-Easton MSA. Figure 18 displays ozone design values for the Pennsylvania portion of the Allentown-Bethlehem-Easton MSA for the previous ten years. As shown, the design values for the ozone monitor in Easton have remained consistently below the design values for the ozone monitor in Allentown and Freemansburg, and as such, is not needed to characterize the Allentown-Bethlehem-Easton MSA with respect to nonattainment decisions

Figure 18. Ozone Design Values, PA Portion of Allentown-Bethlehem-Easton MSA, 2007-2016



Easton SO₂ Monitoring

PA DEP intends to relocate the SO₂ monitor at Easton to its Freemansburg (Northampton County), to continue to support SO₂ monitoring in the MSA. 40 CFR Part 58 Appendix D requires at least one SO₂ monitor to be located within the Allentown-Bethlehem-Easton MSA. Table 8 provides the SO₂ minimum monitoring requirement and SO₂ monitoring sites within the Allentown-Bethlehem-Easton MSA. As the SO₂ monitor is being relocated within the MSA, there would be no net change in the number of SO₂ monitoring sites in the MSA, and the minimum monitoring requirements would remain satisfied.

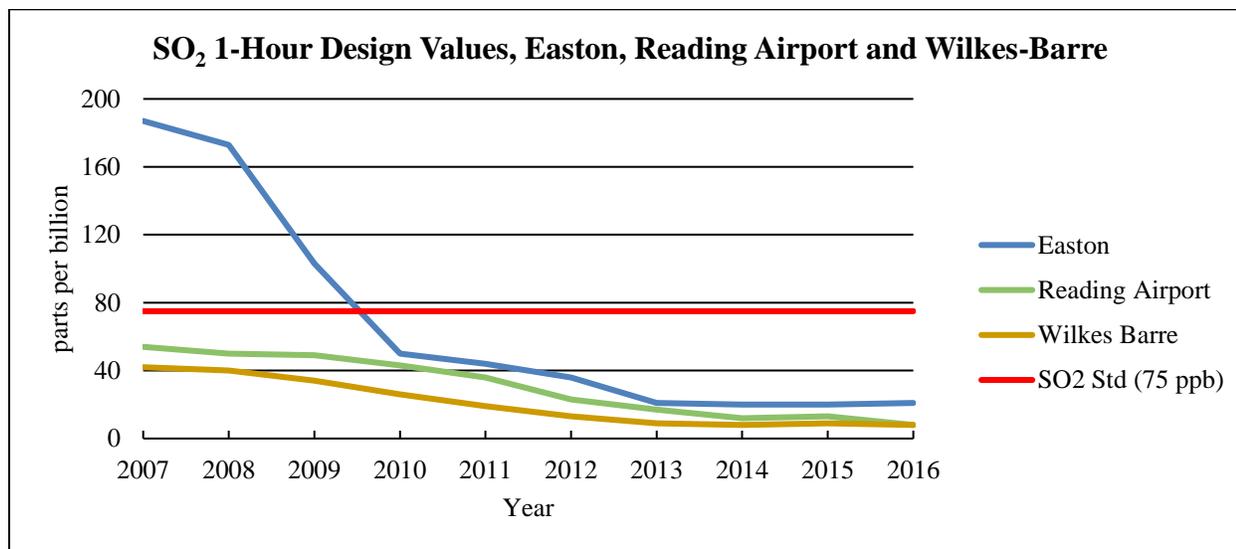
Table 8. SO₂ Monitoring Requirements and Monitors in the Allentown-Bethlehem-Easton MSA

MSA	2016 Population Estimate	2014 NEI (tons/year)	Calculated PWEI	No. of Monitors Required	PA DEP SLAMS Monitors	Other SLAMS Monitors	Total SLAMS Monitors
Allentown-Bethlehem-Easton MSA	835,652	9,972.2	8,333	1	1	NJ-1;	2

Figure 19 displays SO₂ design values for the Easton, Reading Airport and Wilkes-Barre monitoring sites, for the past ten years. Although SO₂ measurements at Easton have declined substantially over the past ten years, the site remains higher than other monitors in the central- and northeastern Pennsylvania regions. For this reason, PA DEP will relocate the SO₂ monitor to the Freemansburg

monitoring site, also in Northampton County, downwind of population centers in the Allentown-Bethlehem-Easton MSA.

Figure 19. SO₂ Design Values, Easton, Reading Airport and Wilkes-Barre Monitoring Sites, 2007-2016



Easton H₂S Monitoring

H₂S is not a criteria pollutant, and as such has no federal ambient standard. Therefore, there are no federal minimum monitoring requirements for this pollutant.

Discontinue Ridley Park (Delaware County) Lead Monitoring Site

As described in the “Lead (Pb) Network Design Requirements” section of this document, 40 CFR Part 58 Appendix D requires lead monitoring near sources emitting greater than 0.5 tpy. The lead monitoring design requirements were established in 2008 with the revision of the NAAQS concentration level. At that time, the monitoring requirement was set as 1.0 tpy, and emissions data from 2007 were used to determine the facilities requiring monitoring. As part of the 2008 lead NAAQS revision, a monitoring start date of January 1, 2010 was included as part of the monitoring requirements, which PA DEP met for all of its new lead monitors installed. In December 2010, the monitoring requirement threshold was lowered to 0.5 tpy for industrial sources.

Table 9 displays the lead monitor that will be discontinued, along with the monitored source and emission rate. The table includes emission data from 2007 through 2015, the most recent available data year. As shown, the facility monitored by the Ridley Park lead monitoring site has maintained emission rates below the 0.5 tpy threshold for the past eight years.

Table 9. Discontinued Lead Monitors with Facility Emissions, 2007-2015

PA DEP Lead Site	Monitored Facility Name	Facility County	Lead Emissions, in tons per year								
			2007	2008	2009	2010	2011	2012	2013	2014	2015
Ridley Park	Exelon Generation Co/ Eddystone	Delaware	1.38	0.70	0.03	0.03	0.01	0.00	0.00	0.00	0.00

Lead concentrations measured at the Ridley Park lead monitoring site have remained reliably and consistently well below the lead NAAQS of 0.15 µg/m³. Table 10 displays detailed lead concentration data for Ridley Park since installation in 2010 through 2016. Information provided in the table includes the 2016 design value, the maximum and second-maximum daily (24-hour) concentrations measured at the site, the percentage of daily samples that measured concentrations greater than 0.05 µg/m³, the percentage of daily samples that measured concentrations lower than the laboratory method reporting limit (a “non-detect”) and the number of complete calendar quarters for each year.

Table 10. Lead Concentration Data for Ridley Park Lead Monitoring Site

Site Name	2016 Design Value	Concentration Measurements 2010 - 2015				Number of Complete Quarters						
		Maximum Daily Value	2 nd Max Daily Value	% Daily Values >0.05 µg/m ³	% of Non-detects	2010	2011	2012	2013	2014	2015	2016
Ridley Park	0.01	0.073	0.049	0.3%	96.7%	4	2	2	2	4	4	4

As shown, the Ridley Park monitoring site has not measured a single daily value equal to or greater than the lead NAAQS of 0.15 µg/m³, since its installation in January 2010. Furthermore, this site has measured a 24-hour concentration average greater than 1/3 the level of the NAAQS (0.05 µg/m³) only once, and overwhelmingly measures levels below the laboratory method reporting limit (“non-detect”). Completeness requirements have been met for the last three years, which encompasses the 2014-2016 design value period.

Discontinue Washington (Washington County) Monitoring Site

PA DEP intends to discontinue the Washington site. For both ozone and PM_{2.5} monitoring, PA DEP and ACHD maintain a number of monitors well in excess of the required monitors in the MSA. The data collected at this monitoring site are either redundant or below other values measured in the MSA, and not needed to support NAAQS compliance.

Washington Ozone Monitoring

The Washington monitoring site is located within the Pittsburgh, PA MSA. Ozone minimum monitoring criteria set forth in 40 CFR Part 58 Appendix D require a minimum of two ozone monitors to be located within the Pittsburgh MSA. Table 11 provides the ozone minimum monitoring requirement and ozone monitoring sites within Pittsburgh MSA. With the establishment of the Fayette County monitoring site (see “Modifications to Air Monitoring Network: Marcellus Shale Development” section of this document), there would be no net change in the number of ozone monitors in the Pittsburgh MSA during 2017-18.

Table 11. Ozone Monitoring Requirements and Monitors in the Allentown-Bethlehem-Easton MSA

MSA	2016 Population Estimate	Maximum 2016 Design Value in MSA	No. of Monitors Required	PA DEP SLAMS Monitors	Other SLAMS Monitors	Total SLAMS Monitors
Pittsburgh, PA MSA	2,342,299	70	2	8	ACHD-3	11

The Pittsburgh MSA contains seven counties in Pennsylvania – Allegheny, Armstrong, Beaver, Butler, Fayette, Washington and Westmoreland Counties. PA DEP currently operates eight ozone monitoring sites in the Pittsburgh MSA outside of Allegheny County: Beaver Falls (Beaver County), Brighton Township (Beaver County), Charleroi (Washington County), Florence (Washington County), Greensburg (Westmoreland County), Hookstown (Beaver County), Kittanning (Armstrong County) and Washington. ACHD operates three ozone monitors in Allegheny County: Harrison 2, Lawrenceville and South Fayette. With the discontinuation of the Easton monitoring site, a total of ten ozone monitoring sites would remain in the Pittsburgh MSA. With the establishment of the Fayette County monitoring site, the complement of ozone monitors in the Pittsburgh MSA would return to eleven monitors. In either case, the number of monitors not only satisfies, but well exceeds the minimum ozone monitoring requirement.

On July 20, 2012 U.S. EPA designated the entire Pittsburgh MSA as the Pittsburgh-Beaver Valley, PA Ozone Nonattainment Area. Figure 20 displays ozone design values for all PA DEP sites in the Pittsburgh MSA, for the previous ten years. Figure 21 displays ozone design values for the Washington monitoring site in comparison to the maximum design values from monitoring sites in Allegheny County (ACHD sites), as well as maximum design values from PA DEP sites in the remaining counties of the Pittsburgh MSA. As shown, the design values for the ozone monitor in Washington have remained consistently at or below the design values for the remaining monitoring sites in the MSA, and well below maximum values. Therefore, the Washington monitor is not needed to characterize the Pittsburgh MSA with respect to nonattainment decisions.

Figure 20. Ozone Design Values, Pittsburgh MSA, 2007-2016

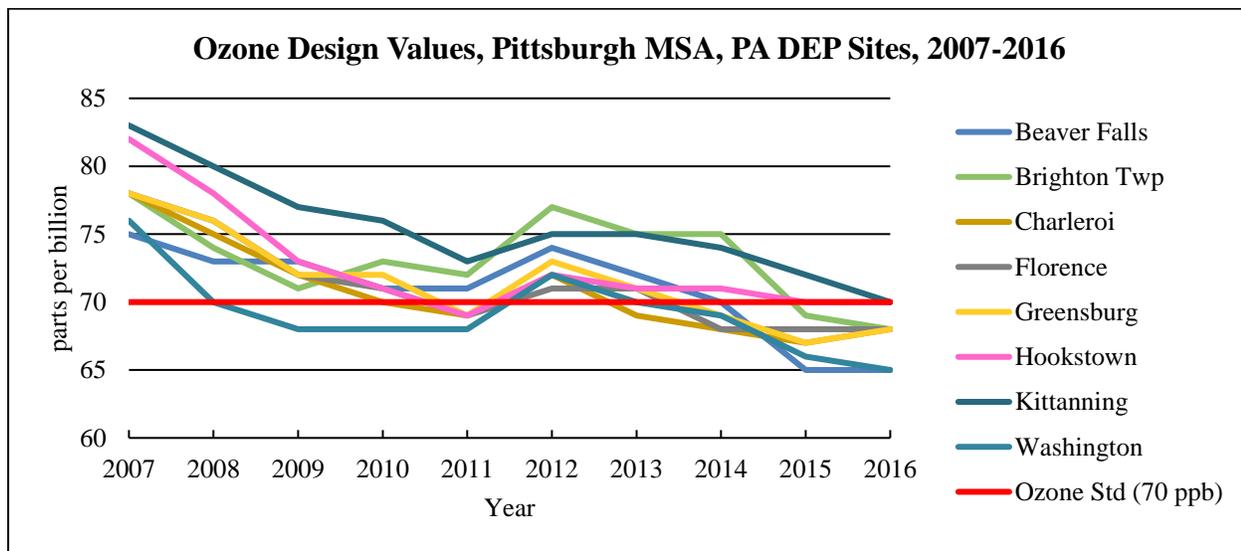
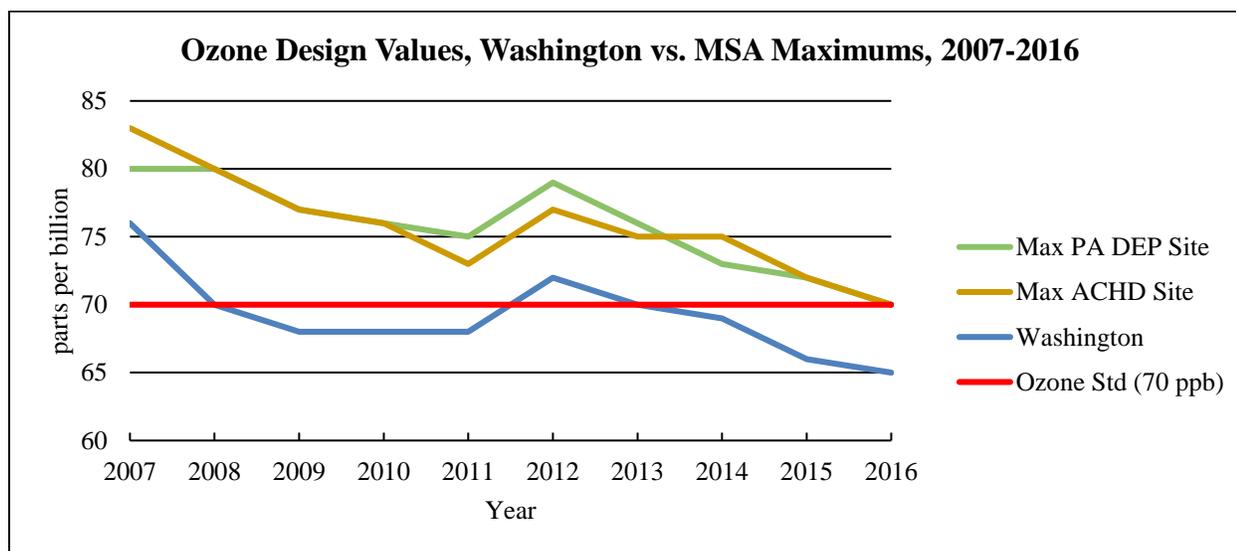


Figure 21. Ozone Design Values, Washington vs. Maximum PA DEP and ACHD sites, 2007-2016



Washington PM_{2.5} Monitoring

40 CFR Part 58 Appendix D require a minimum of three PM_{2.5} monitors to be located within the Pittsburgh MSA. Table 12 provides the PM_{2.5} minimum monitoring requirement and PM_{2.5} monitoring sites within Pittsburgh MSA. With the establishment of the Fayette County monitoring site (see “Modifications to Air Monitoring Network: Marcellus Shale Development” section of this document), there would be no net change in the number of PM_{2.5} monitors in the Pittsburgh MSA during 2017-18.

Table 12. PM_{2.5} Monitoring Requirements and Monitors in the Allentown-Bethlehem-Easton MSA

MSA	2016 Population Estimate	2016 Max Design Values		No. of Monitors Required	PA DEP SLAMS Monitors	Other SLAMS Monitors	Total SLAMS Monitors
		Annual	24-Hour				
Pittsburgh MSA	2,342,299	12.8	36	3	6	ACHD-9	15

PA DEP currently operates six PM_{2.5} monitoring sites in the Pittsburgh MSA outside of Allegheny County: Beaver Falls (Beaver County), Charleroi (Washington County), Florence (Washington County), Greensburg (Westmoreland County), Kittanning (Armstrong County) and Washington. ACHD operates nine monitors in Allegheny County: Avalon, Clairton, Harrison 2, Lawrenceville, Liberty, North Braddock, North Park, Parkway East and South Fayette. With the discontinuation of the Easton monitoring site, a total of fourteen PM_{2.5} monitoring sites would remain in the Pittsburgh MSA. With the establishment of the Fayette County monitoring site, the complement of PM_{2.5} monitors in the Pittsburgh MSA would return to fifteen monitors. In either case, the number of monitors satisfies and well exceeds the minimum PM_{2.5} monitoring requirement.

Figures 22 and 23 display 24-hour and annual PM_{2.5} design values for all PA DEP sites in the Pittsburgh MSA, for the previous ten years. As shown, the design values for the PM_{2.5} monitor in Washington have remained consistently at or below the design values for the remaining monitoring sites in the MSA, with the exception of Florence, which serves as a PM_{2.5} background site (see Appendix C of this document, “Fine Particulate Matter (PM_{2.5}) Network Design Requirements”).

Figure 22. PM_{2.5} Annual Design Values, Pittsburgh MSA, 2007-2016

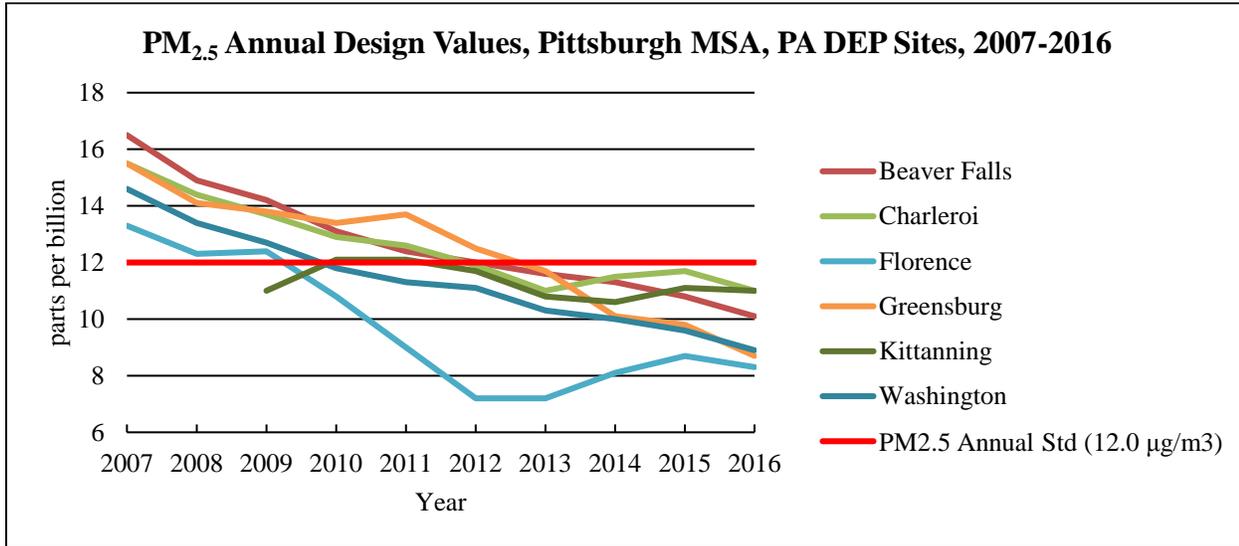
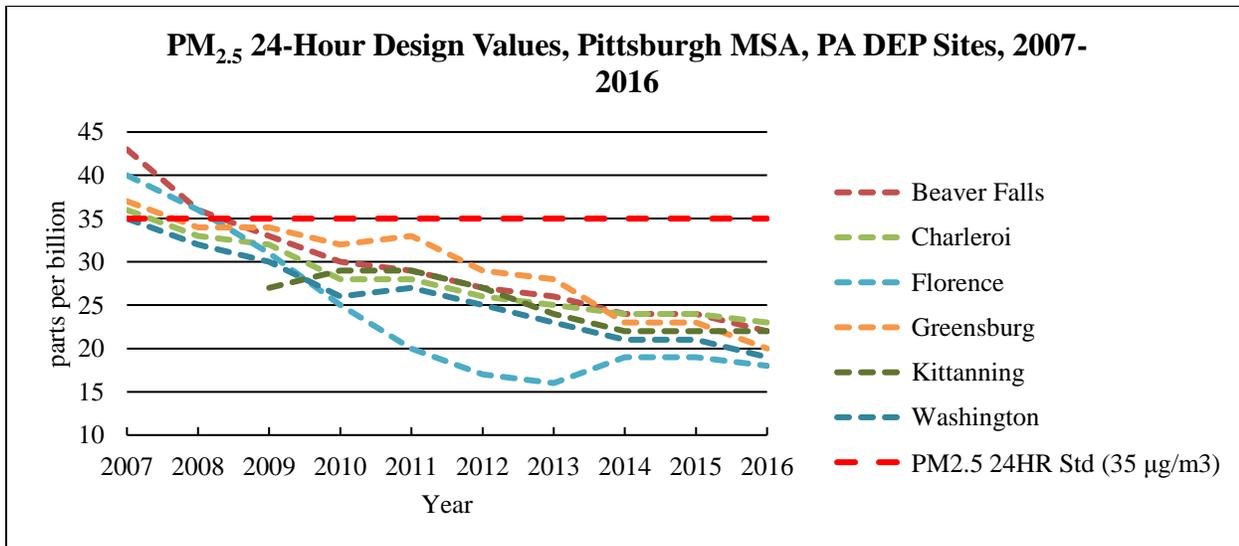


Figure 23. PM_{2.5} 24-Hour Design Values, Pittsburgh MSA, 2007-2016



Figures 24 and 25 display annual and 24-hour PM_{2.5} design values for the Washington monitoring site in comparison to the maximum design values from monitoring sites in Allegheny County (ACHD sites), as well as maximum design values from PA DEP sites in the remaining counties of the Pittsburgh MSA. As shown, PM_{2.5} design values measured at the Washington site are well below maximum values. Therefore, the Washington site would not be needed to characterize the Pittsburgh MSA with respect to any future nonattainment decisions.

Figure 24. PM_{2.5} Annual Design Values, Washington vs. Maximum PA DEP and ACHD sites, 2007-2016

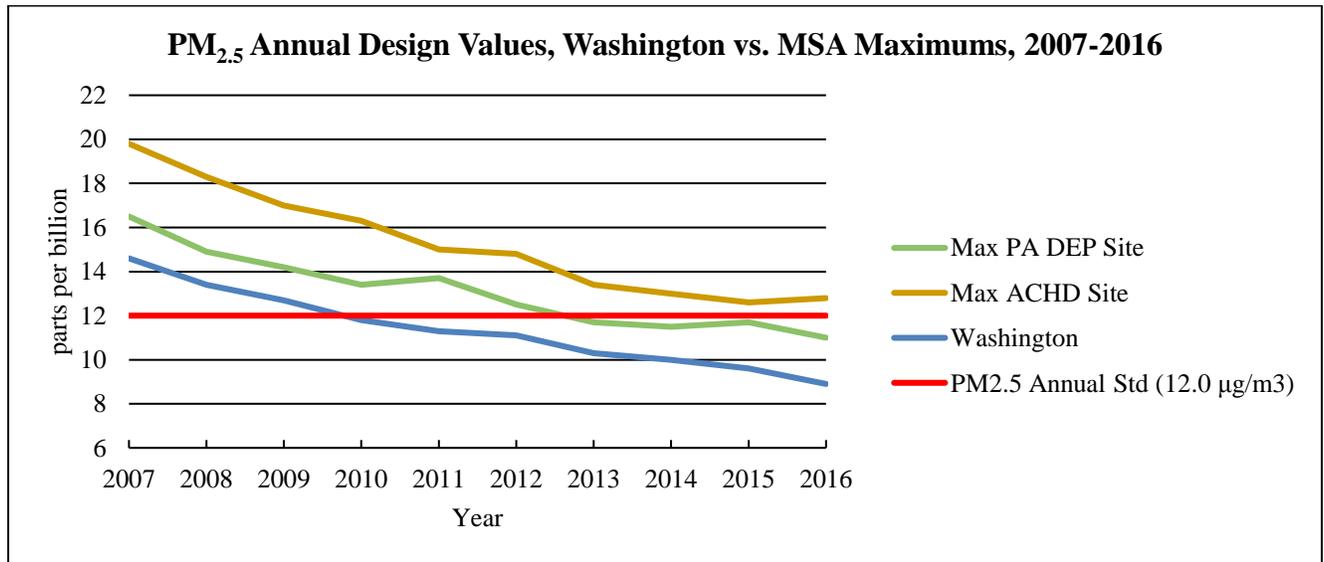
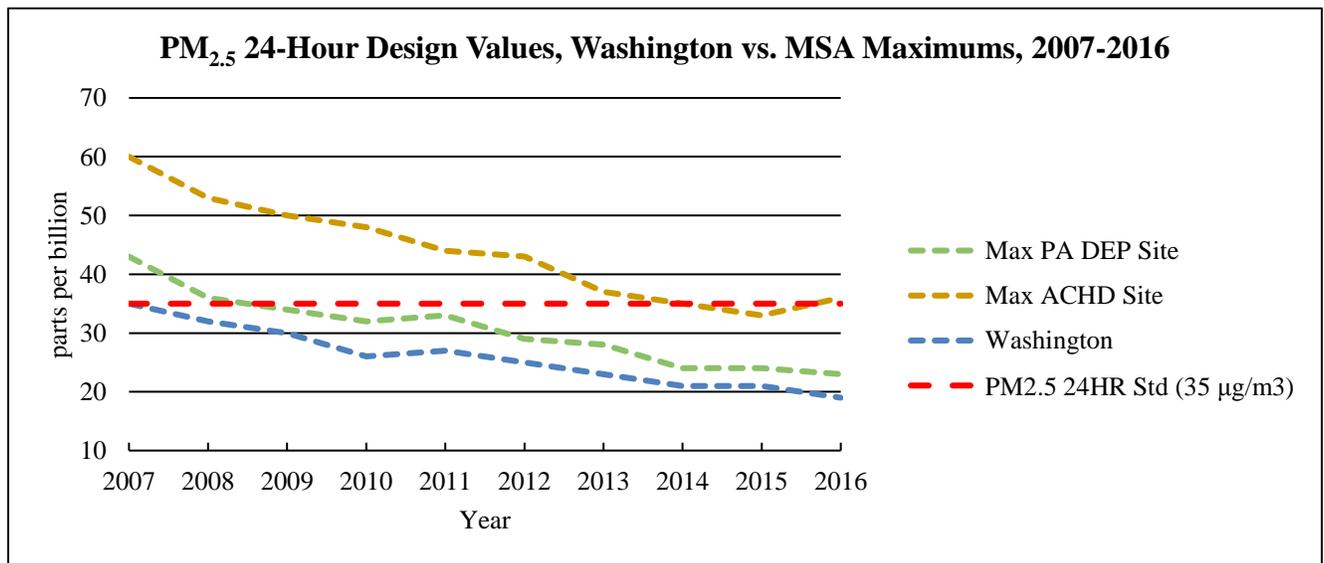


Figure 25. PM_{2.5} 24-Hour Design Values, Washington vs. Maximum PA DEP and ACHD sites, 2007-2016



Modifications to the SO₂ Network

- 1) Discontinue SO₂ monitoring at the Chester (Delaware County) and New Castle (Lawrence County) sites

As provided below in 40 CFR Section 58.14, a low-value SO₂ monitor may be discontinued at the discretion of the U.S. EPA Regional Administrator:

(c) State, or where appropriate, local agency requests for SLAMS monitor station discontinuation, subject to the review of the Regional Administrator, will be approved if any of the following criteria are met and if the requirements of appendix D to this part, if any, continue to be met. Other requests for discontinuation may also be approved on a case-by-case basis if discontinuance does not compromise data collection needed for implementation of a NAAQS and if the requirements of appendix D to this part, if any, continue to be met.

Discontinue SO₂ Monitoring at Chester and New Castle

As described in the “Sulfur Dioxide (SO₂) Network Design Requirements” section in Appendix C of this document, minimum SO₂ monitoring is required based upon a calculated Population Weighted Emissions Index (PWEI) value, which considers both the population and SO₂ emissions contained within defined MSA. Table 13 displays the SO₂ minimum monitoring requirements, PWEI values and monitoring sites in the Philadelphia-Camden-Wilmington MSA (Delaware County is one of five PA counties in this MSA) and Lawrence County, PA. Note that the New Castle site is not located in an MSA, and as such has no monitoring requirement; however, for assessment purposes, Lawrence County totals were used in this demonstration.

Table 13. SO₂ Minimum Monitoring Requirements and Discontinued Monitors

MSA	2016 Population Estimate	2014 NEI (tons/year)	Calculated PWEI	No. of Monitors Required	PA DEP SLAMS Monitors (2017-18)	Other SLAMS Monitors	Total No. of Monitors (2017-18)
Philadelphia-Camden-Wilmington MSA	6,070,500	12934.4	78518	1	1 (0)	AMS-2; DE-4; NJ-1;	8 (7)
Lawrence County, PA*	87,294	3765.5	362	N/A	1 (0)		1 (0)
*Lawrence County is not in an MSA, and has no minimum monitoring requirement. Information provided in this table is for discontinuation assessment purposes only.							

As outlined in Table 13 above, with the discontinuation of the two SO₂ monitors, minimum SO₂ monitoring criteria will continue to be met.

Concentration values at these two monitoring sites have measured values well below the SO₂ NAAQS of 75 ppb for the previous five years. Figure 26 displays the SO₂ design value trend for both monitors, for 2012-2016.

Figure 26. SO₂ Design Values at Chester and New Castle Monitoring Sites

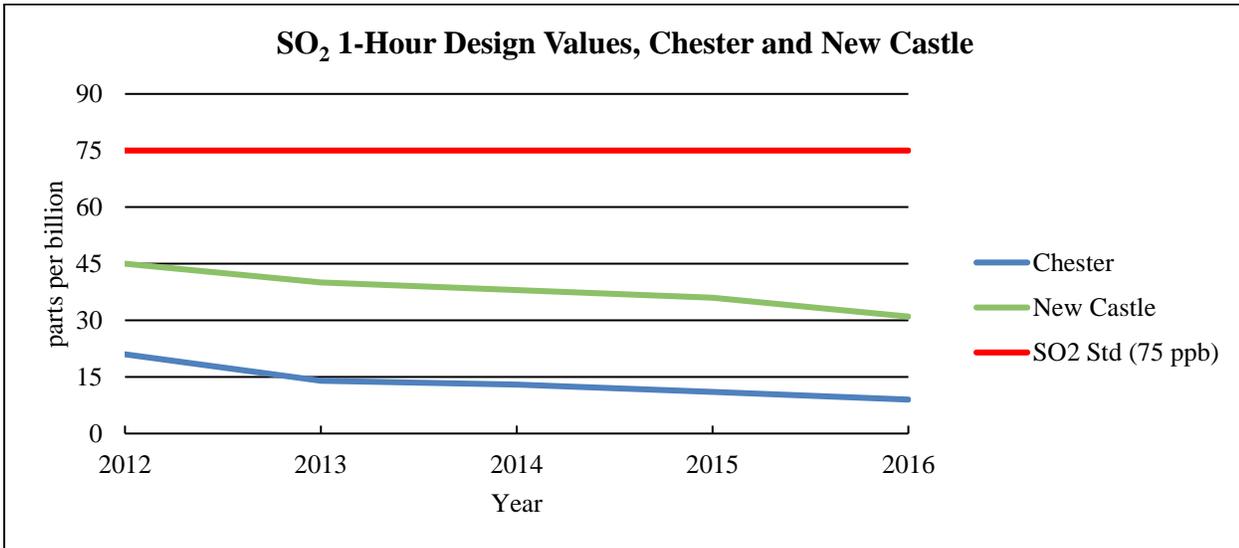
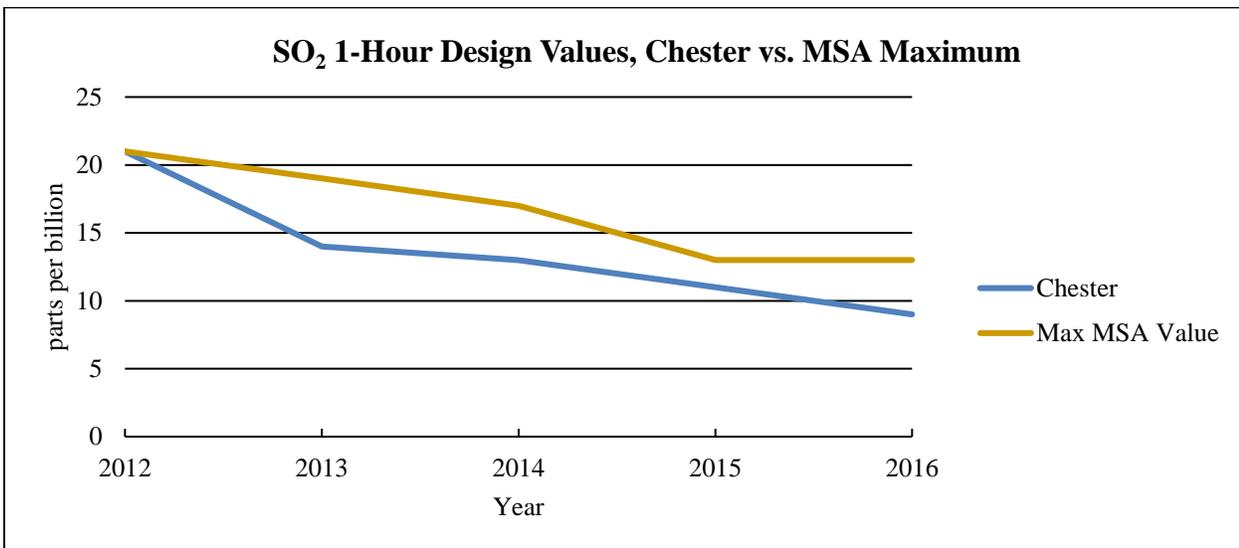


Figure 27 displays design values trends for the past five years measured at the Chester site compared with the maximum design value recorded in the Philadelphia-Camden-Wilmington MSA. As displayed in Figure 27, SO₂ values measured at the Chester monitoring site are trending below the maximum value measured in the Philadelphia-Camden-Wilmington MSA.

Figure 27. SO₂ Design Values at Chester Monitoring Site Compared with the MSA Maximum



Neither SO₂ monitoring site has measured a single hourly exceedance of the level of the SO₂ NAAQS during the past five years. Table 14 lists the hourly maximum 1-hour SO₂ concentrations, as well as the 1-hour 99th percentile concentrations, measured during 2012-2016.

Table 14. Summary SO₂ Concentrations Measurements at Chester and New Castle, 2012-2016

1-Hour SO₂ Concentrations (ppb)				
Year	Chester		New Castle	
	1st Maximum	99th Percentile	1st Maximum	99th Percentile
2012	29	15	54	35
2013	16	15	43	39
2014	17	10	59	40
2015	13	9	40	29
2016	26	8	42	24

The monitoring trends presented above demonstrate that the SO₂ monitors in Chester and New Castle are unlikely to achieve design values in exceedance of the SO₂ NAAQS. Because neither is needed to satisfy minimum SO₂ monitoring requirements, PA DEP intends to discontinue SO₂ monitoring at these two sites.

Modifications to the CO Network

- 1) Discontinue CO monitoring at the York (York County) site

As provided below in 40 CFR Section 58.14, a low-value CO monitor may be discontinued at the discretion of the U.S. EPA Regional Administrator:

(c) State, or where appropriate, local agency requests for SLAMS monitor station discontinuation, subject to the review of the Regional Administrator, will be approved if any of the following criteria are met and if the requirements of appendix D to this part, if any, continue to be met. Other requests for discontinuation may also be approved on a case-by-case basis if discontinuance does not compromise data collection needed for implementation of a NAAQS and if the requirements of appendix D to this part, if any, continue to be met.

Discontinue CO Monitoring at York

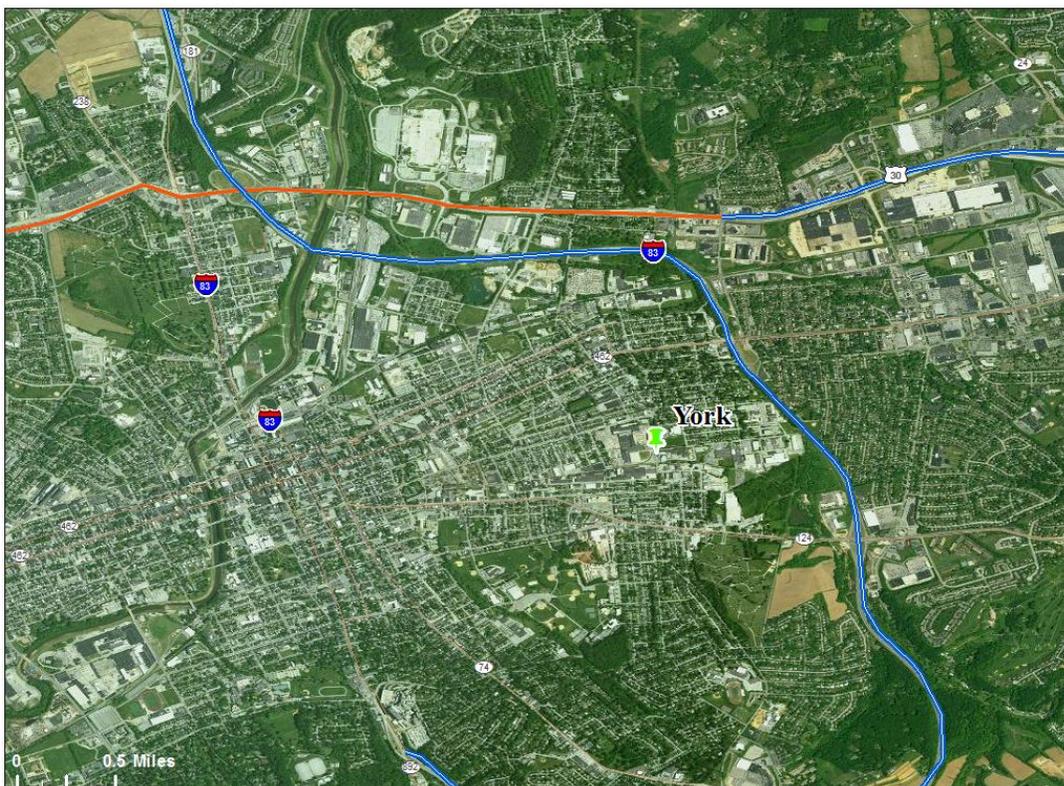
As described in the “Carbon Monoxide (CO) Network Design Requirements” in Appendix C of this document, there are no minimum CO monitoring requirements outside of the Philadelphia-Camden-Wilmington, PA and Pittsburgh, PA MSAs. Although not required to meet EPA minimum monitoring requirements, PA DEP does maintain five CO monitoring stations for use in Prevention of Significant Deterioration (PSD) modeling applications. Upon review of long-term trends between the Arendtsville and York monitoring data, PA DEP plans to discontinue the CO monitor at the York monitoring site.

The Arendtsville monitoring station is approximately 30 miles west-southwest of the York monitoring station. The Arendtsville site is located in a rural environment, away from point and mobile sources. The York site is located in an urban environment, bordered by two heavily-traveled highways, U.S. 30 and I-83. Figures 28 and 29 provide satellite imagery for the area immediately surrounding the Arendtsville and York monitoring stations, respectively.

Figure 28. Arendtsville Monitoring Site



Figure 29. York Monitoring Site



Figures 30 and 31 display the long-term trends of 1-hour and 8-hour maximum CO concentrations measured at the Arendtsville and York monitoring sites for the previous ten years. Neither site has measured an exceedance of either the 1-hour (35 ppm) or 8-hour (9 ppm) CO NAAQS. In fact, neither site has measured an exceedance of the CO NAAQS since their respective installations.

Figure 30. CO 1-Hour Average Maximum Concentrations at Arendtsville and York Monitoring Sites

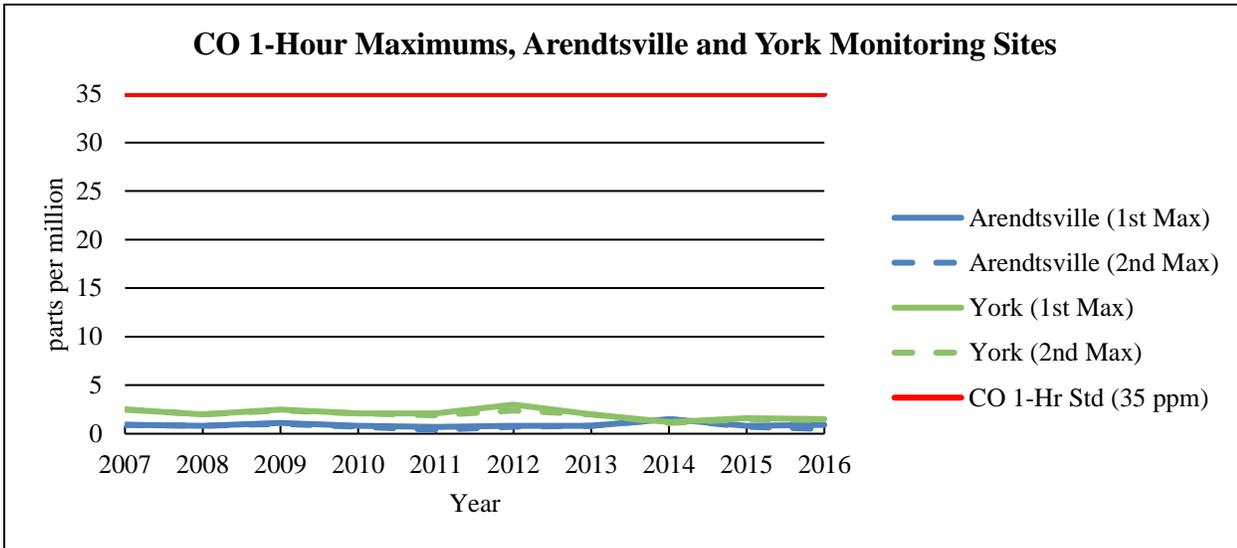
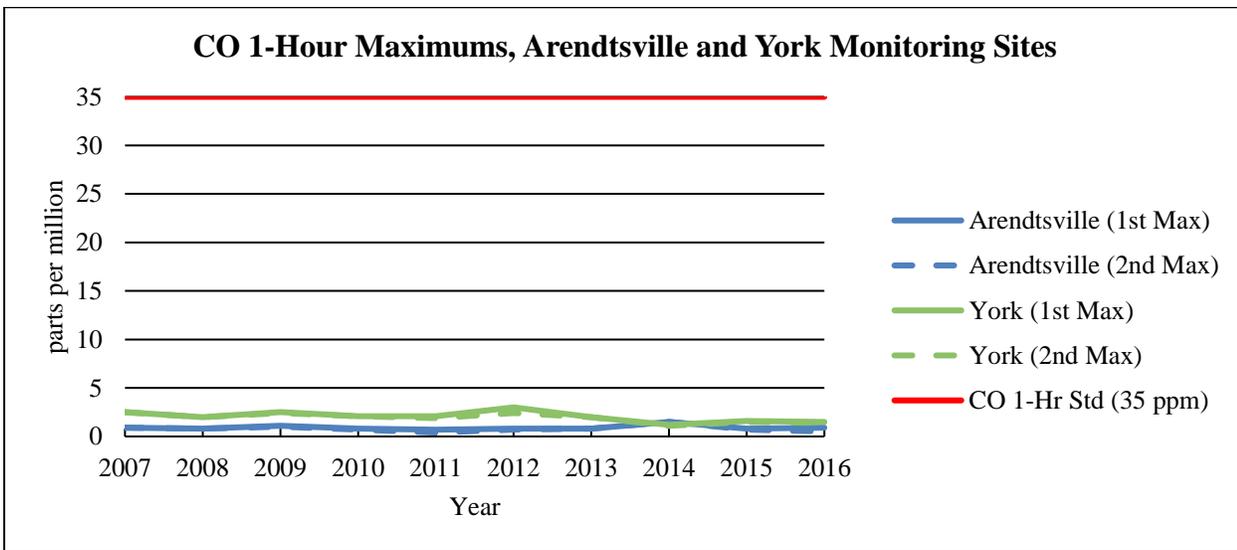


Figure 31. CO 8-Hour Average Maximum Concentrations at Arendtsville and York Monitoring Sites



The monitoring trends presented above demonstrate that though neither site is likely to measure a 1-hour or 8-hour average in exceedance of the CO NAAQS, the York site consistently measures slightly higher CO values than the Arendtsville site. This is expected, owing to its urban location and proximity to mobile sources. The Arendtsville monitor is more indicative of non-source related background values in central Pennsylvania. For this reason, values from the Arendtsville CO monitor are more useful to PSD modeling purposed than are values from the York CO monitor. As the York CO monitor is not needed to satisfy minimum CO monitoring requirements, PA DEP intends to discontinue CO monitoring at this site.

Modifications to the PM_{2.5} Network

- 1) Discontinue PM_{2.5} monitoring at the Swiftwater (Monroe County) monitoring site

As provided below in 40 CFR Section 58.14, a low-value PM_{2.5} monitor may be discontinued at the discretion of the U.S. EPA Regional Administrator:

(c) State, or where appropriate, local agency requests for SLAMS monitor station discontinuation, subject to the review of the Regional Administrator, will be approved if any of the following criteria are met and if the requirements of appendix D to this part, if any, continue to be met. Other requests for discontinuation may also be approved on a case-by-case basis if discontinuance does not compromise data collection needed for implementation of a NAAQS and if the requirements of appendix D to this part, if any, continue to be met

Discontinue PM_{2.5} Monitor at Swiftwater

PA DEP plans to discontinue the PM_{2.5} monitor at its Swiftwater site. The Swiftwater monitoring site is located within the East Stroudsburg, PA MSA. As described in the “Fine Particulate Matter (PM_{2.5}) Network Design Requirements” section in Appendix C of this document, PM_{2.5} minimum monitoring requirements are based on the population of an MSA, as well as PM_{2.5} concentration values measured within the MSA. PM_{2.5} minimum monitoring criteria set forth in 40 CFR Part 58, Appendix D do not require any PM_{2.5} monitoring within the East Stroudsburg MSA. Table 15 provides the PM_{2.5} minimum monitoring requirement and PM_{2.5} monitoring sites within the East Stroudsburg MSA. The discontinuation of the Swiftwater monitoring site is reflected in the 2017-18 changes, shown in parentheses in the table.

Table 15. PM_{2.5} Minimum Monitoring Requirements for East Stroudsburg MSA

MSA	2016 Population Estimate	2016 Max Annual Design Value	2016 Max 24-hr Design Value	No. of Monitors Required	PA DEP SLAMS Monitors (2017-18)	Other SLAMS Monitors	Total SLAMS Monitors (2017-18)
East Stroudsburg MSA	166,098	7.6	18	0	1 (0)	0	1 (0)

The Swiftwater PM_{2.5} monitoring site is one of three PM_{2.5} monitoring sites PA DEP has used to monitor regional PM_{2.5} transport. PA DEP uses the New Garden (Chester County) site to assess regional transport from the I-95 corridor. PA DEP began PM_{2.5} monitoring at the Tioga County site in 2014, in response to public concern over pollution impacts of increasing shale gas extraction and processing activities. Both the Swiftwater and Tioga County sites have been used to assess regional transport across northeastern Pennsylvania. Figures 32 and 33 display PM_{2.5} annual average and 24-hour 98th percentile concentrations, respectively, measured at these three regional transport sites.

Figure 32. PM_{2.5} Annual Average Concentrations at Regional Transport Sites

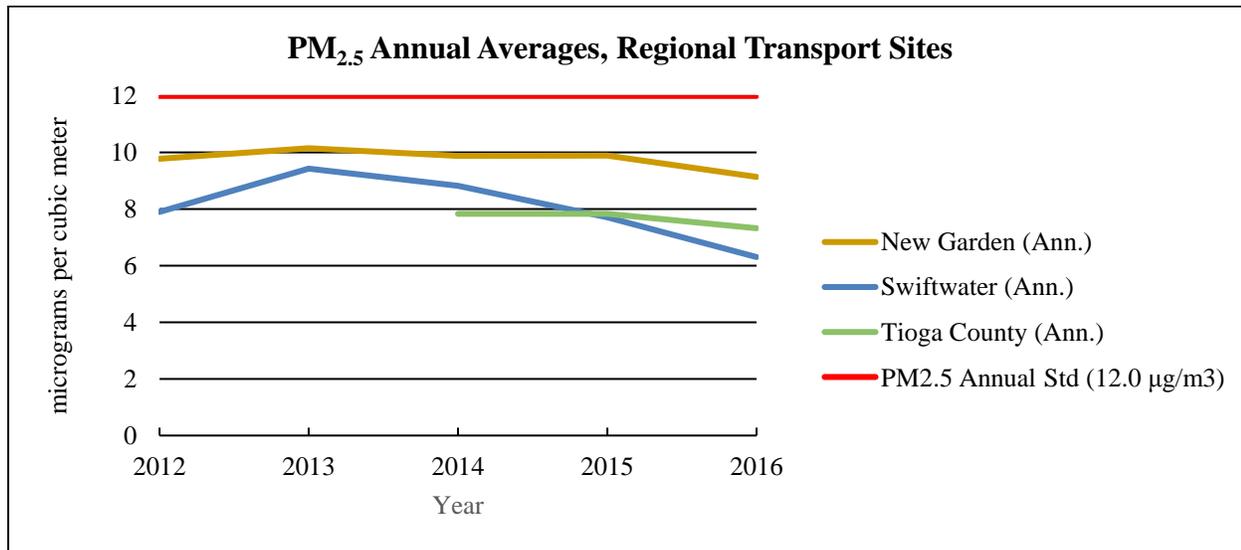
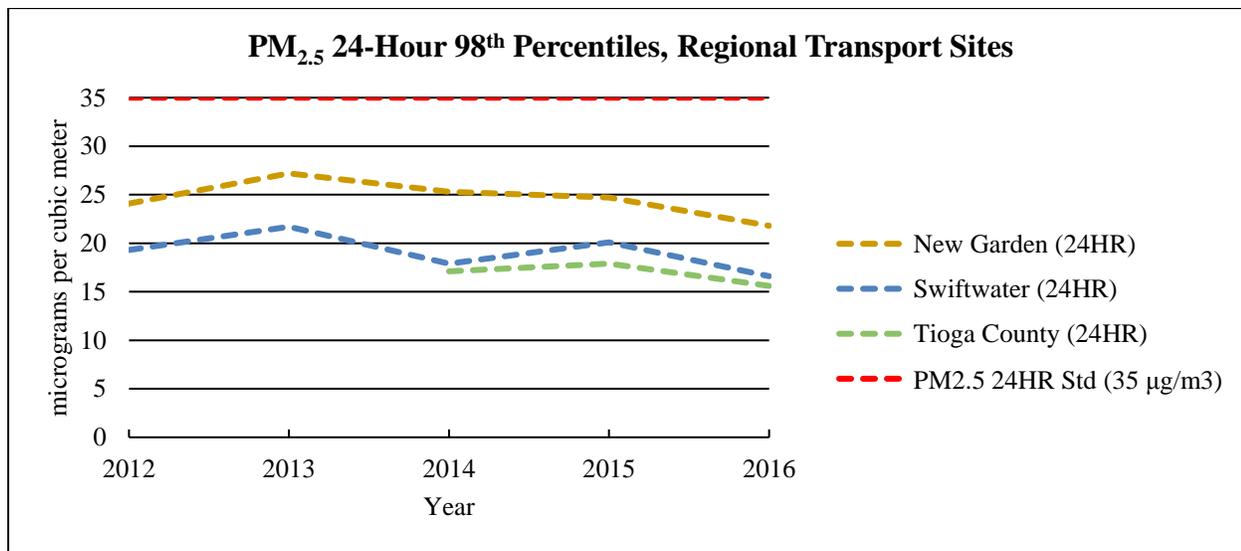


Figure 33. PM_{2.5} 24-Hour 98th Percentile Concentrations at Regional Transport Sites



Network design requirements set forth in 40 CFR Part 58, Appendix D, require PA DEP to maintain a minimum of one regional transport site in Pennsylvania (see “Fine Particulate Matter (PM_{2.5}) Network Design Requirements” section in Appendix C of this document). As the Swiftwater and Tioga County monitors measure transport over the northeastern portion of Pennsylvania, PA DEP will discontinue the Swiftwater monitor and retain the Tioga County monitor to continue to support monitoring efforts in areas of increased shale gas activities.

Modifications to the PM_{2.5} Speciation Network

- 1) Install PM_{2.5} speciation monitor at the Lebanon (Lebanon County) PM_{2.5} monitoring site
- 2) Discontinue PM_{2.5} speciation monitor at either Chester or Marcus Hook (Delaware County) PM_{2.5} monitoring site

Install PM_{2.5} Speciation Monitor at Lebanon (Lebanon County)

PA DEP plans to install a PM_{2.5} speciation monitor at its Lebanon site to help determine if the Lancaster Downwind PM_{2.5} monitor is being influenced by local source(s) of emissions.

The Lebanon monitoring site was originally installed in February 2011, to meet the PM_{2.5} and ozone minimum monitoring requirements of the newly-created Lebanon MSA. In 2012, the Lebanon PM_{2.5} monitor recorded an annual average of 14.25 µg/m³, exceeding the 2012 PM_{2.5} annual standard of 12.0 µg/m³. In 2014, the Lebanon monitor again recorded an annual average exceeding the standard at 12.73 µg/m³. The 3-year annual design value 2012-2014 at the Lebanon site was 12.7 µg/m³.

In December 2014, EPA designated Lebanon County as being in nonattainment of the 2012 PM_{2.5} standard. These designations became final in January 2015 (<https://www.gpo.gov/fdsys/pkg/FR-2015-01-15/pdf/2015-00021.pdf>).

Figure 34 and Figure 35 illustrate the trend in 24-hour and annual average PM_{2.5} concentrations, respectively, over the past 5 years.

Figure 34. PM_{2.5} 24-Hour 98th Percentile Concentrations at Lancaster, Lancaster Downwind and Lebanon

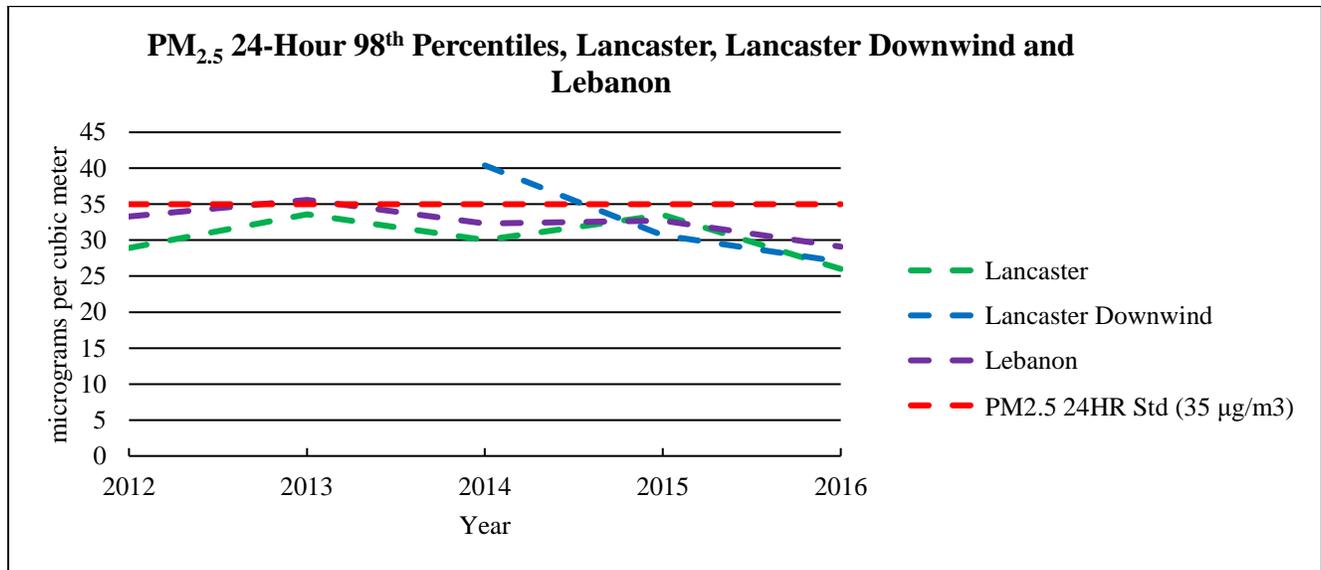
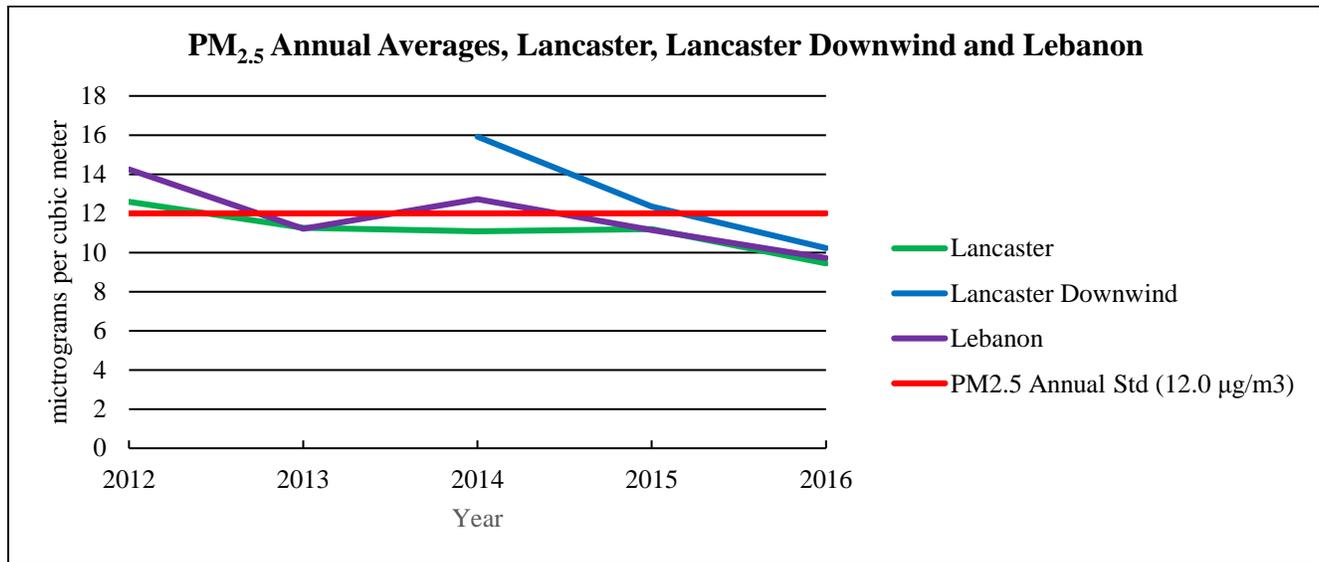


Figure 35. PM_{2.5} Annual Average Concentrations at Lancaster, Lancaster Downwind and Lebanon



As illustrated in the two figures above, Lebanon’s PM_{2.5} concentrations have been on the decline over the last couple of years. Although we have seen the decline in PM_{2.5} concentrations, PA DEP is interested in learning whether any PM_{2.5} speciated data similarities exist between Lebanon and the two PM_{2.5} speciation monitors in Lancaster County. Overall, Lancaster and Lebanon counties have been a concern of the PA DEP due to increased level of ammonia emissions from this region of Pennsylvania. Having a PM_{2.5} speciation monitor at Lebanon will allow the PA DEP to better assess the impacts of ammonia emissions on PM_{2.5} formation specifically in Lebanon County and also assist in any future State Implementation Plan revisions due to a tightening of the PM_{2.5} standard in the future.

Discontinue PM_{2.5} Speciation Monitor at Either Chester or Marcus Hook (Delaware County)

PA DEP plans to discontinue the PM_{2.5} speciation monitor at either its Chester or Marcus Hook site. PM_{2.5} speciation monitoring is not required by U.S. EPA in this region. PA DEP will utilize the resources made available by the discontinuation of this monitor to establish PM_{2.5} speciation monitoring at the Lebanon site, as outlined in the preceding section.

PA DEP has been operating a PM_{2.5} speciation monitor at Chester since 1999 and at Marcus Hook since 2014. Figure 36 and Figure 37 illustrate the trend in 24-hour and annual average PM_{2.5} concentrations, respectively, over the past 5 years.

Figure 36. PM_{2.5} 24-Hour 98th Percentile Concentrations at Chester and Marcus Hook

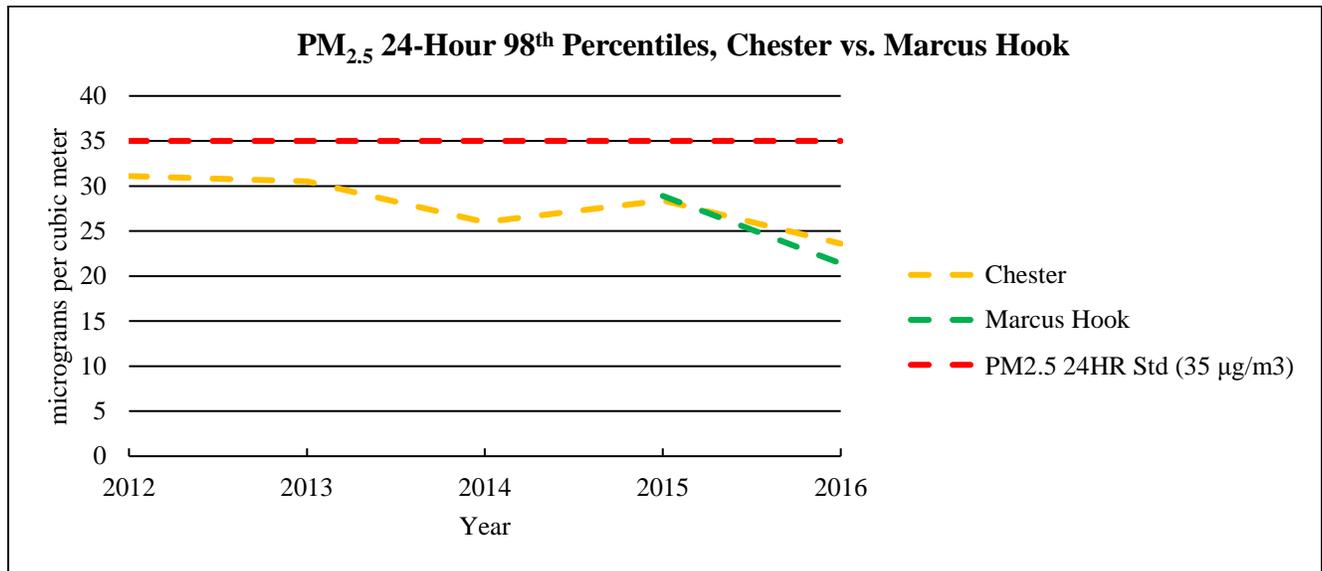
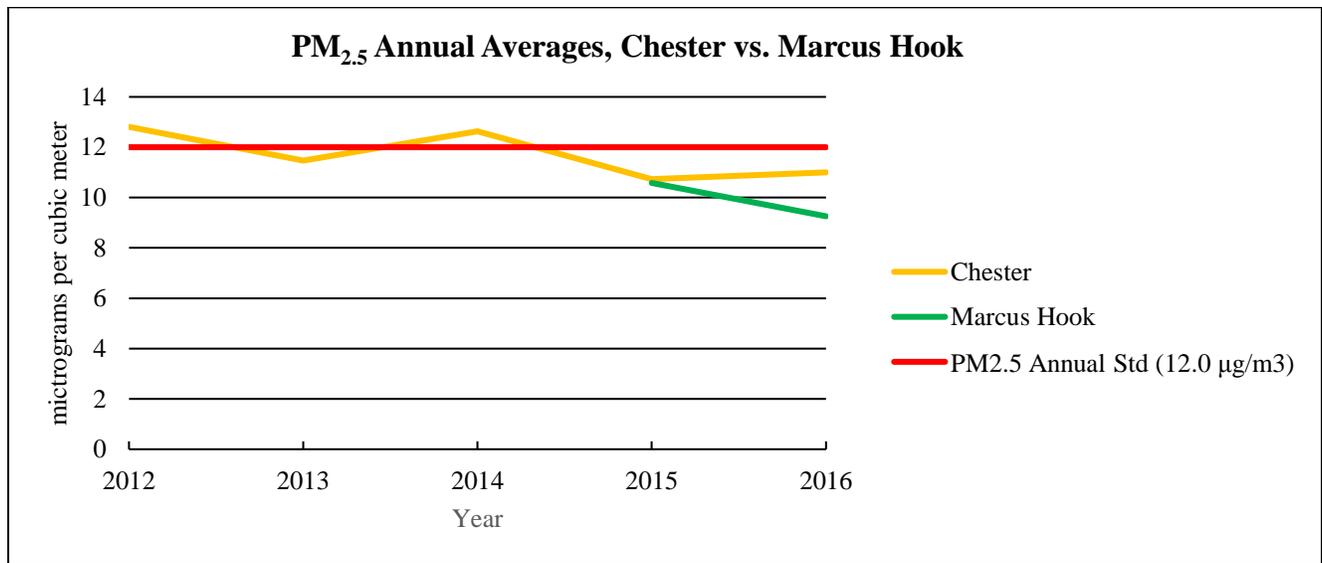


Figure 37. PM_{2.5} Annual Average Concentrations at Chester and Marcus Hook



As outlined in Figure 36 and Figure 37, over the last two years, Marcus Hook's PM_{2.5} concentration has been lower than Chester's PM_{2.5} concentration. PA DEP addressed the cause of the higher PM_{2.5} concentrations at Chester along with its intent to site a PM_{2.5} monitor at Marcus Hook in its 2014 Annual Monitoring Network Plan. In this analysis, PA DEP described the location of the Chester monitor with respect to two facilities: Evonik Degussa Corporation and PQ Corporation and how those two facilities could be influencing PM_{2.5} concentrations at Chester. By the end of Summer 2017, PA DEP plans to analyze the 2015 and 2016 PM_{2.5} speciation data at Chester and Marcus Hook in order to make a decision on which PM_{2.5} speciation monitor to discontinue.

Modifications to the PM₁₀ Network

- 1) Discontinue PM₁₀ monitoring at the Altoona (Blair County) and Montoursville (Lycoming County) sites

As provided below in 40 CFR Section 58.14, a low-value PM₁₀ monitor may be discontinued at the discretion of the U.S. EPA Regional Administrator:

(c) State, or where appropriate, local agency requests for SLAMS monitor station discontinuation, subject to the review of the Regional Administrator, will be approved if any of the following criteria are met and if the requirements of appendix D to this part, if any, continue to be met. Other requests for discontinuation may also be approved on a case-by-case basis if discontinuance does not compromise data collection needed for implementation of a NAAQS and if the requirements of appendix D to this part, if any, continue to be met.

Discontinue PM₁₀ Monitoring at Altoona and Montoursville

The Altoona monitoring site is located in the Altoona MSA, which consists of Blair County. The Montoursville monitoring site is located in the Williamsport MSA, which consists of Lycoming County. As described in the “Particulate Matter (PM₁₀) Network Design Requirements” section in Appendix C of this document, PM₁₀ minimum monitoring requirements are based on the population of an MSA, as well as PM₁₀ concentration values measured within the MSA. PM₁₀ minimum monitoring criteria set forth in 40 CFR Part 58, Appendix D do not require any PM₁₀ monitoring within the Altoona or Williamsport MSAs. Table 16 provides the PM₁₀ minimum monitoring requirement and PM₁₀ monitoring sites within Altoona and Williamsport MSAs. The discontinuation of the Altoona and Montoursville monitoring sites is reflected in the 2017-18 changes, shown in parentheses in the table.

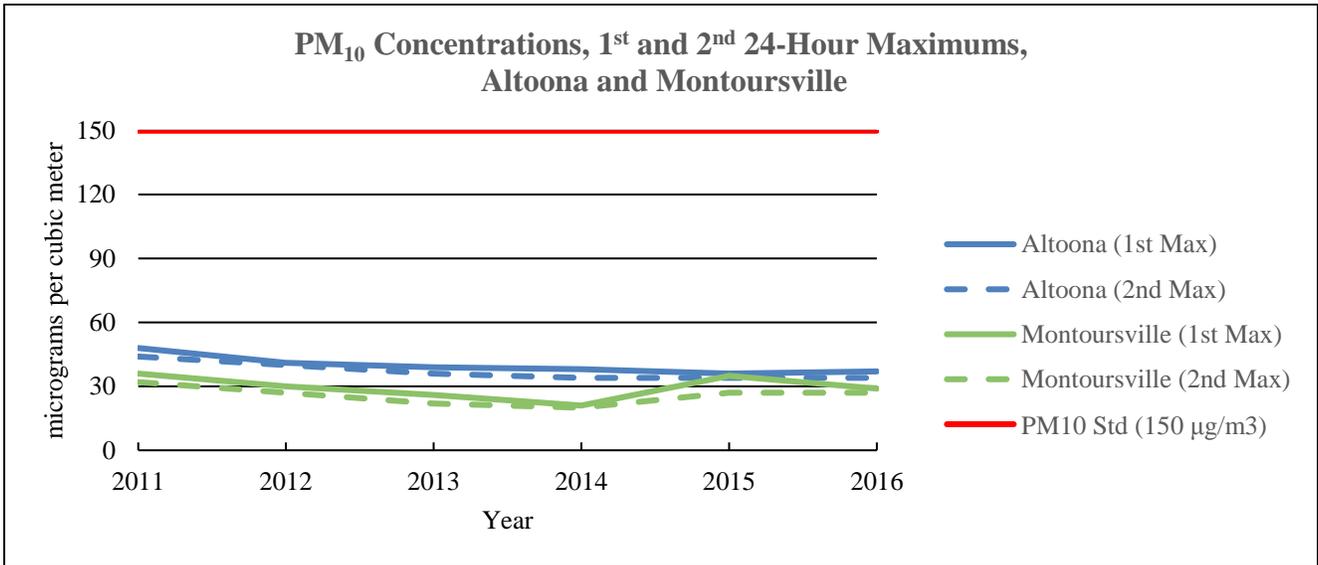
Table 16. PM₁₀ Minimum Monitoring Requirements for Altoona and Williamsport MSAs

MSA	2016 Population Estimate	2016 Max 24-hr Average	Monitoring Requirement Range	PA DEP SLAMS Monitors (2017-18)	Other SLAMS Monitors	Total SLAMS Monitors (2017-18)
Altoona MSA	124,650	37	0	1 (0)		1 (0)
Williamsport MSA	115,248	29	0	1 (0)		1 (0)

As outlined in Table 16 above, with the discontinuation of the two PM₁₀ monitors, minimum PM₁₀ monitoring criteria will continue to be met.

Concentration values at these two monitoring sites have measured values well below the PM₁₀ NAAQS of 150 µg/m³ for the previous five years. Figure 38 displays the PM₁₀ maximum 24-hour value trends for both monitors, for 2012-2016. Neither site has measured a single PM₁₀ 24-hour average in exceedance of the PM₁₀ NAAQS during this time.

Figure 38. PM₁₀ Maximum 24-Hour Averages at Altoona and Montoursville Monitoring Sites



The monitoring trends presented above demonstrate that the PM₁₀ monitors in Altoona and Montoursville are unlikely to achieve 24-hour averages in exceedance of the PM₁₀ NAAQS. As neither is needed to satisfy minimum PM₁₀ monitoring requirements, PA DEP intends to discontinue PM₁₀ monitoring at these two sites.

Modifications to the Air Toxics Network

- 1) Discontinue Swarthmore (Delaware County) monitoring site due to building demolition
- 2) Relocate Springville (Susquehanna County) and Mehoopany (Wyoming County) VOC sampling to new sites within Susquehanna and Wyoming Counties, and add Carbonyl and PM_{2.5} sampling

Discontinue Swarthmore (Delaware County) monitoring site due to building demolition

Air Toxics metals and VOC monitoring has been conducted at the Swarthmore site since 1997 under a partnership agreement with Swarthmore College. The samplers are located on the roof of the school's Hicks Hall Engineering building. This building is scheduled for demolition in 2017 as a part of campus renovation to build a new Biology, Engineering and Psychology building in its place.

Relocate Springville (Susquehanna County) and Mehoopany (Wyoming County) VOC sampling to new sites within Susquehanna and Wyoming Counties, and add Carbonyl and PM_{2.5} sampling.

Air Toxics monitoring using U.S. EPA Method TO-15 has been conducted at the Springville site since 2013, and at the Mehoopany site since 2014. New monitoring sites will be established in Susquehanna County and Wyoming Counties as part of the planned network expansion in response to Marcellus shale activities (see "Modifications to Air Monitoring Network: Marcellus Shale Development" section of this document). These new sites will include VOC, Carbonyl, and PM_{2.5} sampling. New sites are required to meet the minimum site characteristics necessary for the additional monitoring equipment, which the current locations are unable to support.

Replace all TSP-based metals sampling with a PM₁₀-based method; Add Antimony, Selenium and Cobalt to analyte suite

PA DEP will replace all currently installed TSP samplers used for metals monitoring with a more analytically-precise PM₁₀ sampling method using quartz filters. Historically PA DEP has sampled for ambient air toxic metals using a sampler for total suspended particulate (TSP) consistent with methods used for the National Air Toxics Trends Station program (NATTS). The results reflect the total airborne particulate contained in the sampled air. While TSP measurements can provide a quantification of the average concentration of all suspended particulate in the air over a 24-hr sampling period, in reality only the portion of that total is actually inhaled by any one individual. Estimates of this "respirable" fraction are desired when using monitored data for screening for potential long-term exposure effects as that fraction proves a better surrogate for estimating chronic human toxic metals exposure. This has been recognized at the national level as current proposals for the revisions to the NATTS program call for replacing existing TSP metals samplers with samplers for the fraction of particulate 10 microns in aerodynamic diameter or less (PM₁₀) to better capture data on human inhalation exposure. The use of quartz filters with this PM₁₀-based method allows PA DEP to receive results from the lab that have a lower limit of quantification and reporting than the TSP samplers and glass filters used for the screening method.

Additionally, the NATTS revision proposal suggests supplementing the existing suite with three additional metals; Antimony, Cobalt and Selenium. PA DEP is proposing to modify its metals monitoring to include Antimony, Cobalt and Selenium at its existing air toxics metals sampling sites and commence a program to replace existing TSP samplers with PM₁₀ samplers capable of accurately measuring the respirable fraction. A PM₁₀ sampler will be collocated with an existing TSP sampler at the Lancaster monitoring site for one year while data is collected to:

- a. Establish baseline concentrations of Antimony, Cobalt and Selenium using the TSP fraction and
- b. Comparing the measured metals in the collocated PM₁₀ fraction to the TSP fraction.

This data will better inform PA DEP on the relationship of the PM₁₀ fraction to the TSP fraction of the supplemented metals suite

Appendix A - General Descriptions of Air 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 an ultraviolet fluorescence analyzer. Air is drawn through a sample cell where it is then subjected to high intensity ultraviolet light. This causes 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 SO₂ concentration.

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 (O₃). 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 (NO₂) is measured indirectly by a subtraction of the NO from the NO_x concentrations.

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.

Fine Particulate Matter (PM_{2.5})

Fine particulate matter 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 Teflon™ Microfiber filter that is weighed to determine the particulate mass. The normal sampling schedule is for a 24-hour sample to be taken daily. In addition, PA DEP utilizes Federal Equivalent Method (FEM) Met One Model 1020 and Teledyne Model 602 BetaPLUS monitors.

Particulate Matter (PM₁₀)

PM₁₀ 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 PM₁₀, the terms “PM₁₀” 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 may 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, PM₁₀ contributes to reduced visibility and degradation of man-made materials.

PM₁₀ 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.

Lead (Pb)

Lead is emitted to the atmosphere primarily from certain industrial processes, such as battery manufacturers and lead smelters. A portion of the private aviation sector is an additional source of lead emissions. 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 using Inductively Coupled Plasma - Mass Spectrometry.

Air Toxics

Hazardous air pollutants (HAPs), commonly referred to as air toxics, are pollutants known to cause or are suspected of causing cancer or other serious human health effects or ecosystem damage. Some air toxics are released from natural sources such as volcanic eruptions and forest fires. Most air toxics originate from mobile sources (cars, trucks, buses) and stationary sources (factories, refineries, power plants). Examples of some of the 187 toxic air pollutants include heavy metals such as mercury and chromium; benzene, found in gasoline; perchloroethylene, emitted from some dry cleaning facilities; and methylene chloride, used as a solvent and paint stripper by a number of industries.

Appendix B – Sites by MSA and Non-MSA Region

Appendix B of this document displays maps of monitoring network sites organized by Metropolitan Statistical Area (MSA) regions, as described in the “Description of PA DEP’s Ambient Air Monitoring Network” section of this document. MSAs are listed in alphabetical order, followed by non-MSA regions. Table B-1 below lists the MSAs and non-MSA regions, in order of presentation. Areas listed in Table B-1, but not included in the following maps, do not contain monitoring sites operated by PA DEP.

Table B-1. Metropolitan Statistical Areas and Populations

MSA Region	County (Pennsylvania Portion)
Allentown-Bethlehem-Easton MSA	Carbon, Lehigh, Northampton
Altoona, PA-NJ MSA	Blair
Bloomsburg-Berwick, PA MSA	Columbia, Montour
Chambersburg-Waynesboro, PA MSA	Franklin
East Stroudsburg, PA MSA	Monroe
Erie, PA MSA	Erie
Gettysburg, PA MSA	Adams
Harrisburg-Carlisle, PA MSA	Cumberland, Dauphin, Perry
Johnstown, PA MSA	Cambria
Lancaster, PA MSA	Lancaster
Lebanon, PA MSA	Lebanon
New York-Newark-Jersey City MSA	Pike
Philadelphia-Camden-Wilmington, PA-NJ-DE-MD MSA	Bucks, Chester, Delaware, Montgomery, Philadelphia
Pittsburgh, PA MSA	Allegheny, Armstrong, Beaver, Butler, Fayette, Washington, Westmoreland
Reading, PA MSA	Berks
Scranton-Wilkes-Barre-Hazleton MSA	Lackawanna, Luzerne, Wyoming
State College, PA MSA	Centre
Williamsport, PA MSA	Lycoming
York-Hanover, PA MSA	York
Youngstown-Warren-Boardman, OH-PA MSA	Mercer
Northcentral Region - Non-MSA	Bradford, Cameron, Clearfield, Clinton, Northumberland, Potter, Snyder, Sullivan, Tioga, Union
Northeast Region - Non-MSA	Schuylkill, Susquehanna, Wayne
Northwest Region - Non-MSA	Clarion, Crawford, Elk, Forest, Jefferson, Lawrence, McKean, Venango, Warren
Southcentral Region - Non-MSA	Bedford, Fulton, Huntingdon, Juniata, Mifflin
Southwest Region - Non-MSA	Greene, Indiana, Somerset

Figure B-1. Allentown-Bethlehem-Easton, PA-NJ MSA (Pennsylvania portion)

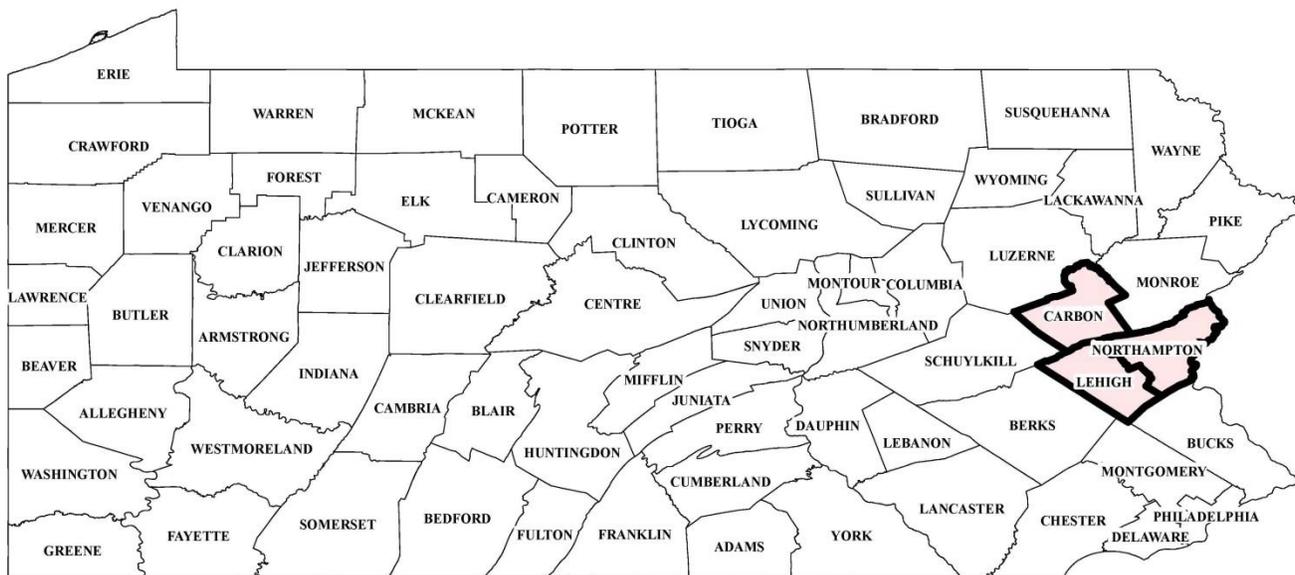


Figure B-2. Allentown-Bethlehem-Easton, PA-NJ MSA (Pennsylvania portion) Site Detail

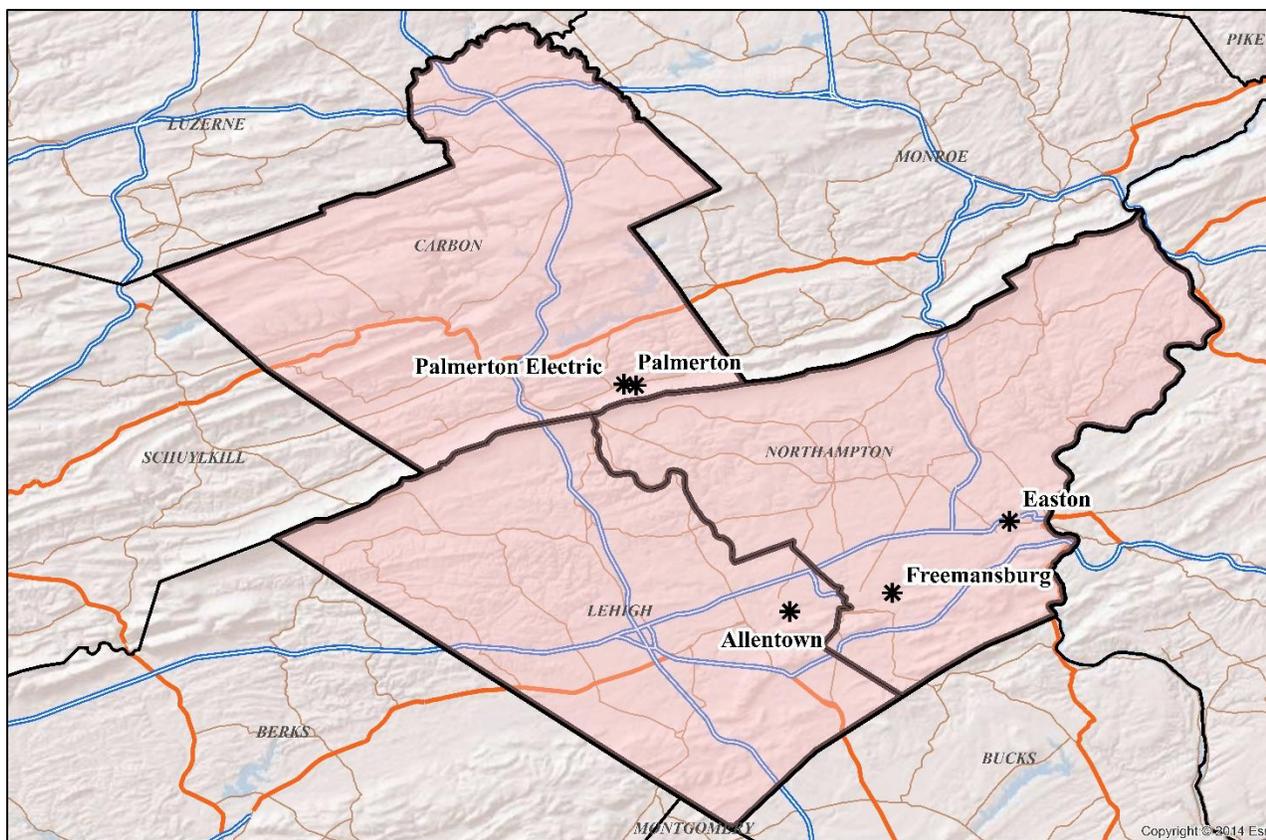


Figure B-3. Altoona, PA MSA

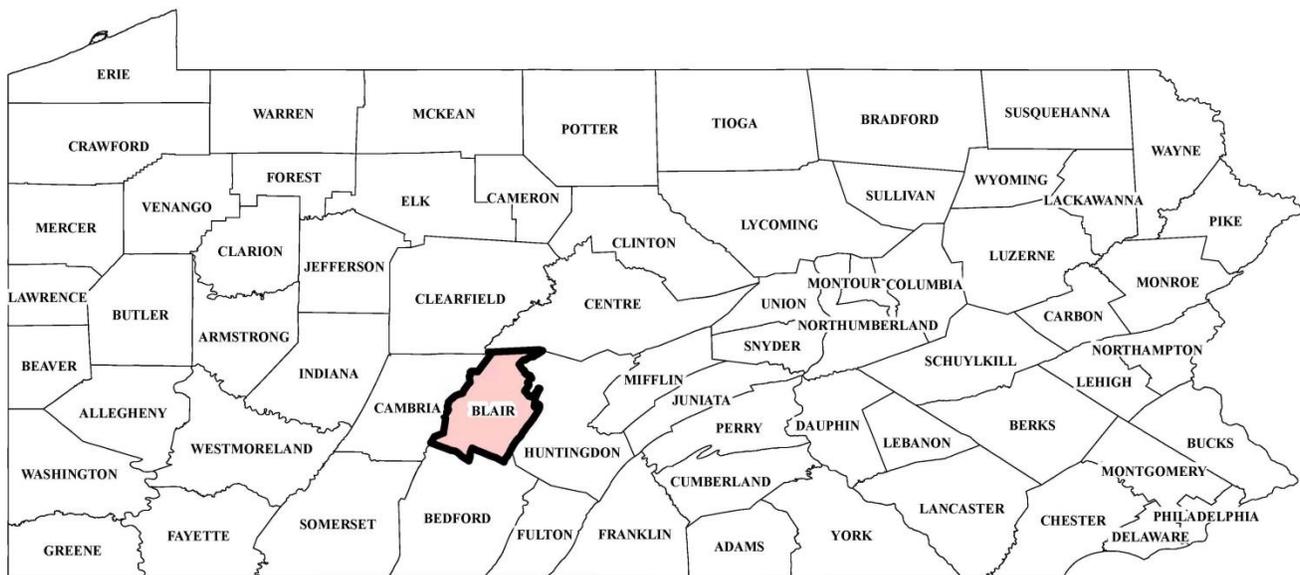


Figure B-4. Altoona, PA MSA Site Detail

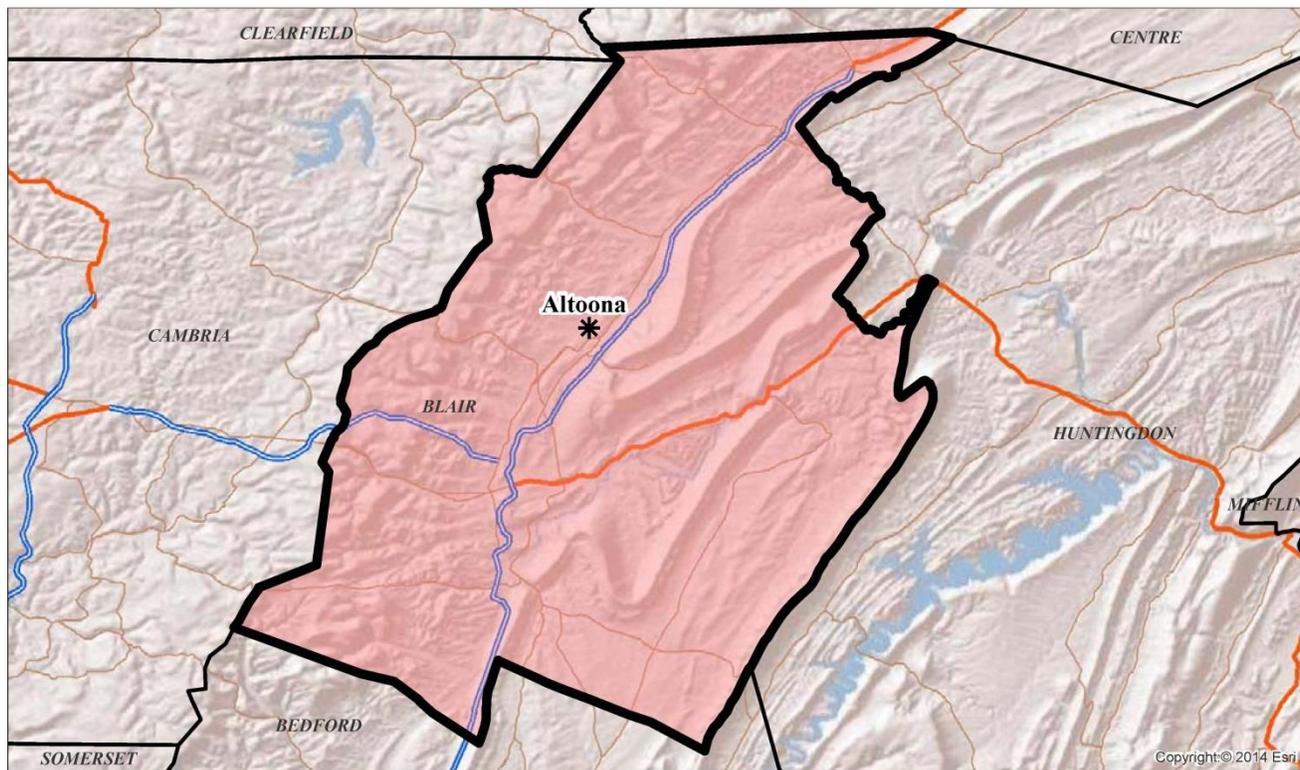


Figure B-5. Chambersburg-Waynesboro, PA MSA

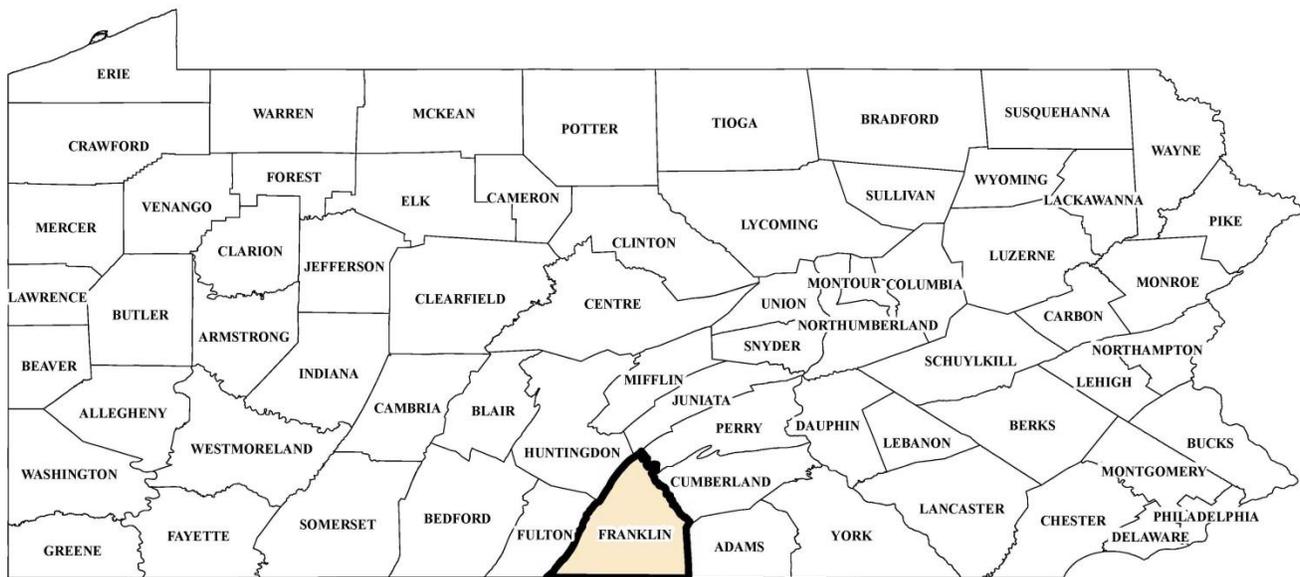


Figure B-6. Chambersburg-Waynesboro, PA MSA Site Detail

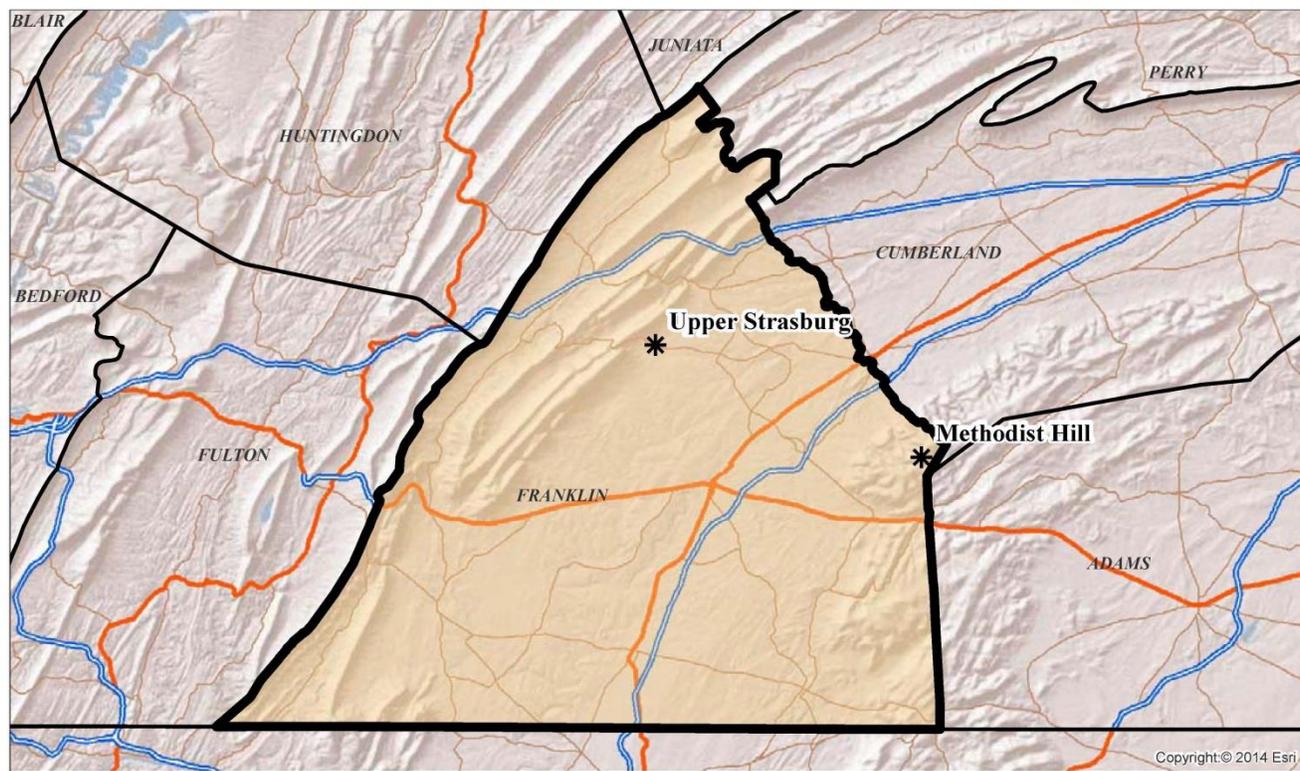


Figure B-7. East Stroudsburg, PA MSA

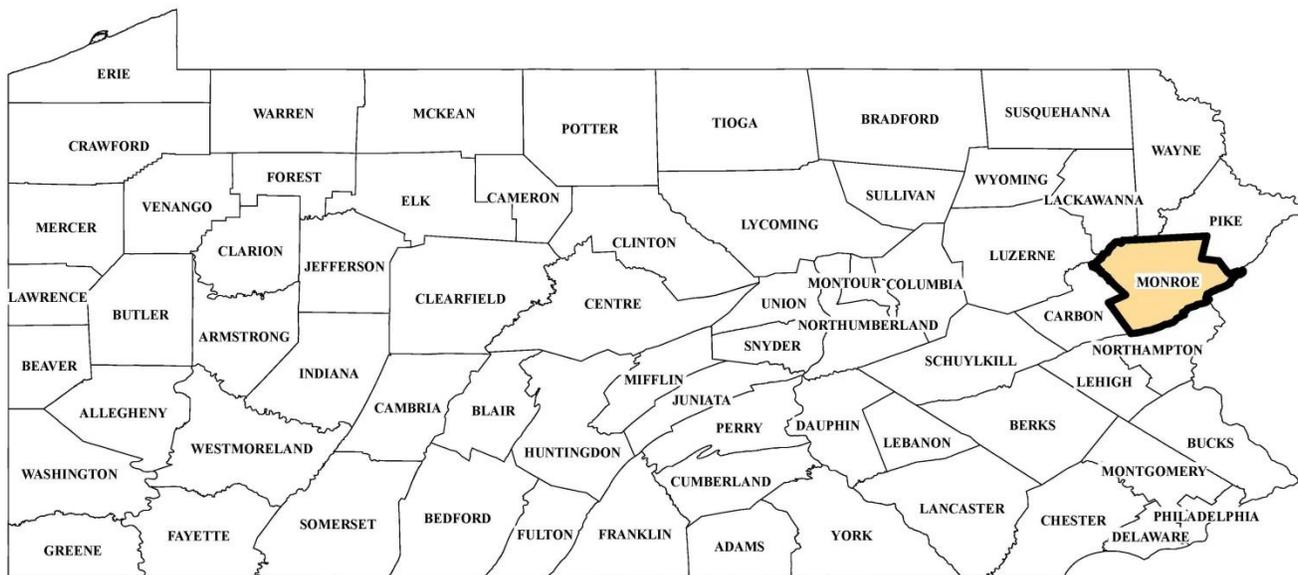


Figure B-8. East Stroudsburg, PA MSA Site Detail

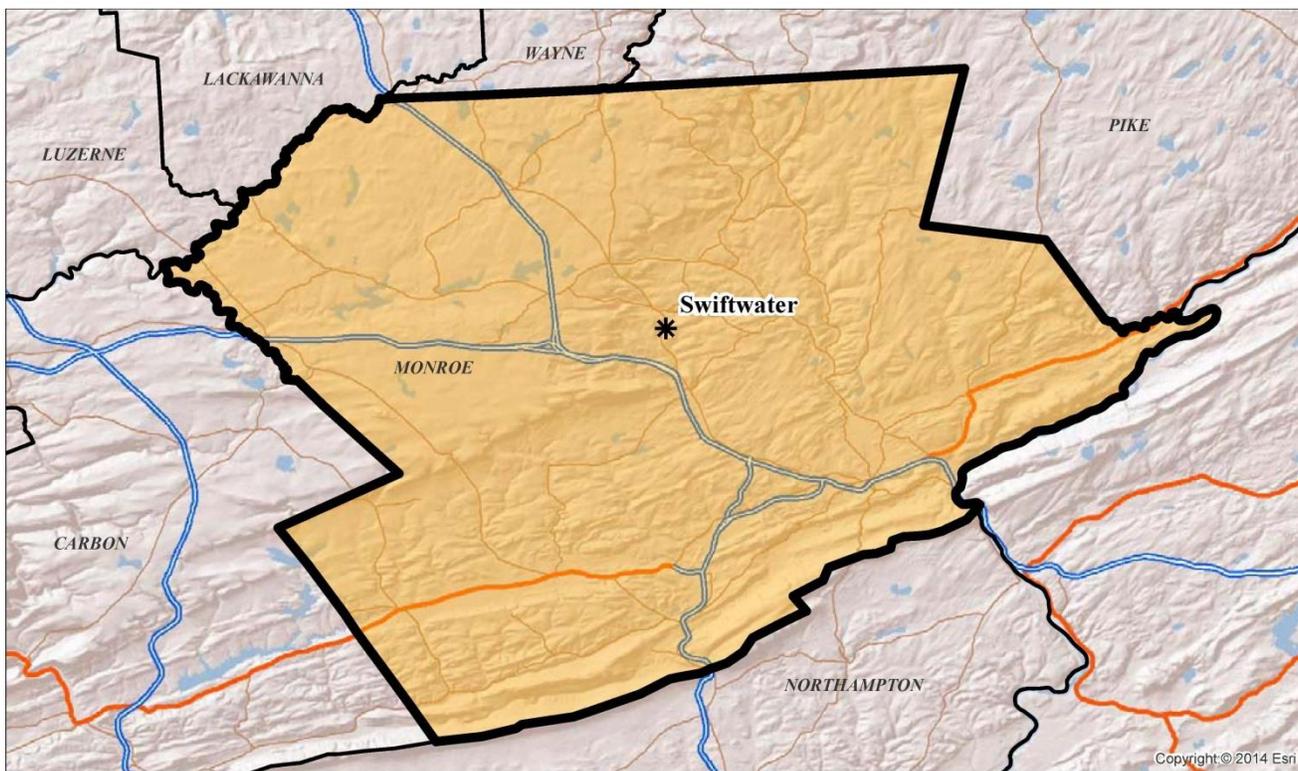


Figure B-9. Erie, PA MSA

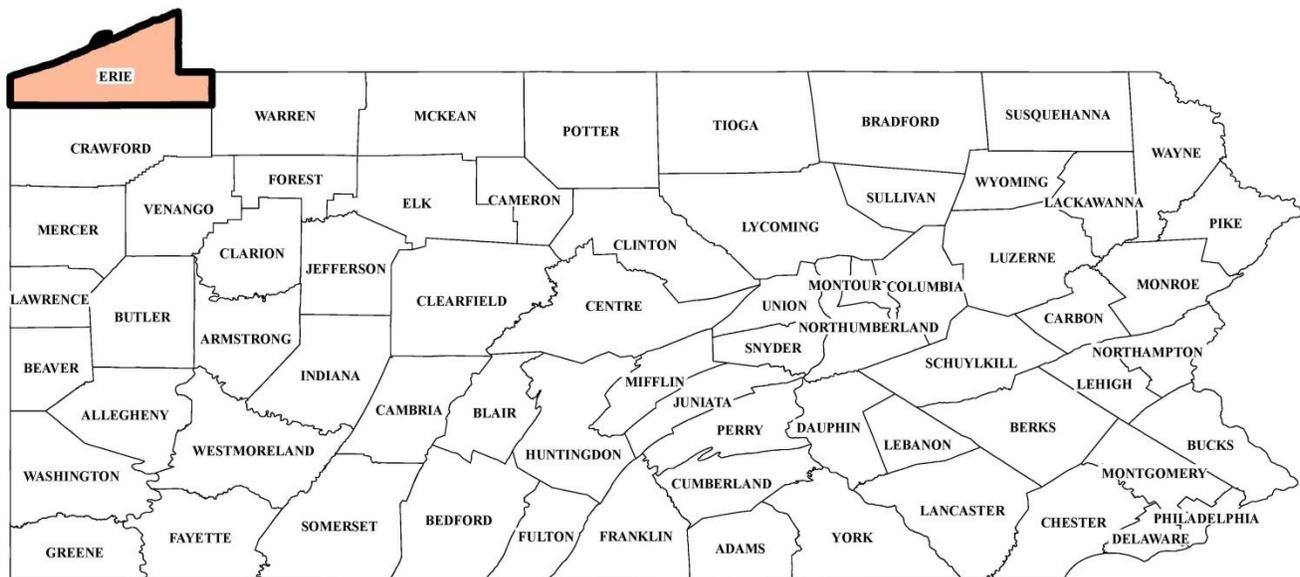


Figure B-10. Erie, PA MSA Site Detail

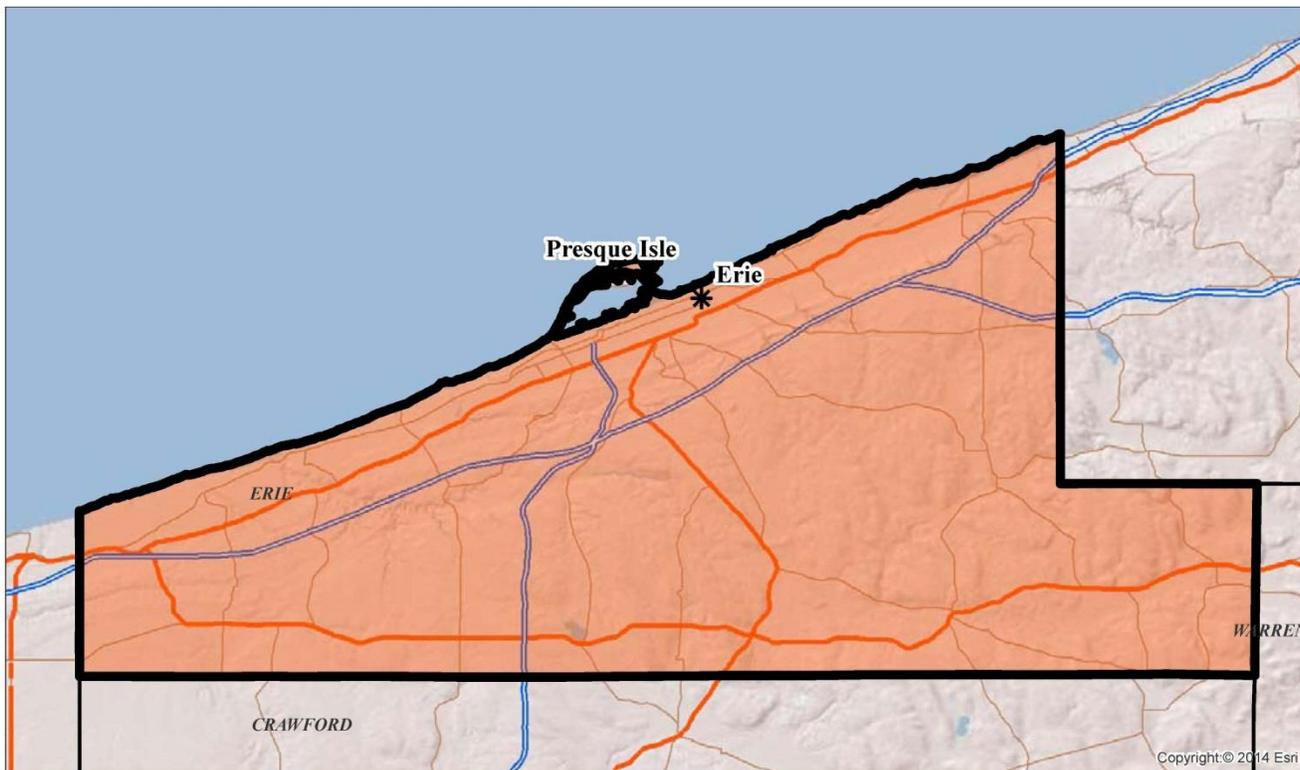


Figure B-11. Gettysburg, PA MSA

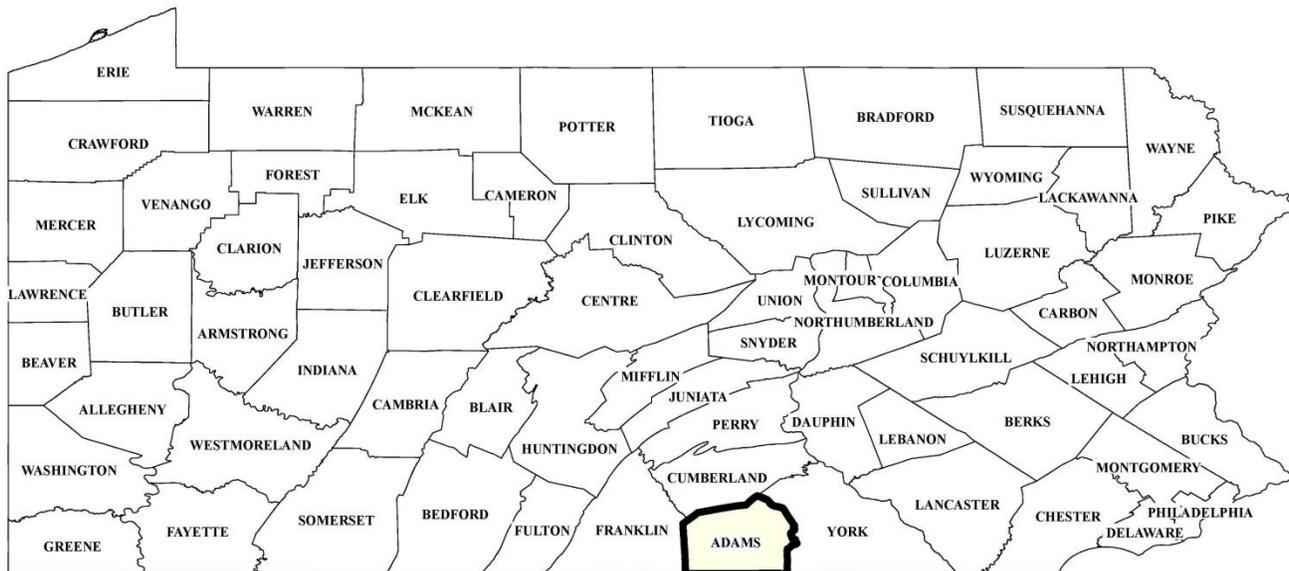


Figure B-12. Gettysburg, PA MSA Site Detail

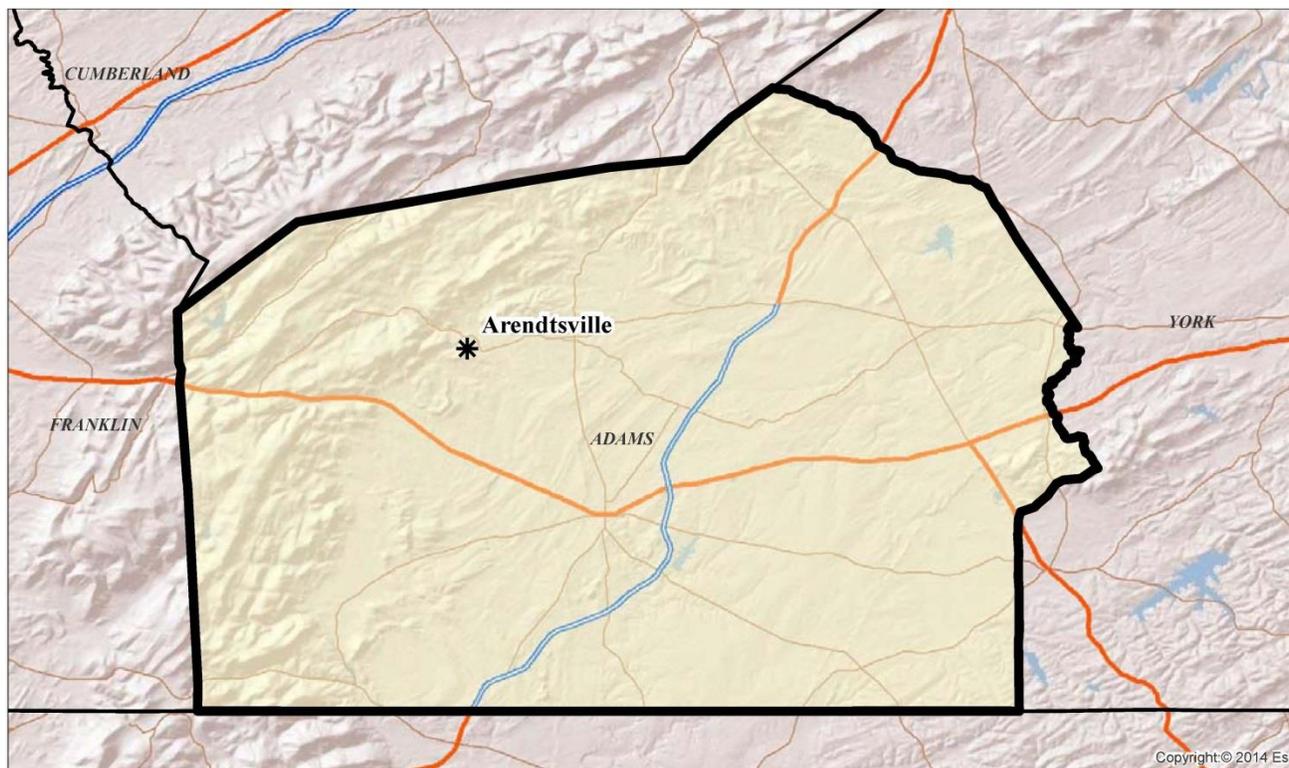


Figure B-13. Harrisburg-Carlisle, PA MSA

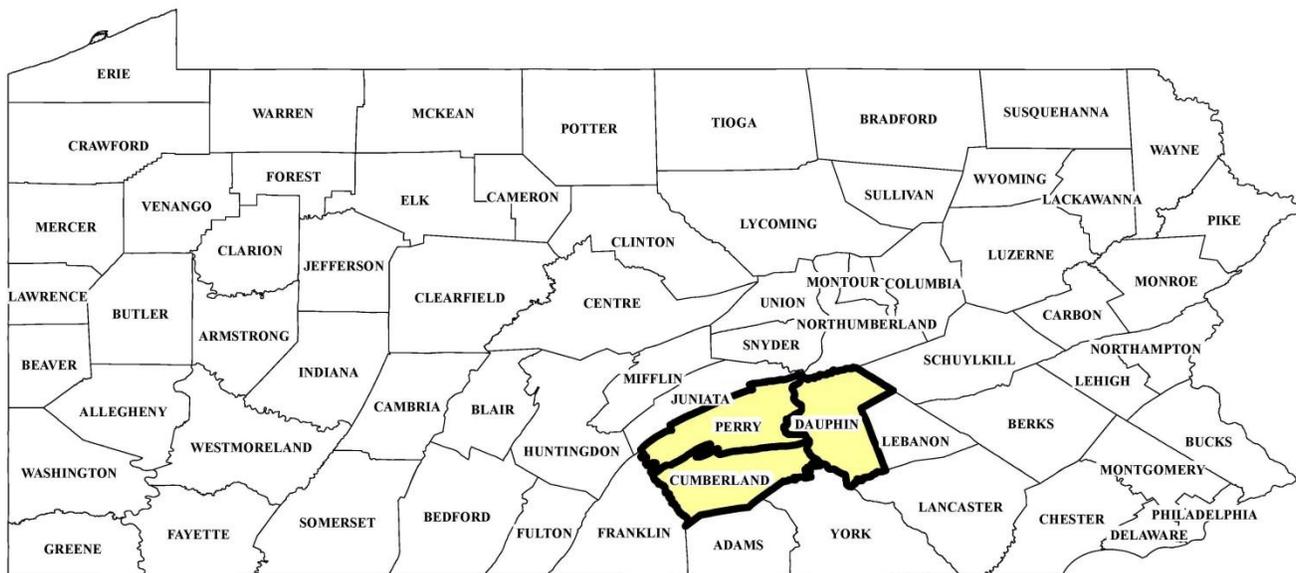


Figure B-14. Harrisburg-Carlisle, PA MSA Site Detail

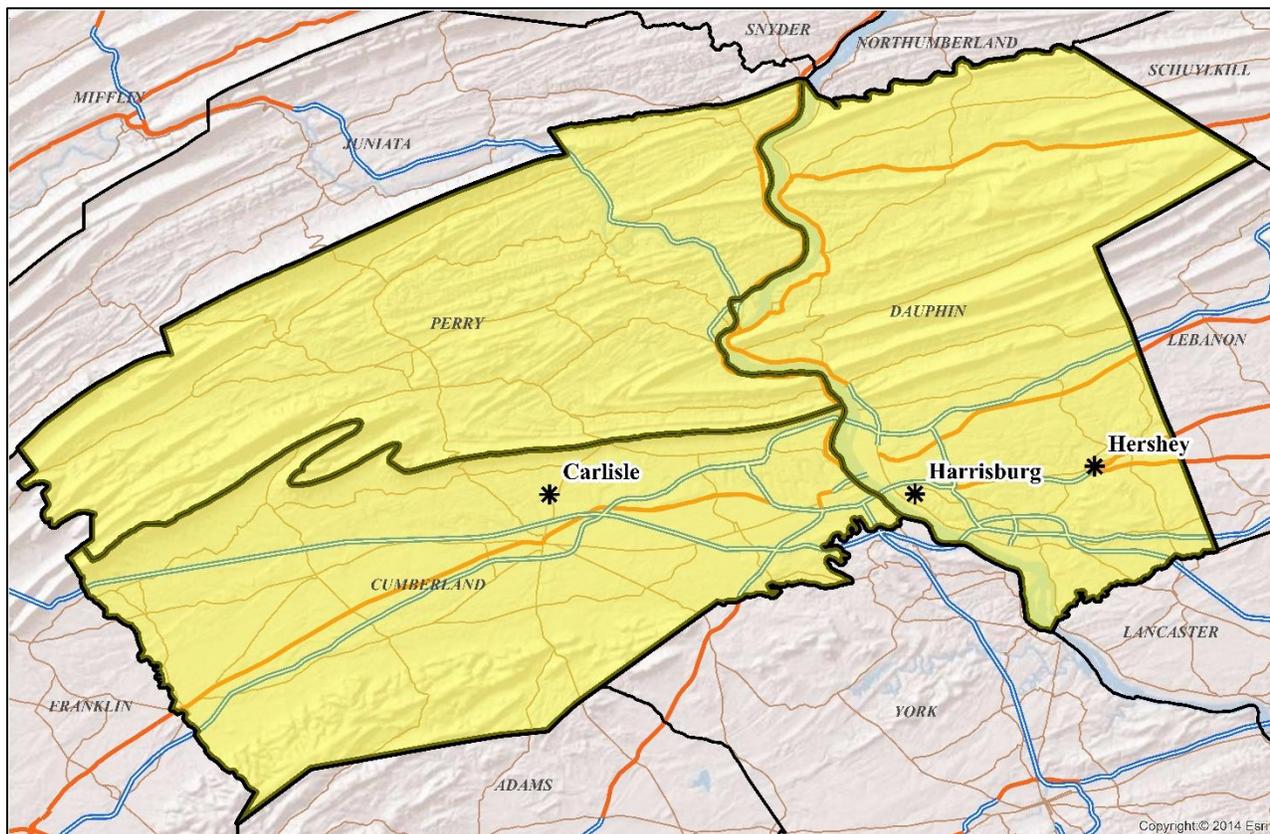


Figure B-19. Lebanon, PA MSA

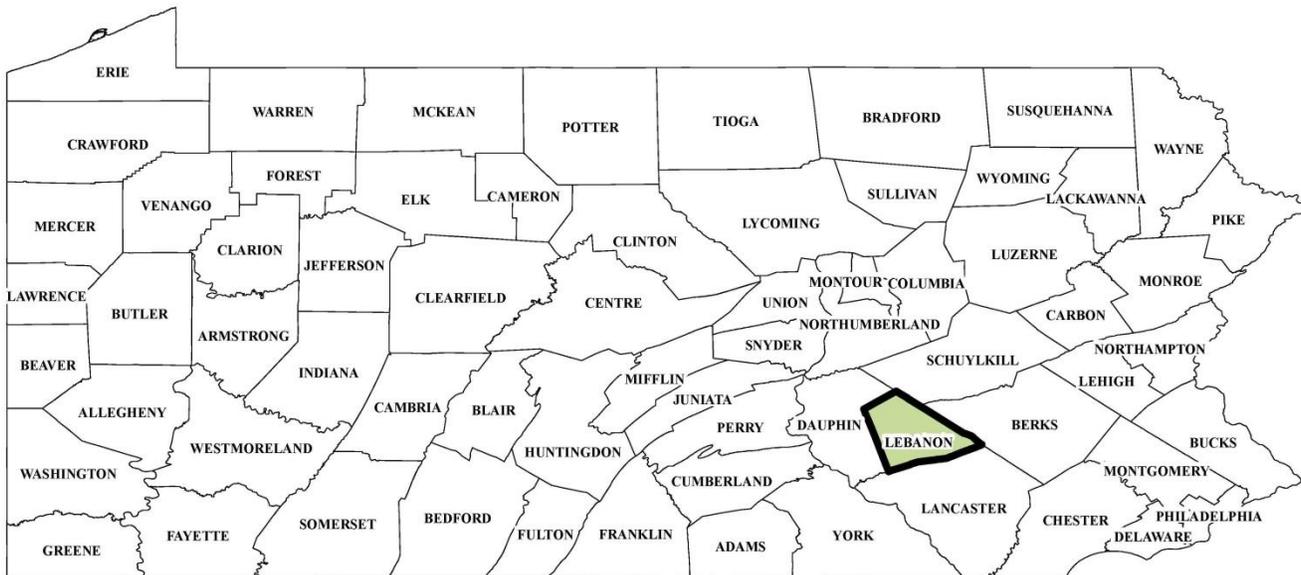


Figure B-20. Lebanon, PA MSA Site Detail

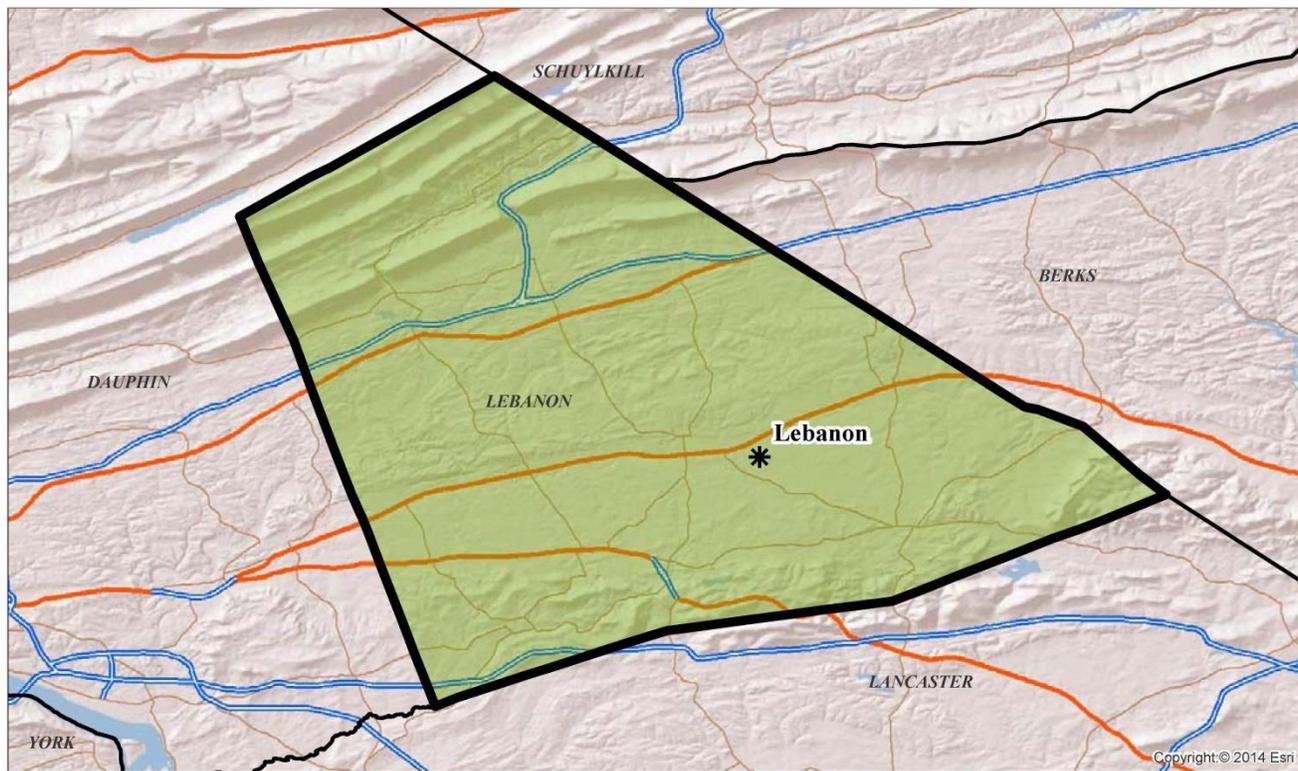


Figure B-21. Philadelphia-Camden-Wilmington, PA-NJ-DE-MD MSA (Pennsylvania portion)

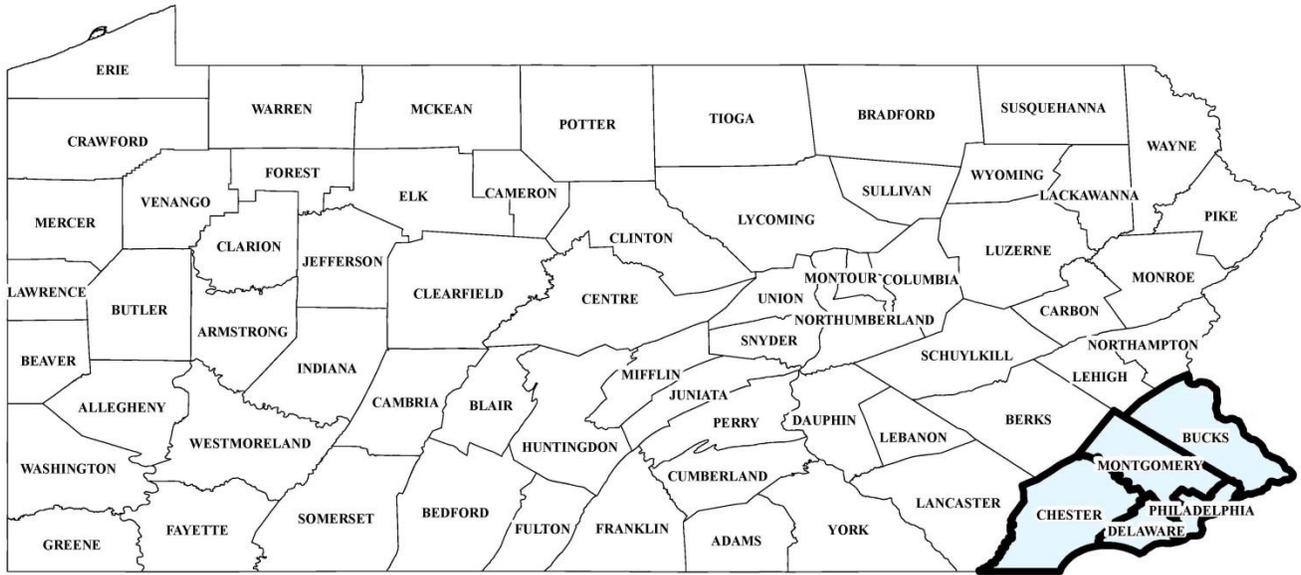


Figure B-22. Philadelphia-Camden-Wilmington, PA-NJ-DE-MD MSA (Pennsylvania portion) Site Detail

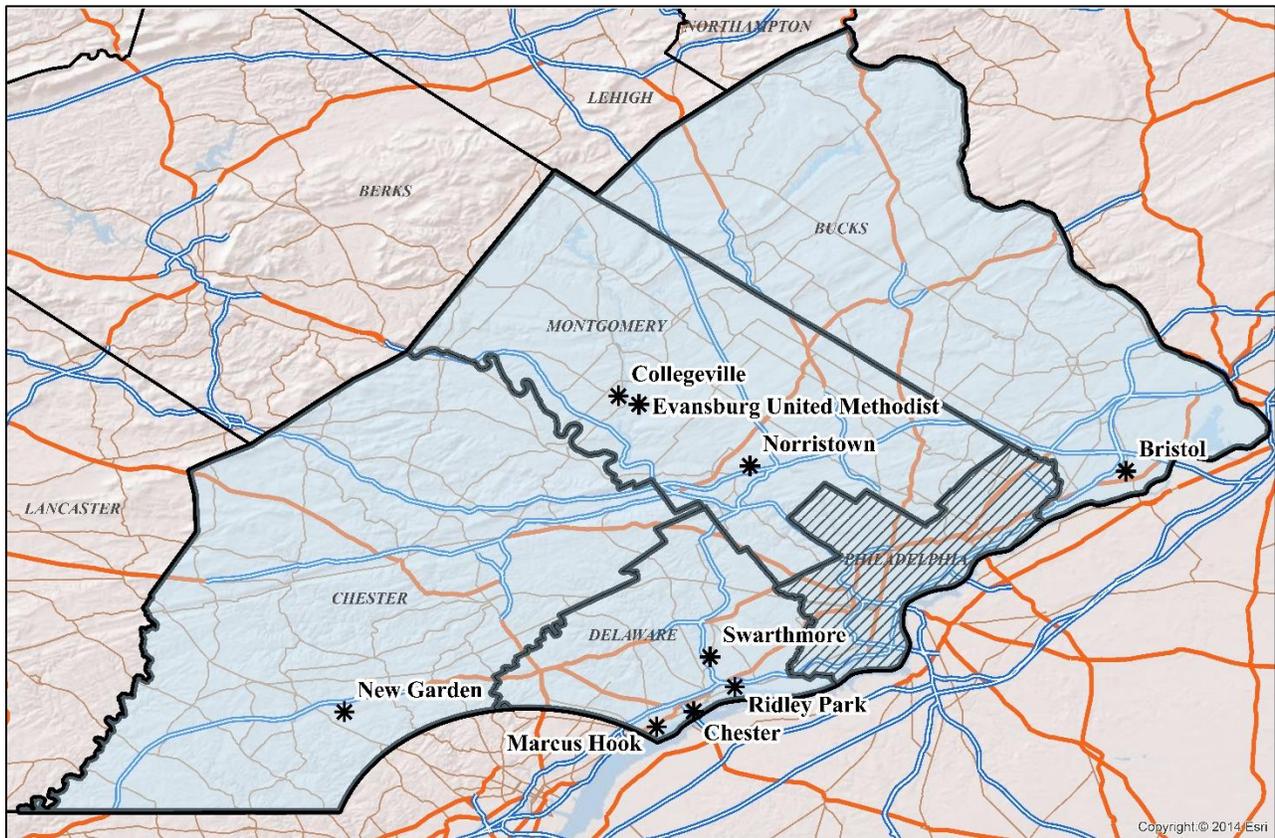


Figure B-23. Pittsburgh, PA MSA

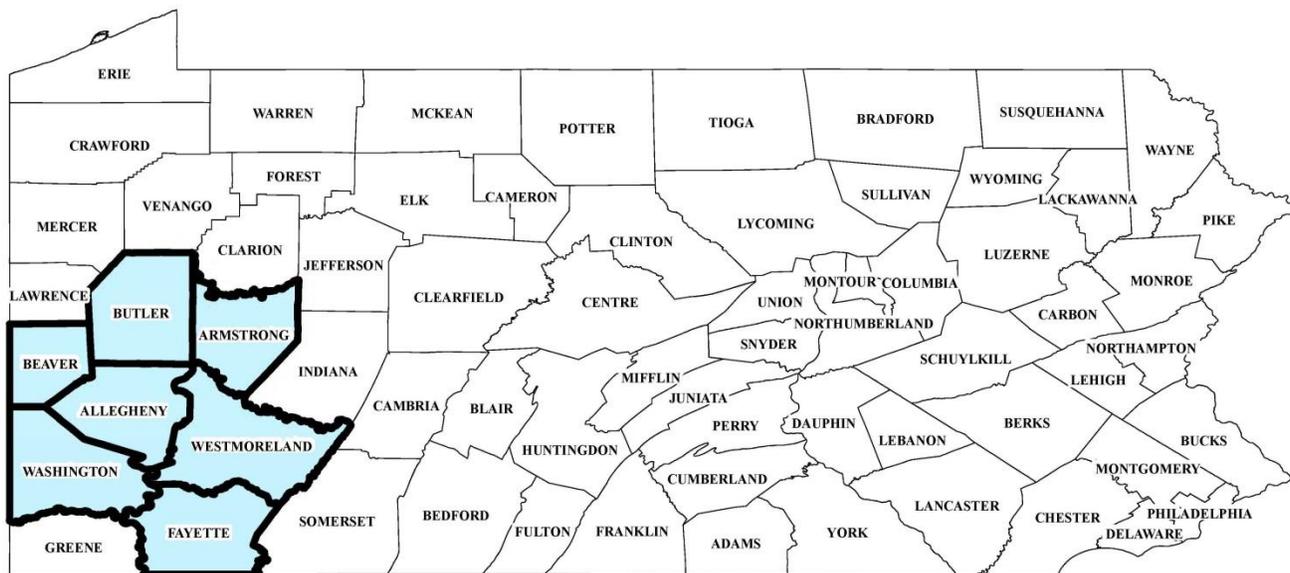


Figure B-24. Pittsburgh, PA MSA Site Detail

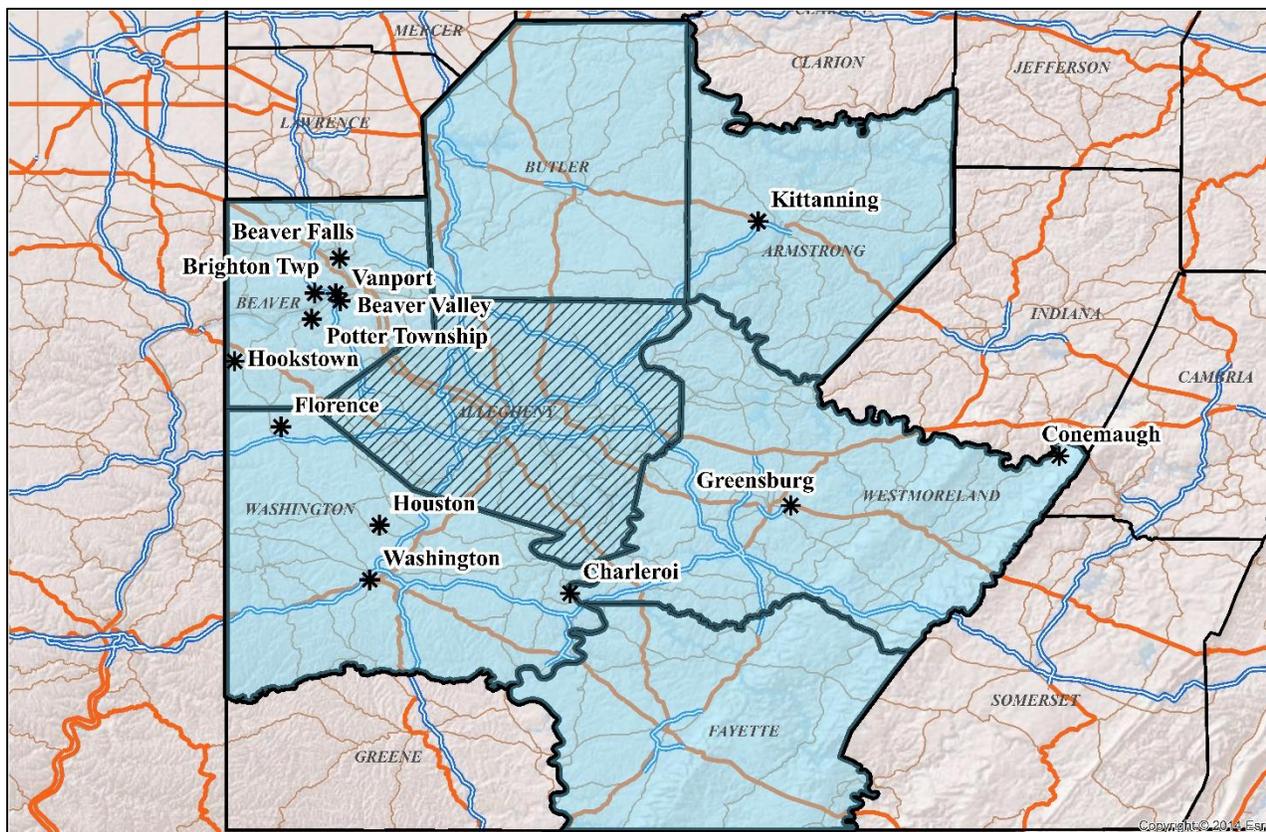


Figure B-25. Reading, PA MSA Overview

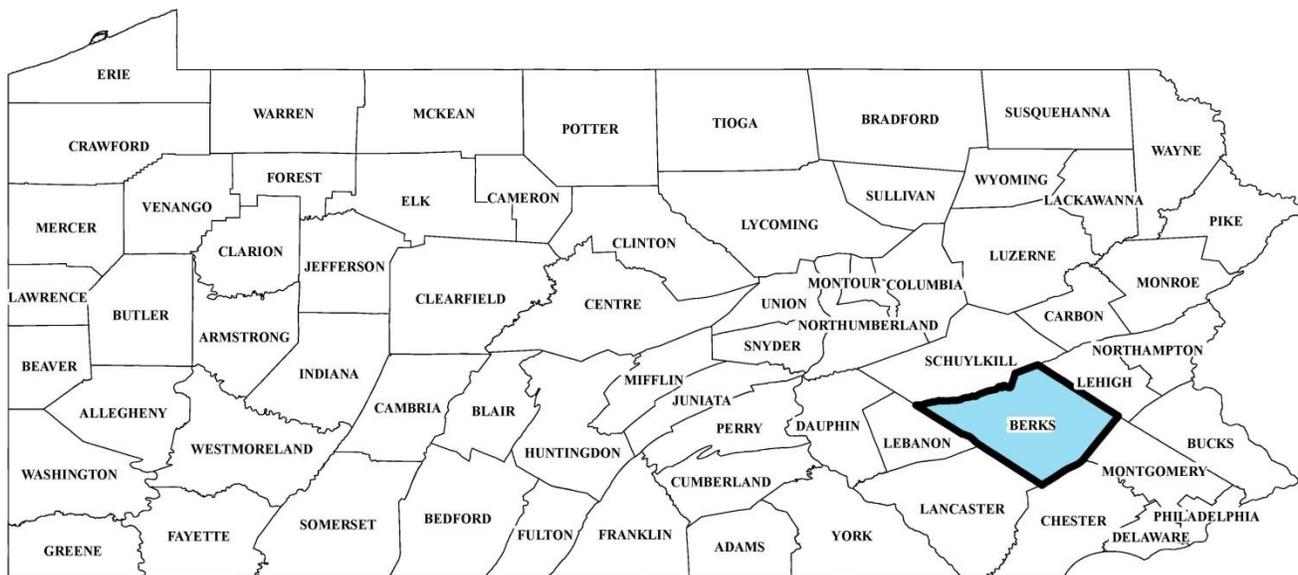


Figure B-26. Reading, PA MSA Site Detail

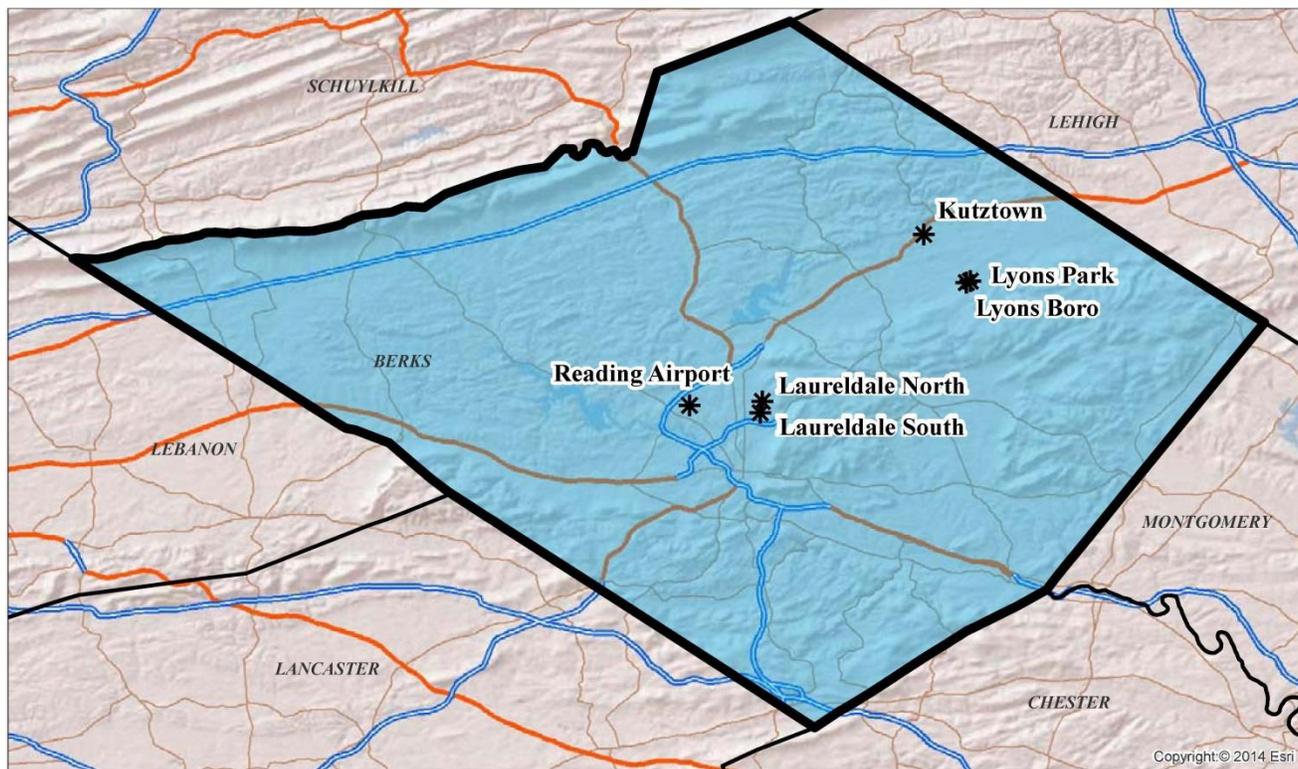


Figure B-27. Scranton-Wilkes-Barre-Hazleton, PA MSA

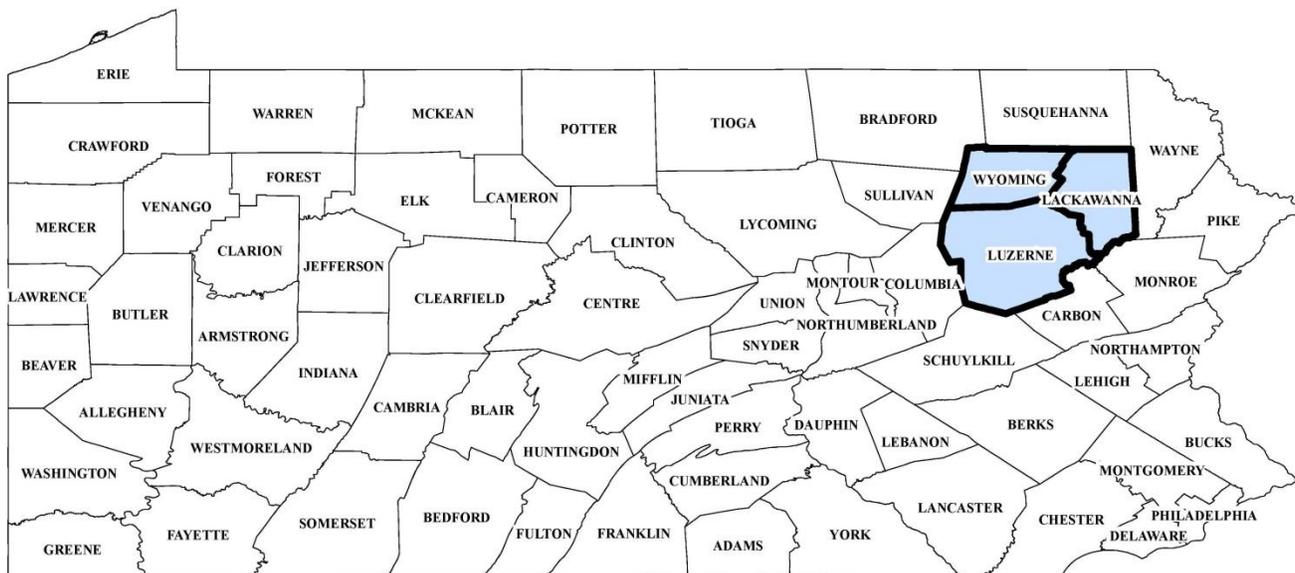


Figure B-28. Scranton-Wilkes-Barre-Hazleton, PA MSA Site Detail

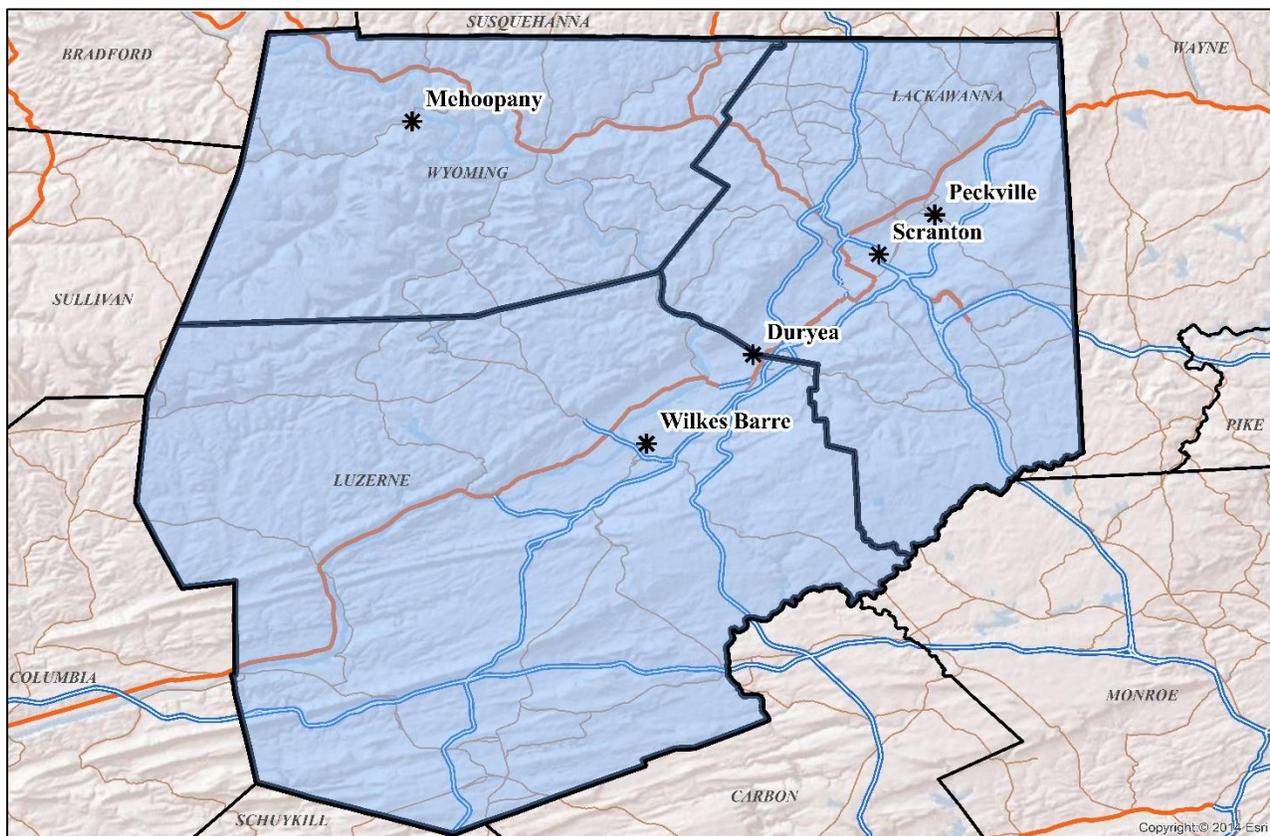


Figure B-29. State College, PA MSA

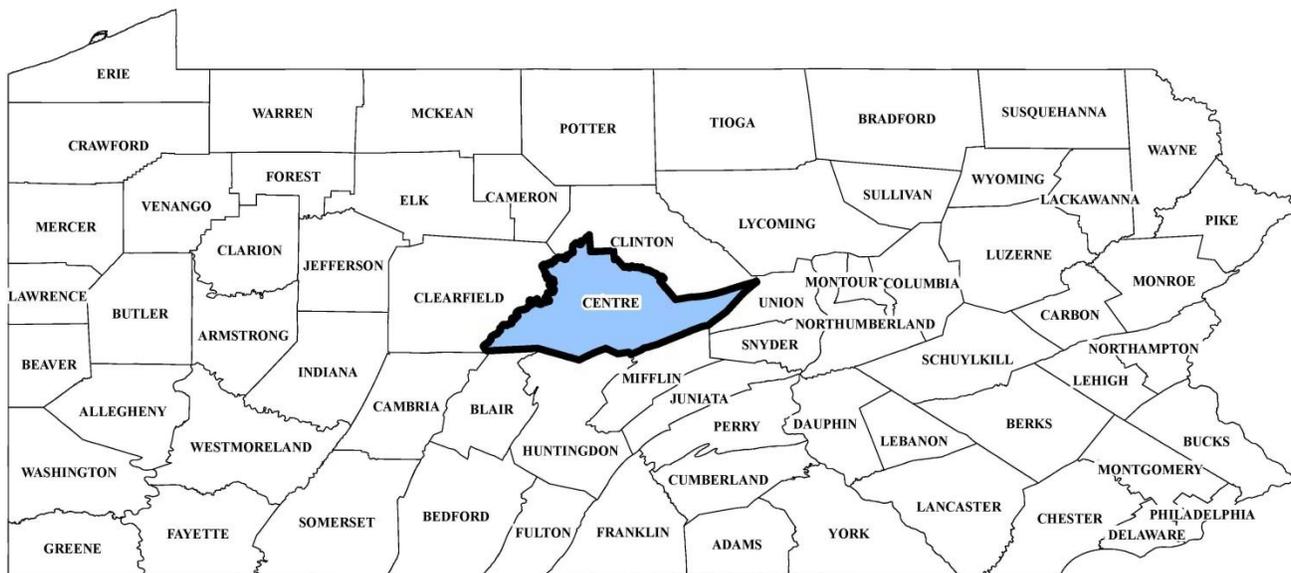


Figure B-30. State College, PA MSA Site Detail

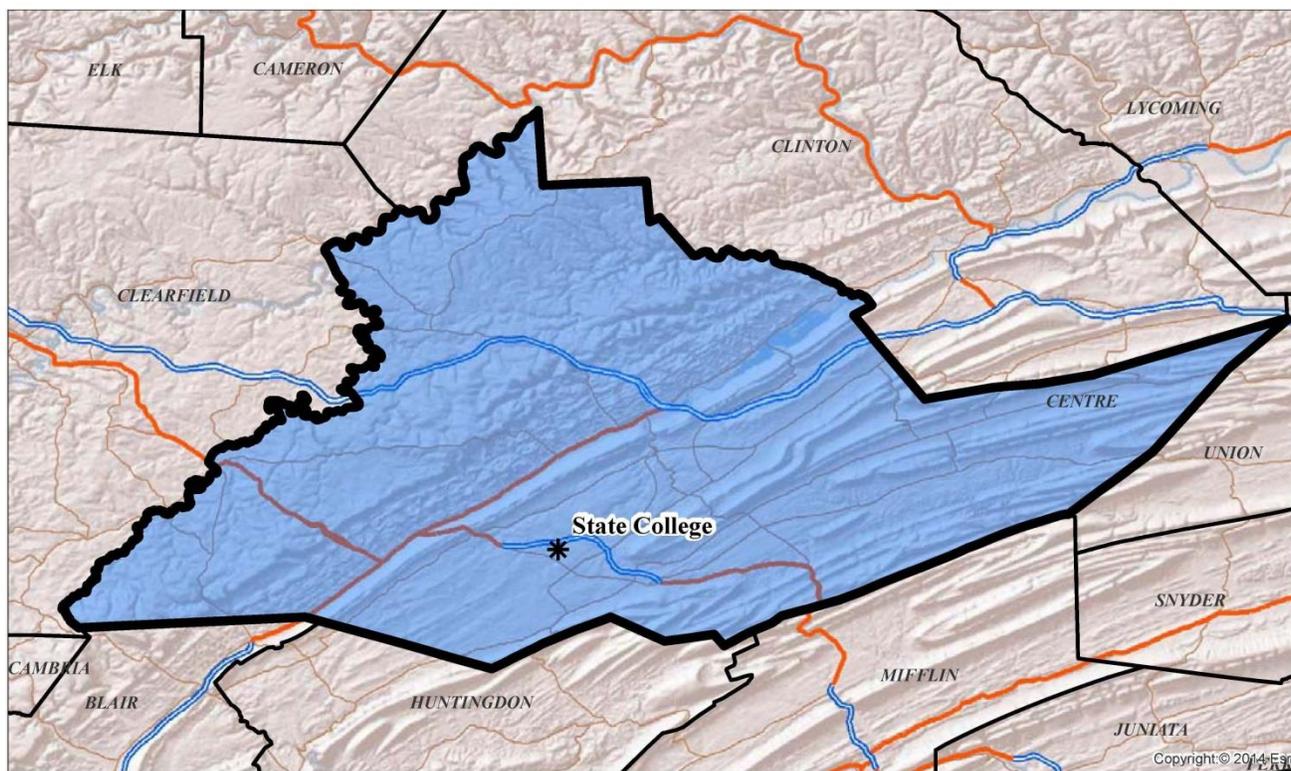


Figure B-31. Williamsport, PA MSA

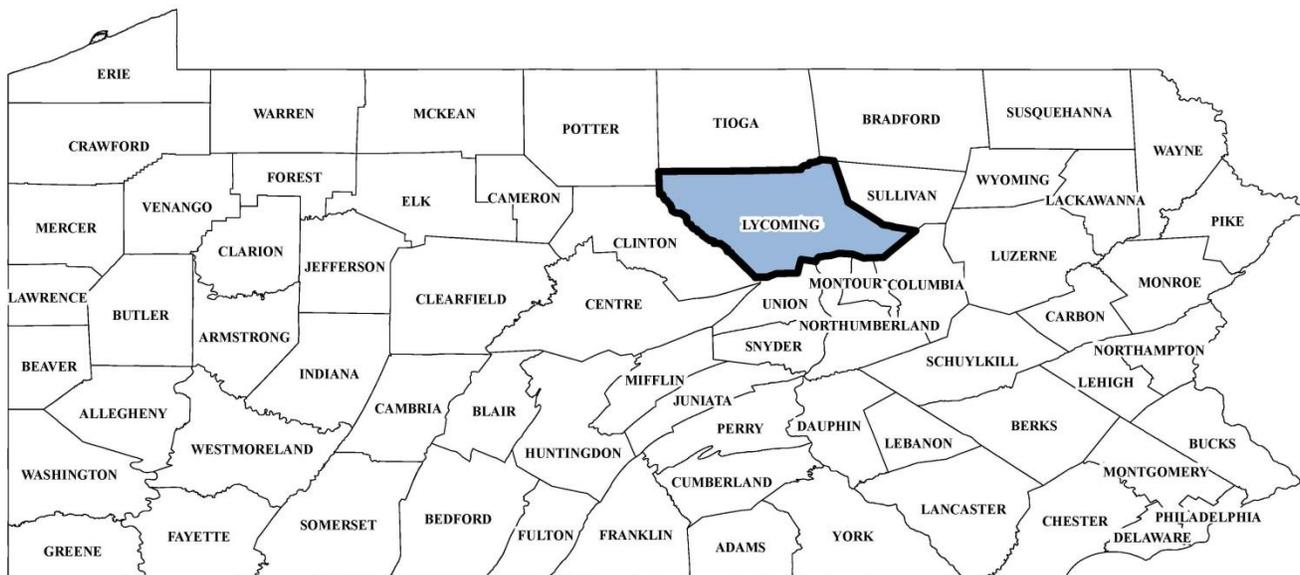


Figure B-32. Williamsport, PA MSA Site Detail

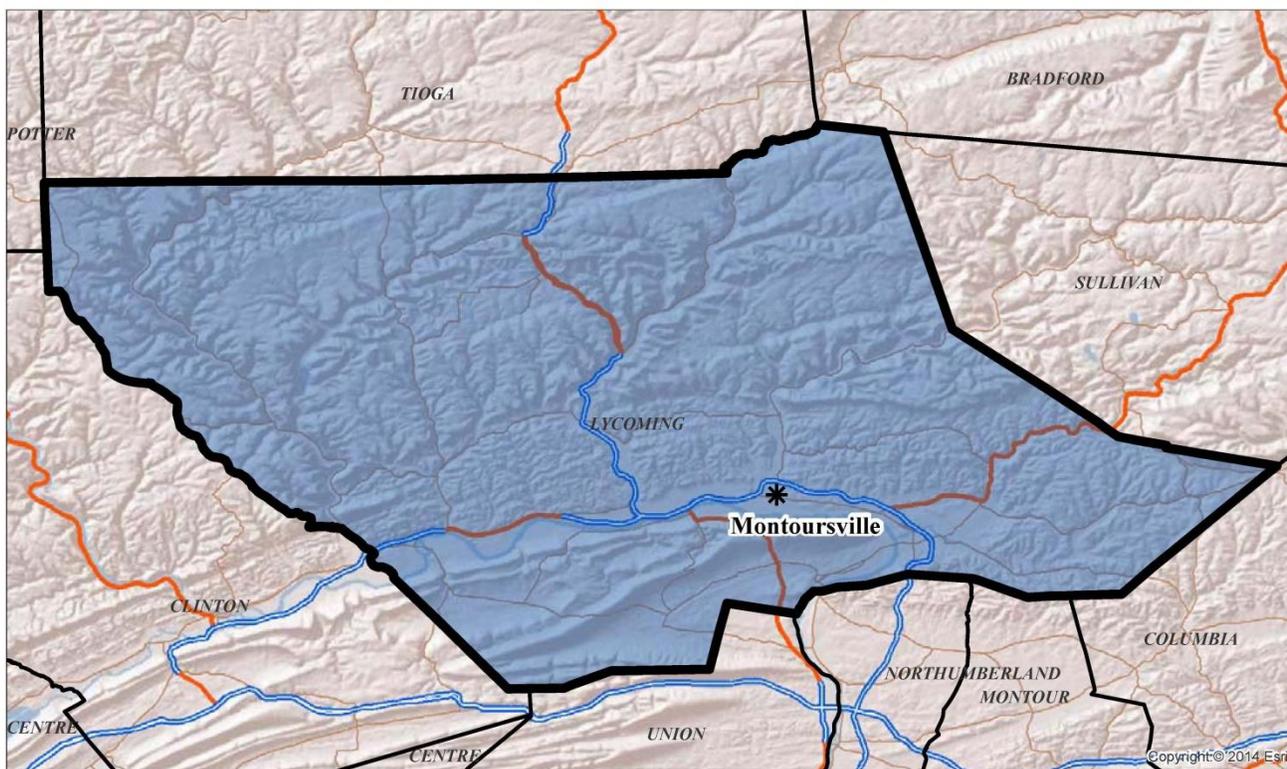


Figure B-33. York-Hanover, PA MSA

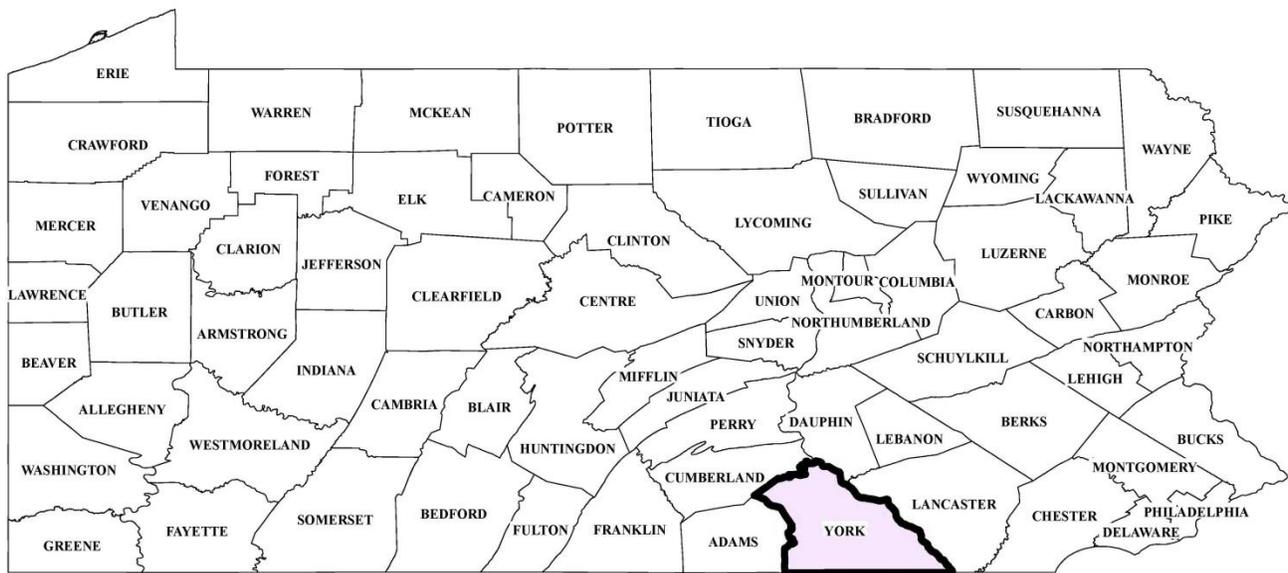


Figure B-34. York-Hanover, PA MSA Site Detail

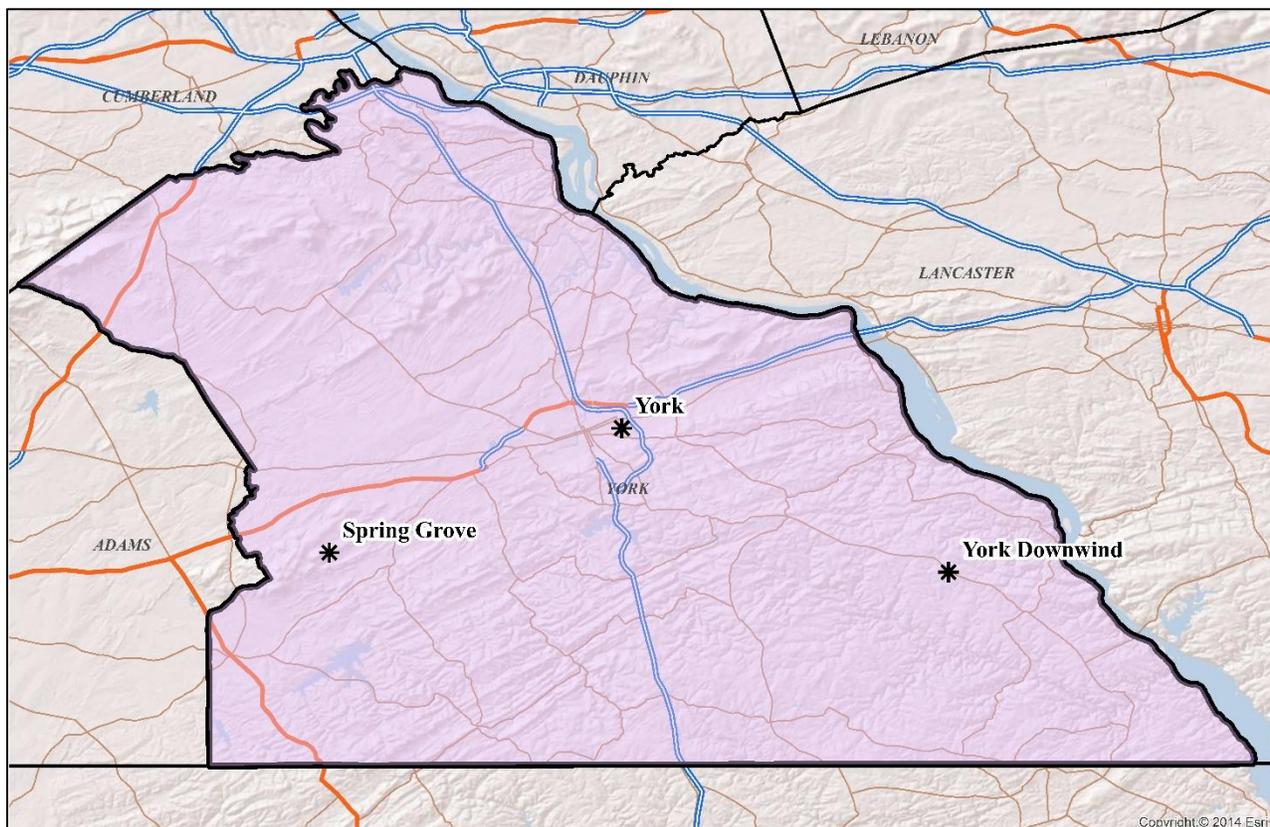


Figure B-35. Youngstown-Warren-Boardman, OH-PA MSA (Pennsylvania portion)

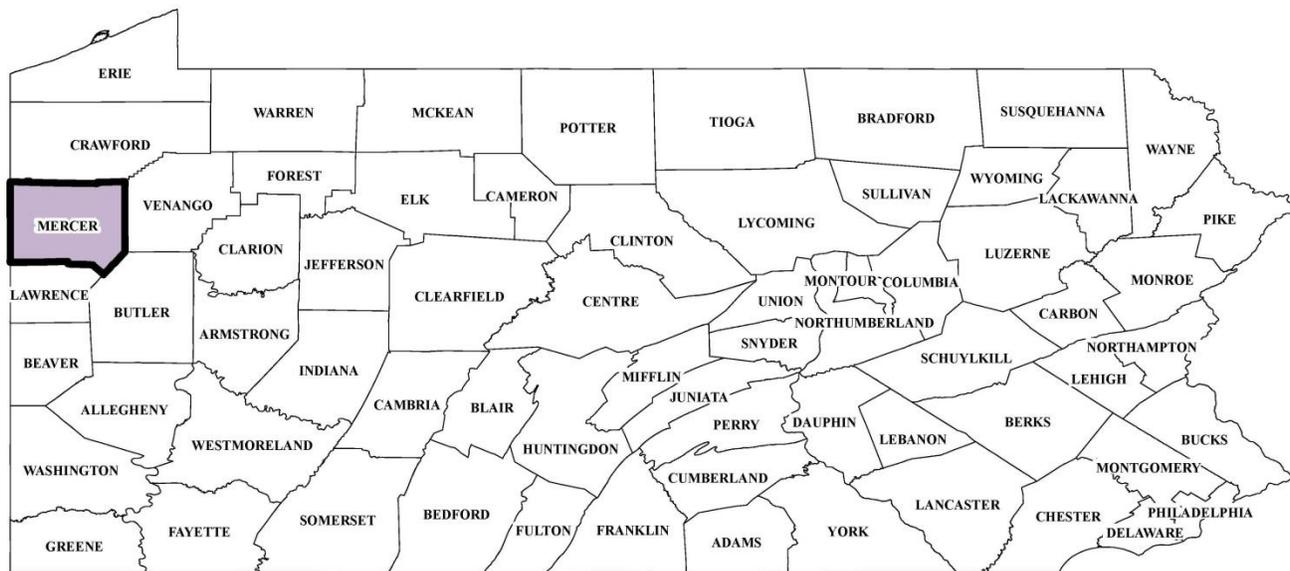


Figure B-36. Youngstown-Warren-Boardman, OH-PA MSA (Pennsylvania portion) Site Detail

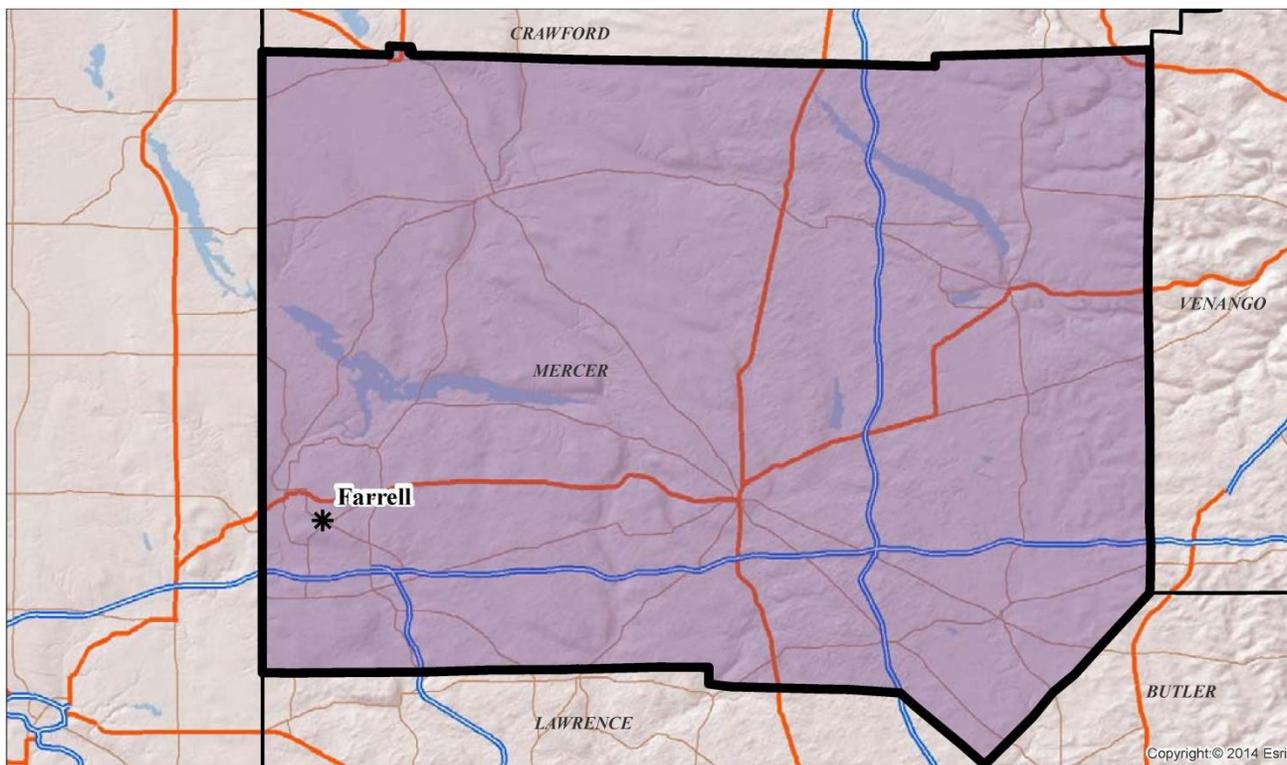


Figure B-37. Overview of the Northcentral Non-MSA Region

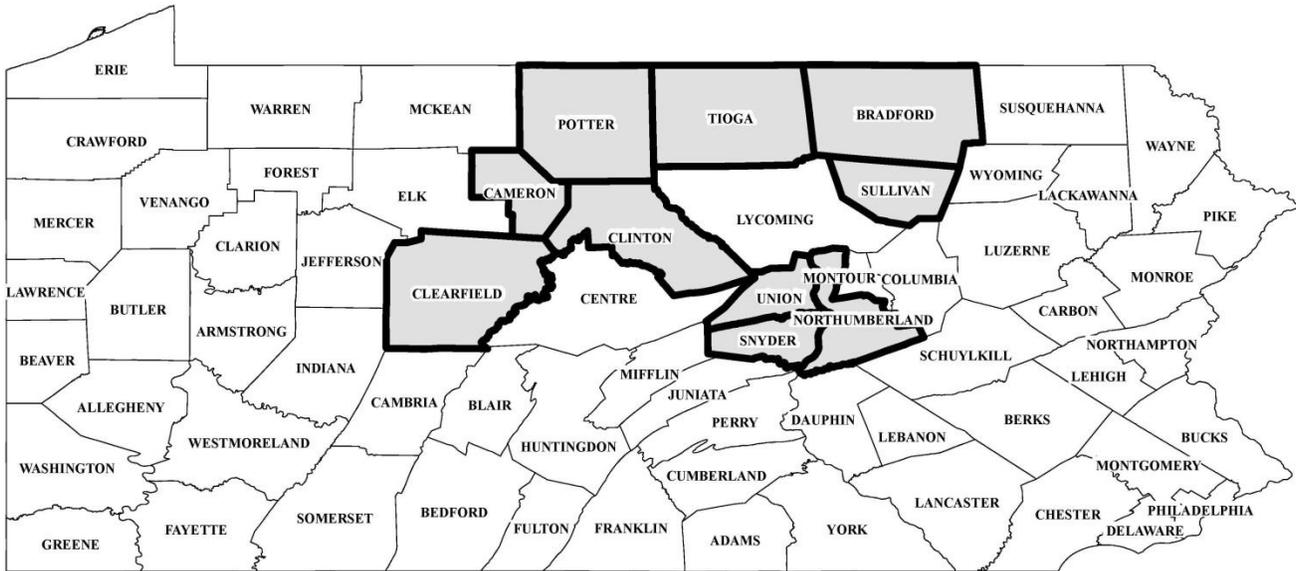


Figure B-38. Northcentral Non-MSA Region Site Detail

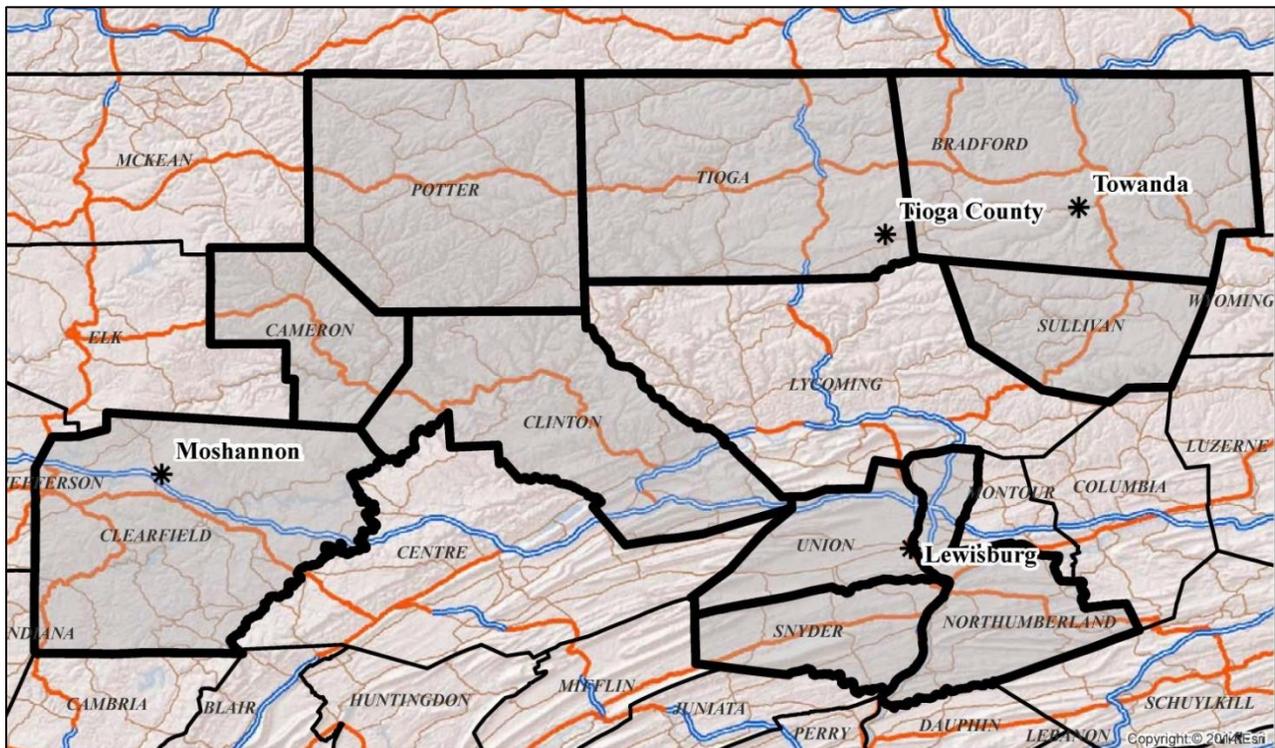


Figure B-39. Overview of the Northeast Non-MSA Region

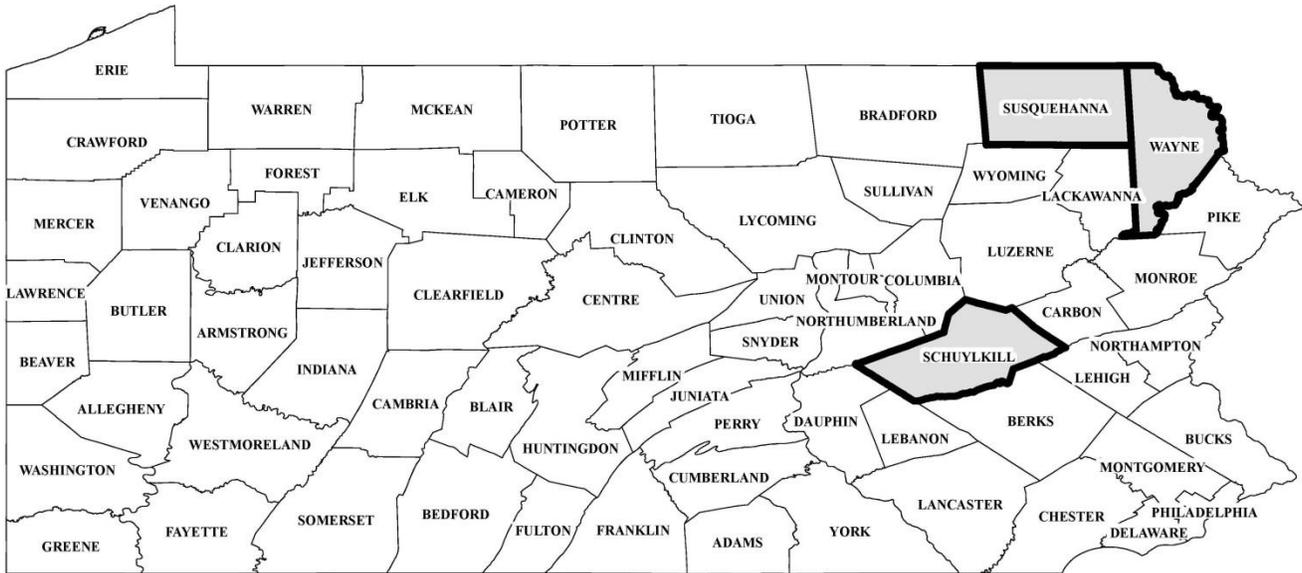


Figure B-40. Northeast Non-MSA Region Site Detail

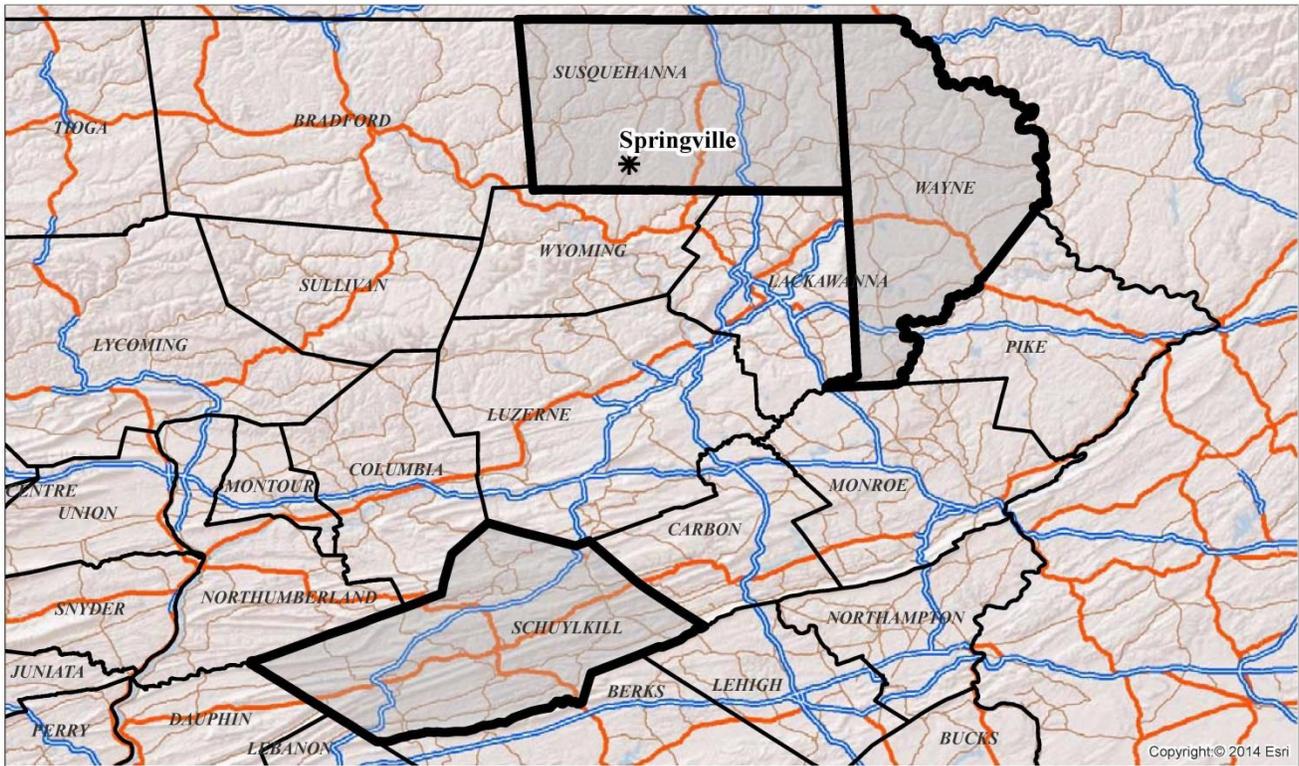


Figure B-43. Overview of the Southwest Non-MSA Region

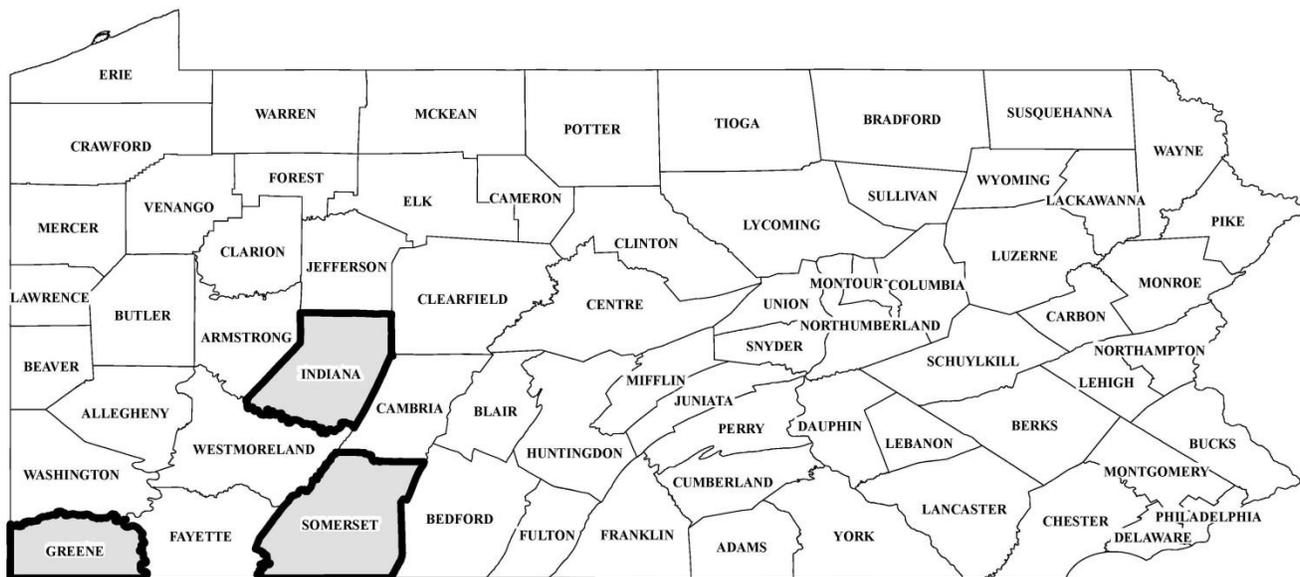
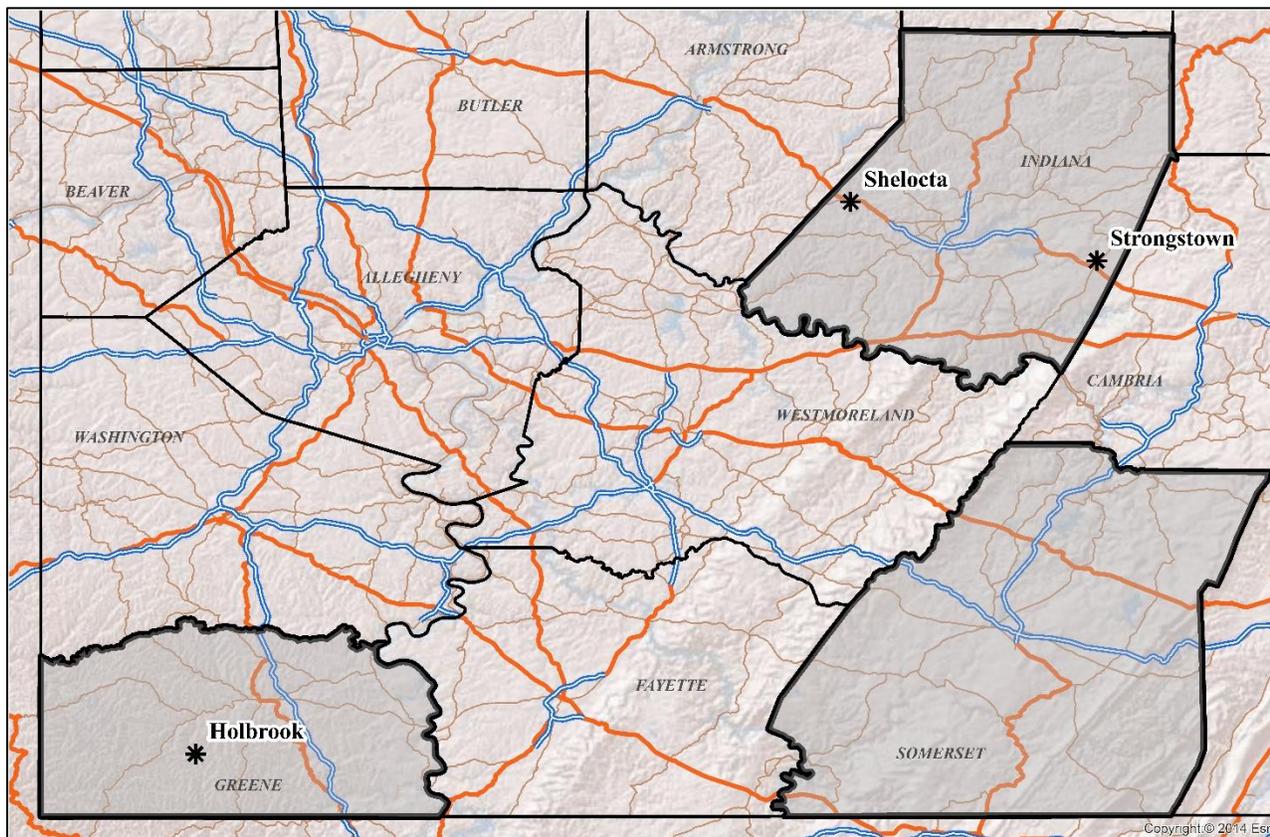


Figure B-44. Southwest Non-MSA Region Site Detail



Appendix C – Network Design and Quality Assurance Criteria

PA DEP operates its air monitoring network in accordance with all applicable requirements set forth in 40 CFR Part 58, Appendices A, B, C, D, and E.

Quality Assurance Requirements– 40 CFR Part 58, Appendix A

PA DEP operates its Ambient Air Monitoring Network in accordance with all quality assurance requirements set forth in 40 CFR Part 58, Appendix A, “Quality Assurance Requirements for Monitors used in Evaluations of National Ambient Air Quality Standards.”

PA DEP has submitted Quality Assurance Project Plans (QAPP) to EPA for all criteria monitoring networks and follows the quality assurance requirements and procedures as described therein. Quality assurance data, including results from precision checks, flow rate verifications and monitor performance audits are submitted to EPA electronically, through its Air Quality System (AQS).

Collocated monitoring requirements for particulate pollutant monitoring are set forth in 40 CFR Part 58, Appendix A. These requirements are used to determine precision for the PM_{2.5} and Lead monitoring networks. A collocated monitoring requirement for PM₁₀ monitoring is also included in 40 CFR Part 58, Appendix A. This requirement is applicable only to manual method PM₁₀ monitors. Starting January 1, 2016, all of PA DEP's PM₁₀ monitoring sites employ continuous monitoring methods. As there is no collocated requirement for continuous method monitoring, PA DEP is not required to maintain a collocated PM₁₀ monitoring site.

Fine Particulate Matter (PM_{2.5}) Collocated Monitoring Requirements

Collocated PM_{2.5} monitoring requirements are set forth in 40 CFR Part 58, Appendix A as follows:

“3.2.3 Collocated Quality Control Sampling Procedures for PM_{2.5}. For each pair of collocated monitors, designate one sampler as the primary monitor whose concentrations will be used to report air quality for the site, and designate the other as the quality control monitor. There can be only one primary monitor at a monitoring site for a given time period.

3.2.3.1 For each distinct monitoring method designation (FRM or FEM) that a PQAQO is using for a primary monitor, the PQAQO must have 15 percent of the primary monitors of each method designation collocated (values of 0.5 and greater round up); and have at least one collocated quality control monitor (if the total number of monitors is less than three). The first collocated monitor must be a designated FRM monitor.

3.2.3.2 In addition, monitors selected for collocation must also meet the following requirements:

(a) A primary monitor designated as an EPA FRM shall be collocated with a quality control monitor having the same EPA FRM method designation.

(b) For each primary monitor designated as an EPA FEM used by the PQAQO, 50 percent of the monitors designated for collocation, or the first if only one collocation is necessary, shall be collocated with a FRM quality control monitor and 50 percent of the monitors shall be collocated with a monitor having the same method designation as the FEM primary monitor. If an odd number of collocated monitors is required, the additional monitor shall be a FRM quality control monitor.

[...]

3.2.3.4 *The collocated monitors should be deployed according to the following protocol:*

(a) *Fifty percent of the collocated quality control monitors should be deployed at sites with annual average or daily concentrations estimated to be within plus or minus 20 percent of either the annual or 24-hour NAAQS and the remainder at the PQAOs discretion;*

[...]

(d) *Sample the collocated quality control monitor on a 1-in-12 day schedule. Report the measurements from both primary and collocated quality control monitors at each collocated sampling site to AQS [...].”*

PA DEP performs all PM_{2.5} continuous monitoring using Federal Equivalent Methods (FEM). All continuous monitors are subject to NAAQS comparison, following the site-level summary statistic procedures set forth in 40 CFR, Part 50, Appendix N, “Interpretation of the National Ambient Air Quality Standards for PM_{2.5}.”

Table C-1 displays the total number of quality assurance collocated sites operated by PA DEP, in relation to the 15% by method requirement in 40 CFR Part 58, Appendix A, §3.2.3.1. This table includes the SPM PM_{2.5} monitoring site at Marcus Hook, and provides information for the proposed 2017-2018 monitoring network. As shown, PA DEP will establish one additional QA-collocated PM_{2.5} monitoring pair upon the addition of five continuous method PM_{2.5} monitoring sites during 2017-2018.

Table C-1. PM_{2.5} QA-Collocated Monitoring Minimum Requirements Demonstration

Primary Monitor Method	Total No. of PA DEP PM _{2.5} Sites	15%	No. of PA DEP QA-Collocated PM _{2.5} Monitors	No. of Addt'l QA-Collocated PM _{2.5} Monitors Needed
Met-One BAM	19/24 (2017-2018)*	3/4 (2017-2018)*	3	0/1 (2017-2018)*
R&P 2025 (FRM)	9	1	1	0

* During 2017-2018, PA DEP plans to expand its PM_{2.5} monitoring network by an additional 5 continuous method monitoring sites, requiring 1 additional QA-collocated pair at a primary continuous method site

Table C-2 provides details of quality assurance collocated PM_{2.5} sites operated by PA DEP, in relation to the collocation monitor designation requirements in 40 CFR Part 58, Appendix A, §3.2.3.2. As shown, PA DEP currently meets these requirements, and will utilize a continuous method for the QA-collocated monitor that will be added upon the PM_{2.5} expansion mentioned above.

Table C-2. PM_{2.5} QA-Collocated Monitoring Method Requirements Demonstration

Site Name	Primary PM _{2.5} Monitor Method	QA-Collocated PM _{2.5} Monitor Method
Lancaster	R&P 2025 (FRM)	R&P 2025 (FRM)
New Garden	Met-One BAM	R&P 2025 (FRM)
Chester	Met-One BAM	R&P 2025 (FRM)
Greensburg	Met-One BAM	Met-One BAM
<i>To be determined (2017-2018*)</i>	Met-One BAM	Met-One BAM

* During 2017-2018, PA DEP plans to expand its PM_{2.5} monitoring network by an additional 5 continuous method monitoring sites, requiring 1 additional QA-collocated pair at a primary continuous method site, with a collocated continuous method monitor

Table C-3 provides details of quality assurance collocated sites operated by PA DEP, in relation to the measurement concentration collocation requirements in 40 CFR Part 58, Appendix A, §3.2.3.4. PA DEP meets these requirements.

Table C-3. PM_{2.5} QA-Collocated Monitoring Site Selection Requirements Demonstration*

Site Name	24-Hour NAAQS	+/- 20% 24-Hour NAAQS	2016 Daily Design Value	Annual NAAQS	+/- 20% Annual NAAQS	2016 Annual Design Value
Lancaster	35 µg/m ³	28 – 42 µg/m ³	30 µg/m ³	12.0 µg/m ³	9.6 - 14.4 µg/m ³	10.6 µg/m ³
New Garden			24 µg/m ³			9.6 µg/m ³
Chester			26 µg/m ³			11.5 µg/m ³
Greensburg			20 µg/m ³			8.7 µg/m ³

* During 2017-2018, PA DEP plans to expand its PM_{2.5} monitoring network by an additional 5 continuous method monitoring sites, requiring 1 additional QA-collocated pair at a primary continuous method site, with a collocated continuous method monitor

PA DEP operates all QA-collocated PM_{2.5} monitors on a 1-in-6 day schedule and reports concentration measurement data from these sites to U.S. EPA via the AQS database.

Lead (Pb) Network Collocated Monitoring Requirements

Collocated lead monitoring requirements are set forth in 40 CFR Part 58, Appendix A as follows:

“3.4.4 Collocated Quality Control Sampling for TSP Pb for monitoring sites other than non-source oriented NCore. For each pair of collocated monitors for manual TSP Pb samplers, designate one sampler as the primary monitor whose concentrations will be used to report air quality for the site, and designate the other as the quality control monitor.

3.4.4.1 A PQAQO must:

- (a) Have 15 percent of the primary monitors (not counting non-source oriented NCore sites in PQAQO) collocated. Values of 0.5 and greater round up; and*
- (b) Have at least one collocated quality control monitor (if the total number of monitors is less than three).*

3.4.4.2 The collocated quality control monitors should be deployed according to the following protocol:

(a) The first collocated Pb site selected must be the site measuring the highest Pb concentrations in the network. If the site is impractical, alternative sites, approved by the EPA Regional Administrator, may be selected. If additional collocated sites are necessary, collocated sites may be chosen that reflect average ambient air Pb concentrations in the network”

In April 2017, PA DEP began operating a collocated lead monitor in Palmerton (Carbon County), and discontinued the collocated lead monitor at Lyons Park (Berks County) in June 2017. PA DEP currently maintains two QA-collocated sites in its lead monitoring network, Palmerton and Laureldale North (Berks County). Table C-4 provides details of number of quality assurance collocated lead sites operated by PA DEP, in relation to the collocation monitor designation requirements in 40 CFR Part 58, Appendix A, §3.4.4. This table provides information for monitors operating currently (as of the date of this document), as well as information regarding the discontinuation of the Ridley Park site in 2017-2018 (see “Site Terminations” section of this document). As shown, PA DEP meets the 15%

requirement noted above, both for its current complement of fourteen monitors, as well as its planned 2017-2018 network complement of thirteen monitors.

Table C-4. Lead Collocated Monitoring Minimum Requirements Demonstration

Total No. of PA DEP Lead Monitoring Sites	15%	No. of PA DEP QA-Collocated Lead Monitors	Add'l QA-Collocated Lead Monitors Needed
14/13 (2017-2018)	2	2	0

Table C-5 displays the highest 3-month averages between 2014-2016, representing the 2016 design value period. Values above the level of the lead NAAQS ($0.15 \mu\text{g}/\text{m}^3$) are indicated in red.

Table C-5. PA DEP Lead Concentration Values, 2014-2016

Station	County	Design Value ($\mu\text{g}/\text{m}^3$)	2014 Max 3-Month Avg ($\mu\text{g}/\text{m}^3$)	2015 Max 3-Month Avg ($\mu\text{g}/\text{m}^3$)	2016 Max 3-Month Avg ($\mu\text{g}/\text{m}^3$)
Beaver Valley	Beaver	0.20	0.20	0.01	0.01
Chester	Delaware	0.01	0.01	0.01	0.01
Conemaugh	Westmoreland	0.01*	0.01	0.01	0.01
Duryea	Luzerne	0.06	0.06	0.02	0.01
Ellwood City	Lawrence	0.03	0.02	0.02	0.03
Laureldale North	Berks	0.03	0.02	0.02	0.03
Laureldale South	Berks	0.03	0.03	0.03	0.01
Lyons Boro	Berks	0.04	0.03	0.04	0.03
Lyons Park	Berks	0.02	0.02	0.02	0.02
Mt Joy	Lancaster	0.23	0.23	0.23	0.07
Palmerton	Carbon	0.16	0.15	0.16	0.11
Potter Township	Beaver	0.02	0.02	0.01	0.01
Ridley Park	Delaware	0.01	0.01	0.01	0.01
Vanport	Beaver	0.05	0.05	0.02	0.02

* Does not meet completeness requirements

In 2014, the highest value PA DEP lead sites were the lead monitors at Beaver Valley and Mount Joy (Lancaster County) monitors. High lead concentrations were measured at the Beaver Valley monitor in early 2014, until the shutdown of the Horsehead site was completed. The lead monitor Mount Joy is a source-oriented monitor for the Mount Joy Wire Corporation wire manufacturing plant in Mount Joy, PA. In 2014-2015, the Mount Joy Wire Corporation made repairs and operational improvements to its facility, which has greatly reduced the number of high value concentration days measured at the Mount Joy lead monitoring site. The Mount Joy monitoring site has not measured a single 24-hour lead concentration in exceedance of the lead NAAQS since January 2015. Table C-6 displays the 3-month averages measured at these two sites.

Table C-6. Three-month Lead Concentration Averages for 2014 at Beaver Valley and Mount Joy Monitoring Sites

2014 Lead Concentration 3-Month Averages (in $\mu\text{g}/\text{m}^3$)		
Month	Beaver Valley	Mount Joy
January	0.20	0.09
February	0.14	0.09
March	0.09	0.05
April	0.06	0.04
May	0.03	0.04
June	0.02	0.04*
July	0.01	0.03
August	0.01	0.03
September	0.01	0.04
October	0.02	0.06
November	0.02	0.13
December	0.02	0.23

In 2015, the highest value PA DEP lead sites were the Mount Joy (Lancaster County) and Palmerton (Carbon County) monitoring sites. The maximum 3-month lead concentration averages measured at the Mount Joy monitoring site were for early 2015, and due to the inclusion of several high value samples that occurred during November and December 2014. As stated earlier, the improvements implemented in 2014-2015 at the source facility are evident in the trend of 3-month averages measured at the Mount Joy monitoring site during 2015. The lead monitor in Palmerton is a source-oriented monitor for the Horsehead Corporation zine powder and recycling plant in Palmerton, PA. Table C-7 displays the 3-month averages measured at these two sites.

Table C-7. Three-month Lead Concentration Averages for 2015 at Mount Joy and Palmerton Monitoring Sites

2015 Lead Concentration 3-Month Averages (in $\mu\text{g}/\text{m}^3$)		
Month	Mount Joy	Palmerton
January	0.23	0.04
February	0.15	0.04
March	0.05	0.09
April	0.03	0.14
May	0.03	0.16
June	0.03	0.15
July	0.03	0.14
August	0.03	0.12
September	0.02	0.10
October	0.03	0.08
November	0.04	0.09
December	0.04	0.09

In 2016, the highest value PA DEP lead sites were the Mount Joy (Lancaster County) and Palmerton (Carbon County) monitoring sites. Table C-8 displays the 3-month averages measured at these two sites, as well and the number of 24-hour averages exceeding the level of the lead NAAQS (0.15 µg/m³) associated with each month.

Table C-8. Three-month Lead Concentration Averages for 2016 at Mount Joy and Palmerton Monitoring Sites

2016 Lead Concentration 3-Month Averages (in µg/m ³)			Number of 24-Hour Averages >0.15 µg/m ³	
Month	Mount Joy	Palmerton	Mount Joy	Palmerton
January	0.04	0.10	2	0
February	0.03	0.10	2	0
March	0.03	0.11	2	0
April	0.02	0.09	0	0
May	0.02	0.09	1	0
June	0.02	0.08	1	0
July	0.03	0.09	1	0
August	0.02	0.08	1	0
September	0.02	0.05	0	0
October	0.02	0.05	0	0
November	0.03	0.05	2	0
December	0.07	0.08	1	1

Although Mt Joy has the higher 2016 design value of the two sites, the 3-month average establishing that value is due to concentrations measured before site improvements and repair in 2014-2015. Since that time, both the pattern (number of high value days) and value of concentrations measured at the Palmerton site indicate that this site is more accurately identified at the measuring the highest lead concentrations in the network. PA DEP has installed a collocated monitor at Palmerton to meet the requirements set forth in 40 CFR Part 58, Section 3.4.4.2 (a).

Quality Assurance Requirements – 40 CFR Part 58, Appendix B

PA DEP does not operate Prevention of Significant Deterioration (PSD) monitors as part of its Ambient Air Monitoring Network. Therefore, 40 CFR Part 58, Appendix B, “Quality Assurance Requirements for Prevention of Significant Deterioration (PSD) Air Monitoring,” is not applicable.

Monitoring Method Requirements – 40 CFR Part 58, Appendix C

PA DEP operates its Ambient Air Monitoring Network in accordance with all monitoring method requirements set forth in 40 CFR Part 58, Appendix C, “Ambient Air Quality Monitoring Methodology.” PA DEP uses EPA-approved Federal Reference Methods (FRM) or Federal Equivalent Methods (FEM) to perform all ambient air monitoring. Monitoring methods are listed in Appendix D of this document.

Network Design Requirements – 40 CFR Part 58, Appendix D

PA DEP operates its Ambient Air Monitoring Network in accordance with all network design requirements set forth in 40 CFR Part 58, Appendix D, “Network Design Criteria for Ambient Air Quality Monitoring.”

Ozone (O₃) Network Design Requirements

Minimum ozone monitoring requirements are set forth in 40 CFR Part 58, Appendix D Section 4.1, “Ozone Design Criteria,” as follows:

“4.1 Ozone (O₃) Design Criteria. (a) State, and where appropriate, local agencies must operate O₃ sites for various locations depending upon area size (in terms of population and geographic characteristics) and typical peak concentrations (expressed in percentages below, or near the O₃ NAAQS). Specific SLAMS O₃ site minimum requirements are included in Table D-2 of this appendix. The NCore sites are expected to complement the O₃ data collection that takes place at single-pollutant SLAMS sites, and both types of sites can be used to meet the network minimum requirements. The total number of O₃ sites needed to support the basic monitoring objectives of public data reporting, air quality mapping, compliance, and understanding O₃-related atmospheric processes will include more sites than these minimum numbers required in Table D-2 of this appendix. The EPA Regional Administrator and the responsible State or local air monitoring agency must work together to design and/or maintain the most appropriate O₃ network to service the variety of data needs in an area.”

Table C-9. Minimum Ozone Monitoring Requirements

(Table D-2 of Appendix D to Part 58— SLAMS Minimum O₃ Monitoring Requirements)

MSA population ^{1,2}	Most recent 3-year design value concentrations \geq85% of any O₃ NAAQS ³	Most recent 3-year design value concentrations $<$85% of any O₃ NAAQS ^{3,4}
>10 million	4	2
4-10 million	3	1
350,000-<4 million	2	1
50,000-<350,000 ⁵	1	0

¹ Minimum monitoring requirements apply to the Metropolitan statistical area (MSA).

² Population based on latest available census figures.

³ The ozone (O₃) National Ambient Air Quality Standards (NAAQS) levels and forms are defined in 40 CFR part 50.

⁴ These minimum monitoring requirements apply in the absence of a design value.

⁵ Metropolitan statistical areas (MSA) must contain an urbanized area of 50,000 or more population.

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These minimum ozone monitoring requirements are satisfied as detailed in Table C-10. Ambient air monitoring sites operated by agencies other than PA DEP are included in the “Other SLAMS Monitors” and “CASTNET Monitors” columns of the table. Changes to the PA DEP ozone monitoring network as described in this plan are included in the table. As shown, the number of ozone monitoring sites within the twenty Pennsylvania MSAs meets or exceeds the minimum monitoring requirement. In addition, the total ozone monitoring network encompasses a substantially greater number of monitoring sites than the minimum requirement, and includes several non-MSA regions of the state.

Table C-10. Ozone Minimum Monitoring Requirements Demonstration, 2017-2018

MSA	2016 Population Estimate	Maximum 2016 Design Value	No. of Monitors Required	PA DEP SLAMS Monitors	Other SLAMS Monitors	Total No. SLAMS Monitors	CASTNET Monitors	Add'l Monitors Needed
Allentown-Bethlehem-Easton MSA	835,652	70	2	2	NJ-1	3		0
Altoona MSA	124,650	63	1	1		1		0
Bloomsburg-Berwick MSA	84,763	No monitors	0	0		0		0
Chambersburg-Waynesboro MSA	153,851	60	1	1		1		0
East Stroudsburg MSA	166,098	65	1	1		1		0
Erie MSA	276,207	66	1	1		1		0
Gettysburg MSA	102,180	67	1	1		1	PA-1	0
Harrisburg-Carlisle MSA	568,033	67	2	2		2		0
Johnstown MSA	134,732	63	1	1		1		0
Lancaster MSA	538,500	69	2	2		2		0
Lebanon MSA	138,863	71	1	1		1		0
New York-Newark-Jersey City MSA	20,153,634	76	4	0	NJ-9; NY-13	22		0
Philadelphia-Camden-Wilmington MSA	6,070,500	77	3	4	AMS-3; DE-4; MD-1; NJ-3	15		0
Pittsburgh MSA	2,342,299	70	2	8	ACHD-3	11		0
Reading MSA	414,812	71	2	2		2		0
Scranton-Wilkes-Barre-Hazleton MSA	555,225	67	2	3		3		0
State College MSA	161,464	65	1	1		1	PA-1	0
Williamsport MSA	115,248	64	1	1		1		0
York-Hanover MSA	443,744	70	2	2		2		0
Youngstown-Warren-Boardman MSA	544,746	69	2	1	OH-3	4	PA-1	0
Northcentral Non-MSA Region	N/A	N/A	N/A	3		3	N/A	N/A
Northwest Non-MSA Region	N/A	N/A	N/A	1		1	N/A	N/A
Southwest Non-MSA Region	N/A	N/A	N/A	2		2	N/A	N/A

Additional ozone monitoring requirements for maximum ozone concentration monitoring are set forth in 40 CFR Part 58, Appendix D, § 4.1 as follows:

(b) Within an O₃ network, at least one O₃ site for each MSA, or CSA if multiple MSAs are involved, must be designed to record the maximum concentration for that particular metropolitan area. More than one maximum concentration site may be necessary in some areas. Table D-2 of this appendix does not account for the full breadth of additional factors that would be considered in designing a complete O₃ monitoring program for an area. Some of these additional factors include geographic size, population density, complexity of terrain and meteorology, adjacent O₃ monitoring programs, air pollution transport from neighboring areas, and measured air quality in comparison to all forms of the O₃ NAAQS (i.e., 8-hour and 1-hour forms). Networks must be designed to account for all of these area characteristics. Network designs must be re-examined in periodic network assessments. Deviations from the above O₃ requirements are allowed if approved by the EPA Regional Administrator.

Seventeen of Pennsylvania's twenty MSAs are incorporated into Combined Statistical Areas (CSA), as defined by the U.S. Office of Management and Budget (OMB). Pennsylvania encompasses eleven CSAs, either wholly or in part. CSA include both MSAs and Micropolitan areas, and often encompass multiple states. Table C-11 displays Pennsylvania's CSAs and their component Pennsylvania MSAs, and identifies the ozone maximum concentration sites. As noted in the table, three MSAs are not included in any CSA.

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Table C-11. Combined Statistical Areas (CSA), MSAs and Maximum Ozone Concentration Sites

CSA Name	Component MSA Name, Pennsylvania Portion	Max Ozone Site	AQS ID
Bloomsburg-Berwick-Sunbury, PA	Bloomsburg-Berwick, PA (MSA) Lewisburg, PA (Micropolitan) Selinsgrove, PA (Micropolitan) Sunbury, PA (Micropolitan)	<i>No monitoring required 40 CFR Part 58 Section 4.1</i>	
Erie-Meadville, PA	Erie, PA (MSA) Meadville, PA (Micropolitan)	Erie ¹	420490003
Harrisburg-York-Lebanon, PA	Gettysburg, PA (MSA)	Lebanon	420750100
	Harrisburg-Carlisle, PA (MSA)		
	Lebanon, PA (MSA)		
	York-Hanover, PA (MSA)		
Johnstown-Somerset, PA	Johnstown, PA (MSA) Somerset, PA (Micropolitan)	Johnstown ¹	420210011
New York-Newark, NY-NJ-CT-PA	Allentown-Bethlehem-Easton, PA-NJ (MSA)	<i>Area of expected maximum ozone concentrations occurs in CT</i>	
	East Stroudsburg, PA (MSA)		
	New York-Newark-Jersey City, NY-NJ-PA (MSA)		
Philadelphia-Reading-Camden, PA-NJ-DE-MD	Philadelphia-Camden-Wilmington, PA-NJ-DE-MD (MSA)	Bristol	420170012
	Reading, PA (MSA)		
Pittsburgh-New Castle-Weirton, PA-OH-WV	Indiana, PA (Micropolitan) New Castle, PA (Micropolitan) Pittsburgh, PA (MSA)	Harrison 2	420031008
State College-DuBois, PA	DuBois, PA (Micropolitan) State College, PA (MSA)	State College ¹	420270100
Washington-Baltimore-Arlington, DC-MD-VA-WV-PA	Chambersburg-Waynesboro, PA (MSA)	<i>Area of expected maximum ozone concentrations occurs in MD</i>	
Williamsport-Lock Haven, PA	Lock Haven, PA (Micropolitan) Williamsport, PA (MSA)	Montoursville ¹	420810100
Youngstown-Warren, OH-PA	Youngstown-Warren-Boardman, OH-PA (MSA)	Farrell	420850100
<i>Not in a CSA</i>	Altoona, PA (MSA)	Altoona	420130801
	Lancaster, PA (MSA)	Lancaster Downwind	420710012
	Scranton-Wilkes-Barre-Hazleton, PA (MSA)	Peckville	420690101

¹ Monitor located in population center of CSA. Monitor may not be in area of expected ozone maximum concentration (downwind of urban center); however monitor is located to represent ozone exposure occurring to majority of CSA population.

Sulfur Dioxide (SO₂) Network Design Requirements

Minimum SO₂ monitoring requirements are set forth in 40 CFR Part 58, Appendix D as follows:

“4.4.2 Requirement for Monitoring by the Population Weighted Emissions Index. (a) The population weighted emissions index (PWEI) shall be calculated by States for each core based statistical area (CBSA) they contain or share with another State or States for use in the implementation of or adjustment to the SO₂ monitoring network. The PWEI shall be calculated by multiplying the population of each CBSA, using the most current census data or estimates, and the total amount of SO₂ in tons per year emitted within the CBSA area, using an aggregate of the most recent county level emissions data available in the National Emissions Inventory for each county in each CBSA. The resulting product shall be divided by one million, providing a PWEI value, the units of which are million persons-tons per year. For any CBSA with a calculated PWEI value equal to or greater than 1,000,000, a minimum of three SO₂ monitors are required within that CBSA. For any CBSA with a calculated PWEI value equal to or greater than 100,000, but less than 1,000,000, a minimum of two SO₂ monitors are required within that CBSA. For any CBSA with a calculated PWEI value equal to or greater than 5,000, but less than 100,000, a minimum of one SO₂ monitor is required within that CBSA.”

These minimum SO₂ monitoring requirements are satisfied as detailed in Table C-12. PWEI values were calculated using the 2014 National Emissions Inventory (NEI) database, which is the most recent data available. Ambient air monitoring sites operated by agencies other than PA DEP are listed in the “Other SLAMS Monitors” column of the table. Changes to the PA DEP SO₂ monitoring network as described in this plan are included in the table. As shown, the number of SO₂ monitoring sites within the twenty Pennsylvania MSAs meets or exceeds the minimum monitoring requirement. In addition, the total SO₂ monitoring network encompasses a greater number of monitoring sites than the minimum requirement.

Table C-12. SO₂ Minimum Monitoring Requirements Demonstration, 2017-2018

MSA	2016 Population Estimate	2014 NEI (tons/year)	Calculated PWEI	No. of Monitors Required	PA DEP SLAMS Monitors	Other SLAMS Monitors	Total No. of Monitors	Add'l Monitors Needed
Allentown-Bethlehem-Easton MSA	835,652	9972.2	8333	1	1	NJ-1	2	0
Altoona MSA	124,650	4206.6	524	0	1		1	0
Bloomsburg-Berwick MSA	84,763	11332.0	961	0	0		0	0
Chambersburg-Waynesboro MSA	153,851	315.4	49	0	0		0	0
East Stroudsburg MSA	166,098	312.8	52	0	0		0	0
Erie MSA	276,207	280.4	77	0	0		0	0
Gettysburg MSA	102,180	161.5	17	0	1		1	0
Harrisburg-Carlisle MSA	568,033	1615.0	917	0	0		0	0
Johnstown MSA	134,732	8267.3	1114	0	1		1	0
Lancaster MSA	538,500	877.8	473	0	0		0	0
Lebanon MSA	138,863	576.4	80	0	0		0	0
New York-Newark-Jersey City MSA	20,153,634	26532.5	534726	2	0	NJ-6; NY-7;	13	0
Philadelphia-Camden-Wilmington MSA	6,070,500	12934.4	78518	1	0	AMS-2; DE-4; NJ-1	7	0
Pittsburgh MSA	2,342,299	62549.8	146510	2	4	ACHD-5	9	0
Reading MSA	414,812	1452.7	603	0	1		1	0
Scranton-Wilkes-Barre-Hazleton MSA	555,225	1487.3	826	0	1		1	0
State College MSA	161,464	1545.5	250	0	1		1	0
Williamsport MSA	115,248	928.4	107	0	0		0	0
York-Hanover MSA	443,744	18636.6	8270	1	2		2	0
Youngstown-Warren-Boardman MSA	544,746	2382.0	1298	0	0	OH-1	1	0
Northwest Non-MSA Region	N/A	N/A	N/A	N/A	2		2	N/A
Southwest Non-MSA Region	N/A	N/A	N/A	N/A	1		1	N/A

Nitrogen Dioxide (NO₂) Network Design Requirements

Minimum NO₂ monitoring requirements include requirements for near-road, area-wide and U.S. EPA Regional Administrator Required monitoring.

Near-Road NO₂ Monitoring

On December 22, 2016, U.S. EPA finalized revisions to the minimum monitoring requirements for near-road NO₂ monitors. The revision removes the existing requirement for near-road NO₂ monitoring stations in Core Based Statistical Areas (CBSAs) having populations between 500,000 and 1,000,000 persons. These monitors were due to have been installed and operational by January 1, 2017 (81 FR 96381). Near-road NO₂ monitoring requirements are set forth in 40 CFR Part 58, Appendix D as follows:

“4.3.2 Requirement for Near-road NO₂ Monitors

a) Within the NO₂ network, there must be one microscale near-road NO₂ monitoring station in each CBSA with a population of 1,000,000 or more persons to monitor a location of expected maximum hourly concentrations sited near a major road with high AADT counts as specified in paragraph 4.3.2(a)(1) of this appendix. An additional near-road NO₂ monitoring station is required for any CBSA with a population of 2,500,000 persons or more, or in any CBSA with a population of 1,000,000 or more persons that has one or more roadway segments with 250,000 or greater AADT counts to monitor a second location of expected maximum hourly concentrations. CBSA populations shall be based on the latest available census figures.”

The Commonwealth of Pennsylvania contains three MSAs (Figure 1), either wholly or in part, with populations greater than 1,000,000 persons. These three MSA are the New York-Newark-Jersey City, NY-NJ-PA MSA, the Philadelphia-Camden-Wilmington, PA-NJ-DE-MD MSA, and the Pittsburgh, PA MSA. NO₂ near-road monitoring for the New-York-Newark-Jersey City MSA is performed by the New Jersey Department of Environmental Protection. NO₂ near-road monitoring for the Pennsylvania portion of the Philadelphia-Camden-Wilmington MSA is performed by Philadelphia Air Management Services. NO₂ near-road monitoring for the Pittsburgh MSA is performed by the Allegheny County Health Department. Near-road NO₂ monitoring network sites for the these MSAs are described in the annual air monitoring network plans of these agencies.

Area-Wide NO₂ Monitoring

Area-wide NO₂ monitoring requirements are set forth in 40 CFR Part 58, Appendix D as follows:

“4.3.3 Requirement for Area-wide NO₂ Monitoring

(a) Within the NO₂ network, there must be one monitoring station in each CBSA with a population of 1,000,000 or more persons to monitor a location of expected highest NO₂ concentrations representing the neighborhood or larger spatial scales. PAMS sites collecting NO₂ data that are situated in an area of expected high NO₂ concentrations at the neighborhood or larger spatial scale may be used to satisfy this minimum monitoring requirement when the NO₂ monitor is operated year round. Emission inventories and meteorological analysis should be used to identify the appropriate locations within a CBSA for locating required area-wide NO₂ monitoring stations. CBSA populations shall be based on the latest available census figures.”

Pennsylvania contains three MSAs with populations greater than 1,000,000 - New York-Newark-Jersey City, NY-NJ-PA MSA, Philadelphia-Camden-Wilmington, PA-NJ-DE-MD MSA and Pittsburgh, PA MSA. Monitoring networks for these MSAs are operated and maintained by the New Jersey Department of Environmental Protection and New York Department of Environmental Conservation, Philadelphia County Air Management Services and the Allegheny County Health Department, respectively. No additional area-wide NO₂ monitoring is required in Pennsylvania under the minimum monitoring requirements set forth in Appendix D.

Regional Administrator-Required NO₂ Monitoring

Regional Administrator-required (RA-40) NO₂ monitoring requirements are set forth in 40 CFR Part 58, Appendix D as follows:

“4.3.4 Regional Administrator Required Monitoring

(a) The Regional Administrators, in collaboration with States, must require a minimum of forty additional NO₂ monitoring stations nationwide in any area, inside or outside of CBSAs, above the minimum monitoring requirements, with a primary focus on siting these monitors in locations to protect susceptible and vulnerable populations. The Regional Administrators, working with States, may also consider additional factors described in paragraph (b) below to require monitors beyond the minimum network requirement.”

U.S. EPA Region III, in consultation with PA DEP, has selected the Chester (Delaware County) and Erie (Erie County) NO₂ monitors operated by PA DEP to be designated as RA-40 monitors.

In addition to satisfying the three categories of minimum monitoring requirements described above, PA DEP maintains NO₂ monitoring sites for use in Air Quality Index (AQI) reporting and forecasting. Ambient NO₂ concentrations are used in ambient air modeling and forecasting as a surrogate for ozone formation and to characterize the strength of meteorological inversions.

Carbon Monoxide (CO) Network Design Requirements

Minimum CO monitoring requirements include requirements for near-road and EPA Regional Administrator Required monitoring.

Near-Road CO Monitoring

Near-road CO monitoring requirements are set forth in 40 CFR Part 58, Appendix D as follows:

“4.2.1 General Requirements. (a) Except as provided in subsection (b), one CO monitor is required to operate collocated with one required near-road NO₂ monitor, as required in Section 4.3.2 of this part, in CBSAs having a population of 1,000,000 or more persons. If a CBSA has more than one required near-road NO₂ monitor, only one CO monitor is required to be collocated with a near-road NO₂ monitor within that CBSA.”

The Commonwealth of Pennsylvania contains three MSAs, either wholly or in part, with populations greater than 1,000,000 persons – New York-Newark-Jersey City, NY-NJ-PA MSA, Philadelphia-Camden-Wilmington, PA-NJ-DE-MD MSA and Pittsburgh, PA MSA. Air quality monitoring for the New York-Newark-Jersey City MSA is performed by the New York State Department of Environmental Conservation and New Jersey Department of Environmental Protection. Air Quality

Monitoring for the Philadelphia-Camden-Wilmington MSA is shared between the Delaware Department of Natural Resources and Environmental Control, Maryland Department of the Environment, New Jersey Department of Environmental Protection, Philadelphia Air Management Services (Philadelphia County, PA) and PA DEP (remaining PA portion). Air quality monitoring for the Pittsburgh MSA is shared between the Allegheny County Health Department (Allegheny County) and PA DEP. For the Pennsylvania portions of these three MSAs, the NO₂ near-road monitoring requirements, and thus the CO monitoring requirements, are being met by the two aforementioned Pennsylvania county agencies. As such, PA DEP is not required to maintain additional CO monitors outside the Philadelphia and Allegheny County networks, for NAAQS compliance purposes.

Regional Administrator-Required Monitoring

Regional Administrator-required CO monitoring requirements are set forth in 40 CFR Part 58, Appendix D as follows:

“4.2.2 Regional Administrator Required Monitoring. (a) The Regional Administrators, in collaboration with states, may require additional CO monitors above the minimum number of monitors required in 4.2.1 of this part, where the minimum monitoring requirements are not sufficient to meet monitoring objectives. The Regional Administrator may require, at his/her discretion, additional monitors in situations where data or other information suggest that CO concentrations may be approaching or exceeding the NAAQS. Such situations include, but are not limited to, (1) characterizing impacts on ground-level concentrations due to stationary CO sources, (2) characterizing CO concentrations in downtown areas or urban street canyons, and (3) characterizing CO concentrations in areas that are subject to high ground level CO concentrations particularly due to or enhanced by topographical and meteorological impacts. The Regional Administrator and the responsible State or local air monitoring agency shall work together to design and maintain the most appropriate CO network to address the data needs for an area, and include all monitors under this provision in the annual monitoring network plan.”

As of the date of this document, the U.S. EPA Region III Administrator has not informed PA DEP that any of its monitors are needed to fulfil the RA-required CO monitoring requirement, nor requested PA DEP to establish a new CO monitoring site to fulfil this requirement.

Fine Particulate Matter (PM_{2.5}) Network Design Requirements

Minimum PM_{2.5} monitoring requirements are set forth in 40 CFR Part 58, Appendix D as follows:

“4.7.1 General Requirements. (a) State, and where applicable local, agencies must operate the minimum number of required PM_{2.5} SLAMS sites listed in Table D-5 of this appendix. The NCore sites are expected to complement the PM_{2.5} data collection that takes place at non-NCore SLAMS sites, and both types of sites can be used to meet the minimum PM_{2.5} network requirements. Deviations from these PM_{2.5} monitoring requirements must be approved by the EPA Regional Administrator.”

Table C-13. Minimum PM_{2.5} Monitoring Requirements

(Table D-5 of Appendix D to Part 58—PM_{2.5} Minimum Monitoring Requirements)

MSA population ^{1,2}	Most recent 3-year design value ≥85% of any PM _{2.5} NAAQS ³	Most recent 3-year design value <85% of any PM _{2.5} NAAQS ^{3 4}
>1,000,000	3	2
500,000-1,000,000	2	1
50,000-<500,000 ⁵	1	0

¹ Minimum monitoring requirements apply to the Metropolitan statistical area (MSA).

² Population based on latest available census figures.

³ The PM_{2.5} National Ambient Air Quality Standards (NAAQS) levels and forms are defined in 40 CFR part 50.

⁴ These minimum monitoring requirements apply in the absence of a design value.

⁵ Metropolitan statistical areas (MSA) must contain an urbanized area of 50,000 or more population.

These minimum PM_{2.5} monitoring requirements are satisfied as detailed in Table C-14. Ambient air monitoring sites operated by agencies other than PA DEP are included on the map, and listed in the “Other SLAMS Monitors” column of the table. Changes to the PA DEP PM_{2.5} monitoring network as described in this plan (notably the planned expansion of the network as described in the “Modifications to Air Monitoring Network: Marcellus Shale Development” section of this document) are included in the table. As shown, the number of PM_{2.5} monitoring sites within the twenty Pennsylvania MSAs meets or exceeds the minimum monitoring requirement. In addition, the total PM_{2.5} monitoring network encompasses a substantially greater number of monitoring sites than the minimum requirement.

Table C-14. PM_{2.5} Minimum Monitoring Requirements Demonstration, 2017-2018

MSA	2016 Population Estimate	2016 Max Annual Design Value	2016 Max 24-hr Design Value	No. of Monitors Required	No. of PA DEP SLAMS Monitors	Other SLAMS Monitors	Total No. of Monitors	Add'l Monitors Needed
Allentown-Bethlehem-Easton MSA	835,652	10.5	25	2	2	NJ-1	3	0
Altoona MSA	124,650	10.1	24	0	1		1	0
Bloomsburg-Berwick MSA	84,763	<i>no monitors</i>		0	0		0	0
Chambersburg-Waynesboro MSA	153,851	<i>no monitors</i>		0	0		0	0
East Stroudsburg MSA	166,098	7.6	18	0	0		0	0
Erie MSA	276,207	9.3	21	0	1		1	0
Gettysburg MSA	102,180	8.6	21	0	1		1	0
Harrisburg-Carlisle MSA	568,033	10	28	1	2		2	0
Johnstown MSA	134,732	10.7	26	1	1		1	0
Lancaster MSA	538,500	12.8	33	2	2		2	0
Lebanon MSA	138,863	11.2	31	1	1		1	0
New York-Newark-Jersey City MSA	20,153,634	10.7	24	3	0	NJ-12; NY-10	22	0
Philadelphia-Camden-Wilmington MSA	6,070,500	11.5	27	3	4	AMS-6; DE-5; MD-1; NJ-3	19	0
Pittsburgh MSA	2,342,299	12.8	36	3	6	ACHD-9	15	0
Reading MSA	414,812	9.6	27	0	1		1	0
Scranton-Wilkes-Barre-Hazleton MSA	555,225	9.9	22	1	2		2	0
State College MSA	161,464	8.1	19	0	1		1	0
Williamsport MSA	115,248	N/A	N/A	0	0		0	0
York-Hanover MSA	443,744	9.9	24	0	1		1	0
Youngstown-Warren-Boardman MSA	544,746	9.6	22	1	1	OH-3	4	0
Northcentral Non-MSA Region	N/A	N/A	N/A	N/A	2		2	N/A
Northeast Non-MSA Region	N/A	N/A	N/A	N/A	1		1	N/A
Northwest Non-MSA Region	N/A	N/A	N/A	N/A	2		2	N/A
Southwest Non-MSA Region	N/A	N/A	N/A	N/A	1		1	N/A

A requirement for continuous PM_{2.5} monitoring is set forth in 40 CFR Part 58, Appendix D as follows:

“4.7.2 Requirement for Continuous PM_{2.5} Monitoring. The State, or where appropriate, local agencies must operate continuous PM_{2.5} analyzers equal to at least one-half (round up) the minimum required sites listed in Table D-5 of this appendix. At least one required continuous analyzer in each MSA must be collocated with one of the required FRM/FEM/ARM monitors, unless at least one of the required FRM/FEM/ARM monitors is itself a continuous FEM or ARM monitor in which case no collocation requirement applies. State and local air monitoring agencies must use methodologies and quality assurance/quality control (QA/QC) procedures approved by the EPA Regional Administrator for these required continuous analyzers.”

PA DEP’s planned air monitoring network for 2017-2018 includes 33 continuous PM_{2.5} monitors in total, either designated as primary monitors, or collocated with FRM primary monitors. Twenty-seven of these monitors are located in MSAs. PA DEP operates all continuous PM_{2.5} monitors as SLAMS monitors, with the exception of Marcus Hook, which is an SPM site, and therefore not eligible to be counted towards the continuous monitoring requirement. Table C-15 demonstrates that PA DEP either meets or exceeds the continuous PM_{2.5} monitoring requirement.

Table C-15. PM_{2.5} Continuous Monitoring Requirements Demonstration, 2016-2017

MSA	No. of SLAMS Monitors Required	No. of Continuous Monitors Required	No. of PA DEP SLAMS Continuous Method Monitors	Other Continuous Method Monitors	Add'l Continuous Monitors Required
Allentown-Bethlehem-Easton MSA	2	1	2	NJ-1	0
Altoona MSA	0	0	1		0
Bloomsburg-Berwick MSA	0	0	0		0
Chambersburg-Waynesboro MSA	0	0	0		0
East Stroudsburg MSA	0	0	0		0
Erie MSA	0	0	1		0
Gettysburg MSA	0	0	1		0
Harrisburg-Carlisle MSA	1	1	2		0
Johnstown MSA	1	1	1		0
Lancaster MSA	2	1	2		0
Lebanon MSA	1	1	1		0
New York-Newark-Jersey City MSA	3	2	0	NJ-6; NY-2	0
Philadelphia-Camden-Wilmington MSA	3	2	4	AMS-5; DE-2; MD-1; NJ-1	0
Pittsburgh MSA	3	2	6	ACHD-2	0
Reading MSA	0	0	1		0
Scranton-Wilkes-Barre-Hazleton MSA	1	1	2		0
State College MSA	0	0	1		0
Williamsport MSA	0	0	0		0
York-Hanover MSA	0	0	1		0
Youngstown-Warren-Boardman MSA	1	1	1		0

A requirement for PM_{2.5} regional background and transport monitoring is set forth in 40 CFR Part 58, Appendix D as follows:

“4.7.3 Requirement for PM_{2.5} Background and Transport Sites. Each State shall install and operate at least one PM_{2.5} site to monitor for regional background and at least one PM_{2.5} site to monitor regional transport. These monitoring sites may be at community-oriented sites and this requirement may be satisfied by a corresponding monitor in an area having similar air quality in another State. State and local air monitoring agencies must use methodologies and QA/QC procedures approved by the EPA Regional Administrator for these sites. Methods used at these sites may include non-federal reference method samplers such as IMPROVE or continuous PM_{2.5} monitors.”

PA DEP maintains the Arendtsville, Florence, New Garden and Tioga County PM_{2.5} monitoring sites for purposes of regional background and transport monitoring. Table C-16 lists these sites along with their respective measurement scales and monitoring objectives.

Table C-16. PM_{2.5} Regional Background and Transport Requirements Demonstration

Site Name	AQS Code	County	Measurement Scale	Monitoring Objective	Monitoring Method(s)
Arendtsville	420010001	Adams	Regional Scale	General/Background	Met-One BAM
Florence	421255001	Washington	Regional Scale	General/Background	Met-One BAM
New Garden	420290100	Chester	Urban Scale	Regional Transport	Met-One BAM
Tioga County	421174000	Tioga	Urban Scale	Regional Transport	Met-One BAM

The Arendtsville and Florence monitoring sites are situated in rural settings and are classified as general/background monitors. The locations of these monitoring sites are such that PM_{2.5} impacts from any existing large SO₂, NO₂ and VOC sources would not be expected to influence the PM_{2.5} concentrations measured at these sites. Located in Washington County, PM_{2.5} concentrations measured at the Florence monitoring site are used to assess the background PM_{2.5} concentrations for western Pennsylvania regions. PM_{2.5} background concentrations in western Pennsylvania are representative of air flow patterns primarily originating in Ohio and West Virginia. Similarly, the Arendtsville monitoring site located in Adams County is used to assess background concentrations in eastern Pennsylvania, representing air flow patterns from western PA, western Maryland and West Virginia. The regional transport sites – New Garden and Tioga County – are also situated in more rural areas of PA but tend to capture regional transport of pollution. New Garden captures the emissions from the Baltimore-Washington I-95 corridor, while Tioga County captures regional transport of emissions across the northern tier of Pennsylvania.

Particulate Matter (PM₁₀) Network Design Requirements

Minimum PM₁₀ monitoring requirements are set forth in 40 CFR Part 58, Appendix D as follows:

“4.6 Particulate Matter (PM₁₀) Design Criteria. (a) Table D-4 indicates the approximate number of permanent stations required in MSAs to characterize national and regional PM₁₀ air quality trends and geographical patterns. The number of PM₁₀ stations in areas where MSA populations exceed 1,000,000 must be in the range from 2 to 10 stations, while in low population urban areas, no more than two stations are required. A range of monitoring stations is specified in Table D-4 because sources of pollutants and local control efforts can vary from one part of the country to another and therefore, some flexibility is allowed in selecting the actual number of stations in any one locale. Modifications from these PM₁₀ monitoring requirements must be approved by the Regional Administrator.”

Table C-17. Minimum PM₁₀ Monitoring Requirements

(Table D-4 of Appendix D to Part 58— PM₁₀ Minimum Monitoring Requirements (Approximate Number of Stations Per MSA) ¹)

Population Category	High concentration ²	Medium concentration ³	Low concentration ^{4,5}
>1,000,000	6-10	4-8	2-4
500,000-1,000,000	4-8	2-4	1-2
250,000-500,000	3-4	1-2	0-1
100,000-250,000	1-2	0-1	0

¹ Selection of urban areas and actual numbers of stations per area will be jointly determined by EPA and the State agency.

² High concentration areas are those for which ambient PM₁₀ data show ambient concentrations exceeding the PM₁₀ NAAQS by 20 percent or more.

³ Medium concentration areas are those for which ambient PM₁₀ data show ambient concentrations exceeding 80 percent of the PM₁₀ NAAQS.

⁴ Low concentration areas are those for which ambient PM₁₀ data show ambient concentrations less than 80 percent of the PM₁₀ NAAQS.

⁵ These minimum monitoring requirements apply in the absence of a design value.

Minimum PM₁₀ monitoring requirements for Pennsylvania MSAs are detailed in Table C-18. Ambient air monitoring sites operated by agencies other than PA DEP are listed in the “Other SLAMS Monitors” column of the table. As shown, based on 2016 concentration data, both the New York-Newark-Jersey City and the Philadelphia-Camden-Wilmington MSA may require one additional SLAMS monitor to fulfil minimum monitoring requirements.

The Pennsylvania portion of the New York-Newark-Jersey City MSA is Pike County, representing less than 1% of the population of the MSA and upwind of the majority of population centers. PA DEP expects that any additional PM₁₀ monitoring required in the New York-Newark-Jersey City MSA would be located outside of Pennsylvania, and as such, has no plans to install a PM₁₀ monitor in Pike County.

Similarly, PA DEP expects that any additional PM₁₀ monitoring required in the Philadelphia-Camden-Wilmington MSA will be performed by either Philadelphia Air Management Services or New Jersey DEP, and has no plans to install a PM₁₀ monitor in any of the four counties around Philadelphia County.

The number of PM₁₀ monitoring sites within the remaining Pennsylvania MSAs meets or exceeds the minimum monitoring requirement.

Table C-18. PM₁₀ Minimum Monitoring Requirements Demonstration, 2017-2018

MSA	2016 Population Estimate	2016 Max 24-hr Average	Monitoring Requirement Range	PA DEP SLAMS Monitors	Other SLAMS Monitors	Total No. of Monitors	Add'l Monitors Needed
Allentown-Bethlehem-Easton MSA	835,652	35	1 - 2	1		1	
Altoona MSA	124,650	37	0	0		0	
Bloomsburg-Berwick MSA	84,763	no monitors	0	0		0	
Chambersburg-Waynesboro MSA	153,851	no monitors	0	0		0	
East Stroudsburg MSA	166,098	no monitors	0	0		0	
Erie MSA	276,207	33	0 - 1	1		1	
Gettysburg MSA	102,180	no monitors	0	0		0	
Harrisburg-Carlisle MSA	568,033	41	1 - 2	1		1	
Johnstown MSA	134,732	52	0	1		1	
Lancaster MSA	538,500	45	1 - 2	1		1	
Lebanon MSA	138,863	no monitors	0	0		0	
New York-Newark-Jersey City MSA	20,153,634	56	2 - 4	0	NJ-1;	1	1
Philadelphia-Camden-Wilmington MSA	6,070,500	55	2 - 4	0	AMS-1;	1	1
Pittsburgh MSA	2,342,299	93	2 - 4	1	ACHD-9;	10	
Reading MSA	414,812	no monitors	0 - 1	0		0	
Scranton-Wilkes-Barre-Hazleton MSA	555,225	32	1 - 2	1		1	
State College MSA	161,464	no monitors	0	0		0	
Williamsport MSA	115,248	29	0	0		0	
York-Hanover MSA	443,744	no monitors	0 - 1	0		0	
Youngstown-Warren-Boardman MSA	544,746	49	1 - 2	0	OH-4	4	

Lead (Pb) Network Design Requirements

Minimum lead monitoring requirements are set forth in 40 CFR Part 58, Appendix D as follows:

“4.5 Lead (Pb) Design Criteria. (a) State and, where appropriate, local agencies are required to conduct ambient air Pb monitoring near Pb sources which are expected to or have been shown to contribute to a maximum Pb concentration in ambient air in excess of the NAAQS, taking into account the logistics and potential for population exposure. At a minimum, there must be one source-oriented SLAMS site located to measure the maximum Pb concentration in ambient air resulting from each non-airport Pb source which emits 0.50 or more tons per year and from each airport which emits 1.0 or more tons per year based on either the most recent National Emission Inventory [<https://www.epa.gov/air-emissions-inventories>] or other scientifically justifiable methods and data

(such as improved emissions factors or site-specific data) taking into account logistics and the potential for population exposure.

[...]

(ii) The Regional Administrator may waive the requirement in paragraph 4.5(a) for monitoring near Pb sources if the State or, where appropriate, local agency can demonstrate the Pb source will not contribute to a maximum Pb concentration in ambient air in excess of 50 percent of the NAAQS (based on historical monitoring data, modeling, or other means). The waiver must be renewed once every 5 years as part of the network assessment required under § 58.10(d).”

Table C-19 displays previously identified 0.5 tpy or greater lead sources in Pennsylvania, outside of Allegheny and Philadelphia Counties, along with their correlating PA DEP lead monitoring sites. Site locations were chosen in accordance with 40 CFR Part 58, Appendix D, based on conservative dispersion modeling, and approved by EPA Region III.

Table C-19. Lead Sources Greater Than 0.5 Tons Per Year and PA DEP Lead Monitoring Sites

County	Facility Name	Emissions, in tons per year					PA DEP Lead Monitoring Site
		2011	2012	2013	2014	2015	
Beaver	Horsehead Corp/Monaca Smelter	5.73	5.97	5.40	1.47	(facility idle)	Beaver Valley Vanport
Beaver	Firstenergy Gen LLC/Bruce Mansfield Plt	0.60	0.50	0.60	0.56	0.30	Potter Township
Berks	East Penn Mfg Co Inc/Battery Assembly	1.75	1.66	1.58	1.77	1.28	Lyons Boro Lyons Park
Berks	Exide Tech/Reading Smelter	0.84	1.12	0.32	(facility idle)	(facility idle)	Laureldale North Laureldale South
Carbon	Horsehead Corp/Palmerton	0.66	0.55	0.65	1.67	1.81	Palmerton
Delaware	Exelon Generation Co/Eddystone	0.01	0.00	0.00	0.00	0.00	Ridley Park*
Indiana	Genon NE Mgmt Co/Conemaugh Plt	0.11	0.11	0.13	0.11	0.11	Conemaugh
Lancaster	Mt Joy Wire Corp/Mt Joy	0.50	0.52	0.52	0.52	0.52	Mt Joy
Lawrence	Inmetco/Ellwood City	0.04	0.06	0.06	0.06	0.05	Ellwood City
Luzerne	Schott North Amer Inc/Duryea	0.08	0.03	0.03	0.03	0.01	Duryea
* Monitor that will be discontinued							

Siting Criteria Requirements – 40 CFR Part 58, Appendix E

PA DEP operates its Ambient Air Monitoring Network in accordance with all siting criteria requirements set forth in 40 CFR Part 58, Appendix E, “Probe and Monitoring Path Siting Criteria for Ambient Air Quality Monitoring.” PA DEP has instituted a 5-year statewide site survey plan (corresponding with the 5-year network assessment) that examines many aspects of the site, including siting criteria. Siting criteria are also re-checked when site operators or field supervisors report construction or other activities that may impact air monitoring at the site.

Appendix D – Pennsylvania Monitoring Network Site Details

Appendix D of this document provides a detailed description of the existing monitoring network sites. This appendix includes 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 Sections 58.10 (a) and 58.10 (b). Unless otherwise indicated, all sites and monitors meet siting requirements set forth in of 40 CFR Part 58, Appendices A, C, D, and E.

Table D-1 below provides details on the methods and instrumentation utilized by PA DEP's Air Quality Monitoring Division for all criteria and toxic pollutant monitoring. PA DEP utilizes Federal Reference Methods (FRM) and Federal Equivalent Methods in its monitoring network, for criteria pollutants. Although there are no national concentration standards for air toxic pollutants, PA DEP uses approved EPA analytical methods to determine ambient concentrations.

Table D-1. Ambient Air Monitoring Equipment and Methods

PARAMETER	MANUFACTURER/INSTRUMENT/MODEL	EPA METHOD DESIGNATION
Continuous Gaseous Sampling		
OZONE	Teledyne Advanced Pollution Instrumentation, Model 400E or T400; Advanced Pollution Instrumentation, Model 400/400A Photometric Ozone Analyzer	Automated Equivalent Method: EQOA-0992-087 57 FR 44565, 9/28/92 63 FR 31992, 6/11/98 67 FR 57811, 9/12/02 Latest Modification: 08/2010; 05/2013; 07/2014; 9/2015
SO₂	Teledyne Advanced Pollution Instrumentation, Models 100A, T100 UV Fluorescence SO ₂ Analyzer	Automated Equivalent Method: EQSA-0495-100 60 FR 17061, 4/4/95 Latest Modification: 08/2010; 05/2013; 07/2014; 9/2015
	Thermo Environmental Instruments, Inc./Thermo Electron Model 43i Pulsed Fluorescence SO ₂ Analyzer	Automated Equivalent Method: EQSA-0486-060 51 FR 12390, 4/10/86 Latest Modification: 10/2015
NO/NO₂/NO_x	Teledyne Advanced Pollution Instrumentation Models 200A, T200 Chemiluminescence Nitrogen Oxides Analyzer for Ambient Concentrations	Automated Reference Method: RFNA-1194-099 59 FR 61892, 12/2/94 Latest modifications: 03/2009; 08/2010; 10/2012; 5/2013; 06/2014; 07/2014; 9/2015
CO	Teledyne Advanced Pollution Instrumentation Models 300, T300 CO Gas Filter Correlation Analyzer	Automated Reference Method: RFCA-1093-093 58 FR 58166, 10/29/93 Latest Modification: 08/2010; 05/2013; 07/2014; 9/2015
H₂S	Teledyne-API Model 101E UV Fluorescence H ₂ S Analyzer	None
Mercury	Tekran Mercury Vapor Analyzer Model 2537A Cold Vapor Atomic Fluorescence Spectrometer (CVAFS)	EPA Compendium Method IO-5

Table D-1. Ambient Air Monitoring Equipment and Methods (cont.)

PARAMETER	MANUFACTURER/INSTRUMENT/MODEL	EPA METHOD DESIGNATION
Particulate Sampling		
PM_{2.5}		
<i>Discrete</i>	Thermo Fisher Scientific Partisol® 2025i Sequential PM _{2.5} Air Sampler or Rupprecht & Patashnick Partisol®-Plus 2025 PM _{2.5} Sequential Sampler	Manual Reference Method: RFPS-0498-118 63 FR 18911, 4/16/98 67 FR 15567, 4/2/02 (EQPM-0202-145 redesignated as manual reference method 12/18/06) Latest modification: 06/2011
<i>Continuous</i>	Met-One Instruments, Inc. Beta-Attenuation Mass (BAM) Model 1020 – PM _{2.5} FEM Configuration	Automated Equivalent Method EQPM-0308-170 73 FR 13224, 3/12/08 73 FR 22362, 4/25/08 Latest modifications: 7/2010; 8/2010; 8/2012; 3/2015; 9/2015
	Teledyne API Model 602 BetaPLUS Particle Measurement System	Automatic Equivalent Method EQPM-0912-204 77 FR 60985, 10/5/2012
PM_{2.5} SPECIATION	Met One Instruments SASS PM _{2.5} Ambient Chemical Speciation Air Sampler URG Corporation 3000N Sequential Particulate Speciation System	None
PM₁₀	Thermo Scientific TEOM® 1400AB/TEOM® 1405 Ambient Particulate Monitor or Rupprecht & Patashnick TEOM® Series 1400/1400a Tapered Element Oscillating Microbalance Ambient Particulate Monitor	Automated Equivalent Method: EQPM-1090-079 55 FR 43406, 10/29/90 Latest modification: 12/2008
LEAD	Tisch TE-5170 VFC+ Inductively Coupled Plasma - Mass Spectrometry	Manual Equivalent Method EQL-0710-192 75 FR 45627, 8/3/10
PM₁₀-based Metals	Thermo GMW PM ₁₀ High-Volume Air Sampler - Volumetric Model SA/G1200	Manual Reference Method: RFPS-1287-063 52 FR 45684, 12/01/87 53FR 1062, 1/15/88
TSP/Metals	Thermo GMW TSP High-Volume Air Sampler - Volumetric Flow Controlled Inductively Coupled Plasma - Mass Spectrometry (Metals)	Manual Reference Method Method Code 802 47 FR 54912, 12/6/82 48 FR 17355 4/22/83 EPA Compendium Method IO-3.5
Other Toxic Sampling		
VOC	ATEC Model 2200-12 ATEC Model 2200-102 Entech CS1200ES4	EPA Compendium Method TO-15
Carbonyl	Xontech Model 925 Automated Carbonyl Sampler ATEC Model 2200-102	EPA Compendium Method TO-11A

PA DEP's 2017 ANNUAL AMBIENT AIR MONITORING NETWORK PLAN

SITE NAME: ALLENTOWN
AQS ID: 420770004
MSA: Allentown-Bethlehem-Easton MSA
COUNTY: LEHIGH
MUNICIPALITY: CITY OF ALLENTOWN
LATITUDE: 40.61194445
LONGITUDE: -75.43261111
ADDRESS: STATE HOSPITAL REAR 1600 HANOVER AVE
COMMENTS: Meets federal monitoring requirements in the Allentown-Bethlehem-Easton MSA

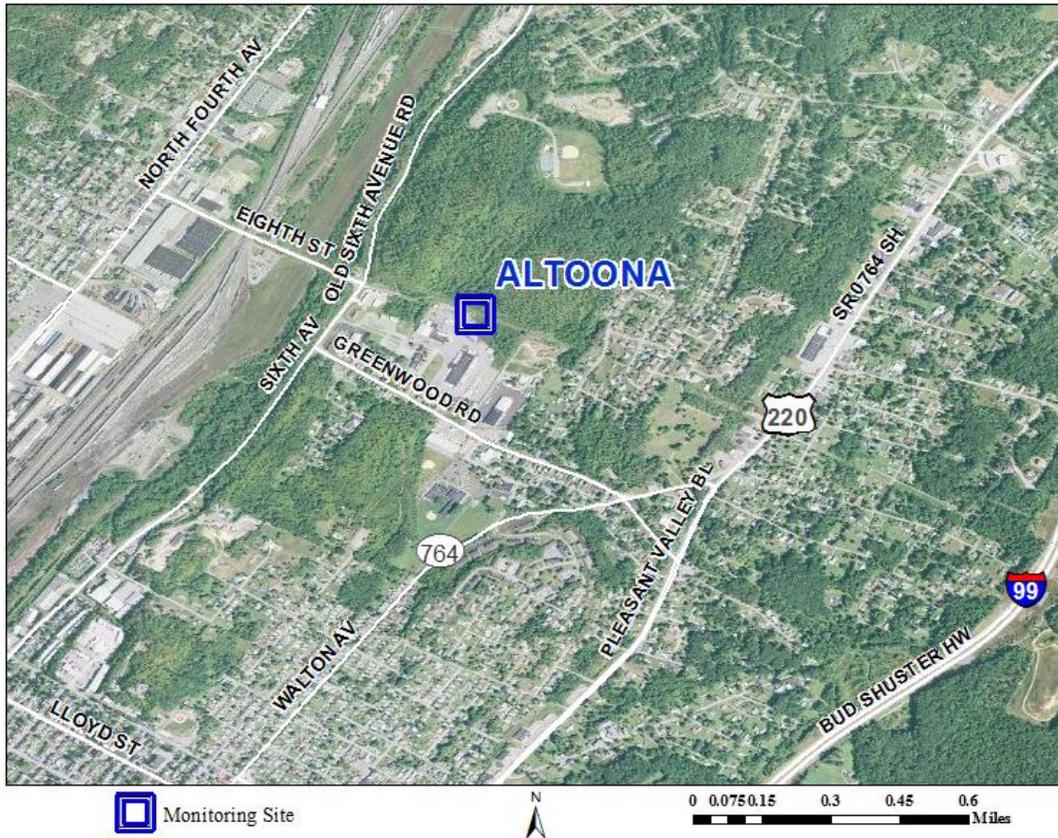


Monitor Summary

<i>Monitor</i>	<i>Network</i>	<i>Start Date</i>	<i>Sample Frequency</i>	<i>Method Description</i>	<i>Monitoring Scale</i>	<i>Appendix D Objectives</i>
Ozone	SLAMS	1/1/1984	Continuous	UV Absorption	Neighborhood	Population Exposure
PM _{2.5}	SLAMS	1/1/2016	Continuous	Beta Attenuation	Neighborhood	Source Oriented
PM ₁₀	SLAMS	5/16/1996	Continuous	TEOM Gravimetric	Neighborhood	Population Exposure

PA DEP's 2017 ANNUAL AMBIENT AIR MONITORING NETWORK PLAN

SITE NAME: ALTOONA
AQS ID: 420130801
MSA: Altoona MSA
COUNTY: BLAIR
MUNICIPALITY: LOGAN TWP
LATITUDE: 40.53563889
LONGITUDE: -78.37036111
ADDRESS: 2ND AVE & 7TH ST
COMMENTS: Monitors for NAAQS compliance for criteria pollutants in Altoona MSA

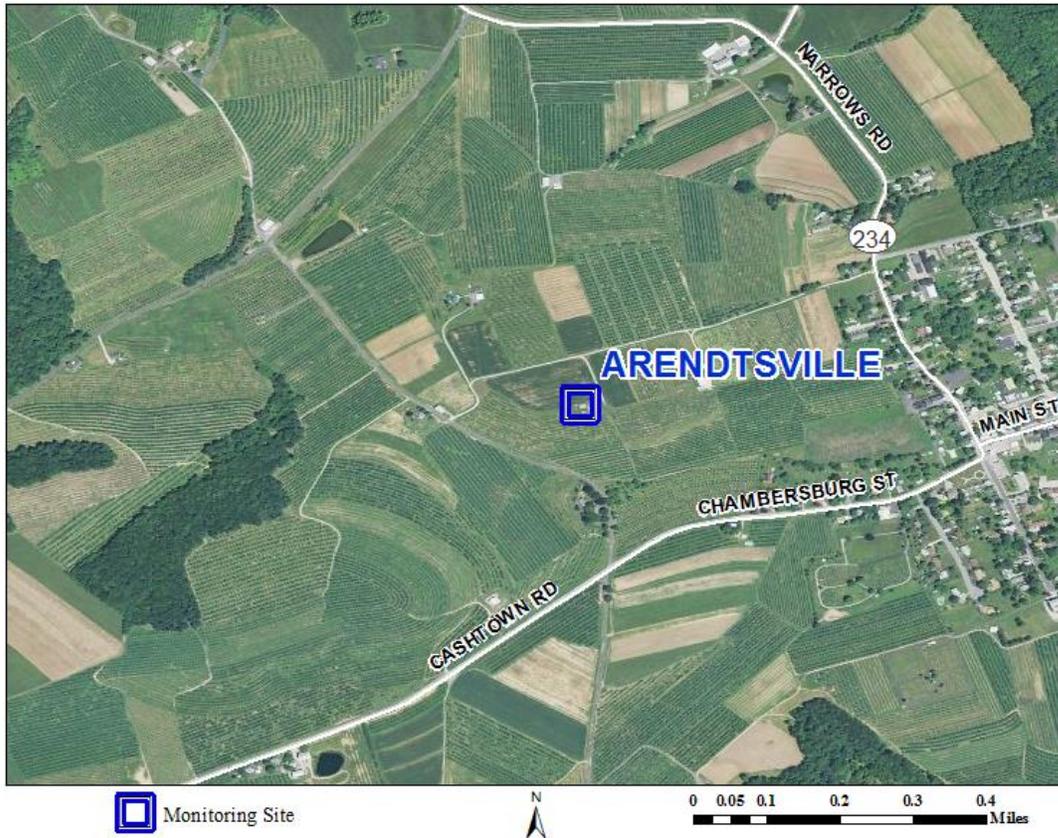


Monitor Summary

Monitor	Network	Start Date	Sample Frequency	Method Description	Monitoring Scale	Appendix D Objectives
Ozone	SLAMS	5/1/1978	Continuous	UV Absorption	Urban Scale	Max Ozone Concentration
SO ₂	SLAMS	5/1/1978	Continuous	UV Fluorescence	Neighborhood	Population Exposure
PM _{2.5}	SLAMS	6/1/2010	Continuous	Beta Attenuation	Neighborhood	Population Exposure
PM ₁₀ (discontinue)	SLAMS	5/17/1995	Continuous	TEOM Gravimetric	Neighborhood	Population Exposure

PA DEP's 2017 ANNUAL AMBIENT AIR MONITORING NETWORK PLAN

SITE NAME: ARENDSVILLE
AQS ID: 420010001
MSA: Gettysburg MSA
COUNTY: ADAMS
MUNICIPALITY: FRANKLIN TWP
LATITUDE: 39.92330556
LONGITUDE: -77.30816667
ADDRESS: WINDING ROAD, BIGLERVILLE
COMMENTS: Monitors regional transport of pollutants into eastern PA



Monitor Summary

<i>Monitor</i>	<i>Network</i>	<i>Start Date</i>	<i>Sample Frequency</i>	<i>Method Description</i>	<i>Monitoring Scale</i>	<i>Appendix D Objectives</i>
Ozone	SLAMS	11/1/2014	Continuous	UV Absorption	Regional Scale	Regional Transport
SO₂	SLAMS	10/6/2014	Continuous	UV Fluorescence	Urban Scale	General/Background
NO₂	SLAMS	6/24/1997	Continuous	Chemiluminescence	Urban Scale	General/Background
CO	SLAMS	6/24/1997	Continuous	Non-dispersive Infrared	Neighborhood	General/Background
PM_{2.5}	SLAMS	7/1/2009	Continuous	Beta Attenuation	Regional Scale	General/Background
Carbonyls	Other	6/2/1997	1 in 6	DNPH - Coated Cartridges (24 Hour)	N/A	N/A
VOC	Other	6/2/1997	1 in 6	Canister (24 Hour)	N/A	N/A
PM_{2.5} Speciation	CSN	1/1/2002	1 in 6	Gravimetric	Urban Scale	General/Background

PA DEP's 2017 ANNUAL AMBIENT AIR MONITORING NETWORK PLAN

SITE NAME: BEAVER FALLS
AQS ID: 420070014
MSA: Pittsburgh MSA
COUNTY: BEAVER
MUNICIPALITY: CITY OF BEAVER FALLS
LATITUDE: 40.74780556
LONGITUDE: -80.31575
ADDRESS: EIGHTH STREET AND RIVER ALLEY
COMMENTS: Monitors for NAAQS compliance for criteria pollutants



Monitor Summary

<i>Monitor</i>	<i>Network</i>	<i>Start Date</i>	<i>Sample Frequency</i>	<i>Method Description</i>	<i>Monitoring Scale</i>	<i>Appendix D Objectives</i>
Ozone	SLAMS	1/1/1974	Continuous	UV Absorption	Urban Scale	Population Exposure
NO₂	SLAMS	1/1/1974	Continuous	Chemiluminescence	Neighborhood	Population Exposure
PM_{2.5}	SLAMS	12/1/1999	Daily	Gravimetric	Neighborhood	Population Exposure
PM_{2.5}	SLAMS	7/16/2004	Continuous	Beta Attenuation	Neighborhood	Population Exposure
PM₁₀	SLAMS	9/20/1995	Continuous	TEOM Gravimetric	Neighborhood	Population Exposure

PA DEP's 2017 ANNUAL AMBIENT AIR MONITORING NETWORK PLAN

SITE NAME: BEAVER VALLEY
AQS ID: 420070007
MSA: Pittsburgh MSA
COUNTY: BEAVER
MUNICIPALITY: CENTER TWP
LATITUDE: 40.671394
LONGITUDE: -80.314264
ADDRESS: 200 FAIRVIEW DRIVE
COMMENTS: Monitors lead concentrations from nearby source



Monitor Summary

<i>Monitor</i>	<i>Network</i>	<i>Start Date</i>	<i>Sample Frequency</i>	<i>Method Description</i>	<i>Monitoring Scale</i>	<i>Appendix D Objectives</i>
Pb	SLAMS	1/1/2010	1 in 6	ICP-MS	Middle Scale	Source Oriented
TSP/Metals	Other	2/20/2011	1 in 6	High Volume Sampler with Quartz Filter (24 Hour)	N/A	N/A
VOC	Other	New 2017-18	1 in 6	Canister (24 Hour)	N/A	N/A

PA DEP's 2017 ANNUAL AMBIENT AIR MONITORING NETWORK PLAN

SITE NAME: BRIGHTON TWP
AQS ID: 420070005
MSA: Pittsburgh MSA
COUNTY: BEAVER
MUNICIPALITY: BRIGHTON TWP
LATITUDE: 40.68547222
LONGITUDE: -80.3605
ADDRESS: 1015 SEBRING ROAD
COMMENTS: Monitors ozone and SO₂ concentrations within the Ohio River valley

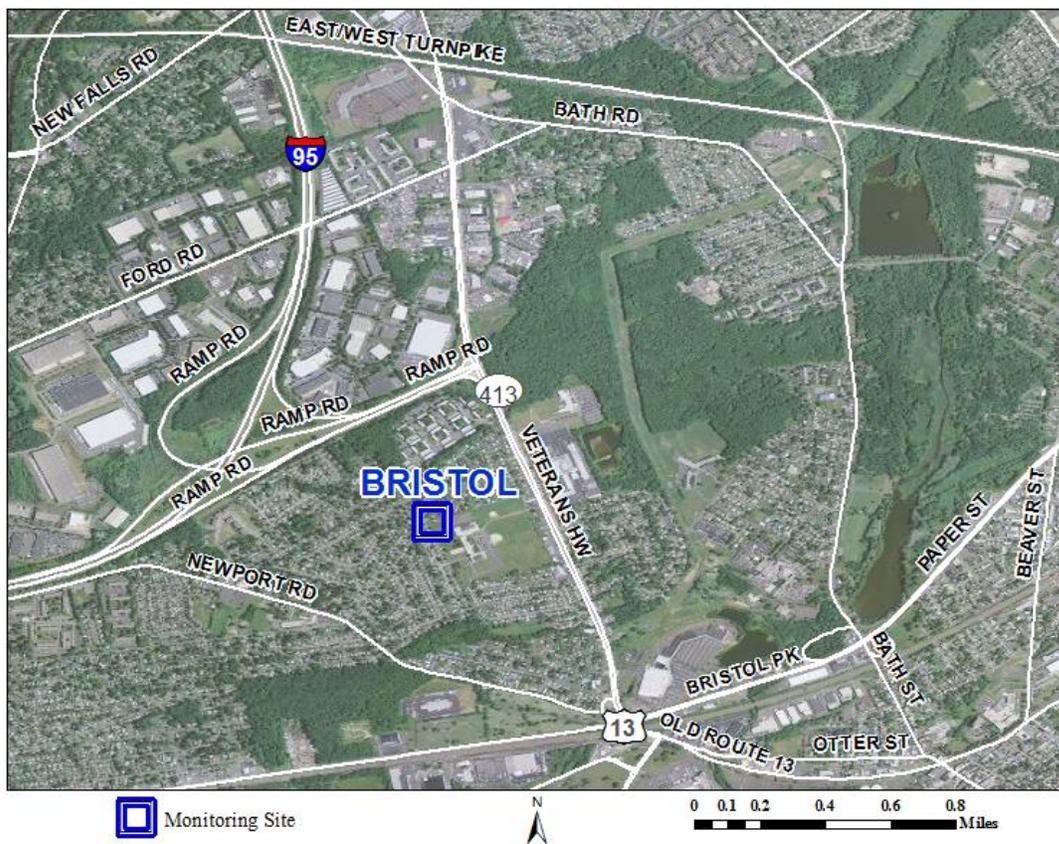


Monitor Summary

<i>Monitor</i>	<i>Network</i>	<i>Start Date</i>	<i>Sample Frequency</i>	<i>Method Description</i>	<i>Monitoring Scale</i>	<i>Appendix D Objectives</i>
Ozone	SLAMS	4/20/1994	Continuous	UV Absorption	Neighborhood	Population Exposure
SO₂	SLAMS	4/20/1994	Continuous	UV Fluorescence	Neighborhood	Highest Concentration

PA DEP's 2017 ANNUAL AMBIENT AIR MONITORING NETWORK PLAN

SITE NAME: BRISTOL
AQS ID: 420170012
MSA: Philadelphia-Camden-Wilmington MSA
COUNTY: BUCKS
MUNICIPALITY: BRISTOL TWP
LATITUDE: 40.10738889
LONGITUDE: -74.88247222
ADDRESS: ROCKVIEW DRIVE
COMMENTS: Monitors downwind concentration of ozone from mobile sources in the Philadelphia metro area



Monitor Summary

Monitor	Network	Start Date	Sample Frequency	Method Description	Monitoring Scale	Appendix D Objectives
Ozone	SLAMS	1/1/1974	Continuous	UV Absorption	Neighborhood	Max Ozone Concentration

PA DEP's 2017 ANNUAL AMBIENT AIR MONITORING NETWORK PLAN

SITE NAME: CARLISLE
AQS ID: 420410101
MSA: Harrisburg-Carlisle MSA
COUNTY: CUMBERLAND
MUNICIPALITY: NORTH MIDDLETON TWP
LATITUDE: 40.24661111
LONGITUDE: -77.18372222
ADDRESS: IMPERIAL COURT
COMMENTS: Monitors fine particulate matter to meet federal monitoring requirements in the Harrisburg MSA



Monitor Summary

<i>Monitor</i>	<i>Network</i>	<i>Start Date</i>	<i>Sample Frequency</i>	<i>Method Description</i>	<i>Monitoring Scale</i>	<i>Appendix D Objectives</i>
PM _{2.5}	SLAMS	3/29/2001	Daily	Gravimetric	Neighborhood	Population Exposure
PM _{2.5}	SLAMS	1/1/2009	Continuous	Beta Attenuation	Neighborhood	Population Exposure

PA DEP's 2017 ANNUAL AMBIENT AIR MONITORING NETWORK PLAN

SITE NAME: CHARLEROI
AQS ID: 421250005
MSA: Pittsburgh MSA
COUNTY: WASHINGTON
MUNICIPALITY: CHARLEROI BORO
LATITUDE: 40.14658333
LONGITUDE: -79.90222222
ADDRESS: CHARLEROI WASTE TREATMENT PLANT
COMMENTS: Monitors for criteria pollutants to meet federal requirements including NAAQS compliance in the Pittsburgh MSA



Monitor Summary

<i>Monitor</i>	<i>Network</i>	<i>Start Date</i>	<i>Sample Frequency</i>	<i>Method Description</i>	<i>Monitoring Scale</i>	<i>Appendix D Objectives</i>
Ozone	SLAMS	1/1/1974	Continuous	UV Absorption	Neighborhood	Population Exposure
SO ₂	SLAMS	1/1/1974	Continuous	UV Fluorescence	Neighborhood	Population Exposure
NO ₂	SLAMS	1/1/1974	Continuous	Chemiluminescence	Neighborhood	Population Exposure
PM _{2.5}	SLAMS	1/12/2016	Daily	Gravimetric	Neighborhood	Population Exposure
PM _{2.5}	SLAMS	4/1/2009	Continuous	Beta Attenuation	Neighborhood	Population Exposure
VOC	Other	5/31/2009	1 in 6	Canister (24 Hour)	N/A	N/A

PA DEP's 2017 ANNUAL AMBIENT AIR MONITORING NETWORK PLAN

SITE NAME: CHESTER
AQS ID: 420450002
MSA: Philadelphia-Camden-Wilmington MSA
COUNTY: DELAWARE
MUNICIPALITY: CITY OF CHESTER
LATITUDE: 39.83519445
LONGITUDE: -75.37211111
ADDRESS: FRONT ST & NORRIS ST
COMMENTS: Monitors criteria pollutants for NAAQS compliance in the Philadelphia-Camden-Wilmington MSA



Monitor Summary

Monitor	Network	Start Date	Sample Frequency	Method Description	Monitoring Scale	Appendix D Objectives
Ozone	SLAMS	1/1/1974	Continuous	UV Absorption	Urban Scale	Population Exposure
SO ₂ (discontinue)	SLAMS	4/1/1974	Continuous	UV Fluorescence	Neighborhood	Population Exposure
NO ₂	SLAMS	1/1/1974	Continuous	Chemiluminescence	Neighborhood	Population Exposure
PM _{2.5}	SLAMS	4/1/2009	Continuous	Beta Attenuation	Neighborhood	Population Exposure
PM _{2.5} Speciation	CSN	12/1/2014	1 in 6	Gravimetric	Neighborhood	Population Exposure
Pb	SLAMS	2/1/1994	1 in 6	ICP-MS	Neighborhood	Population Exposure
VOC	Other	1/10/1995	1 in 6	Canister (24 Hour)	N/A	N/A
TSP/Metals	Other	1/10/1995	1 in 6	High Volume Sampler with Quartz Filter (24 Hour)	N/A	N/A

PA DEP's 2017 ANNUAL AMBIENT AIR MONITORING NETWORK PLAN

SITE NAME: COLLEGEVILLE
AQS ID: 420910005
MSA: Philadelphia-Camden-Wilmington MSA
COUNTY: MONTGOMERY
MUNICIPALITY: COLLEGEVILLE BORO
LATITUDE: 40.1925
LONGITUDE: -75.4575
ADDRESS: URSINUS COLLEGE
COMMENTS: Monitors for VOCs near source

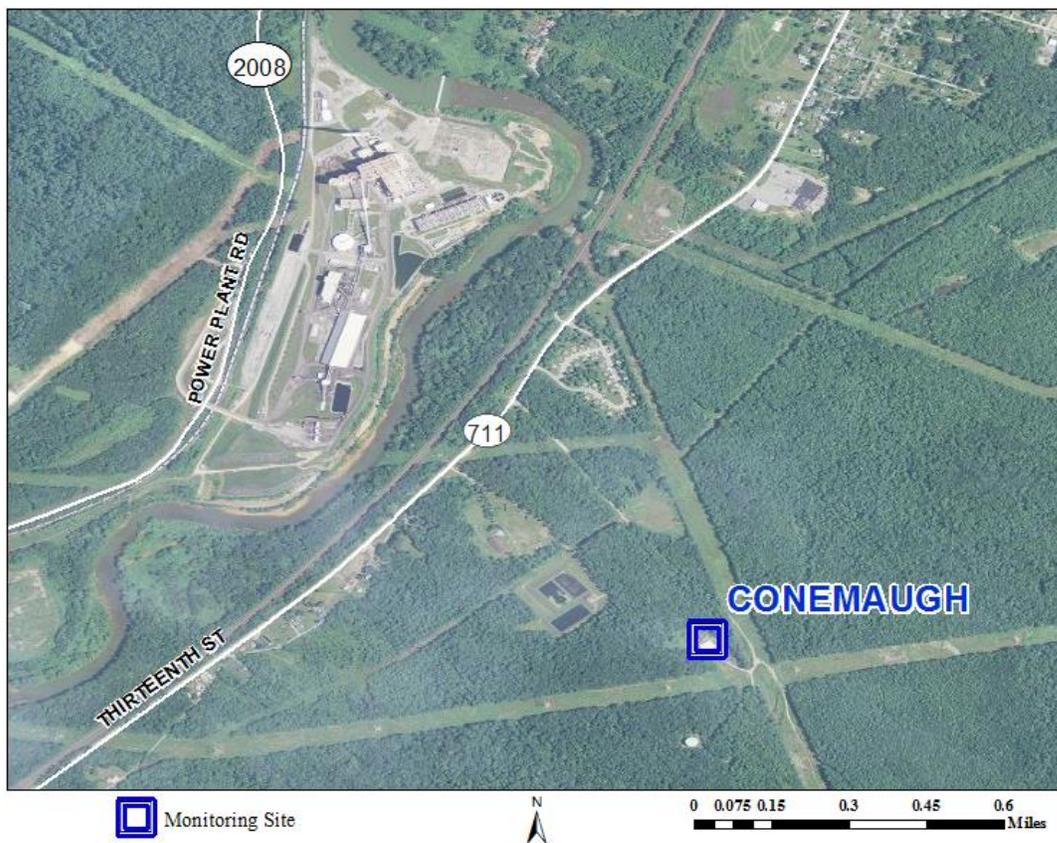


Monitor Summary

<i>Monitor</i>	<i>Network</i>	<i>Start Date</i>	<i>Sample Frequency</i>	<i>Method Description</i>	<i>Monitoring Scale</i>	<i>Appendix D Objectives</i>
VOC	Other	5/18/2007	1 in 6	Canister (24 Hour)	N/A	N/A

PA DEP's 2017 ANNUAL AMBIENT AIR MONITORING NETWORK PLAN

SITE NAME: CONEMAUGH
AQS ID: 421290009
MSA: Pittsburgh MSA
COUNTY: WESTMORELAND
MUNICIPALITY: ST CLAIR TWP
LATITUDE: 40.39292
LONGITUDE: -79.02446
ADDRESS: SUGAR RUN - RT 711
COMMENTS: Monitors lead concentrations from nearby source

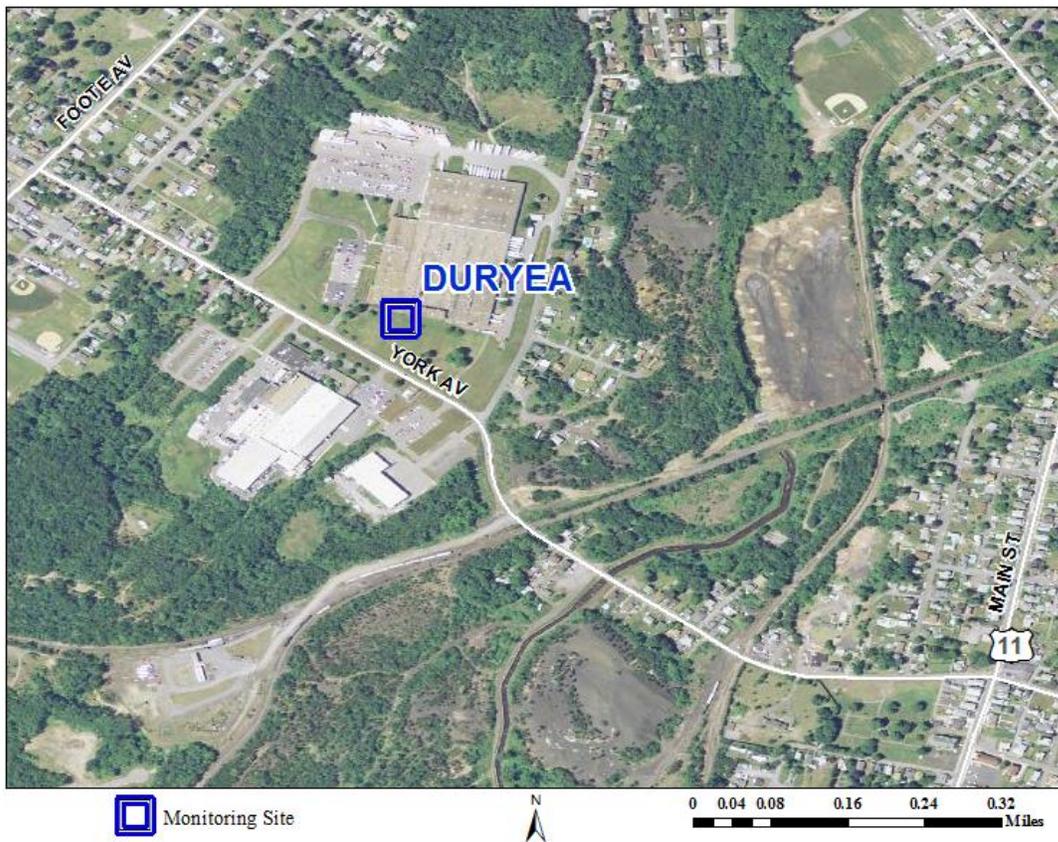


Monitor Summary

<i>Monitor</i>	<i>Network</i>	<i>Start Date</i>	<i>Sample Frequency</i>	<i>Method Description</i>	<i>Monitoring Scale</i>	<i>Appendix D Objectives</i>
Pb	SLAMS	1/1/2010	1 in 6	ICP-MS	Middle Scale	Source Oriented

PA DEP's 2017 ANNUAL AMBIENT AIR MONITORING NETWORK PLAN

SITE NAME: DURYEA
AQS ID: 420790036
MSA: Scranton-Wilkes-Barre-Hazleton MSA
COUNTY: LUZERNE
MUNICIPALITY: DURYEA BORO
LATITUDE: 41.348869
LONGITUDE: -75.747322
ADDRESS: 401 YORK AVE
COMMENTS: Monitor lead concentrations close to a source region



Monitor Summary

<i>Monitor</i>	<i>Network</i>	<i>Start Date</i>	<i>Sample Frequency</i>	<i>Method Description</i>	<i>Monitoring Scale</i>	<i>Appendix D Objectives</i>
Pb	SLAMS	1/1/2010	1 in 6	ICP-MS	Middle Scale	Source Oriented

PA DEP's 2017 ANNUAL AMBIENT AIR MONITORING NETWORK PLAN

SITE NAME: EASTON
AQS ID: 420958000
MSA: Allentown-Bethlehem-Easton MSA
COUNTY: NORTHAMPTON
MUNICIPALITY: WILSON BORO
LATITUDE: 40.69230556
LONGITUDE: -75.23711111
ADDRESS: 17TH AND SPRING GARDEN STREETS
COMMENTS: Monitors SO₂ concentrations in the Allentown-Bethlehem-Easton MSA
This site will be discontinued.



Monitor Summary

Monitor	Network	Start Date	Sample Frequency	Method Description	Monitoring Scale	Appendix D Objectives
Ozone (discontinue)	SLAMS	10/20/1999	Continuous	UV Absorption	Neighborhood	Population Exposure
SO ₂ (discontinue)	SLAMS	10/20/1999	Continuous	UV Fluorescence	Neighborhood	Population Exposure
H ₂ S (discontinue)	SPM	1/1/1986	Continuous	UV Fluorescence	Neighborhood	Population Exposure

PA DEP's 2017 ANNUAL AMBIENT AIR MONITORING NETWORK PLAN

SITE NAME: ELLWOOD CITY
AQS ID: 420730011
MSA: Northwest Region - Non-MSA
COUNTY: LAWRENCE
MUNICIPALITY: ELLWOOD CITY BORO
LATITUDE: 40.859409
LONGITUDE: -80.276131
ADDRESS: Spring Avenue Ext. & Arch St.
COMMENTS: Monitors lead concentrations from nearby source



Monitor Summary

<i>Monitor</i>	<i>Network</i>	<i>Start Date</i>	<i>Sample Frequency</i>	<i>Method Description</i>	<i>Monitoring Scale</i>	<i>Appendix D Objectives</i>
Pb	SLAMS	1/1/2010	1 in 6	ICP-MS	Middle Scale	Source Oriented
Metals (PM₁₀-based)	Other	4/21/2016	1 in 6	High Volume Sampler with Quartz Filter (24 Hour)	N/A	N/A

PA DEP's 2017 ANNUAL AMBIENT AIR MONITORING NETWORK PLAN

SITE NAME: ERIE
AQS ID: 420490003
MSA: Erie MSA
COUNTY: ERIE
MUNICIPALITY: CITY OF ERIE
LATITUDE: 42.14197222
LONGITUDE: -80.03869444
ADDRESS: 10TH AND MARNE STREETS
COMMENTS: Monitors for NAAQS compliance in the Erie MSA.



Monitor Summary

<i>Monitor</i>	<i>Network</i>	<i>Start Date</i>	<i>Sample Frequency</i>	<i>Method Description</i>	<i>Monitoring Scale</i>	<i>Appendix D Objectives</i>
Ozone	SLAMS	5/18/1988	Continuous	UV Absorption	Neighborhood	Population Exposure
NO ₂	SLAMS	5/18/1988	Continuous	Chemiluminescence	Neighborhood	Population Exposure
CO	SLAMS	11/1/2004	Continuous	Non-dispersive Infrared	Neighborhood	Population Exposure
PM _{2.5}	SLAMS	7/1/2009	Continuous	Beta Attenuation	Neighborhood	Population Exposure
PM ₁₀	SLAMS	8/10/1995	Continuous	TEOM Gravimetric	Neighborhood	Population Exposure

PA DEP's 2017 ANNUAL AMBIENT AIR MONITORING NETWORK PLAN

SITE NAME: EVANSBURG UNITED METHODIST
AQS ID: 420910016
MSA: Philadelphia-Camden-Wilmington MSA
COUNTY: MONTGOMERY
MUNICIPALITY: LOWER PROVIDENCE TWP
LATITUDE: 40.183056
LONGITUDE: -75.434167
ADDRESS: 3871 GERMANTOWN PIKE
COMMENTS: Monitors for VOC's near source



Monitor Summary

<i>Monitor</i>	<i>Network</i>	<i>Start Date</i>	<i>Sample Frequency</i>	<i>Method Description</i>	<i>Monitoring Scale</i>	<i>Appendix D Objectives</i>
VOC	Other	2/18/2009	1 in 6	Canister (24 Hour)	N/A	N/A

PA DEP's 2017 ANNUAL AMBIENT AIR MONITORING NETWORK PLAN

SITE NAME: FARRELL
AQS ID: 420850100
MSA: Youngstown-Warren-Boardman MSA
COUNTY: MERCER
MUNICIPALITY: CITY OF FARRELL
LATITUDE: 41.21405556
LONGITUDE: -80.48347222
ADDRESS: PA518 (NEW CASTLE ROAD) & PA418
COMMENTS: Meets federal monitoring requirements in the PA part of the Youngstown-Warren-Boardman MSA

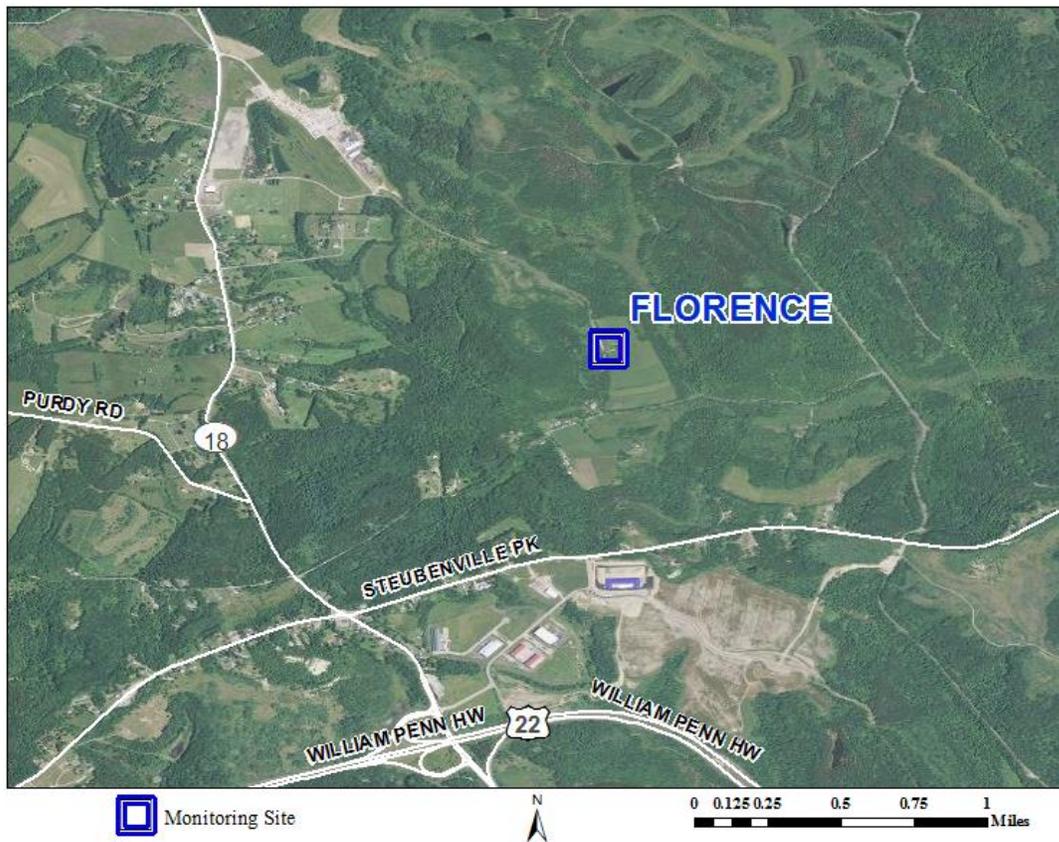


Monitor Summary

Monitor	Network	Start Date	Sample Frequency	Method Description	Monitoring Scale	Appendix D Objectives
Ozone	SLAMS	9/1/1980	Continuous	UV Absorption	Urban Scale	Max Ozone Concentration
PM _{2.5}	SLAMS	2/1/2000	Daily	Gravimetric	Urban Scale	Population Exposure
PM _{2.5}	SLAMS	11/3/2010	Continuous	Beta Attenuation	Urban Scale	Population Exposure

PA DEP's 2017 ANNUAL AMBIENT AIR MONITORING NETWORK PLAN

SITE NAME: FLORENCE
AQS ID: 421255001
MSA: Pittsburgh MSA
COUNTY: WASHINGTON
MUNICIPALITY: HANOVER TWP
LATITUDE: 40.44547222
LONGITUDE: -80.42122222
ADDRESS: HILLMAN STATE PARK - KINGS CREEK ROAD
COMMENTS: Monitors transport of pollutants into PA from upwind areas including Ohio and West Virginia

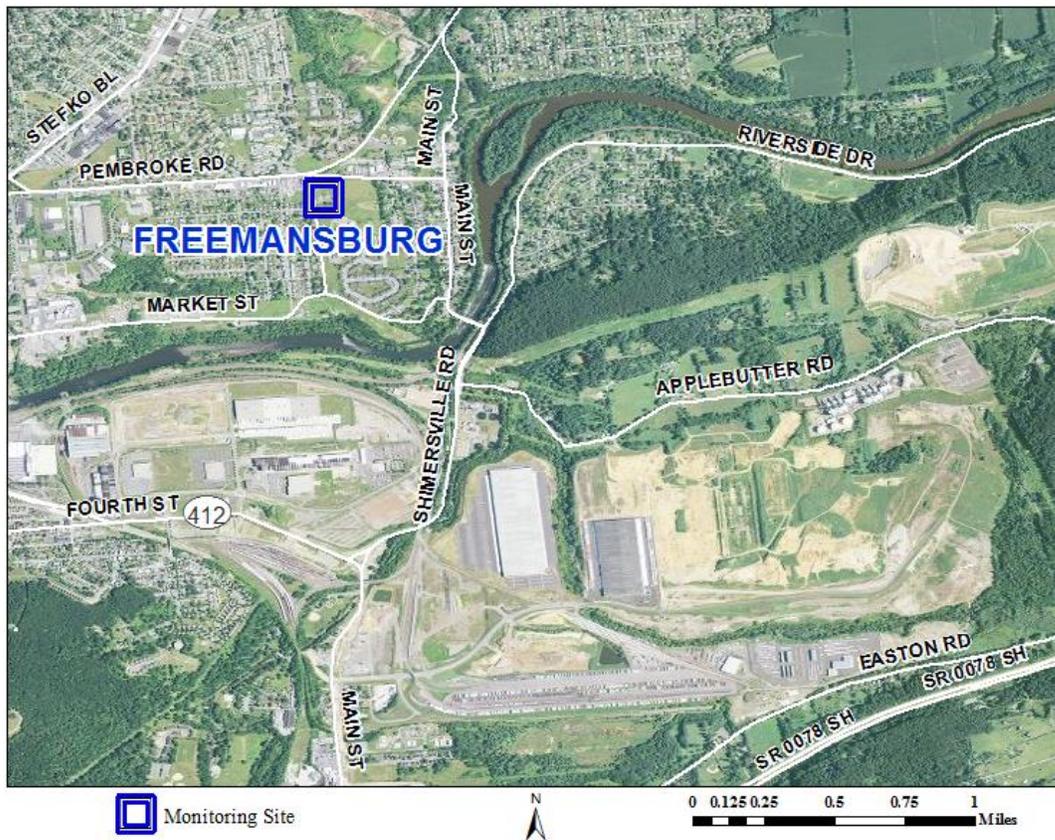


Monitor Summary

<i>Monitor</i>	<i>Network</i>	<i>Start Date</i>	<i>Sample Frequency</i>	<i>Method Description</i>	<i>Monitoring Scale</i>	<i>Appendix D Objectives</i>
Ozone	SLAMS	6/8/1995	Continuous	UV Absorption	Regional Scale	Regional Transport
SO ₂	SLAMS	1/1/1982	Continuous	UV Fluorescence	Urban Scale	Regional Transport
PM _{2.5}	SLAMS	6/11/2012	Daily	Gravimetric	Regional Scale	General/Background
PM _{2.5}	SLAMS	7/1/2009	Continuous	Beta Attenuation	Regional Scale	General/Background
PM _{2.5} Speciation	CSN	1/1/2002	1 in 6	Gravimetric	Regional Scale	Regional Transport

PA DEP's 2017 ANNUAL AMBIENT AIR MONITORING NETWORK PLAN

SITE NAME: FREEMANSBURG
AQS ID: 420950025
MSA: Allentown-Bethlehem-Easton MSA
COUNTY: NORTHAMPTON
MUNICIPALITY: FREEMANSBURG BORO
LATITUDE: 40.62847222
LONGITUDE: -75.34158333
ADDRESS: WASHINGTON & CAMBRIA STS.
 FREEMANSBURG
COMMENTS: Meets federal monitoring requirements in the Allentown-Bethlehem-Easton MSA

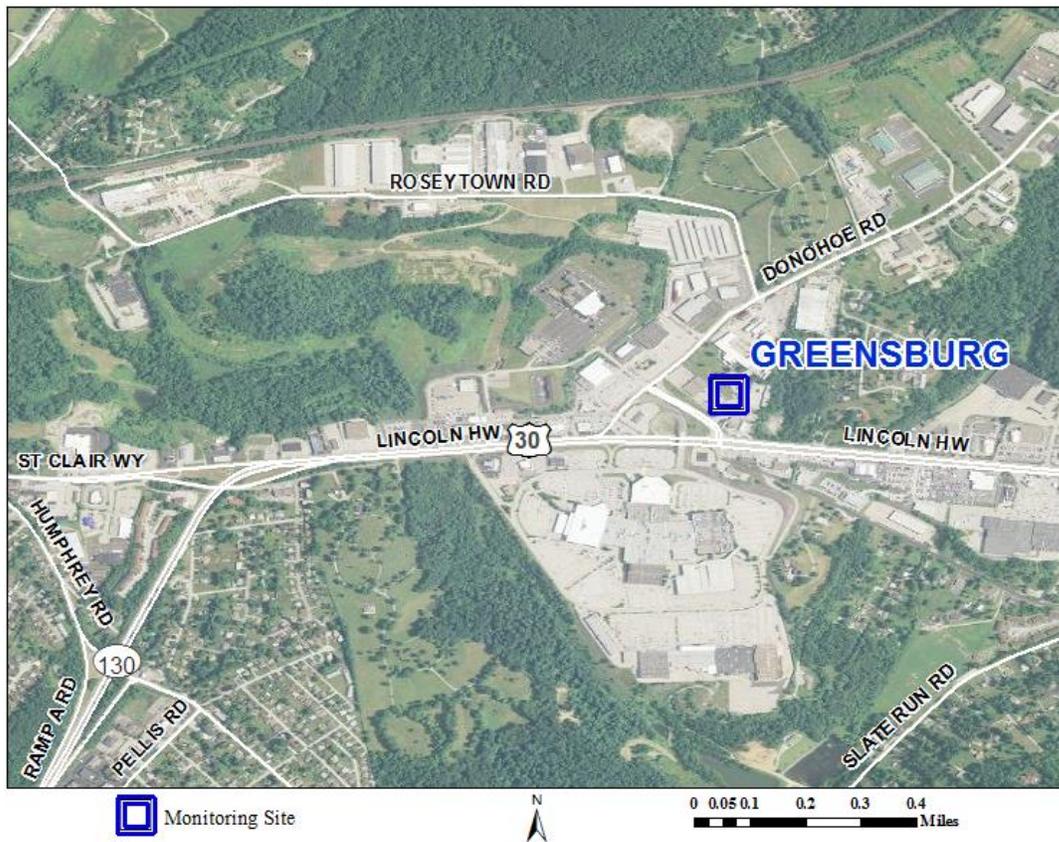


Monitor Summary

<i>Monitor</i>	<i>Network</i>	<i>Start Date</i>	<i>Sample Frequency</i>	<i>Method Description</i>	<i>Monitoring Scale</i>	<i>Appendix D Objectives</i>
Ozone	SLAMS	8/20/1997	Continuous	UV Absorption	Neighborhood	Population Exposure
NO ₂	SLAMS	8/20/1997	Continuous	Chemiluminescence	Neighborhood	Population Exposure
PM _{2.5}	SLAMS	2/27/2012	Daily	Gravimetric	Neighborhood	Population Exposure
PM _{2.5}	SLAMS	7/1/2009	Continuous	Beta Attenuation	Neighborhood	Population Exposure
SO ₂ (add)	SLAMS	New 2017-18	Continuous	UV Fluorescence	Urban Scale	Regional Transport

PA DEP's 2017 ANNUAL AMBIENT AIR MONITORING NETWORK PLAN

SITE NAME: GREENSBURG
AQS ID: 421290008
MSA: Pittsburgh MSA
COUNTY: WESTMORELAND
MUNICIPALITY: HEMPFIELD TWP
LATITUDE: 40.30438889
LONGITUDE: -79.50605556
ADDRESS: DONOHOE ROAD - PENN DOT MAINT DIST BLDG
COMMENTS: Meets federal monitoring requirements in the Pittsburgh MSA and for NAAQS compliance



Monitor Summary

<i>Monitor</i>	<i>Network</i>	<i>Start Date</i>	<i>Sample Frequency</i>	<i>Method Description</i>	<i>Monitoring Scale</i>	<i>Appendix D Objectives</i>
Ozone	SLAMS	10/1/1997	Continuous	UV Absorption	Urban Scale	Population Exposure
PM _{2.5}	SLAMS	9/5/2012	Daily	Gravimetric	Neighborhood	Population Exposure
PM _{2.5}	SLAMS	7/1/2009	Continuous	Beta Attenuation	Neighborhood	Population Exposure
PM _{2.5} Speciation	CSN	1/1/2002	1 in 6	Gravimetric	Urban Scale	Population Exposure
VOC	Other	1/2/2010	1 in 6	Canister (24 Hour)	N/A	N/A

PA DEP's 2017 ANNUAL AMBIENT AIR MONITORING NETWORK PLAN

SITE NAME: HARRISBURG
AQS ID: 420430401
MSA: Harrisburg-Carlisle MSA
COUNTY: DAUPHIN
MUNICIPALITY: SWATARA TWP
LATITUDE: 40.246992
LONGITUDE: -76.846988
ADDRESS: 651 Gibson Blvd
COMMENTS: Monitors criteria pollutants for NAAQS compliance in the Harrisburg MSA



Monitor Summary

<i>Monitor</i>	<i>Network</i>	<i>Start Date</i>	<i>Sample Frequency</i>	<i>Method Description</i>	<i>Monitoring Scale</i>	<i>Appendix D Objectives</i>
Ozone	SLAMS	6/1/1978	Continuous	UV Absorption	Neighborhood	Population Exposure
PM_{2.5}	SLAMS	1/1/2012	Daily	Gravimetric	Neighborhood	Population Exposure
PM_{2.5}	SLAMS	1/1/2009	Continuous	Beta Attenuation	Neighborhood	Population Exposure

PA DEP's 2017 ANNUAL AMBIENT AIR MONITORING NETWORK PLAN

SITE NAME: HERSHEY
AQS ID: 420431100
MSA: Harrisburg-Carlisle MSA
COUNTY: DAUPHIN
MUNICIPALITY: DERRY TWP
LATITUDE: 40.27241667
LONGITUDE: -76.68141667
ADDRESS: SIPE AVE & MAE STREET
COMMENTS: Monitors criteria pollutants for NAAQS compliance in the Harrisburg MSA; also measures concentrations downwind of the Harrisburg Metro Area



Monitor Summary

<i>Monitor</i>	<i>Network</i>	<i>Start Date</i>	<i>Sample Frequency</i>	<i>Method Description</i>	<i>Monitoring Scale</i>	<i>Appendix D Objectives</i>
Ozone	SLAMS	8/1/1981	Continuous	UV Absorption	Urban Scale	Max Ozone Concentration
PM₁₀	SLAMS	1/19/2012	Continuous	TEOM Gravimetric	Neighborhood	Population Exposure

PA DEP's 2017 ANNUAL AMBIENT AIR MONITORING NETWORK PLAN

SITE NAME: HOLBROOK
AQS ID: 420590002
MSA: Southwest Region - Non-MSA
COUNTY: GREENE
MUNICIPALITY: CENTER TWP
LATITUDE: 39.81602778
LONGITUDE: -80.28480556
ADDRESS: 4.8 KM SE OF HOLBROOK
COMMENTS: Monitors transport of pollutants into PA from WV and OH

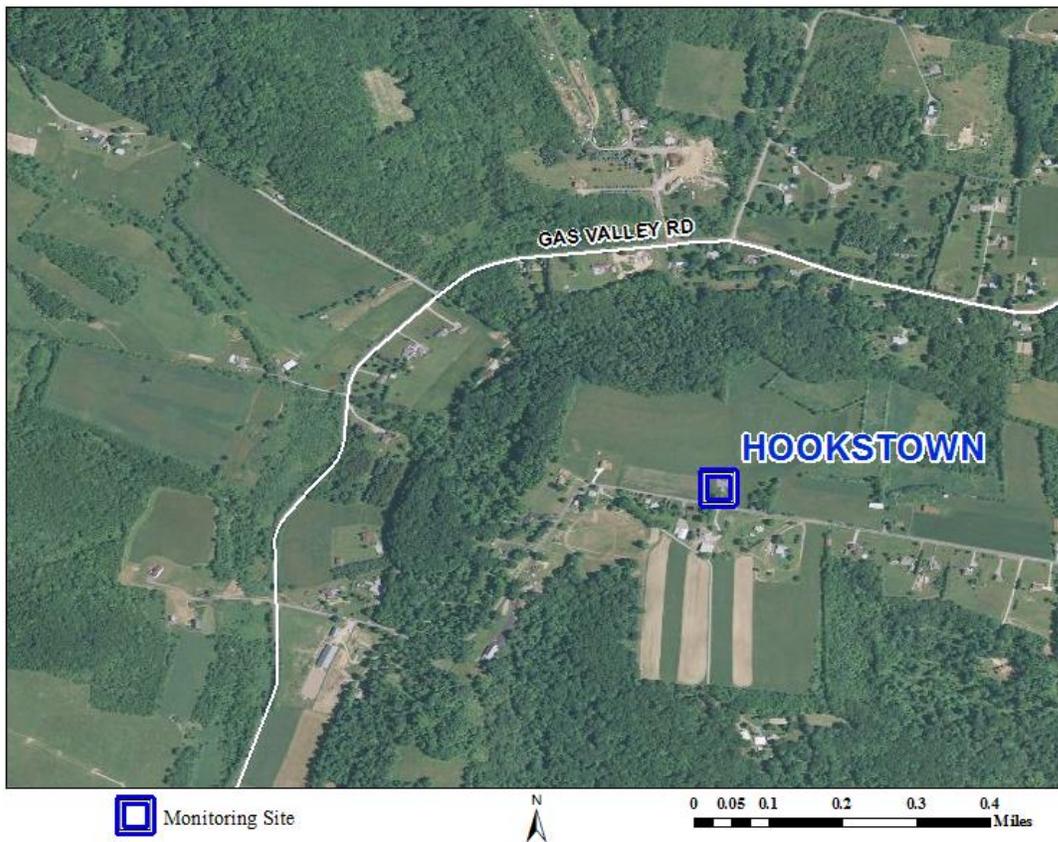


Monitor Summary

<i>Monitor</i>	<i>Network</i>	<i>Start Date</i>	<i>Sample Frequency</i>	<i>Method Description</i>	<i>Monitoring Scale</i>	<i>Appendix D Objectives</i>
Ozone	SLAMS	1/1/1997	Continuous	UV Absorption	Regional Scale	Regional Transport
PM_{2.5}	SLAMS	1/1/2016	Continuous	Beta Attenuation	Neighborhood	Source Oriented

PA DEP's 2017 ANNUAL AMBIENT AIR MONITORING NETWORK PLAN

SITE NAME: HOOKSTOWN
AQS ID: 420070002
MSA: Pittsburgh MSA
COUNTY: BEAVER
MUNICIPALITY: GREENE TWP
LATITUDE: 40.56305556
LONGITUDE: -80.50444445
ADDRESS: ROUTE 168 & TOMLINSON ROAD
COMMENTS: Monitors transport of pollutants into PA from WV and OH

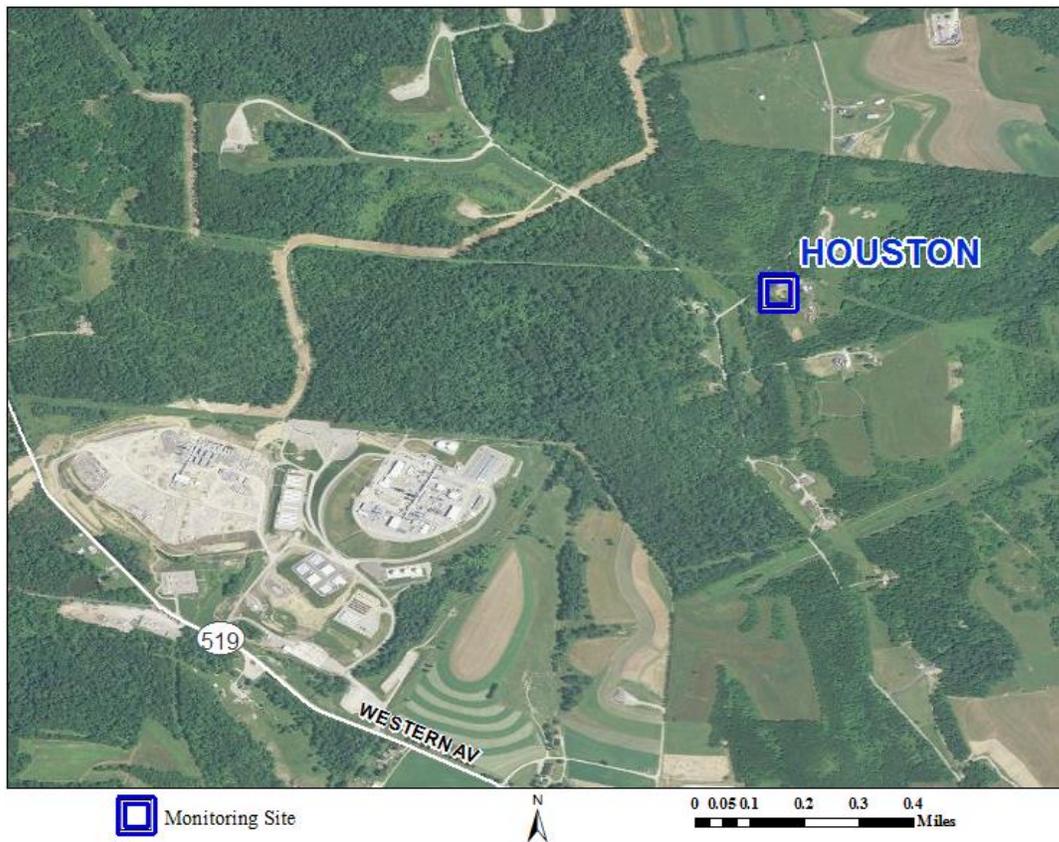


Monitor Summary

<i>Monitor</i>	<i>Network</i>	<i>Start Date</i>	<i>Sample Frequency</i>	<i>Method Description</i>	<i>Monitoring Scale</i>	<i>Appendix D Objectives</i>
Ozone	SLAMS	6/8/1995	Continuous	UV Absorption	Regional Scale	Regional Transport
SO₂	SLAMS	1/1/1983	Continuous	UV Fluorescence	Urban Scale	Regional Transport

PA DEP's 2017 ANNUAL AMBIENT AIR MONITORING NETWORK PLAN

SITE NAME: HOUSTON
AQS ID: 421255200
MSA: Pittsburgh MSA
COUNTY: WASHINGTON
MUNICIPALITY: CHARTIERS TWP
LATITUDE: 40.268963
LONGITUDE: -80.243995
ADDRESS: 220 MEDDINGS RD
COMMENTS: Monitors criteria pollutants and VOC's downwind of natural gas processing facility

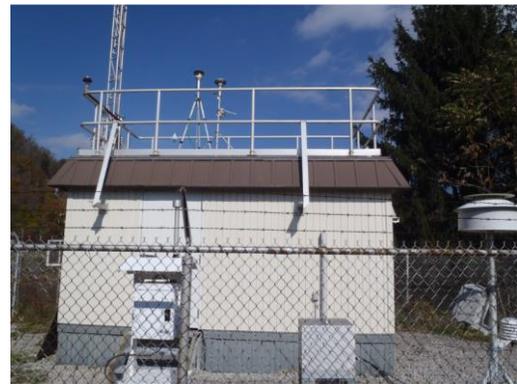


Monitor Summary

<i>Monitor</i>	<i>Network</i>	<i>Start Date</i>	<i>Sample Frequency</i>	<i>Method Description</i>	<i>Monitoring Scale</i>	<i>Appendix D Objectives</i>
NO ₂	SLAMS	7/23/2012	Continuous	Chemiluminescence	Neighborhood	Source Oriented
Carbonyls	Other	7/23/2012	1 in 6	DNPH - Coated Cartridges (24 Hour)	N/A	N/A
VOC	Other	7/23/2012	1 in 6	Canister (24 Hour)	N/A	N/A

PA DEP's 2017 ANNUAL AMBIENT AIR MONITORING NETWORK PLAN

SITE NAME: JOHNSTOWN
AQS ID: 420210011
MSA: Johnstown MSA
COUNTY: CAMBRIA
MUNICIPALITY: CITY OF JOHNSTOWN
LATITUDE: 40.30994445
LONGITUDE: -78.91544445
ADDRESS: MILLER AUTO SHOP 1 MESSENGER ST
COMMENTS: Monitors for NAAQS compliance of criteria pollutants in the Johnstown MSA



Monitor Summary

<i>Monitor</i>	<i>Network</i>	<i>Start Date</i>	<i>Sample Frequency</i>	<i>Method Description</i>	<i>Monitoring Scale</i>	<i>Appendix D Objectives</i>
Ozone	SLAMS	1/1/1974	Continuous	UV Absorption	Neighborhood	Population Exposure
SO ₂	SLAMS	1/1/1974	Continuous	UV Fluorescence	Urban Scale	Population Exposure
NO ₂	SLAMS	1/1/1974	Continuous	Chemiluminescence	Neighborhood	Population Exposure
CO	SLAMS	1/1/1978	Continuous	Non-dispersive Infrared	Neighborhood	Population Exposure
PM _{2.5}	SLAMS	4/1/2009	Continuous	Beta Attenuation	Neighborhood	Population Exposure
PM _{2.5} Speciation	CSN	1/26/2009	1 in 6	Gravimetric	Neighborhood	Population Exposure
PM ₁₀	SLAMS	4/18/1996	Continuous	TEOM Gravimetric	Neighborhood	Population Exposure

PA DEP's 2017 ANNUAL AMBIENT AIR MONITORING NETWORK PLAN

SITE NAME: KITTANNING
AQS ID: 420050001
MSA: Pittsburgh MSA
COUNTY: ARMSTRONG
MUNICIPALITY: EAST FRANKLIN TWP
LATITUDE: 40.814
LONGITUDE: -79.56469445
ADDRESS: GLADE DR. & NOLTE RD. KITTANNING
COMMENTS: Monitors PM_{2.5} and ozone downwind of Pittsburgh MSA



Monitor Summary

<i>Monitor</i>	<i>Network</i>	<i>Start Date</i>	<i>Sample Frequency</i>	<i>Method Description</i>	<i>Monitoring Scale</i>	<i>Appendix D Objectives</i>
Ozone	SLAMS	8/14/1997	Continuous	UV Absorption	Urban Scale	Max Ozone Concentration
PM_{2.5}	SLAMS	7/1/2009	Continuous	Beta Attenuation	Urban Scale	Extreme Downwind

PA DEP's 2017 ANNUAL AMBIENT AIR MONITORING NETWORK PLAN

SITE NAME: KUTZTOWN
AQS ID: 420110006
MSA: Reading MSA
COUNTY: BERKS
MUNICIPALITY: MAXATAWNY TWP
LATITUDE: 40.51408
LONGITUDE: -75.78972
ADDRESS: KUTZTOWN UNIVERSITY CAMPUS
COMMENTS: Measures downwind ozone concentrations of the Reading metro area



Monitor Summary

<i>Monitor</i>	<i>Network</i>	<i>Start Date</i>	<i>Sample Frequency</i>	<i>Method Description</i>	<i>Monitoring Scale</i>	<i>Appendix D Objectives</i>
Ozone	SLAMS	9/27/2007	Continuous	UV Absorption	Urban Scale	Extreme Downwind

PA DEP's 2017 ANNUAL AMBIENT AIR MONITORING NETWORK PLAN

SITE NAME: LANCASTER
AQS ID: 420710007
MSA: Lancaster MSA
COUNTY: LANCASTER
MUNICIPALITY: CITY OF LANCASTER
LATITUDE: 40.04686111
LONGITUDE: -76.28341667
ADDRESS: ABRAHAM LINCOLN JR HIGH GROFFTOWN RD
COMMENTS: Monitors for NAAQS compliance for criteria pollutants in the Lancaster MSA



Monitor Summary

Monitor	Network	Start Date	Sample Frequency	Method Description	Monitoring Scale	Appendix D Objectives
Ozone	SLAMS	1/1/1974	Continuous	UV Absorption	Neighborhood	Population Exposure
PM _{2.5}	SLAMS	1/1/1999	Daily	Gravimetric	Neighborhood	Population Exposure
PM _{2.5}	SLAMS	11/1/2003	Continuous	Beta Attenuation	Neighborhood	Population Exposure
PM _{2.5} Speciation	CSN	1/1/2002	1 in 6	Gravimetric	Neighborhood	Population Exposure
PM ₁₀	SLAMS	3/22/1995	Continuous	TEOM Gravimetric	Neighborhood	Population Exposure
Carbonyls	Other	5/24/1999	1 in 6	DNPH - Coated Cartridges (24 Hour)	N/A	N/A
VOC	Other	5/24/1999	1 in 6	Canister (24 Hour)	N/A	N/A
TSP/Metals	Other	5/24/1999	1 in 6	High Volume Sampler with Quartz Filter (24 Hour)	N/A	N/A
Mercury	Other	5/24/1999	Continuous	Tekran Vapor Analyzer	N/A	N/A

PA DEP's 2017 ANNUAL AMBIENT AIR MONITORING NETWORK PLAN

SITE NAME: LANCASTER DOWNWIND
AQS ID: 420710012
MSA: Lancaster MSA
COUNTY: LANCASTER
MUNICIPALITY: LEACOCK TWP
LATITUDE: 40.043833
LONGITUDE: -76.1124
ADDRESS: 3445 W. NEWPORT ROAD
COMMENTS: Measures downwind ozone concentrations of the Lancaster metro area



Monitor Summary

<i>Monitor</i>	<i>Network</i>	<i>Start Date</i>	<i>Sample Frequency</i>	<i>Method Description</i>	<i>Monitoring Scale</i>	<i>Appendix D Objectives</i>
Ozone	SLAMS	4/1/2008	Continuous	UV Absorption	Urban Scale	Extreme Downwind
PM_{2.5}	SLAMS	1/1/2016	Daily	Gravimetric	Urban Scale	Population Exposure
PM_{2.5}	SLAMS	1/1/2014	Continuous	Beta Attenuation	Urban Scale	Population Exposure
PM_{2.5} Speciation	CSN		1 in 6	Gravimetric		

PA DEP's 2017 ANNUAL AMBIENT AIR MONITORING NETWORK PLAN

SITE NAME: LAURELDALE NORTH
AQS ID: 420110020
MSA: Reading MSA
COUNTY: BERKS
MUNICIPALITY: MUHLENBERG TWP
LATITUDE: 40.385981
LONGITUDE: -75.912856
ADDRESS: 3139 KUTZTOWN ROAD
COMMENTS: Monitors lead concentrations from nearby sources



Monitor Summary

<i>Monitor</i>	<i>Network</i>	<i>Start Date</i>	<i>Sample Frequency</i>	<i>Method Description</i>	<i>Monitoring Scale</i>	<i>Appendix D Objectives</i>
Pb	SLAMS	1/1/2010	1 in 6	ICP-MS	Middle Scale	Source Oriented

PA DEP's 2017 ANNUAL AMBIENT AIR MONITORING NETWORK PLAN

SITE NAME: LAURELDALE SOUTH
AQS ID: 420111717
MSA: Reading MSA
COUNTY: BERKS
MUNICIPALITY: MUHLENBERG TWP
LATITUDE: 40.37730556
LONGITUDE: -75.91458333
ADDRESS: SPRING VALLEY ROAD
COMMENTS: Monitors lead concentrations from nearby sources – legacy site



Monitor Summary

Monitor	Network	Start Date	Sample Frequency	Method Description	Monitoring Scale	Appendix D Objectives
Pb	SLAMS	1/1/1976	1 in 6	ICP-MS	Neighborhood	Source Oriented

PA DEP's 2017 ANNUAL AMBIENT AIR MONITORING NETWORK PLAN

SITE NAME: LEBANON
AQS ID: 420750100
MSA: Lebanon MSA
COUNTY: LEBANON
MUNICIPALITY: SOUTH LEBANON TWP
LATITUDE: 40.337328
LONGITUDE: -76.383447
ADDRESS: 1275 BIRCH RD
COMMENTS: Meets federal monitoring requirements in the Lebanon MSA



Monitor Summary

<i>Monitor</i>	<i>Network</i>	<i>Start Date</i>	<i>Sample Frequency</i>	<i>Method Description</i>	<i>Monitoring Scale</i>	<i>Appendix D Objectives</i>
Ozone	SLAMS	2/25/2011	Continuous	UV Absorption	Urban Scale	Max Ozone Concentration
PM_{2.5}	SLAMS	1/7/2016	Daily	Gravimetric	Urban Scale	Population Exposure
PM_{2.5}	SLAMS	2/25/2011	Continuous	Beta Attenuation	Urban Scale	Population Exposure

PA DEP's 2017 ANNUAL AMBIENT AIR MONITORING NETWORK PLAN

SITE NAME: LEWISBURG
AQS ID: 421190001
MSA: Northcentral Region - Non-MSA
COUNTY: UNION
MUNICIPALITY: EAST BUFFALO TWP
LATITUDE: 40.9552
LONGITUDE: -76.8819
ADDRESS: 701 MOORE AVE
COMMENTS: Monitors VOC concentrations near source region

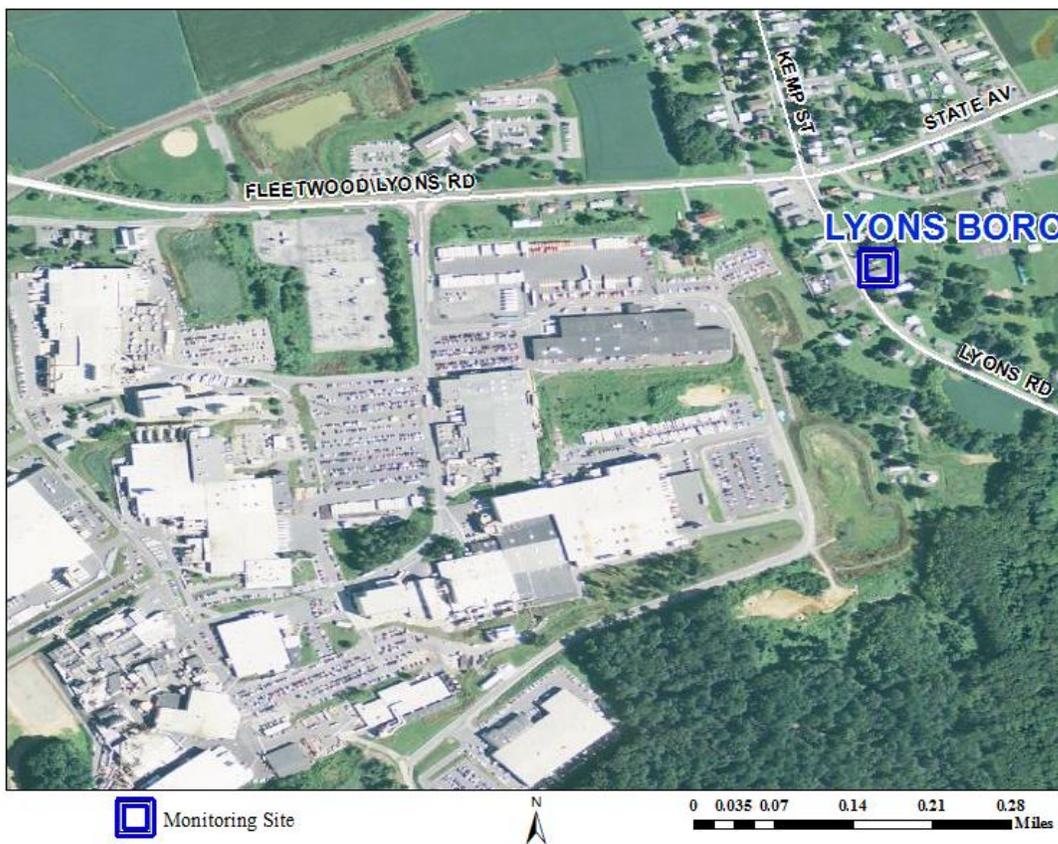


Monitor Summary

<i>Monitor</i>	<i>Network</i>	<i>Start Date</i>	<i>Sample Frequency</i>	<i>Method Description</i>	<i>Monitoring Scale</i>	<i>Appendix D Objectives</i>
VOC	Other	8/1/2003	1 in 6	Canister (24 Hour)	N/A	N/A
TSP/Metals	Other	8/1/2003	1 in 6	High Volume Sampler with Quartz Filter (24 Hour)	N/A	N/A

PA DEP's 2017 ANNUAL AMBIENT AIR MONITORING NETWORK PLAN

SITE NAME: LYONS BORO
AQS ID: 420110021
MSA: Reading MSA
COUNTY: BERKS
MUNICIPALITY: LYONS BORO
LATITUDE: 40.477075
LONGITUDE: -75.756919
ADDRESS: KEMP ST.
COMMENTS: Monitors lead concentrations from nearby sources

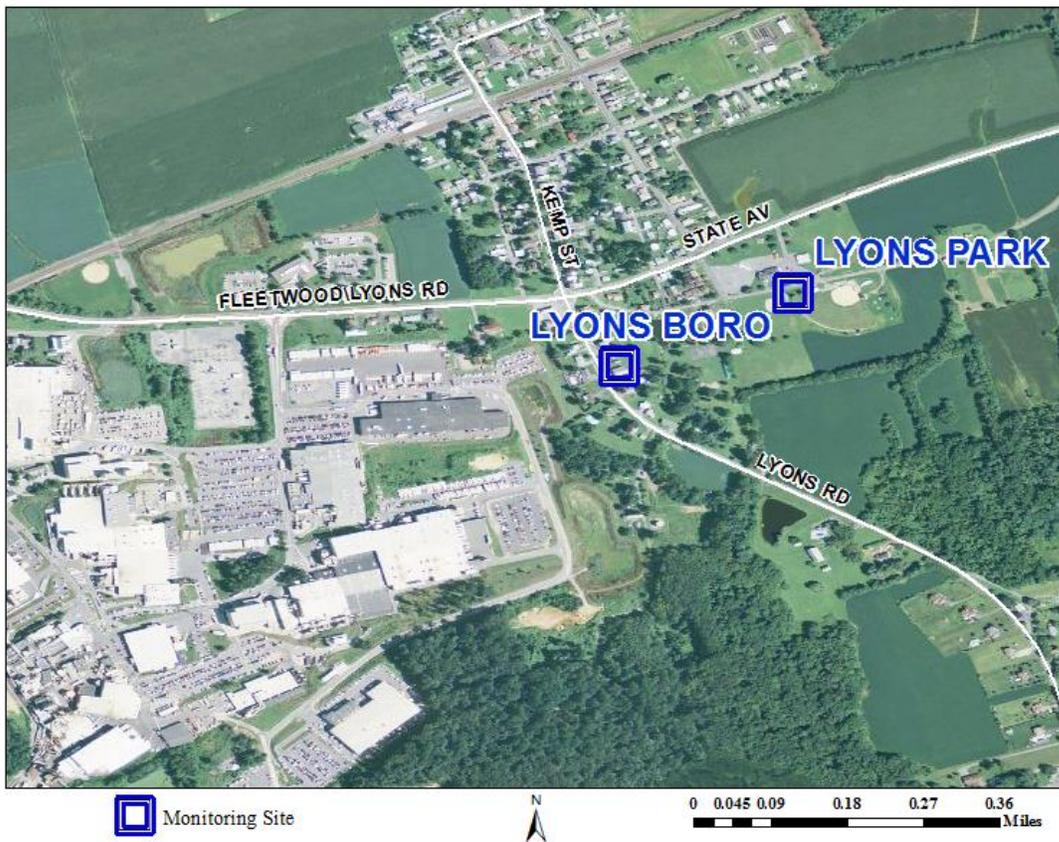


Monitor Summary

<i>Monitor</i>	<i>Network</i>	<i>Start Date</i>	<i>Sample Frequency</i>	<i>Method Description</i>	<i>Monitoring Scale</i>	<i>Appendix D Objectives</i>
Pb	SLAMS	1/1/2010	1 in 6	ICP-MS	Middle Scale	Source Oriented

PA DEP's 2017 ANNUAL AMBIENT AIR MONITORING NETWORK PLAN

SITE NAME: LYONS PARK
AQS ID: 420110022
MSA: Reading MSA
COUNTY: BERKS
MUNICIPALITY: LYONS BORO
LATITUDE: 40.478319
LONGITUDE: -75.753947
ADDRESS: PARK AVE.
COMMENTS: Monitors lead concentrations from nearby sources

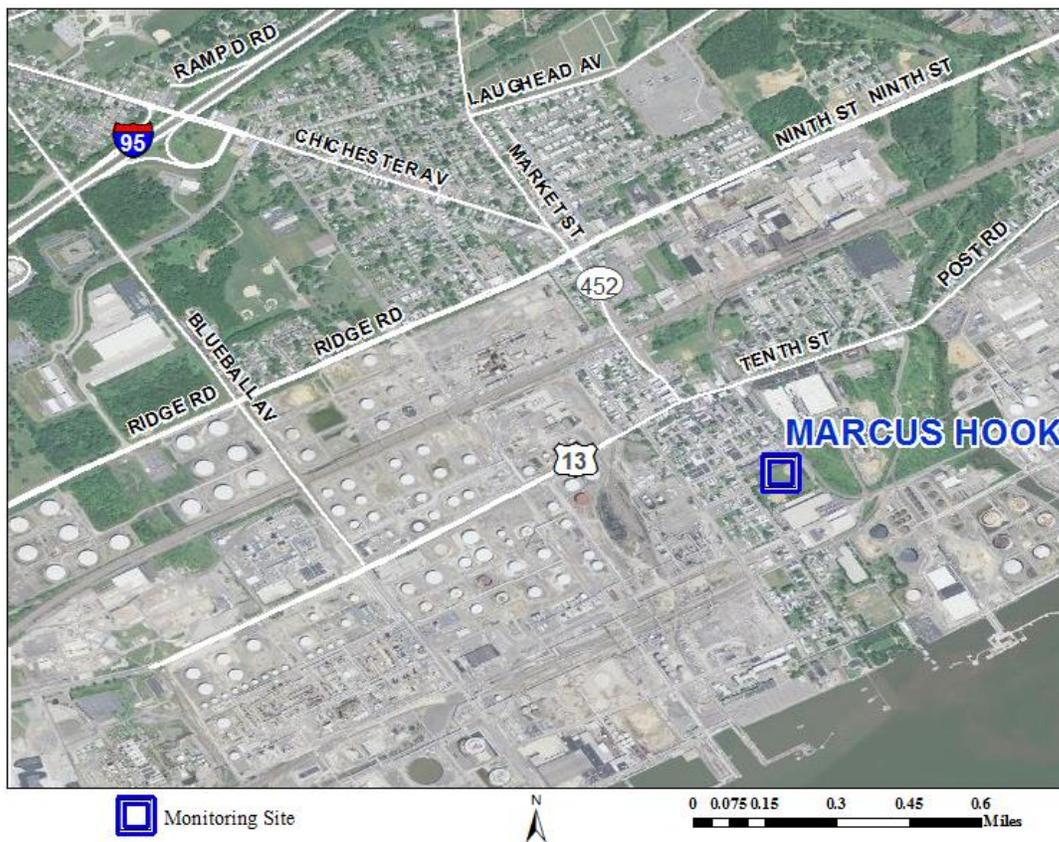


Monitor Summary

<i>Monitor</i>	<i>Network</i>	<i>Start Date</i>	<i>Sample Frequency</i>	<i>Method Description</i>	<i>Monitoring Scale</i>	<i>Appendix D Objectives</i>
Pb	SLAMS	1/1/2010	1 in 6	ICP-MS	Middle Scale	Source Oriented

PA DEP's 2017 ANNUAL AMBIENT AIR MONITORING NETWORK PLAN

SITE NAME: MARCUS HOOK
AQS ID: 420450109
MSA: Philadelphia-Camden-Wilmington MSA
COUNTY: DELAWARE
MUNICIPALITY: MARCUS HOOK BORO
LATITUDE: 39.8178
LONGITUDE: -75.4142
ADDRESS: EAST 8TH AVE & CHURCH ST.
COMMENTS: Monitors criteria pollutants and VOC near oil refineries

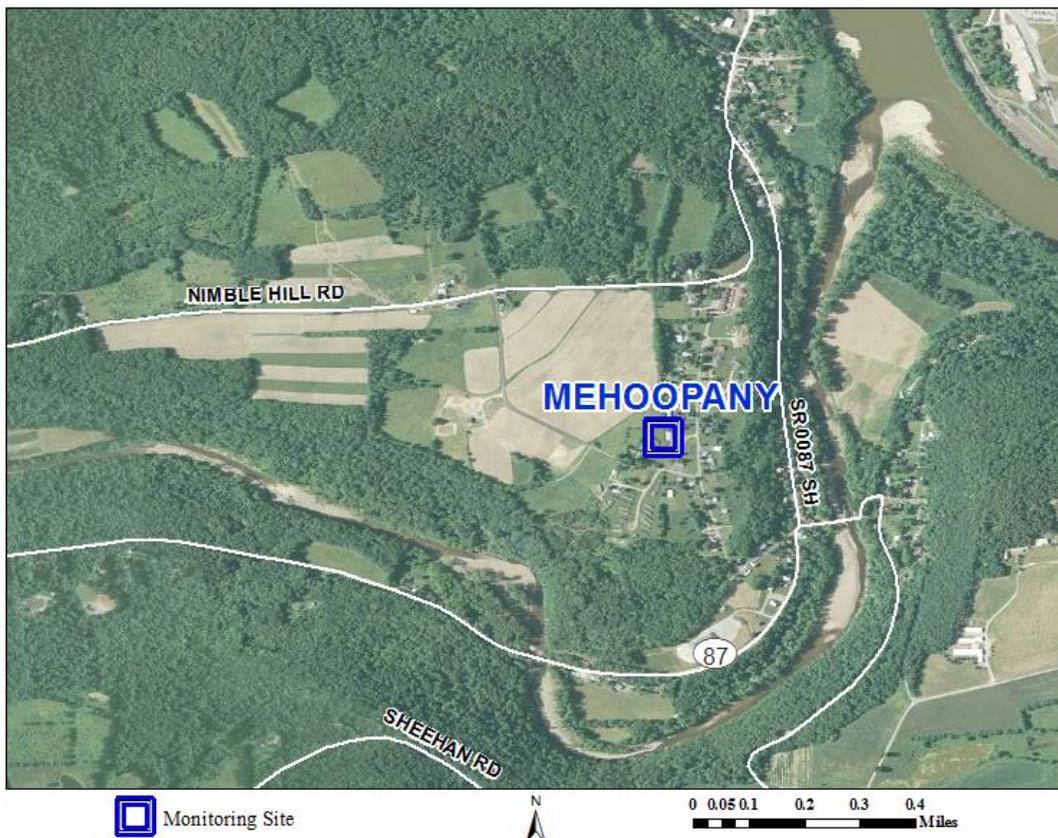


Monitor Summary

<i>Monitor</i>	<i>Network</i>	<i>Start Date</i>	<i>Sample Frequency</i>	<i>Method Description</i>	<i>Monitoring Scale</i>	<i>Appendix D Objectives</i>
PM _{2.5}	SPM	12/1/2014	Continuous	Beta Attenuation	Neighborhood	Population Exposure
PM _{2.5} Speciation	CSN	12/1/2014	1 in 6	Gravimetric	Neighborhood	Population Exposure
VOC	Other	4/2/1995	1 in 6	Canister (24 Hour)	N/A	N/A

PA DEP's 2017 ANNUAL AMBIENT AIR MONITORING NETWORK PLAN

SITE NAME: MEHOOPANY
AQS ID: 421310001
MSA: Scranton-Wilkes-Barre-Hazleton MSA
COUNTY: WYOMING
MUNICIPALITY: MEHOOPANY TWP
LATITUDE: 41.56583611
LONGITUDE: -76.06434722
ADDRESS: SCHOOLHOUSE RD & PEARL RD
COMMENTS: Monitors for VOC's downwind of natural gas production and processing facilities
This site will be discontinued.



Monitor Summary

<i>Monitor</i>	<i>Network</i>	<i>Start Date</i>	<i>Sample Frequency</i>	<i>Method Description</i>	<i>Monitoring Scale</i>	<i>Appendix D Objectives</i>
VOC (discontinue)	Other	3/16/2014	1 in 6	Canister (24 Hour)	N/A	N/A

SITE NAME: METHODIST HILL
AQS ID: 420550001
MSA: Chambersburg-Waynesboro MSA
COUNTY: FRANKLIN
MUNICIPALITY: SOUTHAMPTON TWP
LATITUDE: 39.96072222
LONGITUDE: -77.47552778
ADDRESS: FOREST ROAD - METHODIST HILL
COMMENTS: Monitors regional transport of ozone into areas east of the Appalachians



Monitor Summary

<i>Monitor</i>	<i>Network</i>	<i>Start Date</i>	<i>Sample Frequency</i>	<i>Method Description</i>	<i>Monitoring Scale</i>	<i>Appendix D Objectives</i>
Ozone	SLAMS	6/26/1996	Continuous	UV Absorption	Regional Scale	Regional Transport

PA DEP's 2017 ANNUAL AMBIENT AIR MONITORING NETWORK PLAN

SITE NAME: MONTOURSVILLE
AQS ID: 420810100
MSA: Williamsport MSA
COUNTY: LYCOMING
MUNICIPALITY: MONTOURSVILLE BORO
LATITUDE: 41.25019445
LONGITUDE: -76.91344445
ADDRESS: 899 CHERRY STREET
COMMENTS: Meets ozone monitoring requirements in the Williamsport MSA

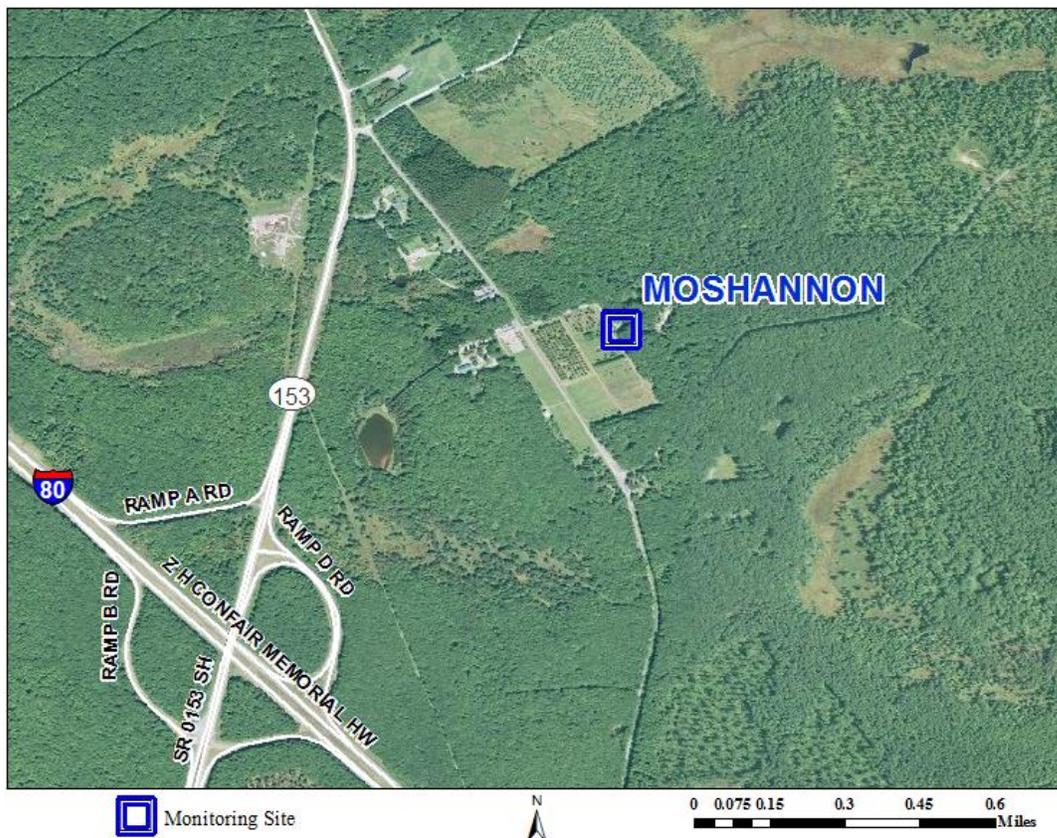


Monitor Summary

Monitor	Network	Start Date	Sample Frequency	Method Description	Monitoring Scale	Appendix D Objectives
Ozone	SLAMS	11/20/2001	Continuous	UV Absorption	Urban Scale	Population Exposure
PM ₁₀ (discontinue)	SLAMS	12/3/2001	Continuous	TEOM Gravimetric	Neighborhood	Population Exposure

PA DEP's 2017 ANNUAL AMBIENT AIR MONITORING NETWORK PLAN

SITE NAME: MOSHANNON
AQS ID: 420334000
MSA: Northcentral Region - Non-MSA
COUNTY: CLEARFIELD
MUNICIPALITY: PINE TWP
LATITUDE: 41.1175
LONGITUDE: -78.52619445
ADDRESS: LOCATED NEAR S.B. ELLIOTT STATE PARK
COMMENTS: Monitors the effects of ozone on vegetation as per a research contract with Penn State University

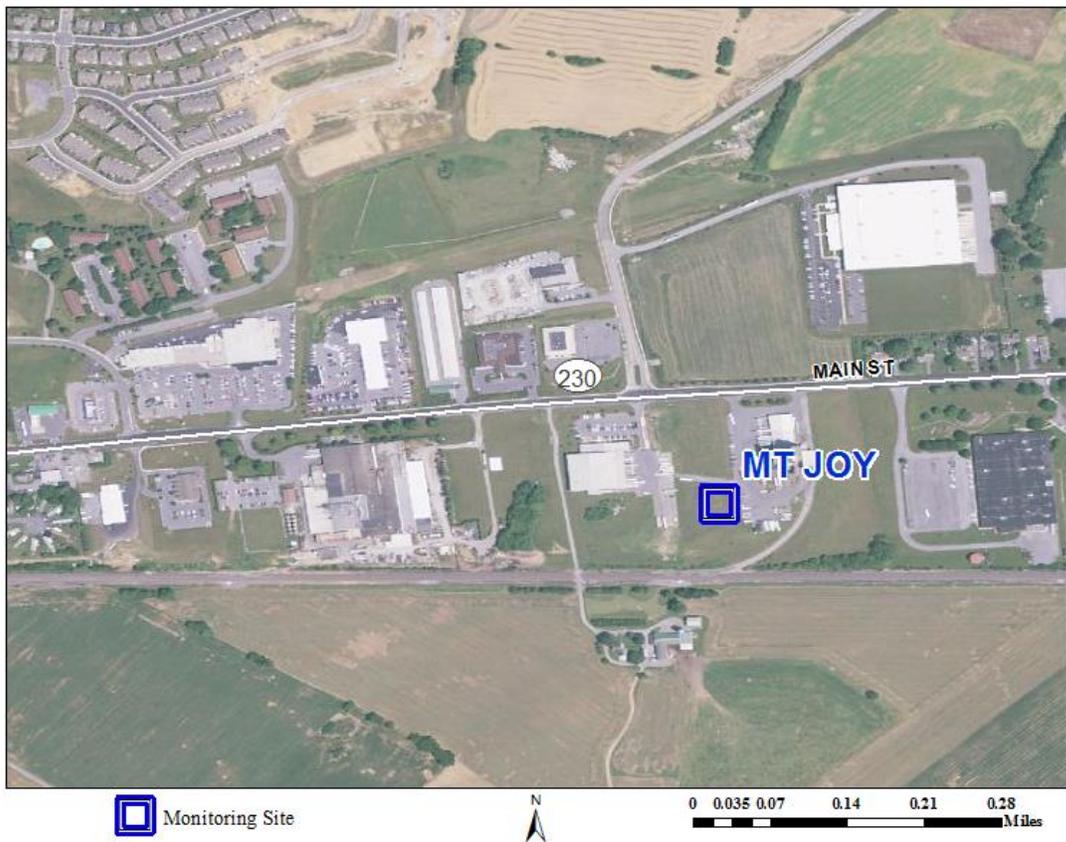


Monitor Summary

<i>Monitor</i>	<i>Network</i>	<i>Start Date</i>	<i>Sample Frequency</i>	<i>Method Description</i>	<i>Monitoring Scale</i>	<i>Appendix D Objectives</i>
Ozone	SLAMS	4/1/1996	Continuous	UV Absorption	Regional Scale	Regional Transport

PA DEP's 2017 ANNUAL AMBIENT AIR MONITORING NETWORK PLAN

SITE NAME: MT JOY
AQS ID: 420710009
MSA: Lancaster MSA
COUNTY: LANCASTER
MUNICIPALITY: RAPHO TWP
LATITUDE: 40.108944
LONGITUDE: -76.472235
ADDRESS: 1088 EAST MAIN STREET
COMMENTS: Monitors lead concentrations downwind of nearby source



Monitor Summary

<i>Monitor</i>	<i>Network</i>	<i>Start Date</i>	<i>Sample Frequency</i>	<i>Method Description</i>	<i>Monitoring Scale</i>	<i>Appendix D Objectives</i>
Pb	SLAMS	1/1/2012	1 in 6	ICP-MS	Middle Scale	Source Oriented

PA DEP's 2017 ANNUAL AMBIENT AIR MONITORING NETWORK PLAN

SITE NAME: NEW CASTLE
AQS ID: 420730015
MSA: Northwest Region - Non-MSA
COUNTY: LAWRENCE
MUNICIPALITY: CITY OF NEW CASTLE
LATITUDE: 40.99605556
LONGITUDE: -80.34652778
ADDRESS: S CROTON AVE & JEFFERSON ST.
COMMENTS: Monitors criteria pollutants downwind of source regions.



Monitor Summary

Monitor	Network	Start Date	Sample Frequency	Method Description	Monitoring Scale	Appendix D Objectives
Ozone	SLAMS	1/1/1974	Continuous	UV Absorption	Urban Scale	Population Exposure
SO ₂ (discontinue)	SLAMS	1/1/1974	Continuous	UV Fluorescence	Urban Scale	Population Exposure

PA DEP's 2017 ANNUAL AMBIENT AIR MONITORING NETWORK PLAN

SITE NAME: NEW GARDEN
AQS ID: 420290100
MSA: Philadelphia-Camden-Wilmington MSA
COUNTY: CHESTER
MUNICIPALITY: NEW GARDEN TWP
LATITUDE: 39.83458333
LONGITUDE: -75.76805556
ADDRESS: NEW GARDEN AIRPORT - TOUGHKENAMON
COMMENTS: Meets federal monitoring requirements in the Philadelphia-Camden-Wilmington MSA



Monitor Summary

<i>Monitor</i>	<i>Network</i>	<i>Start Date</i>	<i>Sample Frequency</i>	<i>Method Description</i>	<i>Monitoring Scale</i>	<i>Appendix D Objectives</i>
Ozone	SLAMS	6/29/2000	Continuous	UV Absorption	Regional Scale	Extreme Downwind
PM_{2.5}	SLAMS	8/31/2012	Daily	Gravimetric	Urban Scale	Regional Transport
PM_{2.5}	SLAMS	7/1/2009	Continuous	Beta Attenuation	Urban Scale	Regional Transport
PM_{2.5} Speciation	CSN	1/1/2002	1 in 6	Gravimetric	Regional Scale	Regional Transport

PA DEP's 2017 ANNUAL AMBIENT AIR MONITORING NETWORK PLAN

SITE NAME: NORRISTOWN
AQS ID: 420910013
MSA: Philadelphia-Camden-Wilmington MSA
COUNTY: MONTGOMERY
MUNICIPALITY: PLYMOUTH TWP
LATITUDE: 40.11327778
LONGITUDE: -75.30869445
ADDRESS: STATE ARMORY - 1046 BELVOIR RD
COMMENTS: Meets federal monitoring requirements in the PA part of the Philadelphia-Camden-Wilmington MSA

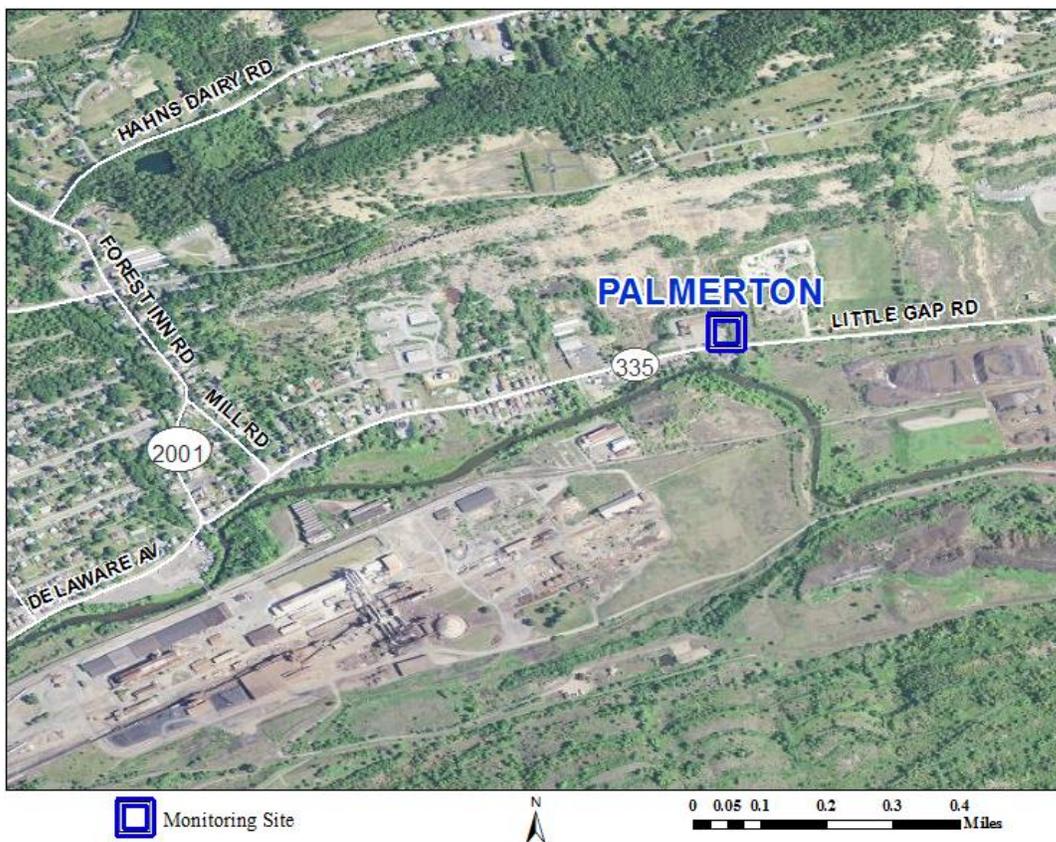


Monitor Summary

<i>Monitor</i>	<i>Network</i>	<i>Start Date</i>	<i>Sample Frequency</i>	<i>Method Description</i>	<i>Monitoring Scale</i>	<i>Appendix D Objectives</i>
Ozone	SLAMS	1/1/1974	Continuous	UV Absorption	Neighborhood	Population Exposure
SO ₂	SLAMS	1/1/1974	Continuous	UV Fluorescence	Neighborhood	Population Exposure

PA DEP's 2017 ANNUAL AMBIENT AIR MONITORING NETWORK PLAN

SITE NAME: PALMERTON
AQS ID: 420250214
MSA: Allentown-Bethlehem-Easton MSA
COUNTY: CARBON
MUNICIPALITY: LOWER TOWAMENSING TWP
LATITUDE: 40.814204
LONGITUDE: -75.580448
ADDRESS: 620 LITTLE GAP RD
COMMENTS: Monitors lead concentrations from nearby source

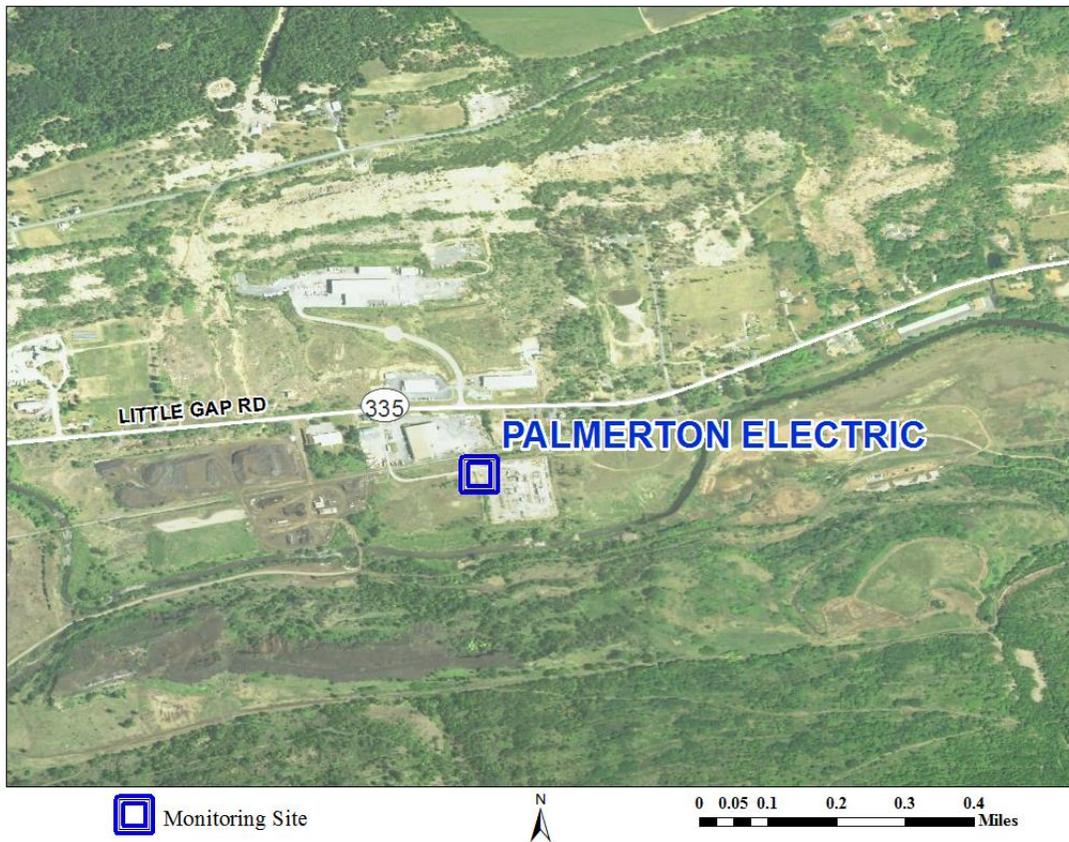


Monitor Summary

<i>Monitor</i>	<i>Network</i>	<i>Start Date</i>	<i>Sample Frequency</i>	<i>Method Description</i>	<i>Monitoring Scale</i>	<i>Appendix D Objectives</i>
Pb	SLAMS	5/9/2012	1 in 6	ICP-MS	Middle Scale	Source Oriented

PA DEP's 2017 ANNUAL AMBIENT AIR MONITORING NETWORK PLAN

SITE NAME: PALMERTON ELECTRIC
AQS ID: 420250300
MSA: Allentown-Bethlehem-Easton MSA
COUNTY: CARBON
MUNICIPALITY: LOWER TOWAMENSING TWP
LATITUDE: 40.81329
LONGITUDE: -75.56979
ADDRESS: LITTLE GAP RD
COMMENTS: Monitors metals near source region

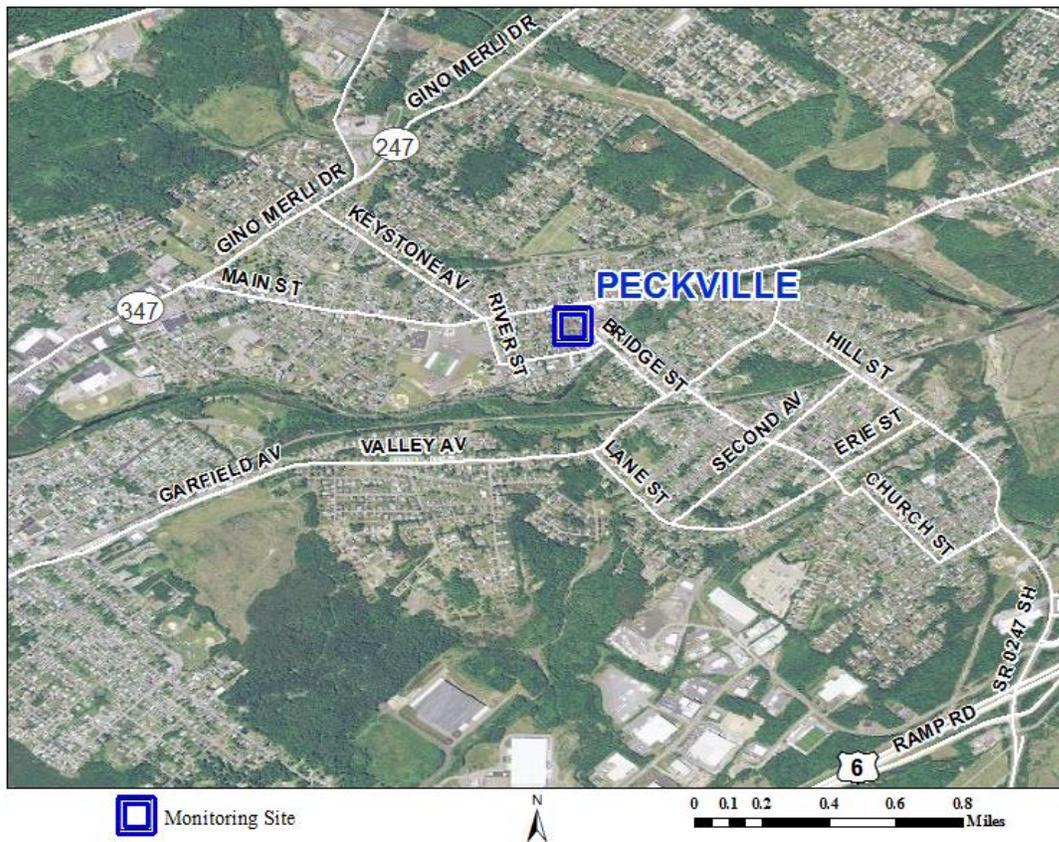


Monitor Summary

<i>Monitor</i>	<i>Network</i>	<i>Start Date</i>	<i>Sample Frequency</i>	<i>Method Description</i>	<i>Monitoring Scale</i>	<i>Appendix D Objectives</i>
TSP/Metals	Other	4/1/2017	1 in 6	High Volume Sampler with Quartz Filter (24 Hour)	N/A	N/A

PA DEP's 2017 ANNUAL AMBIENT AIR MONITORING NETWORK PLAN

SITE NAME: PECKVILLE
AQS ID: 420690101
MSA: Scranton-Wilkes-Barre-Hazleton MSA
COUNTY: LACKAWANNA
MUNICIPALITY: BLAKELY BORO
LATITUDE: 41.47908333
LONGITUDE: -75.57819445
ADDRESS: WILSON FIRE CO. ERIE & PLEASANT
COMMENTS: Monitors ozone concentrations to meet federal requirements in the Scranton-Wilkes-Barre MSA

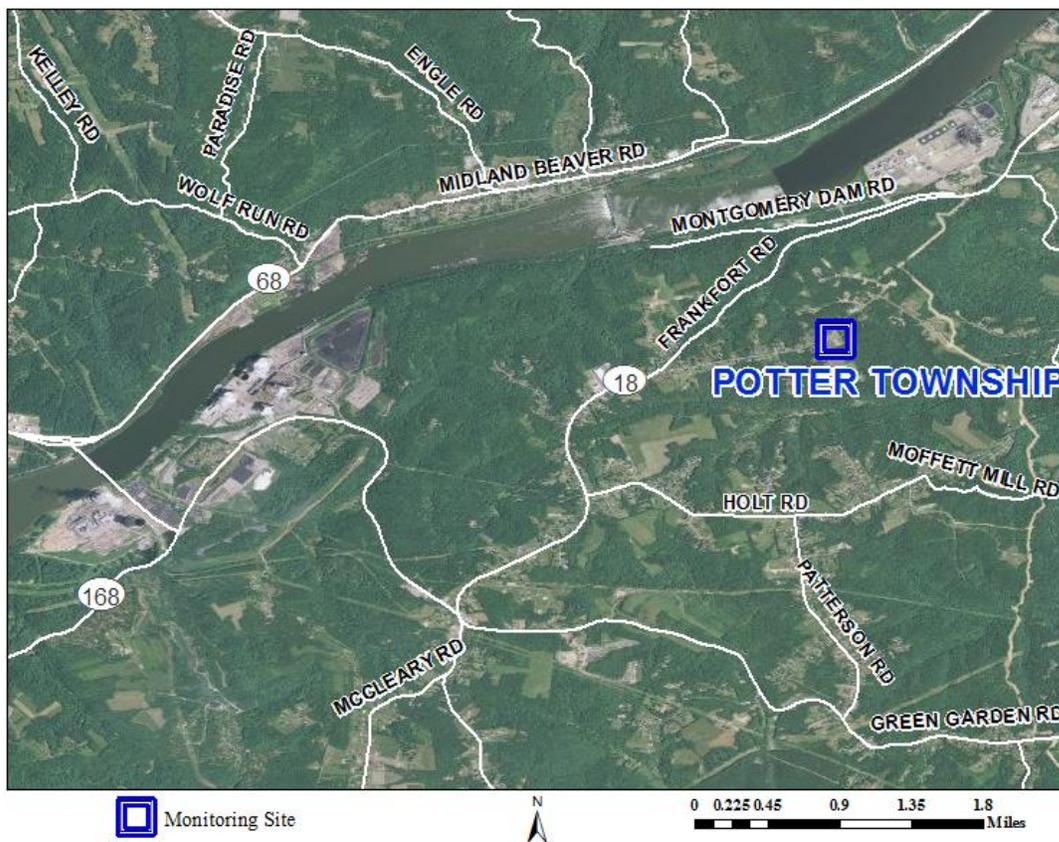


Monitor Summary

<i>Monitor</i>	<i>Network</i>	<i>Start Date</i>	<i>Sample Frequency</i>	<i>Method Description</i>	<i>Monitoring Scale</i>	<i>Appendix D Objectives</i>
Ozone	SLAMS	4/1/1991	Continuous	UV Absorption	Urban Scale	Max Ozone Concentration

PA DEP's 2017 ANNUAL AMBIENT AIR MONITORING NETWORK PLAN

SITE NAME: POTTER TOWNSHIP
AQS ID: 420070006
MSA: Pittsburgh MSA
COUNTY: BEAVER
MUNICIPALITY: POTTER TWP
LATITUDE: 40.638936
LONGITUDE: -80.365653
ADDRESS: 206 MOWRY RD
COMMENTS: Monitors lead concentrations from nearby source



Monitor Summary

Monitor	Network	Start Date	Sample Frequency	Method Description	Monitoring Scale	Appendix D Objectives
Pb	SLAMS	1/1/2010	1 in 6	ICP-MS	Middle Scale	Source Oriented

PA DEP's 2017 ANNUAL AMBIENT AIR MONITORING NETWORK PLAN

SITE NAME: PRESQUE ISLE
AQS ID: 420490004
MSA: Erie MSA
COUNTY: ERIE
MUNICIPALITY: MILLCREEK TWP
LATITUDE: 42.162
LONGITUDE: -80.1133
ADDRESS: EAST FISHER DR.
COMMENTS: Monitors VOC's and metals near source regions.



Monitor Summary

<i>Monitor</i>	<i>Network</i>	<i>Start Date</i>	<i>Sample Frequency</i>	<i>Method Description</i>	<i>Monitoring Scale</i>	<i>Appendix D Objectives</i>
VOC	Other	6/8/2000	1 in 6	Canister (24 Hour)	N/A	N/A
TSP/Metals	Other	6/8/2000	1 in 6	High Volume Sampler with Quartz Filter (24 Hour)	N/A	N/A

PA DEP's 2017 ANNUAL AMBIENT AIR MONITORING NETWORK PLAN

SITE NAME: READING AIRPORT
AQS ID: 420110011
MSA: Reading MSA
COUNTY: BERKS
MUNICIPALITY: BERN TWP
LATITUDE: 40.38335
LONGITUDE: -75.9686
ADDRESS: 1059 ARNOLD ROAD
COMMENTS: Monitors for NAAQS compliance for criteria pollutants in Reading MSA



Monitor Summary

<i>Monitor</i>	<i>Network</i>	<i>Start Date</i>	<i>Sample Frequency</i>	<i>Method Description</i>	<i>Monitoring Scale</i>	<i>Appendix D Objectives</i>
Ozone	SLAMS	7/1/2007	Continuous	UV Absorption	Neighborhood	Population Exposure
SO₂	SLAMS	7/1/2007	Continuous	UV Fluorescence	Neighborhood	Population Exposure
PM_{2.5}	SLAMS	7/1/2007	Daily	Gravimetric	Neighborhood	Population Exposure
PM_{2.5}	SLAMS	7/1/2007	Continuous	Beta Attenuation	Neighborhood	Population Exposure
VOC	Other	6/17/2007	1 in 6	Canister (24 Hour)	N/A	N/A
TSP/Metals	Other	6/17/2007	1 in 6	High Volume Sampler with Quartz Filter (24 Hour)	N/A	N/A

PA DEP's 2017 ANNUAL AMBIENT AIR MONITORING NETWORK PLAN

SITE NAME: RIDLEY PARK
AQS ID: 420450004
MSA: Philadelphia-Camden-Wilmington MSA
COUNTY: DELAWARE
MUNICIPALITY: EDDYSTONE BORO
LATITUDE: 39.862928
LONGITUDE: -75.325689
ADDRESS: INDUSTRIAL HIGHWAY (RT 291)
COMMENTS: Monitors lead concentrations near lead source
This site will be discontinued.



Monitor Summary

Monitor	Network	Start Date	Sample Frequency	Method Description	Monitoring Scale	Appendix D Objectives
Pb (discontinue)	SLAMS	1/1/2010	1 in 6	ICP-MS	Middle Scale	Source Oriented

PA DEP's 2017 ANNUAL AMBIENT AIR MONITORING NETWORK PLAN

SITE NAME: SCRANTON
AQS ID: 420692006
MSA: Scranton-Wilkes-Barre-Hazleton MSA
COUNTY: LACKAWANNA
MUNICIPALITY: CITY OF SCRANTON
LATITUDE: 41.442146
LONGITUDE: -75.630139
ADDRESS: GEORGE ST TROOP AND CITY OF SCRANTON
COMMENTS: Monitors for NAAQS compliance for criteria pollutants in the Scranton-Wilkes-Barre MSA

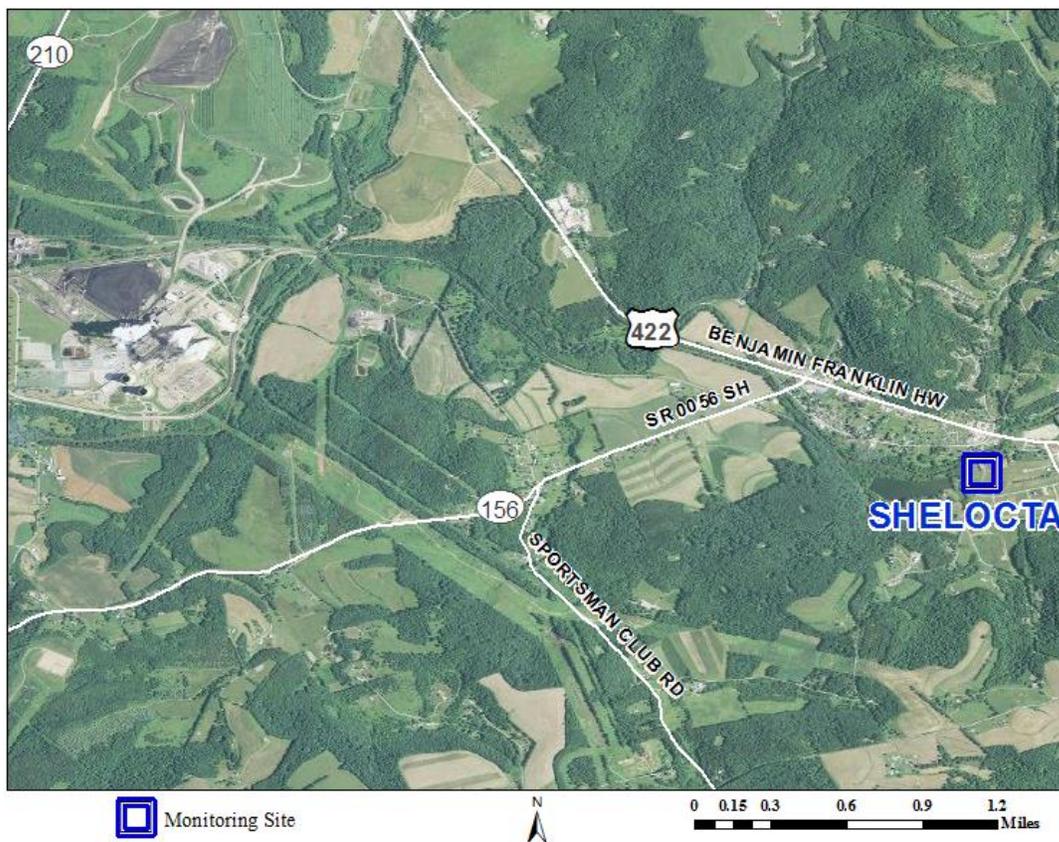


Monitor Summary

<i>Monitor</i>	<i>Network</i>	<i>Start Date</i>	<i>Sample Frequency</i>	<i>Method Description</i>	<i>Monitoring Scale</i>	<i>Appendix D Objectives</i>
Ozone	SLAMS	1/14/1974	Continuous	UV Absorption	Neighborhood	Max Ozone Concentration
NO ₂	SLAMS	1/1/1974	Continuous	Chemiluminescence	Neighborhood	Population Exposure
CO	SLAMS	1/1/1978	Continuous	Non-dispersive Infrared	Neighborhood	Population Exposure
PM _{2.5}	SLAMS	7/1/2009	Continuous	Beta Attenuation	Neighborhood	Population Exposure

PA DEP's 2017 ANNUAL AMBIENT AIR MONITORING NETWORK PLAN

SITE NAME: SHELOCTA
AQS ID: 420630005
MSA: Southwest Region - Non-MSA
COUNTY: INDIANA
MUNICIPALITY: ARMSTRONG TWP
LATITUDE: 40.652511
LONGITUDE: -79.292769
ADDRESS: 182 SOUTH RIDGE RD
COMMENTS: Monitors lead concentrations from source area



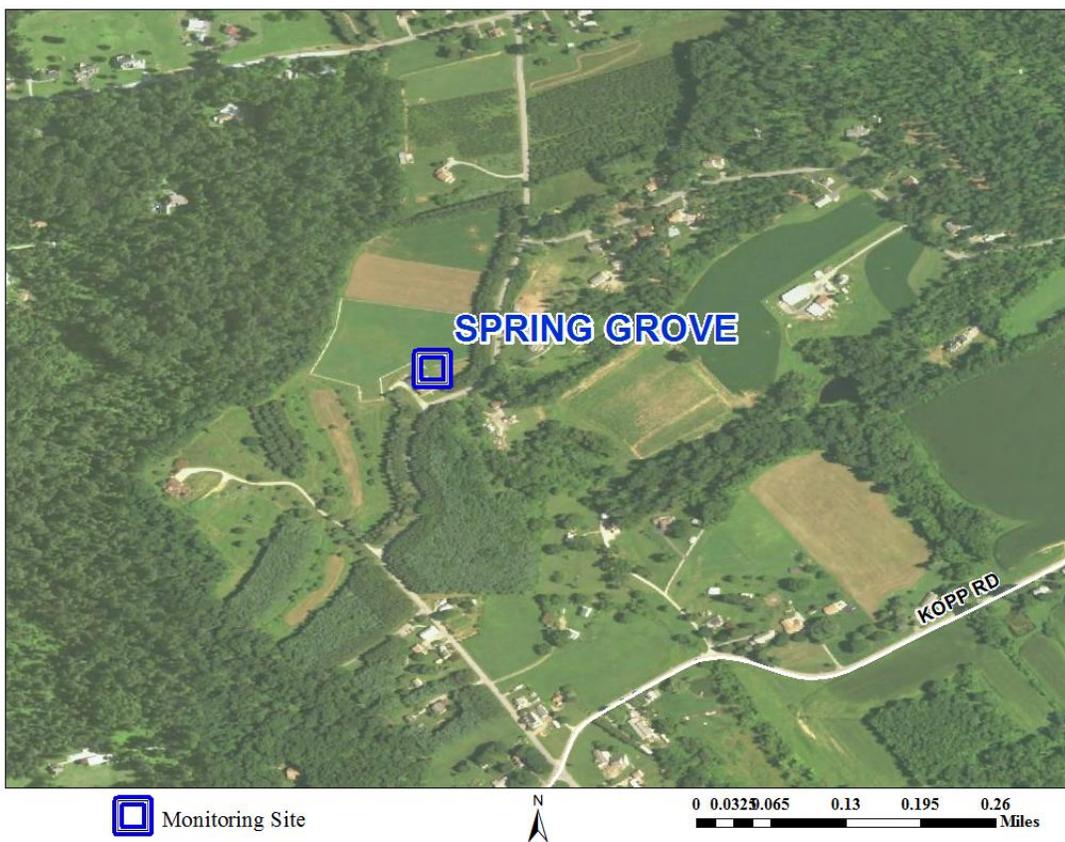
Monitor Summary

<i>Monitor</i>	<i>Network</i>	<i>Start Date</i>	<i>Sample Frequency</i>	<i>Method Description</i>	<i>Monitoring Scale</i>	<i>Appendix D Objectives</i>
Pb	SLAMS	1/1/2010	1 in 6	ICP-MS	Middle Scale	Source Oriented

PA DEP's 2017 ANNUAL AMBIENT AIR MONITORING NETWORK PLAN

SITE NAME: SPRING GROVE
AQS ID: 421330012
MSA: York MSA
COUNTY: York
MUNICIPALITY: JACKSON TWP
LATITUDE: 39.8751
LONGITUDE: -76.912256
ADDRESS: ORCHARD RD
COMMENTS: Source monitor to fulfill SO2 DRR requirements

Photo not available

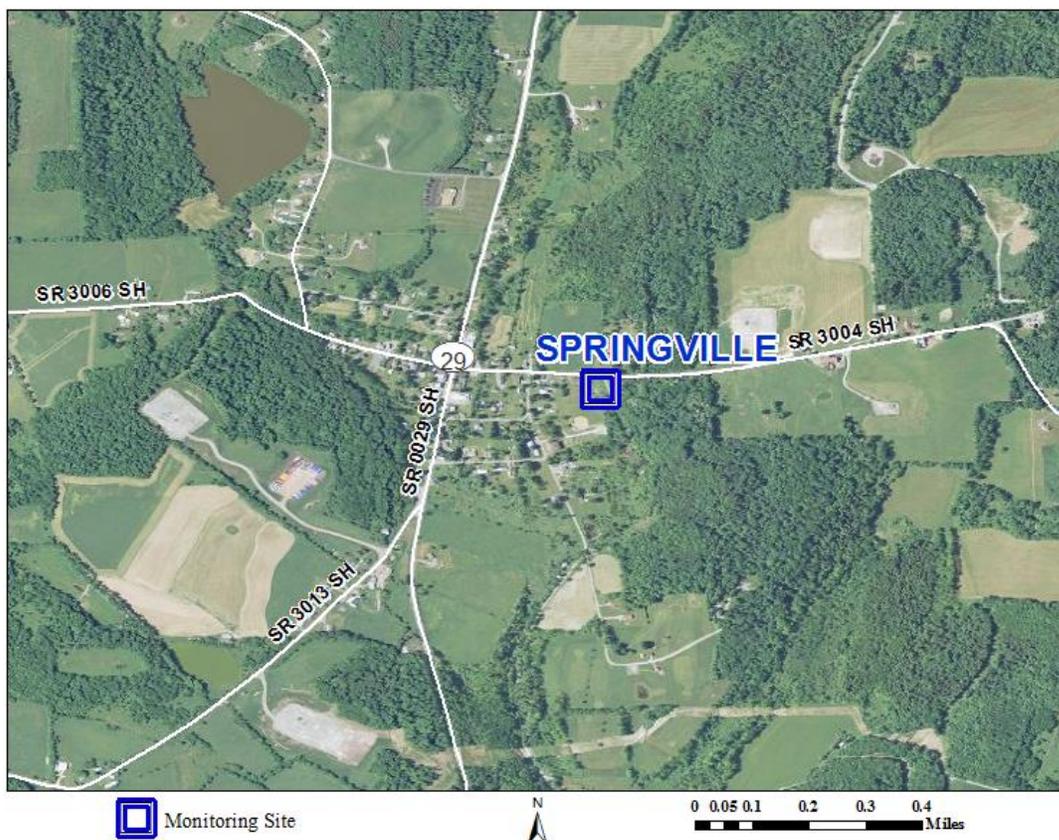


Monitor Summary

<i>Monitor</i>	<i>Network</i>	<i>Start Date</i>	<i>Sample Frequency</i>	<i>Method Description</i>	<i>Monitoring Scale</i>	<i>Appendix D Objectives</i>
SO ₂	SLAMS	1/1/2017	Continuous	Pulsed Fluorescence	Urban Scale	Source Oriented

PA DEP's 2017 ANNUAL AMBIENT AIR MONITORING NETWORK PLAN

SITE NAME: SPRINGVILLE
AQS ID: 421150001
MSA: Northeast Region - Non-MSA
COUNTY: SUSQUEHANNA
MUNICIPALITY: SPRINGVILLE TWP
LATITUDE: 41.6972
LONGITUDE: -75.9145
ADDRESS: TWP PROPERTY SR 3004
COMMENTS: Monitors downwind concentrations of VOC's downwind of natural gas production facilities
This site will be discontinued.

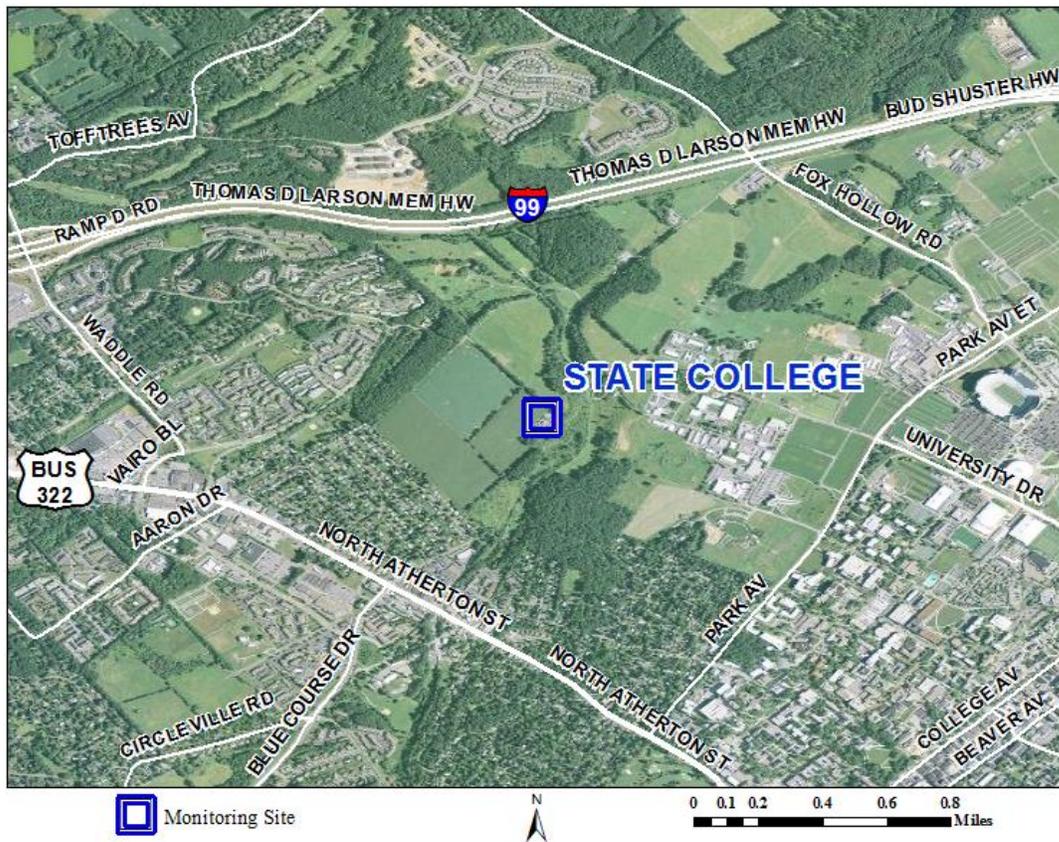


Monitor Summary

<i>Monitor</i>	<i>Network</i>	<i>Start Date</i>	<i>Sample Frequency</i>	<i>Method Description</i>	<i>Monitoring Scale</i>	<i>Appendix D Objectives</i>
VOC (discontinue)	Other	2/27/2013	1 in 6	Canister (24 Hour)	N/A	N/A

PA DEP's 2017 ANNUAL AMBIENT AIR MONITORING NETWORK PLAN

SITE NAME: STATE COLLEGE
AQS ID: 420270100
MSA: State College MSA
COUNTY: CENTRE
MUNICIPALITY: COLLEGE TWP
LATITUDE: 40.8116667
LONGITUDE: -77.8772222
ADDRESS: PENN STATE UNIVERSITY - ARBORETUM SITE
COMMENTS: Meets federal monitoring requirements in the State College MSA



Monitor Summary

<i>Monitor</i>	<i>Network</i>	<i>Start Date</i>	<i>Sample Frequency</i>	<i>Method Description</i>	<i>Monitoring Scale</i>	<i>Appendix D Objectives</i>
Ozone	SLAMS	4/1/2000	Continuous	UV Absorption	Neighborhood	Population Exposure
SO ₂	SLAMS	3/8/2002	Continuous	UV Fluorescence	Neighborhood	Population Exposure
NO ₂	SLAMS	3/8/2002	Continuous	Chemiluminescence	Neighborhood	Population Exposure
PM _{2.5}	SLAMS	2/1/2000	Daily	Gravimetric	Neighborhood	Population Exposure
PM _{2.5}	SLAMS	9/1/2010	Continuous	Beta Attenuation	Neighborhood	Population Exposure

PA DEP's 2017 ANNUAL AMBIENT AIR MONITORING NETWORK PLAN

SITE NAME: STRONGSTOWN
AQS ID: 420630004
MSA: Southwest Region - Non-MSA
COUNTY: INDIANA
MUNICIPALITY: PINE TWP
LATITUDE: 40.5633
LONGITUDE: -78.91997
ADDRESS: PA DEPT. OF TRANSPORTATION - RT. 403
COMMENTS: Monitors SO₂ concentrations in Indiana-Cambria County nonattainment area



Monitor Summary

<i>Monitor</i>	<i>Network</i>	<i>Start Date</i>	<i>Sample Frequency</i>	<i>Method Description</i>	<i>Monitoring Scale</i>	<i>Appendix D Objectives</i>
Ozone	SLAMS	11/1/2004	Continuous	UV Absorption	Urban Scale	Extreme Downwind
SO ₂	SLAMS	11/1/2004	Continuous	UV Fluorescence	Urban Scale	Regional Transport

PA DEP's 2017 ANNUAL AMBIENT AIR MONITORING NETWORK PLAN

SITE NAME: SWARTHMORE
AQS ID: 420450003
MSA: Philadelphia-Camden-Wilmington MSA
COUNTY: DELAWARE
MUNICIPALITY: SWARTHMORE BORO
LATITUDE: 39.8969
LONGITUDE: -75.3539
ADDRESS: 500 COLLEGE AVE.
COMMENTS: Monitors VOC's near source region
This site will be discontinued.



Monitor Summary

<i>Monitor</i>	<i>Network</i>	<i>Start Date</i>	<i>Sample Frequency</i>	<i>Method Description</i>	<i>Monitoring Scale</i>	<i>Appendix D Objectives</i>
VOC (discontinue)	Other	1/22/1997	1 in 6	Canister (24 Hour)	N/A	N/A
TSP/Metals (discontinue)	Other	1/22/1997	1 in 6	High Volume Sampler with Quartz Filter (24 Hour)	N/A	N/A

PA DEP's 2017 ANNUAL AMBIENT AIR MONITORING NETWORK PLAN

SITE NAME: SWIFTWATER
AQS ID: 420890002
MSA: East Stroudsburg MSA
COUNTY: MONROE
MUNICIPALITY: POCONO TWP
LATITUDE: 41.08306
LONGITUDE: -75.32328
ADDRESS: DEP/DCNR Pocono District Office
COMMENTS: Meets federal monitoring requirements in the PA portion of the East Stroudsburg MSA

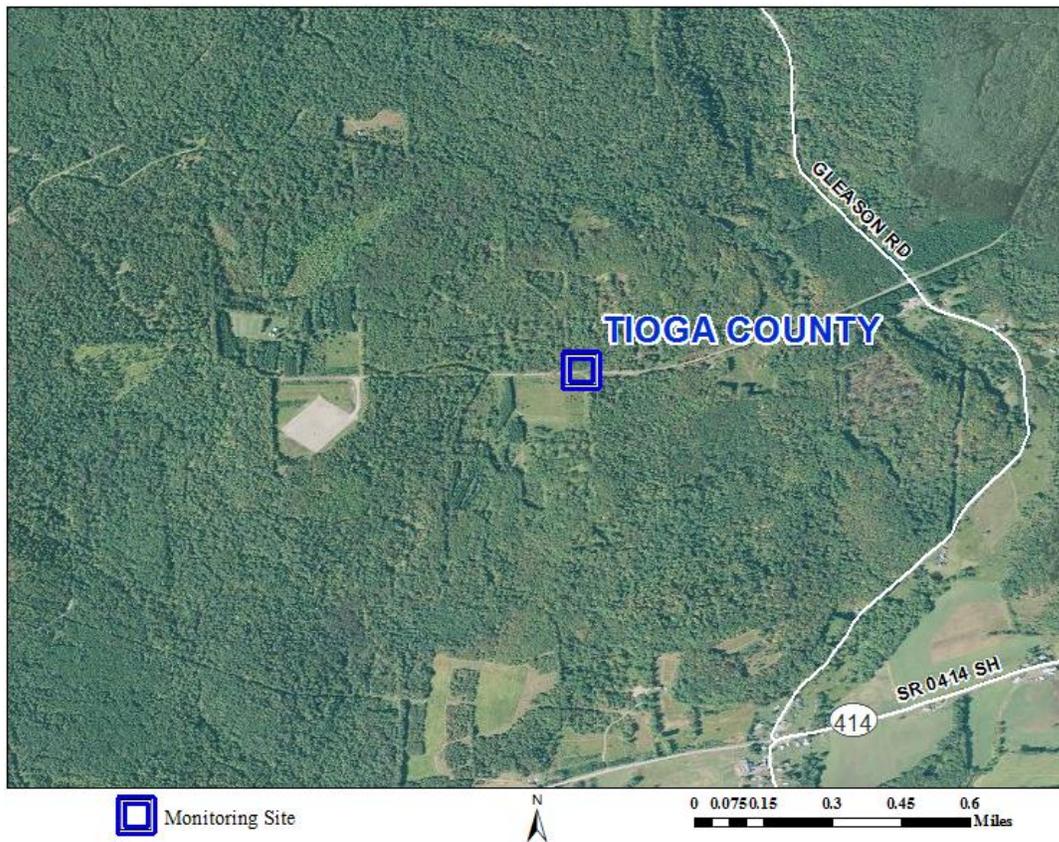


Monitor Summary

Monitor	Network	Start Date	Sample Frequency	Method Description	Monitoring Scale	Appendix D Objectives
Ozone	SLAMS	4/1/2006	Continuous	UV Absorption	Urban Scale	Extreme Downwind
PM _{2.5} (discontinue)	SLAMS	6/1/2010	Continuous	Beta Attenuation	Urban Scale	Regional Transport

PA DEP's 2017 ANNUAL AMBIENT AIR MONITORING NETWORK PLAN

SITE NAME: TIOGA COUNTY
AQS ID: 421174000
MSA: Northcentral Region - Non-MSA
COUNTY: TIOGA
MUNICIPALITY: UNION TWP
LATITUDE: 41.64558333
LONGITUDE: -76.93797222
ADDRESS: TIOGA
COMMENTS: Monitors for criteria pollutants near natural gas production facilities as well as under an ozone monitoring contract with Penn State University

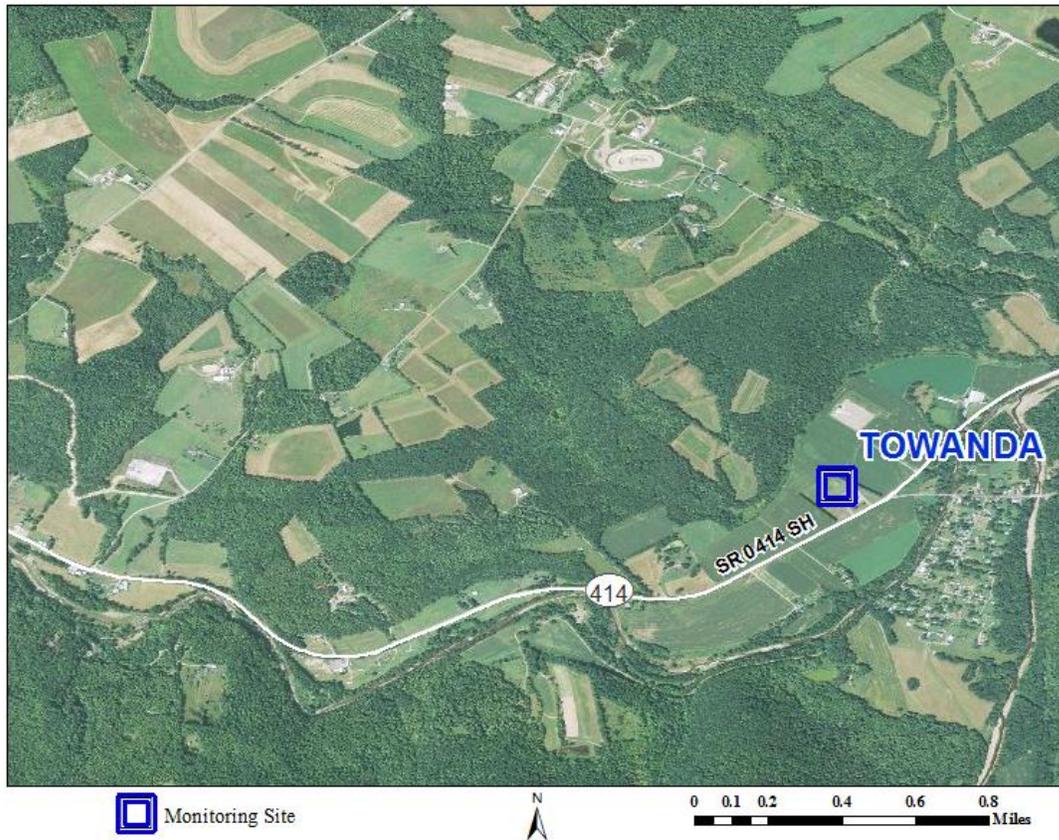


Monitor Summary

<i>Monitor</i>	<i>Network</i>	<i>Start Date</i>	<i>Sample Frequency</i>	<i>Method Description</i>	<i>Monitoring Scale</i>	<i>Appendix D Objectives</i>
Ozone	SLAMS	6/1/1999	Continuous	UV Absorption	Regional Scale	Regional Transport
NO ₂	SLAMS	5/9/2012	Continuous	Chemiluminescence	Urban Scale	Source Oriented
PM _{2.5}	SLAMS	10/1/2014	Continuous	Beta Attenuation	Urban Scale	Regional Transport

PA DEP's 2017 ANNUAL AMBIENT AIR MONITORING NETWORK PLAN

SITE NAME: TOWANDA
AQS ID: 420150011
MSA: Northcentral Region - Non-MSA
COUNTY: BRADFORD
MUNICIPALITY: MONROE TWP
LATITUDE: 41.70539
LONGITUDE: -76.512876
ADDRESS: Rt. 414 & MAIN ST
COMMENTS: Monitors downwind concentration of pollutants from natural gas production facilities



Monitor Summary

<i>Monitor</i>	<i>Network</i>	<i>Start Date</i>	<i>Sample Frequency</i>	<i>Method Description</i>	<i>Monitoring Scale</i>	<i>Appendix D Objectives</i>
Ozone	SLAMS	2/27/2013	Continuous	UV Absorption	Neighborhood	Source Oriented
NO₂	SLAMS	3/1/2013	Continuous	Chemiluminescence	Neighborhood	Source Oriented
PM_{2.5}	SLAMS	1/1/2016	Continuous	Beta Attenuation	Neighborhood	Source Oriented

PA DEP's 2017 ANNUAL AMBIENT AIR MONITORING NETWORK PLAN

SITE NAME: UPPER STRASBURG
AQS ID: 420550002
MSA: Chambersburg-Waynesboro MSA
COUNTY: FRANKLIN
MUNICIPALITY: LETTERKENNY TWP
LATITUDE: 40.059828
LONGITUDE: -77.710608
ADDRESS: 9716 UPPER STRASBURG RD
COMMENTS: Monitors lead concentrations from source area



Monitor Summary

<i>Monitor</i>	<i>Network</i>	<i>Start Date</i>	<i>Sample Frequency</i>	<i>Method Description</i>	<i>Monitoring Scale</i>	<i>Appendix D Objectives</i>
Pb	SLAMS	1/1/2010	1 in 6	ICP-MS	Middle Scale	Source Oriented

PA DEP's 2017 ANNUAL AMBIENT AIR MONITORING NETWORK PLAN

SITE NAME: VANPORT
AQS ID: 420070505
MSA: Pittsburgh MSA
COUNTY: BEAVER
MUNICIPALITY: VANPORT TWP
LATITUDE: 40.68486111
LONGITUDE: -80.32291667
ADDRESS: TAMAQUI DR
COMMENTS: Monitors lead concentrations from source area – legacy site



Monitor Summary

<i>Monitor</i>	<i>Network</i>	<i>Start Date</i>	<i>Sample Frequency</i>	<i>Method Description</i>	<i>Monitoring Scale</i>	<i>Appendix D Objectives</i>
Pb	SLAMS	3/1/1971	1 in 6	ICP-MS	Middle Scale	Source Oriented

PA DEP's 2017 ANNUAL AMBIENT AIR MONITORING NETWORK PLAN

SITE NAME: WARREN EAST
AQS ID: 421230005
MSA: Northwest Region - Non-MSA
COUNTY: WARREN
MUNICIPALITY: CITY OF WARREN
LATITUDE: 41.825708
LONGITUDE: -79.119952
ADDRESS: 2044 PENNSYLVANIA AVE EAST
COMMENTS: Monitors hydrogen sulfide levels near source



Monitor Summary

<i>Monitor</i>	<i>Network</i>	<i>Start Date</i>	<i>Sample Frequency</i>	<i>Method Description</i>	<i>Monitoring Scale</i>	<i>Appendix D Objectives</i>
SO ₂	SLAMS	1/1/2012	Continuous	UV Fluorescence	Micro Scale	Population Exposure
H ₂ S	SPM	1/1/2012	Continuous	UV Fluorescence	Micro Scale	Source Oriented

PA DEP's 2017 ANNUAL AMBIENT AIR MONITORING NETWORK PLAN

SITE NAME: WARREN OVERLOOK
AQS ID: 421230004
MSA: Northwest Region - Non-MSA
COUNTY: WARREN
MUNICIPALITY: CONEWANGO TWP
LATITUDE: 41.84372222
LONGITUDE: -79.17288889
ADDRESS: OVERLOOK SITE - NEAR STONE HILL ROAD
COMMENTS: Monitors SO₂ concentrations in the Warren nonattainment area



Monitor Summary

<i>Monitor</i>	<i>Network</i>	<i>Start Date</i>	<i>Sample Frequency</i>	<i>Method Description</i>	<i>Monitoring Scale</i>	<i>Appendix D Objectives</i>
SO ₂	SLAMS	11/25/1996	Continuous	UV Fluorescence	Neighborhood	Highest Concentration

PA DEP's 2017 ANNUAL AMBIENT AIR MONITORING NETWORK PLAN

SITE NAME: WASHINGTON
AQS ID: 421250200
MSA: Pittsburgh MSA
COUNTY: WASHINGTON
MUNICIPALITY: CITY OF WASHINGTON
LATITUDE: 40.17063889
LONGITUDE: -80.26172222
ADDRESS: MCCARRELL AND FAYETTE STS
COMMENTS: Monitors for criteria pollutants so federal monitoring requirements may be met as well as NAAQS compliance.

This site will be discontinued.

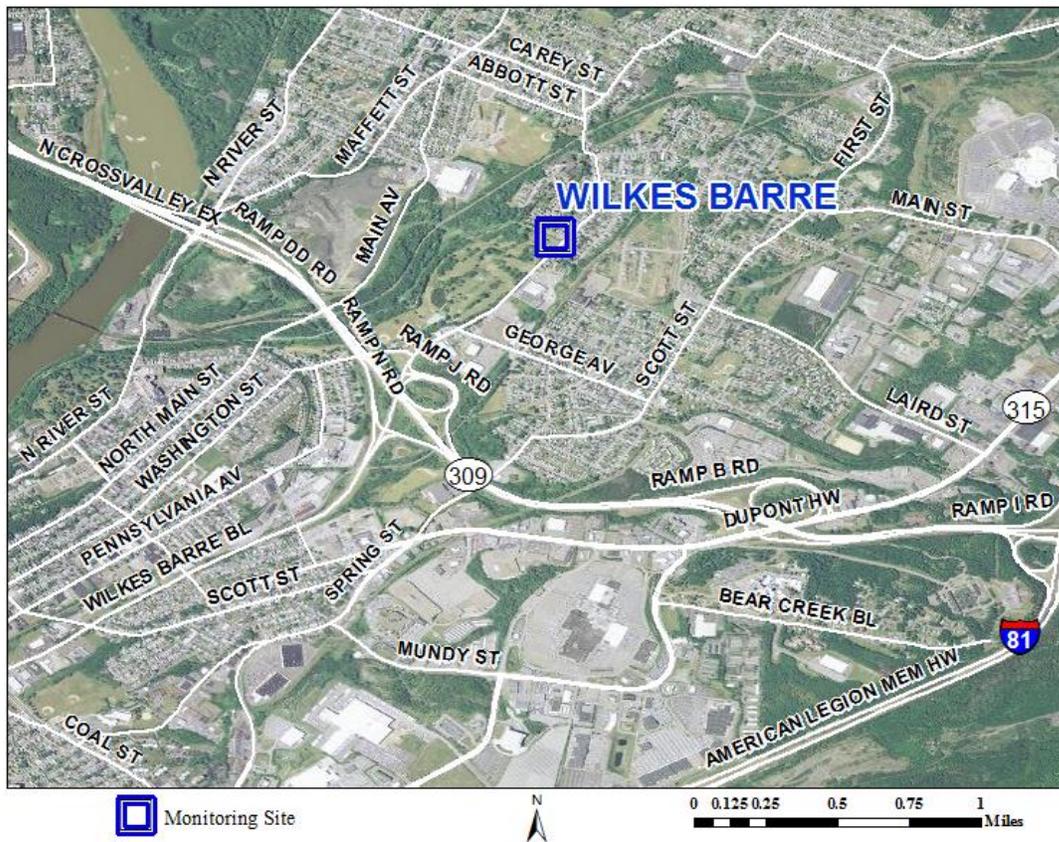


Monitor Summary

<i>Monitor</i>	<i>Network</i>	<i>Start Date</i>	<i>Sample Frequency</i>	<i>Method Description</i>	<i>Monitoring Scale</i>	<i>Appendix D Objectives</i>
Ozone (discontinue)	SLAMS	1/1/1984	Continuous	UV Absorption	Neighborhood	Population Exposure
PM_{2.5} (discontinue)	SLAMS	1/1/1999	Daily	Gravimetric	Neighborhood	Population Exposure
PM_{2.5} (discontinue)	SLAMS	11/10/2010	Continuous	Beta Attenuation	Neighborhood	Population Exposure

PA DEP's 2017 ANNUAL AMBIENT AIR MONITORING NETWORK PLAN

SITE NAME: WILKES-BARRE
AQS ID: 420791101
MSA: Scranton-Wilkes-Barre-Hazleton MSA
COUNTY: LUZERNE
MUNICIPALITY: CITY OF WILKES-BARRE
LATITUDE: 41.26597222
LONGITUDE: -75.84636111
ADDRESS: CHILWICK & WASHINGTON STS
COMMENTS: Meets federal monitoring requirements in the Scranton-Wilkes-Barre MSA

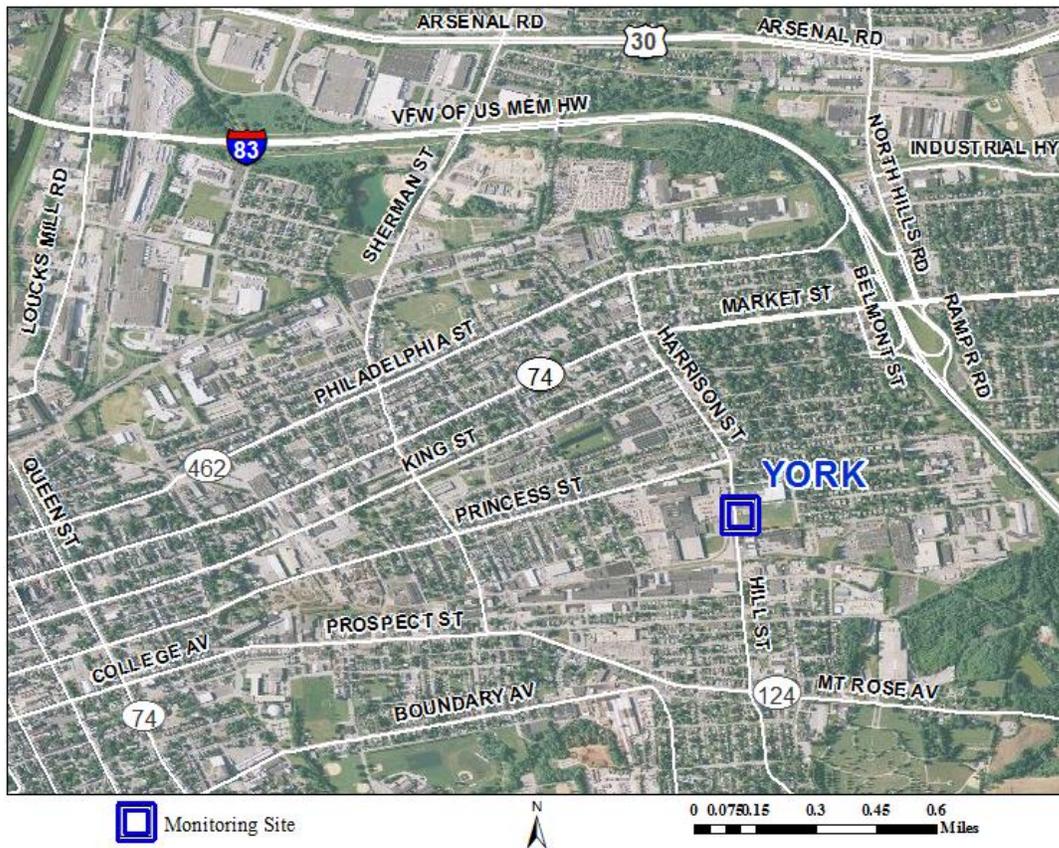


Monitor Summary

<i>Monitor</i>	<i>Network</i>	<i>Start Date</i>	<i>Sample Frequency</i>	<i>Method Description</i>	<i>Monitoring Scale</i>	<i>Appendix D Objectives</i>
Ozone	SLAMS	5/28/1982	Continuous	UV Absorption	Neighborhood	Population Exposure
SO ₂	SLAMS	5/28/1982	Continuous	UV Fluorescence	Neighborhood	Population Exposure
PM ₁₀	SLAMS	10/20/1994	Continuous	TEOM Gravimetric	Neighborhood	Population Exposure

PA DEP's 2017 ANNUAL AMBIENT AIR MONITORING NETWORK PLAN

SITE NAME: YORK
AQS ID: 421330008
MSA: York-Hanover MSA
COUNTY: YORK
MUNICIPALITY: SPRING GARDEN TWP
LATITUDE: 39.96552778
LONGITUDE: -76.69958333
ADDRESS: HILL ST.
COMMENTS: Monitors for NAAQS compliance and to meet federal monitoring requirements in the York-Hanover MSA



Monitor Summary

Monitor	Network	Start Date	Sample Frequency	Method Description	Monitoring Scale	Appendix D Objectives
Ozone	SLAMS	1/1/1974	Continuous	UV Absorption	Urban Scale	Population Exposure
SO ₂	SLAMS	4/1/1974	Continuous	UV Fluorescence	Urban Scale	Population Exposure
NO ₂	SLAMS	1/1/1974	Continuous	Chemiluminescence	Neighborhood	Population Exposure
CO (discontinue)	SLAMS	1/1/1982	Continuous	Non-dispersive Infrared	Neighborhood	Population Exposure
VOC	Other	1/15/2011	1 in 6	Canister (24 Hour)	N/A	N/A
PM _{2.5}	SLAMS	1/1/1999	Daily	Gravimetric	Neighborhood	Population Exposure
PM _{2.5}	SLAMS	8/19/2004	Continuous	Beta Attenuation	Neighborhood	Population Exposure

SITE NAME: YORK DOWNWIND
AQS ID: 421330011
MSA: York-Hanover MSA
COUNTY: YORK
MUNICIPALITY: CHANCEFORD TWP
LATITUDE: 39.860972
LONGITUDE: -76.462055
ADDRESS: 2632 DELTA ROAD
COMMENTS: Measures downwind ozone concentrations of the York metro area



Monitoring Site



0 0.05 0.1 0.2 0.3 0.4 Miles

Monitor Summary

<i>Monitor</i>	<i>Network</i>	<i>Start Date</i>	<i>Sample Frequency</i>	<i>Method Description</i>	<i>Monitoring Scale</i>	<i>Appendix D Objectives</i>
Ozone	SLAMS	4/22/2008	Continuous	UV Absorption	Urban Scale	Extreme Downwind

Appendix E – Changes Made to 2017 Annual Ambient Air Monitoring Network Plan Based on Comments Received During Public Comment Period

Based on comments received during the public comment period, PA DEP is making several changes to its 2017 Annual Ambient Air Monitoring Network Plan (ANP). Those changes are outlined below.

- 1.) In response to public comments, Table 6 on page 18 needed updated to include all measurements at every PM_{2.5} expansion site. The new Table 6 appears below:

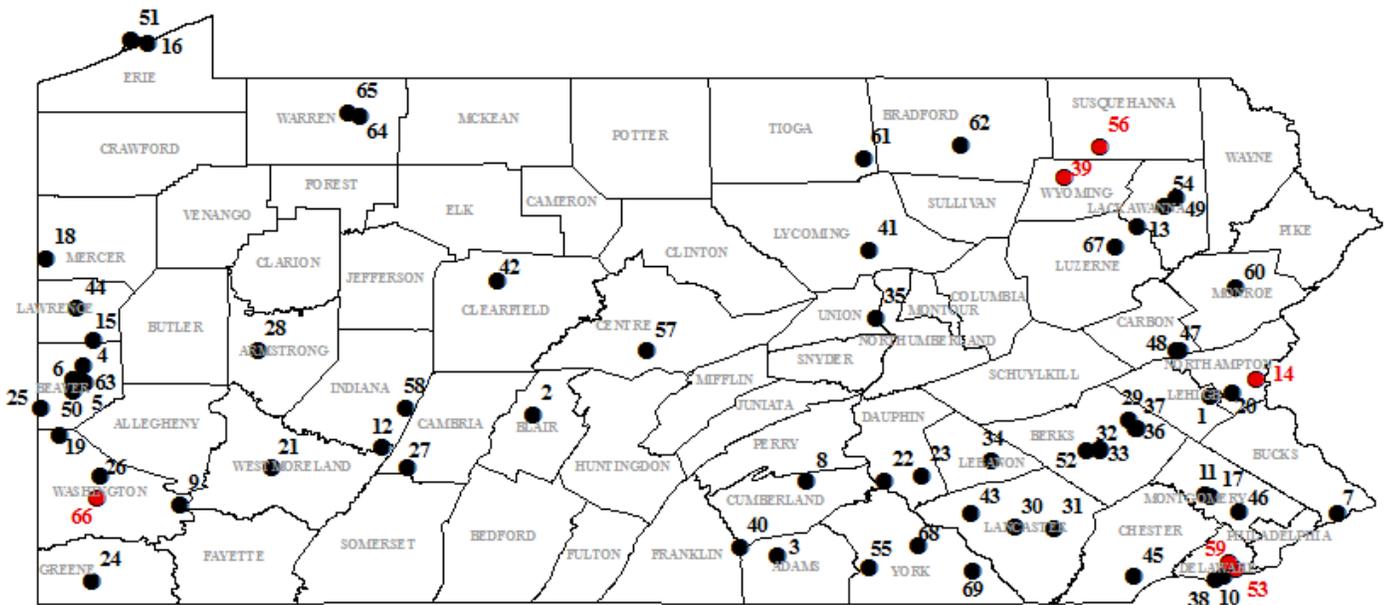
Table 6. Schedule for Expansion of PA DEP Monitoring Network in Marcellus Shale Region

Sites to be Established During 2017-2018		
County	Parameters Monitored	Estimated Start Date
Clarion	PM _{2.5}	January 1, 2018
Fayette	Ozone, NO ₂ , PM _{2.5} , Carbonyls, VOC	January 1, 2018
Jefferson	PM _{2.5}	January 1, 2018
Susquehanna	PM _{2.5} , Carbonyls, VOC	January 1, 2018
Wyoming	PM _{2.5} , Carbonyls, VOC	January 1, 2018
Sites to be Established During 2018-2019		
County	Parameters Monitored	Estimated Start Date
Indiana	PM _{2.5}	January 1, 2019
Lycoming	PM _{2.5}	July 1, 2018
McKean	PM _{2.5}	January 1, 2019

- 2.) Several commentators were concerned about the discontinuation of the Washington site due to increased Marcellus Shale related activity within Washington County. In response to these public comments, PA DEP will be establishing an ozone and PM_{2.5} monitor at its Houston site (AQS ID 42-125-5200), which is approximately seven miles to the north of the Washington site. Based on Figure 4 in this document, the Marcellus Shale compressor stations are concentrated in the northern and western portion of Washington County. The Houston site is more downwind of this region than the Washington site. Therefore, PA DEP believes this to be an effective compromise.
- 3.) As one commentator identified, the discontinued lead monitoring sites of Shelocta and Upper Strasburg were inadvertently included in Figure 3 and Appendix D of the 2017 Annual Network Plan. Both of these sites were discontinued in March 2017 and should not have been included in either of these sections. Figure 3 is amended as shown on the following page. In addition, pages D-57 and D-66 of this document should be disregarded.

PA DEP's 2017 ANNUAL AMBIENT AIR MONITORING NETWORK PLAN

Figure 3. Map of PA DEP Air Monitoring Network



Legend: **RED** – Site will be discontinued in 2017-2018; **BLUE** – Site will be added in 2017-2018

Map ID	Site Name	Map ID	Site Name	Map ID	Site Name	Map ID	Site Name
1	Allentown	21	Greensburg	41	Montoursville	61	Tioga County
2	Altoona	22	Harrisburg	42	Moshannon	62	Towanda
3	Arendtsville	23	Hershey	43	Mt Joy	63	Vanport
4	Beaver Falls	24	Holbrook	44	New Castle	64	Warren East
5	Beaver Valley	25	Hookstown	45	New Garden	65	Warren Overlook
6	Brighton Twp	26	Houston	46	Norristown	66	Washington
7	Bristol	27	Johnstown	47	Palmerton	67	Wilkes Barre
8	Carlisle	28	Kittanning	48	Palmerton Electric	68	York
9	Charleroi	29	Kutztown	49	Peckville	69	York Downwind
10	Chester	30	Lancaster	50	Potter Township	---	Clarion County
11	Collegeville	31	Lancaster Downwind	51	Presque Isle	---	Fayette County
12	Conemaugh	32	Laureldale North	52	Reading Airport	---	Jefferson County
13	Duryea	33	Laureldale South	53	Ridley Park	---	Susquehanna County
14	Easton	34	Lebanon	54	Scranton	---	Wyoming County
15	Ellwood City	35	Lewisburg	55	Spring Grove		
16	Erie	36	Lyons Boro	56	Springville		
17	Evansburg United Methodist	37	Lyons Park	57	State College		
18	Farrell	38	Marcus Hook	58	Strongstown		
19	Florence	39	Mehoopany	59	Swarthmore		
20	Freemansburg	40	Methodist Hill	60	Swiftwater		