

Annual Ambient Air Monitoring Network Plan

2021



**COMMONWEALTH OF VIRGINIA
VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR AND RENEWABLE DIVISION – OFFICE OF AIR
QUALITY MONITORING**

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TABLE of CONTENTS

ACRONYM LISTING	3
GLOSSARY	4
INTRODUCTION	7
NETWORK DESIGN	7
DATA REQUIREMENTS RULE	9
MULTI-STATE/MULTI-AGENCY MONITORING	11
AIR QUALITY MONITORING NETWORK CHANGES.....	- 12 -
MONITORING SITE CHANGES SINCE LAST REVIEW	- 12 -
INSTRUMENT CHANGES SINCE LAST REVIEW	- 14 -
ANTICIPATED SITE CHANGES	- 14 -
ANTICIPATED INSTRUMENTATION CHANGES	- 17 -
MONITORING SITES.....	- 18 -
MONITORING SITE INFORMATION.....	- 68 -

ACRONYM LISTING

Acronym	Acronym Description
AQCR	Air Quality Control Region (see 9 VAC 5-20-200)
BAM	Beta Attenuation Monitor
CAA	Clean Air Act
CBSA	Core Based Statistical Area
CFR	Code of Federal Regulations
CO	Carbon Monoxide
CSN	Chemical Speciation Network
EMP	Enhanced Monitoring Plan
ES	Elementary School
FEM	Federal Equivalent Method
FRM	Federal Reference Method
IMPROVE	Interagency Monitoring of Protected Visual Environments
MSA	Metropolitan Statistical Area
NATTS	National Air Toxics Trend Site
NCore	National Core Monitoring Site
NO2	Nitrogen Dioxide
OTR	Ozone Transport Region
PAMS	Photochemical Assessment Monitoring
Pb	Chemical Symbol for metallic Lead
PM2.5	Particulate Matter less than 2.5 microns in diameter
PM10	Particulate Matter less than 10 microns in diameter
SLAMS	State/Local Air Monitoring Site
SO2	Sulfur Dioxide
SO2 DR	Sulfur Dioxide Data Requirements Rule
TEOM	Tapered Element Oscillating Microbalance PM2.5 monitoring technology

GLOSSARY

AADT means the annual average daily traffic.

Act means the Clean Air Act as amended (42 U.S.C. 7401, et seq.)

Air quality system (AQS) means the EPA's computerized system for storing and reporting of information relating to ambient air quality data.

Chemical Speciation Network (CSN) includes Speciation Trends Network stations as specified in paragraph 4.7.4 of appendix D of this part (40 CFR Part 58) and supplemental speciation stations that provide chemical species data of fine particulate.

CO means carbon monoxide.

Design value means the calculated concentration according to the applicable appendix of part 50 of 40 CFR for the highest site in an attainment or nonattainment area.

Federal equivalent method (FEM) means a method for measuring the concentration of an air pollutant in the ambient air that has been designated as an equivalent method in accordance with part 53; it does not include a method for which an equivalent method designation has been canceled in accordance with §53.11 or §53.16.

Federal reference method (FRM) means a method of sampling and analyzing the ambient air for an air pollutant that is specified as a reference method in an appendix to part 50, or a method that has been designated as a reference method in accordance with this part; it does not include a method for which a reference method designation has been canceled in accordance with §53.11 or §53.16 of this chapter.

Meteorological measurements means measurements of wind speed, wind direction, barometric pressure, temperature, relative humidity, solar radiation, ultraviolet radiation, and/or precipitation that occur at SLAMS stations including the NCore and PAMS networks.

Metropolitan Statistical Area (MSA) means a CBSA associated with at least one urbanized area of 50,000 population or greater. The central-county, plus adjacent counties with a high degree of integration, comprise the area.

Monitor means an instrument, sampler, analyzer, or other device that measures or assists in the measurement of atmospheric air pollutants and which is acceptable for use in ambient air surveillance under the applicable provisions of appendix C to this part.

Monitoring agency means a state, local or tribal agency responsible for meeting the requirements of this part.

Monitoring organization means a monitoring agency responsible for operating a monitoring site for which the quality assurance regulations apply.

NATTS means the National Air Toxics Trends Stations. This network provides hazardous air pollution ambient data.

NCore means the National Core multipollutant monitoring stations. Monitors at these sites are required to measure particles (PM_{2.5} speciated PM_{2.5}, PM_{10-2.5}), O₃, SO₂, CO, nitrogen oxides (NO/NO_y), and meteorology (wind speed, wind direction, temperature, relative humidity).

Near-road monitor means any approved monitor meeting the applicable specifications described in 40 CFR part 58, appendix D (sections 4.2.1, 4.3.2, 4.7.1(b) (2)) and appendix E (section 6.4(a), Table E-4) for near-road measurement of PM_{2.5}, CO, or NO₂.

Network means all stations of a given type or types.

Network Plan means the Annual Monitoring Network Plan described in §58.10.

PAMS means Photochemical Assessment Monitoring stations as prescribed in 40 CFR part 58 Appendix D paragraph 5.

Pb means lead.

PM means particulate matter, including but not limited to PM₁₀, PM_{2.5}, and PM_{10-2.5}.

PM_{2.5} means particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers as measured by a reference method based on appendix L of part 50 and designated in accordance with part 53 of this chapter, by an equivalent method designated in accordance with part 53, or by an approved regional method designated in accordance with appendix C to this part.

PM₁₀ means particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers as measured by a reference method based on appendix J of part 50 of this chapter and designated in accordance with part 53 of this chapter or by an equivalent method designated in accordance with part 53.

PM_{10-2.5} means particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers and greater than a nominal 2.5 micrometers as measured by a reference method based on appendix O to part 50 of 40 CFR and designated in accordance with part 53 of this chapter or by an equivalent method designated in accordance with part 53.

SLAMS means state or local air monitoring stations. The SLAMS include the ambient air quality monitoring sites and monitors that are required by appendix D of this part and are needed for the monitoring objectives of appendix D, including NAAQS comparisons, but may serve other data purposes. The SLAMS includes NCore, PAMS, CSN, and all other state or locally operated criteria pollutant monitors, operated in accordance to this part, that have not been designated and approved by the Regional Administrator as SPM stations in an annual monitoring network plan.

SO₂ means sulfur dioxide.

Special purpose monitor (SPM) station means a monitor included in an agency's monitoring network that the agency has designated as a special purpose monitor station in its annual monitoring network plan and in the AQS, and which the agency does not count when showing compliance with the minimum requirements of this subpart for the number and siting of monitors of various types. Any SPM operated by an air monitoring agency must be included in the periodic assessments and annual monitoring network plan required by §58.10 and approved by the Regional Administrator.

Total Suspended Particulates (TSP) means particulate matter as measured by the method described in appendix B of Part 50.

VOC means volatile organic compounds

INTRODUCTION

40 CFR Part 58 Paragraph 10 states as follows:

§58.10 Annual monitoring network plan and periodic network assessment

(a)(1) Beginning July 1, 2007, the state, or where applicable local, agency shall submit to the Regional Administrator an annual monitoring network plan which shall provide for the documentation of the establishment and maintenance of an air quality surveillance system that consists of a network of SLAMS monitoring stations that can include FRM, FEM, and ARM monitors that are part of SLAMS, NCore, CSN, PAMS, and SPM stations. The plan shall include a statement of whether the operation of each monitor meets the requirements of appendices A, B, C, D, and E of this part, where applicable. The Regional Administrator may require additional information in support of this statement. The annual monitoring network plan must be made available for public inspection and comment for at least 30 days prior to submission to the EPA and the submitted plan shall include and address, as appropriate, any received comments.

This document is intended to address the regulatory requirement for an annual air monitoring network plan for the Commonwealth of Virginia. The requirements for the components of the annual monitoring network plan are contained in §58.10 paragraphs (2) through (13).

NETWORK DESIGN

The monitoring program for the DEQ operates the ambient air monitoring network of both gaseous and particulate pollutant monitors required in 42 US Code §7410 (a) (2) (B) (i) which requires that the Commonwealth of Virginia:

- (B) provide for establishment and operation of appropriate devices, methods, systems, and procedures necessary to—*
- (i) monitor, compile, and analyze data on ambient air quality,*

The implementation and operating requirements of the ambient monitoring network are contained in 40 CFR Part 58 as defined below in §58.2 as follows:

- (1) Quality assurance procedures for monitor operation and data handling.*
- (2) Methodology used in monitoring stations.*
- (3) Operating schedule.*
- (4) Siting parameters for instruments or instrument probes.*
- (5) Minimum ambient air quality monitoring network requirements used to provide support to the State implementation plans (SIP), national air quality assessments, and policy decisions. These minimums are described as part of the network design requirements, including minimum numbers and placement of monitors of each type.*

Table 1 below shows the number of monitors and types of pollutants monitored and how they are distributed throughout the Commonwealth by Air Quality Control Region and Metropolitan Statistical Area (MSA). This table demonstrates air monitor distribution

and pollutant measurement consistent with Part 58 Appendix D. In addition to the MSA and Core Based Statistical Area (CBSA) based pollutant monitoring, Virginia maintains additional monitoring sites to meet additional federal and state based monitoring programs. These programs are listed below.

Table 1 Air Monitoring Samplers/Analyzers in Virginia and Pollutants Monitored

MSA/CBSA(a)	Ozone	PM2.5	NO2	SO2	CO	PM10	Lead (Pb)
Kingsport-Bristol-Bristol, TN-VA		1 FRM					
Winchester, VA-WV	1	1 FRM, 1 FEM				1 FEM	
Harrisonburg, VA	1	1 FRM	1	1			
Roanoke, VA	1	1 FRM, 1 FEM	1	1	1		
Blacksburg-Christiansburg-Radford VA				1			1
Lynchburg, VA		1 FRM					
Charlottesville, VA	1	1 FRM, 1 FEM					
Richmond, VA	5	4 FRM, 2 FEM	3	2	2	1 FRM, 1 FEM	
Virginia Beach-Norfolk-Newport News, VA-NC	3	3 FRM, 1 FEM	2	2	2	1 FRM, 1 FEM	
Washington-Arlington-Alexandria, DC-VA-MD-WV	6	3 FRM, 1 FEM	4	1	2	1 FEM	
Total – MSA/CBSA	18	23	11	8	7	6	1
Total- all sites(b)	21	25	11	8	7	7	1

(a) Metropolitan Statistical Areas/Core based statistical areas

(b) Includes sites not incorporated into an MSA or CBSA i.e. Shenandoah National Park (ozone, IMPROVE); Rockbridge County (Ozone, IMPROVE); Carroll County (PM10); Wythe County (Ozone).

Ozone Network of Monitors – Virginia maintains a highly robust system of ozone monitors throughout the Commonwealth. As seen in Table 1 above, Virginia maintains more than the minimum number of ozone monitors required by regulations for the MSAs where the population is greater than one million i.e. the Washington-Arlington-Alexandria, DC-VA-MD-WV MSA, Richmond, VA MSA and Virginia Beach-Norfolk-Newport News, VA-NC MSA. The actual regulatory required number of monitors is shown in Attachment 1 to this document. In Virginia, there is an ozone monitoring “season” that runs from March 1 through Oct. 31 as outlined in 40 CFR Part 58 Appendix D Table D-3. DEQ operates its monitors throughout the year to maintain operational consistency and to prevent the system-wide shut down and start-up that

would be required if twelve month operation were not followed. Virginia also maintains a number of ozone monitors that are part of the Enhanced Monitoring Program.

PM2.5 Network of Monitors – Virginia also maintains a highly robust system of PM2.5 monitors throughout the Commonwealth. As seen in Table 1 above, DEQ maintains more than the minimum number of PM2.5 monitors required by regulations for the MSAs where the population is greater than one million i.e. the Washington-Arlington-Alexandria, DC-VA-MD-WV MSA, Richmond, VA MSA and Virginia Beach-Norfolk-Newport News, VA-NC MSA. The actual regulatorily required number of monitors is shown in Attachment 1 to this document. DEQ is working towards replacing the PM2.5 FRM filter-based samplers with continuous FEM monitors. This is an ongoing effort. The rate of these replacements is dictated by funding and technical developments in the market availability of these continuous monitors.

Urban Air Toxics Programs – The DEQ maintains one urban air toxics sites at: 51-670-0010 Hopewell City Woodson Middle School. The Hopewell site samples for metals, Volatile Organic Compounds, (VOCs) and Carbonyls. The Urban Air Toxics program operates on a one in six day basis.

NCore - The National Core Monitoring Network (NCore) site maintained by DEQ is located at 51-087-0014 Henrico County MathScience Innovation Center (MSIC). The Design Criteria for the NCore site in Virginia is defined in Appendix D of Part 58 of 40 CFR.

NATTS – DEQ maintains a National Air Toxics Trend Site (NATTS) site located at 51-087-0014 Henrico County MSIC site. In addition to the suite of pollutants measured in the Urban Air Toxics Program, NATTS also samples for Polycyclic Aromatic Hydrocarbons (PAHs). The National Air Toxics Trend Site operates on a one in 6 day basis.

Near Road Monitoring – DEQ will install three near road monitoring sites consistent with the design requirements contained in Appendix D. DEQ currently has two operating sites located at 51-760-0025 Richmond City Joseph Bryan Park and 51-059-0031 located in Springfield at the Backlick Road Park and Ride. The third site will be located in the Virginia Beach-Norfolk-Newport News VA-NC is described in the Virginia Network Changes section.

DATA REQUIREMENTS RULE

EPA published a rule entitled "Data Requirements Rule for the 2010 1-Hour Sulfur Dioxide (SO₂) Primary National Ambient Air Quality Standard (NAAQS)," on Aug. 21, 2015 (80 FR 51052). This rule, referred to as the DRR, directed states to provide data characterizing air quality in areas with large sources of SO₂ emissions and to identify maximum one-hour SO₂ concentrations in ambient air. The DRR required that, at a minimum, air agencies characterize air quality around facilities that emitted 2,000 tons per year (tpy) or more of SO₂ in 2014. For areas that were originally characterized using

air quality modeling, the DRR includes an ongoing data requirement that applies only where the modeling was based on actual emissions and where the area has not subsequently received a nonattainment designation. In such cases, the air agency is required to submit an annual report to the EPA providing updated emissions information and recommending to the EPA whether further modeling is warranted to assess any expected changes in recent air quality.

Virginia has evaluated the original DRR modeling and most recent actual emissions data and determined that no additional modeling analyses are warranted for this annual review period. Specifically, this decision is based on three factors:

1. A comparison of the original actual modeled emissions to the most recent annual emissions for each affected facility.
2. The fact that there have been no increases in short-term emissions at any facility.
3. The original modeling demonstrated NAAQS compliance.

The table below provides a comparison of the most recent emissions (2019) to the modeling period.

Table 2 SO₂ Emissions Summary

Federal ID	Facility	2012 SO₂ Emissions (TPY)	2013 SO₂ Emissions (TPY)	2014 SO₂ Emissions (TPY)	2015 SO₂ Emissions (TPY)	2019 SO₂ Emissions (TPY)	Jurisdiction
VA000000 51199000 01	Dominion Yorktown Power Station	---	9,052.27	9,755.51	4,549.34	268.60	York County
VA000000 51041000 02	Dominion - Chesterfield Power Station	1,229.90	1,966.42	2,180.92	---	411.41	Chesterfield County
VA000000 51083000 46	Dominion/O DEC Clover Power Station	1,875.14	2,262.22	2,083.52	---	399.26	Halifax County

In all cases, the most recent emissions are substantially lower than the average modeled emission rates used in the original submittal to EPA. Dominion – Yorktown Power Station and Dominion/ODEC – Clover Power Station have experienced substantial reductions due to retired units (Yorktown) and reduced utilization (Clover). There also has been an emissions reduction at the Dominion – Chesterfield Power Station. The original modeling demonstrated NAAQS compliance for all three facilities as shown in the table below.

Table 3 SO₂ Modeled Concentrations

Modeling Analysis Results Summary	Original Modeled SO₂ Concentration (µg/m³)	2019 Monitored SO₂ Background Concentration (µg/m³)	Total Concentration (µg/m³)	Percent of NAAQS
Clover Power Station	38.09	8	46.09	23
Chesterfield Power Station	62.53	11	73.53	37
All modeled sources - Chesterfield	120.09	11	131.09	67
Yorktown Power Station	180.61	13	193.61	99

The results for Dominion/ODEC Clover Power Station fall below 50% of the NAAQS. Analogous to the monitor shutdown provisions, the requirement for the annual emissions assessments for this facility may be terminated. The results for the Chesterfield Power Station are expected to remain well below the NAAQS. In fact, the impact from the facility itself, including background is less than 50% of the NAAQS. The cumulative modeled design value from all sources was 131.09 µg/m³; however, the contribution from the Chesterfield Power Station to the maximum design value was minimal (0.0072 µg/m³). Finally, the results for the Yorktown Power Station are expected to decrease substantially due to recently retired coal units and the facility will remain in compliance with the NAAQS.

MULTI-STATE/MULTI-AGENCY MONITORING

Virginia shares monitoring responsibilities in MSA's where multiple states or localities are included in the definition of the MSA. For the most part Virginia meets the minimum monitoring requirements individually without requiring the inclusion of another state or localities in meeting the minimum monitoring requirements.

Washington Metropolitan area – This area is defined as the Washington-Arlington-Alexandria, DC-VA-MD-WV metropolitan statistical area. In this area Virginia generally meets the minimum monitoring requirements individually with the exception of the SO₂ Population Weighted Emissions Inventory (PWEI) requirements located in 40 CFR 58 Appendix D paragraphs 4.4.2 and 4.4.2(1). DEQ currently has one SO₂ monitor located at the Lee Park Site (51-059-0030).

Hampton Roads – Hampton Roads is made up of the VA Beach-Norfolk-Newport News VA-NC Metropolitan Statistical Area. This MSA includes Currituck County and Gates County in N.C. By Memorandum of Agreement signed April 5, 2016 by both DEQ and NC Department of Environmental Quality, the respective agencies agree that the monitoring requirements for this MSA to include the North Carolina Counties are currently met by the monitors maintained in Virginia.

AIR QUALITY MONITORING NETWORK CHANGES

MONITORING SITE CHANGES SINCE LAST REVIEW JULY 1, 2020 to JUNE 30, 2021

Photochemical Assessment Monitoring Station 51-087-0014, 72-M, MathScience Innovation Center Continuous PM2.5, Henrico County, AQCR5

Based on 40 CFR part 58, Appendix D, State air monitoring agencies are required to begin making PAMS measurements at their NCore location(s) by June 1, 2021. DEQ has received all needed instrumentation and the instrumentation operating. While the Automated Gas Chromatograph is operating some additional modifications still have to be completed for the system to run continuously through the PAMS season.



Figure 1 MSIC monitoring site with PAMS component locations identified

40 CFR Part 58 Appendix D paragraph 5 (b) contains the listing of the required PAMS measurements to be performed at the MSIC NCore site. Table 4 below provides a listing of the measured parameters and the status of each instrument at the implementation date of June 1, 2021.

Table 4 PAMS Parameter Measurement Method and Status

No.	Measured Parameter	Instrument	Status July 1, 2021
1	Hourly averaged speciated volatile organic compounds (VOCs)	Markes/Agilent Automated Gas Chromatograph with Kori Drying system	In place and operating
2	Three 8-hour averaged carbonyl samples per day on a 1 in 3 day schedule	ATEC Model 8000 Cartridge Sampler	In place and operating
3	Hourly averaged O ₃	Thermo 49i ozone monitor, EQOA-0880-047	In place and operating
4	Hourly averaged NO	Teledyne T200P NO ₂ monitor, EQNA-1016-241	In place and operating
5	Hourly averaged True NO ₂	TAPI T500U True NO ₂ monitor, EQNA-0512-200	In place and operating
6	Hourly averaged total reactive NO _y	Teledyne T200U NO _y monitor, RFNA-1194-099	In place and operating
7	Hourly averaged ambient temperature	MetOne 061A-2	In place and operating
8	Hourly vector-averaged wind direction	Young 053005 V	In place and operating
9	Hourly vector-averaged wind speed	Young 053005V	In place and operating
10	Hourly average atmospheric pressure	COMET T760	In place and operating
11	Hourly averaged relative humidity	MetOne 083E-0-35 RH Sensor	In place and operating
12	Hourly precipitation	Young 52202 Tipping Rain Bucket Gauge	In place and operating
13	Hourly averaged mixing-height	Vaisala CL51 High Range Ceilometer	In place and operating
14	Hourly averaged solar radiation	MetOne 094-2 Solar Radiation Sensor	In place and operating
15	Hourly averaged ultraviolet radiation	Eppley TUVR Ultraviolet Radiation	In place and operating

**INSTRUMENT CHANGES SINCE LAST REVIEW
JULY 1, 2020 through JUNE 30, 2021**

51-161-1004, 19-A6, Herman Horn ES (Vinton) 2025 PM_{2.5} sampler, Roanoke County, AQCR2

In a network-wide effort to reduce the filter-based PM_{2.5} samplers in the Virginia monitoring network, the Partisol 2025 sampler was shut down and removed from the Vinton site after the February 3, 2021 run day. The continuous instrument (Teledyne T640) that is currently operating at this site will provide continuous PM_{2.5} data and will be listed as a SLAMS monitor. Data collection as the primary monitor began on January 1, 2021.

51-059-0030, 46-B9, Lee District park T-640X Continuous PM₁₀ sampler, Fairfax County, AQCR7

In a network-wide effort to reduce the filter-based PM₁₀ samplers in the Virginia Monitoring Network, the Wedding and Associates high volume PM₁₀ sampler was shut down after the February 3, 2021 run day and removed on March 11th. The continuous instrument (Teledyne T640x) that is currently operating at this site will provide continuous PM₁₀ data and will be listed as the SLAMS monitor.

51-087-0014, 72-M, MathScience Innovation Center T-640x Continuous PM₁₀ sampler, Henrico County, AQCR5

In a network-wide effort to reduce the filter-based PM₁₀ samplers in the Virginia Monitoring Network, the Wedding and Associates high volume PM₁₀ sampler and the modified Partisol low flow PM₁₀ sampler were shut down and removed. The continuous instrument (Teledyne T640x) that is currently operating at this site will provide continuous PM₁₀ data and will be listed as a SLAMS monitor. Data collection as the primary monitor began January 1, 2021.

51-840-0002, 134-C, Winchester Courts Building PM₁₀ High Volume Sampler, Winchester City, AQCR2

In a network-wide effort to reduce the filter-based PM₁₀ samplers in the Virginia Monitoring Network, the Wedding and Associates high volume PM₁₀ sampler was shut down after the February 3, 2021 run day and removed. The continuous instrument (Teledyne T640x) that is currently operating at the Rest (51-069-0010) Frederick County site will provide continuous PM₁₀ data.

**ANTICIPATED SITE CHANGES
JULY 1, 2020 through JUNE 30, 2022**

51-650-XXXX Hampton Roads Near Road Site, AQCR6

Multiple efforts have been made to locate the Hampton Roads Near road site in the highest possible Fleet Adjusted AADT road segment. Table 8 below documents the evaluated road segments, the potential siting location(s), and the results of the monitoring site approval process.

Table 8 Near Road site location attempts

Road Segment	Fleet Adj.- AADT	Location of Site	Results of Approval Process
I-264 EB – I-64 to WCL VA Beach	132939	36° 51.185' N; -76° 11.706' W	City would not approve site due to proximity to underground water line
1-264 EB – SR 190 to SR225	125120	36° 50.05833' N; 76° 8.5633' W	Easement owned by contiguous Apartment developer; would not allow construction
1-264 EB – SR 190 to SR225	125120	36.836963° N; -76.157183° W	Site located on newly sold Easement intended for VDOT road widening
1-264 EB – SR 190 to SR225	125120	36.843942° N; -76.169970° W	Exit from I-264 to be extended site is part of VDOT I-264 upgrade
I-64 WB – SR 134 to US 258	114323	37.043505° N -76.397359° W	Could not secure Locality approval and added construction eliminated access
I-64 EB – SR 134 to US 258	115266	Various Locations	No locations that meet the siting requirements could be identified
I-64 WB – HR Center parkway to ECL Newport News	107598	37.06249° N - 76.42181° W	Property owner, Thomas Nelson CC, indicated installation conflicted with planned construction for site
I-64 EB – SR 134 Mercury Blvd to I-664 HR Beltway	104266	37.036745° N -76.391074° W	City of Hampton rejected proposal due to conflict with proposed 5 year development plan for site

In addition to the eight listed sites, AQM rejected the road segment identified as US-13 from I-64 to WCL Virginia Beach because no suitable location could be identified.

The Office of AQM has done additional monitor siting evaluations in the Tidewater area and have identified two additional possible sites along I-264 in Virginia Beach. These sites are described below:

1. EB I-264 SR 403 Newtown Road to SR 190 Witchduck Road (36.8431 N; -76.1833 W)
This road segment has the highest FAADT in the Tidewater area based on 2018 Virginia Department of Transportation (VDOT) Data. Figure 3 below provides an overhead view of the proposed road segment with the range of possible sites highlighted.



Figure 3 Overhead of EB I-264 between Newtown Road and Witchduck Road

2. WB I-264 SR 403 Newtown Road to SR 190 Witchduck Road (36.8444 N; -76.16583 W)
 This road segment has the highest FAADT in the Tidewater area based on 2018 VDOT data. Figure 4 below provides an overhead view of the proposed road segment with the range of possible sites highlighted.



Figure 4 Overhead of WB I-264 between Newtown Road and Witchduck Road

Extensive construction is occurring at both locations. The westbound location is inaccessible as of the date of this writing. AQM will pursue the EB road segment as the primary choice for the near road siting. There are several possible locations within the rectangular area shown in Figure 3. There is ample power at this location as well.

**ANTICIPATED INSTRUMENTATION CHANGES
JULY 1, 2021 through JUNE 30, 2022**

**51-650-0008, 179-K, NASA Langley T-640 Continuous PM_{2.5} monitor,
Hampton City, AQCR6**

As a result of operational issues with the existing 5014i BAM continuous PM_{2.5} monitor at the NASA Langley (Hampton City) site, a new T-640x continuous FEM instrument will be installed. The new T640x is projected for installation in June of 2021. AQM will remove the existing Partisol PM_{2.5} sampler and the Wedding and Associates High Volume PM₁₀ sampler as part of this upgrade.

MONITORING SITES

OVERHEAD VIEWS OF MONITORING SITES WITH IDENTIFYING ADDRESS INFORMATION

Each overhead view contains a brief discussion of the original purpose for the site being located where it is. In some cases the current reason for the siting has changed.

Gladeville Elementary School, Galax, 23-A

The TSP sampler was installed in June 1983 as a replacement site for a close by monitoring location that was unduly influenced by a nearby source. The TSP was removed January 1989 and a PM10 sampler was installed in its place.



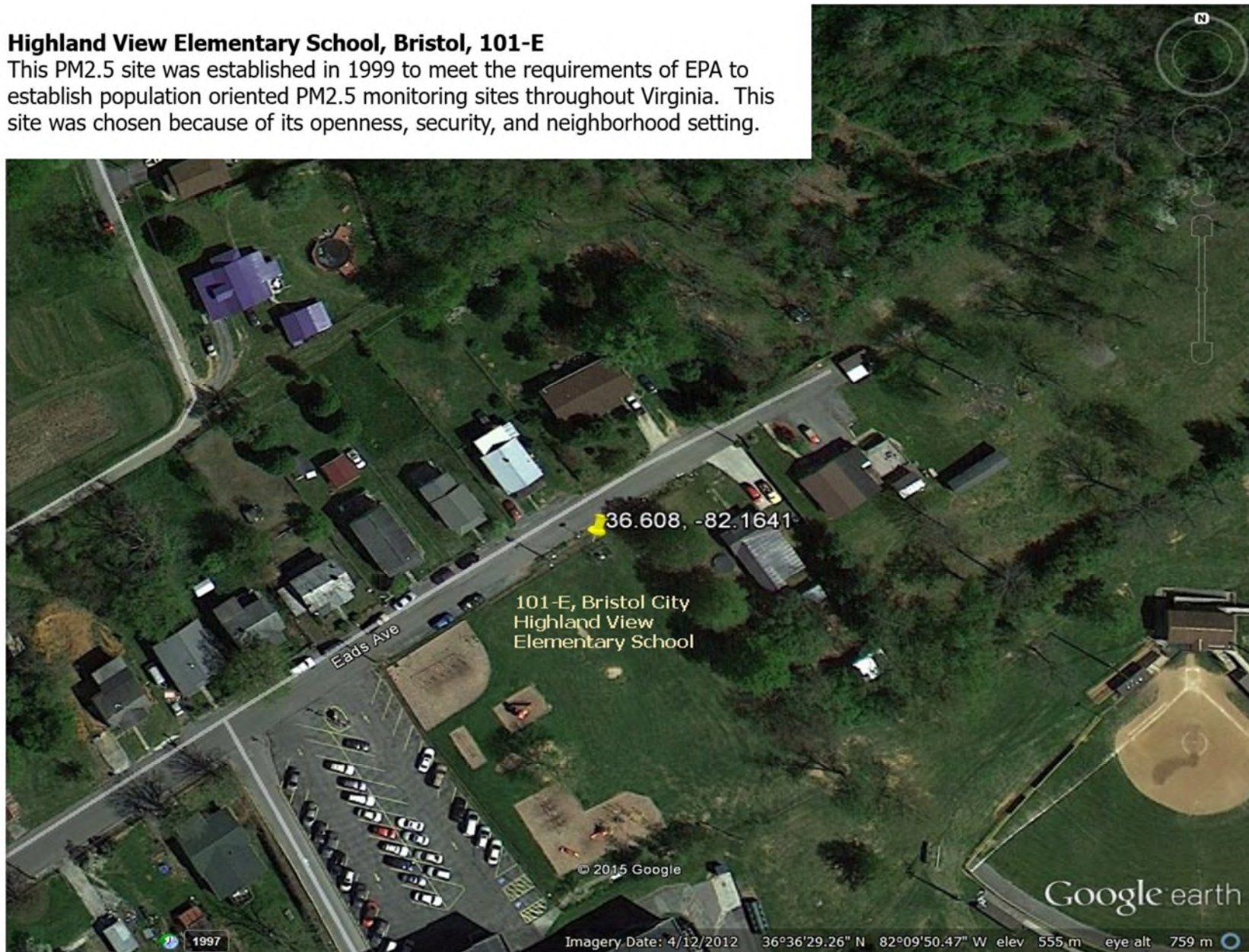
Rural Retreat, Wythe County, 16-B

This site began in April 1990 as a replacement site for the Marion, VA ozone site. This site is downwind of the potential sources of VOCs and more representative of the area.



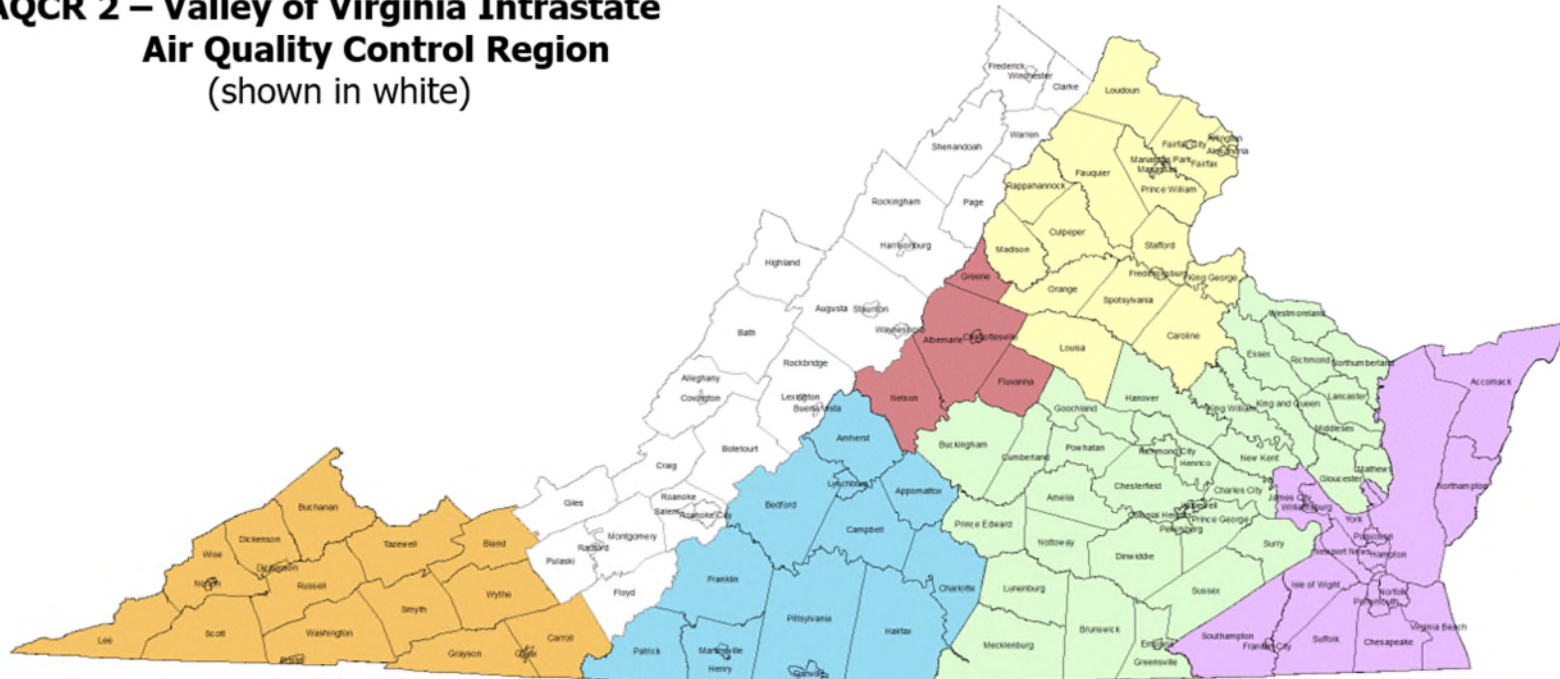
Highland View Elementary School, Bristol, 101-E

This PM2.5 site was established in 1999 to meet the requirements of EPA to establish population oriented PM2.5 monitoring sites throughout Virginia. This site was chosen because of its openness, security, and neighborhood setting.



VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

AQCR 2 – Valley of Virginia Intrastate Air Quality Control Region (shown in white)



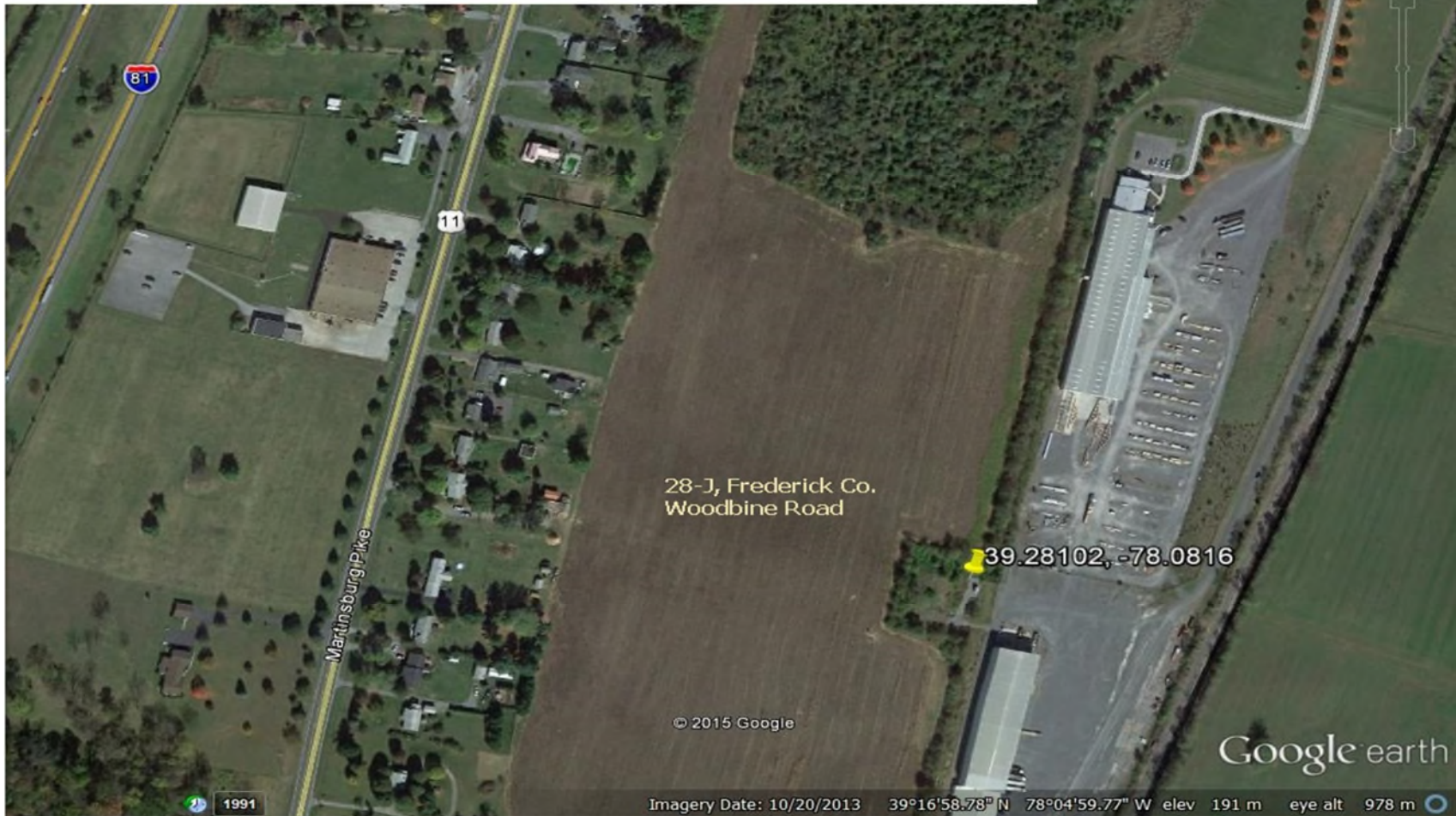
Counties: Alleghany, Augusta, Bath, Botetourt, Clarke, Craig, Floyd, Frederick, Giles, Highland, Montgomery, Page, Pulaski, Roanoke, Rockbridge, Rockingham, Shenandoah, Warren

Cities: Buena Vista, Clifton Forge, Covington, Harrisonburg, Lexington, Radford, Roanoke, Salem, Staunton, Waynesboro, Winchester

CBSA/MSA: 49020 – Winchester VA-WV; 40220 – Roanoke, VA; 25500 – Harrisonburg, VA

Rest, Frederick County, 28-J

Of the counties in Virginia with high VOC emissions and no ozone monitoring, Frederick County was deemed a candidate for a monitoring site. This site was the first choice due to its downwind direction from Winchester and its good security. Ozone sampling began in 1991. In 2006-2007, the environmental group SHENAIR purchased an environmental shelter and TEOM PM2.5 sampler for VA DEQ. In the fall of 2007, the shelter was installed and a 24-hr PM2.5 sampler was also added.



Herman Horn Elementary School, Vinton, 19-A6

This site was installed at the request of locality (Roanoke County Health Department). NO2 sampling began in December 1980 and Ozone was added in August 1981. In January 1987, SO2 and CO analyzers were added in effort to consolidate monitoring efforts in the Roanoke area. In 2013, PM2.5 24-hr and continuous samplers were added.



Natural Bridge Station, 21-C

This site is a cooperative effort between VA DEQ and the National Forest Service. Sampling began in April 1999. The current shelter was supplied by the Forest Service, and the sampling equipment was supplied by VA DEQ. The area is rural, open and has good security.



VDOT, Rockingham County, 26-F

This site was established as a replacement for a monitoring site to the south of the city of Harrisonburg. This site is ten miles north of the city and began in April 2004. On the property of VDOT, it is situated between Route 11 and I-81, with open air flow and good security.



Salem High School, Salem, 110-C

PM2.5 sampling on the roof of the Salem Fire Department stopped in 2006 when roof repairs and construction reconfigured the roof making sampling at this location untenable. After a long search, a spot at Salem High School was found that offered free air flow, good accessibility and very good security. The site was installed and began operation in late 2008.



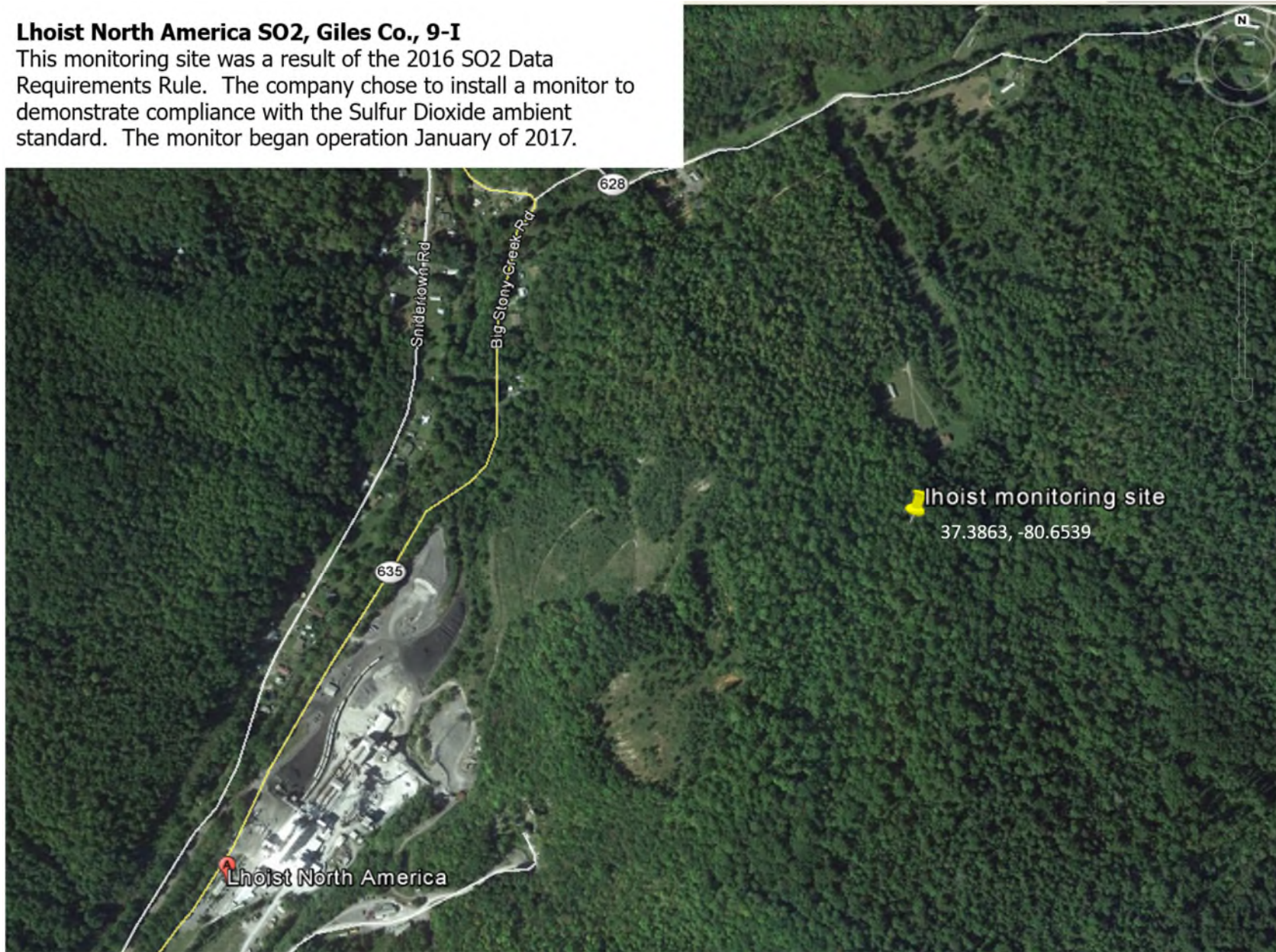
Radford Army Ammunition Plant, Montgomery County, 18-C

A review of Lead sources and the retention of the Lead (Pb) standard, a Lead Monitor was installed at the Radford Army Arsenal Plant. The operational start date was October 4, 2017.



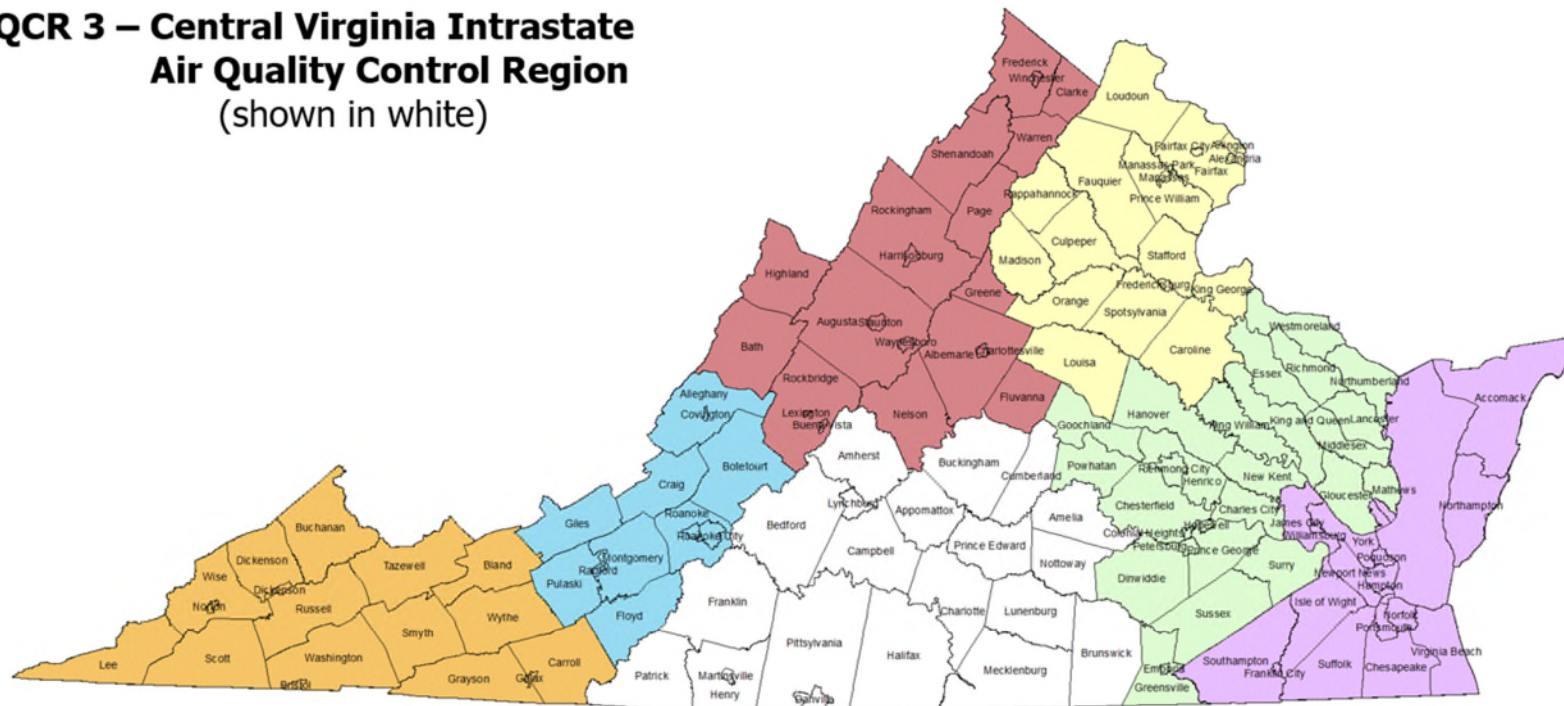
Lhoist North America SO2, Giles Co., 9-1

This monitoring site was a result of the 2016 SO2 Data Requirements Rule. The company chose to install a monitor to demonstrate compliance with the Sulfur Dioxide ambient standard. The monitor began operation January of 2017.



VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

AQCR 3 – Central Virginia Intrastate Air Quality Control Region (shown in white)



Counties: Amelia, Amherst, Appomattox, Bedford, Brunswick, Buckingham, Campbell, Charlotte, Cumberland, Franklin, Halifax, Henry, Lunenburg, Mecklenburg, Nottoway, Patrick, Pittsylvania, Prince Edward

Cities: Bedford, Danville, Lynchburg, Martinsville, South Boston

CBSA/MSA: 31340 – Lynchburg, VA

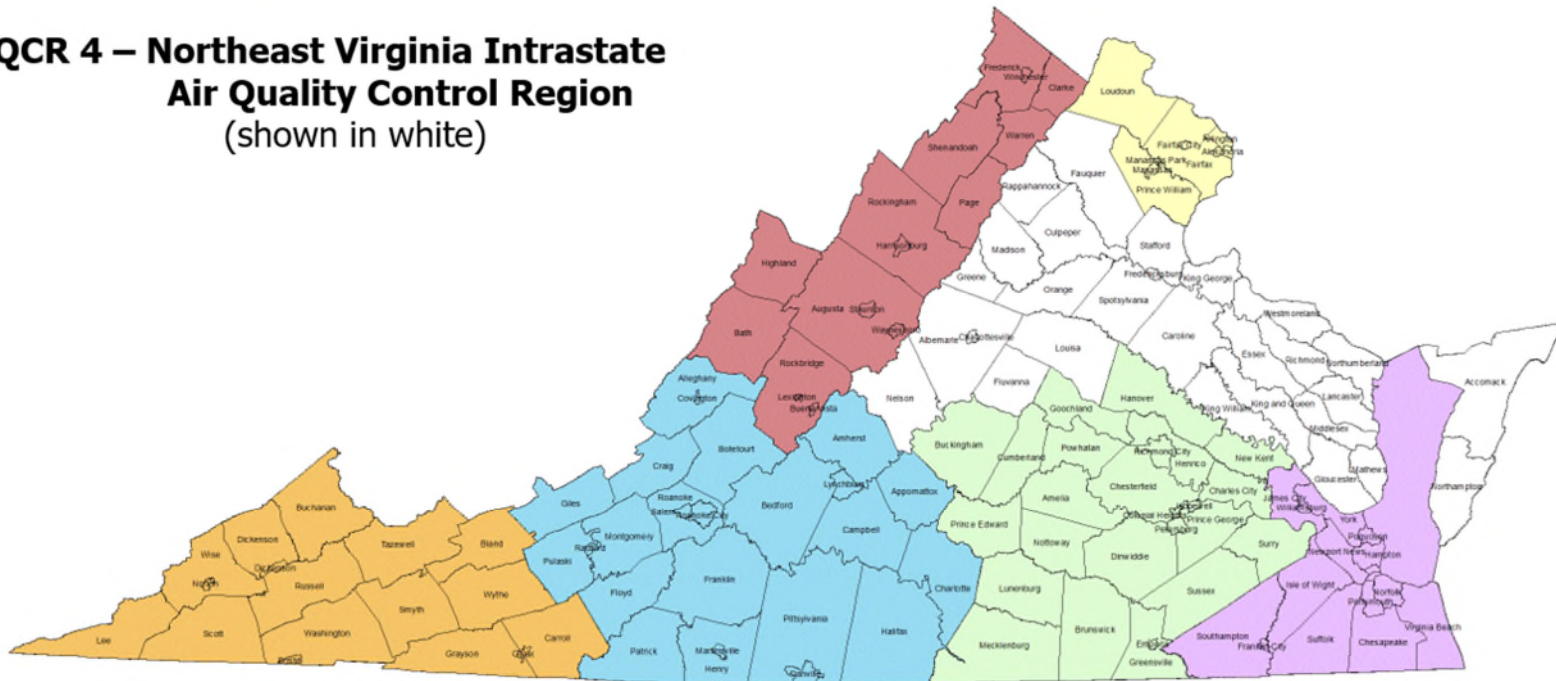
Leesville Road Water Tower, Lynchburg, 155-Q

When the PM2.5 network was put together, it was determined a sampler was needed in Lynchburg. A sampler was installed but it was found that the site had electrical problems that could not be resolved. A secure location was found on city property and the PM2.5 sampler began operation at this site in April 2003.



VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

AQCR 4 – Northeast Virginia Intrastate Air Quality Control Region (shown in white)



Counties: Accomack, Albemarle, Caroline, Culpeper, Essex, Fauquier, Fluvanna, Gloucester, Greene, King and Queen, King George, King William, Lancaster, Louisa, Madison, Mathews, Middlesex, Nelson, Northampton, Northumberland, Orange, Rappahannock, Richmond, Spotsylvania, Stafford, Westmoreland

Cities: Charlottesville, Fredericksburg

CBSA/MSA: 40060 – Richmond, VA; 16820 – Charlottesville, VA; 47900 – Washington-Arlington-Alexandria, DC-VA-MD-WV

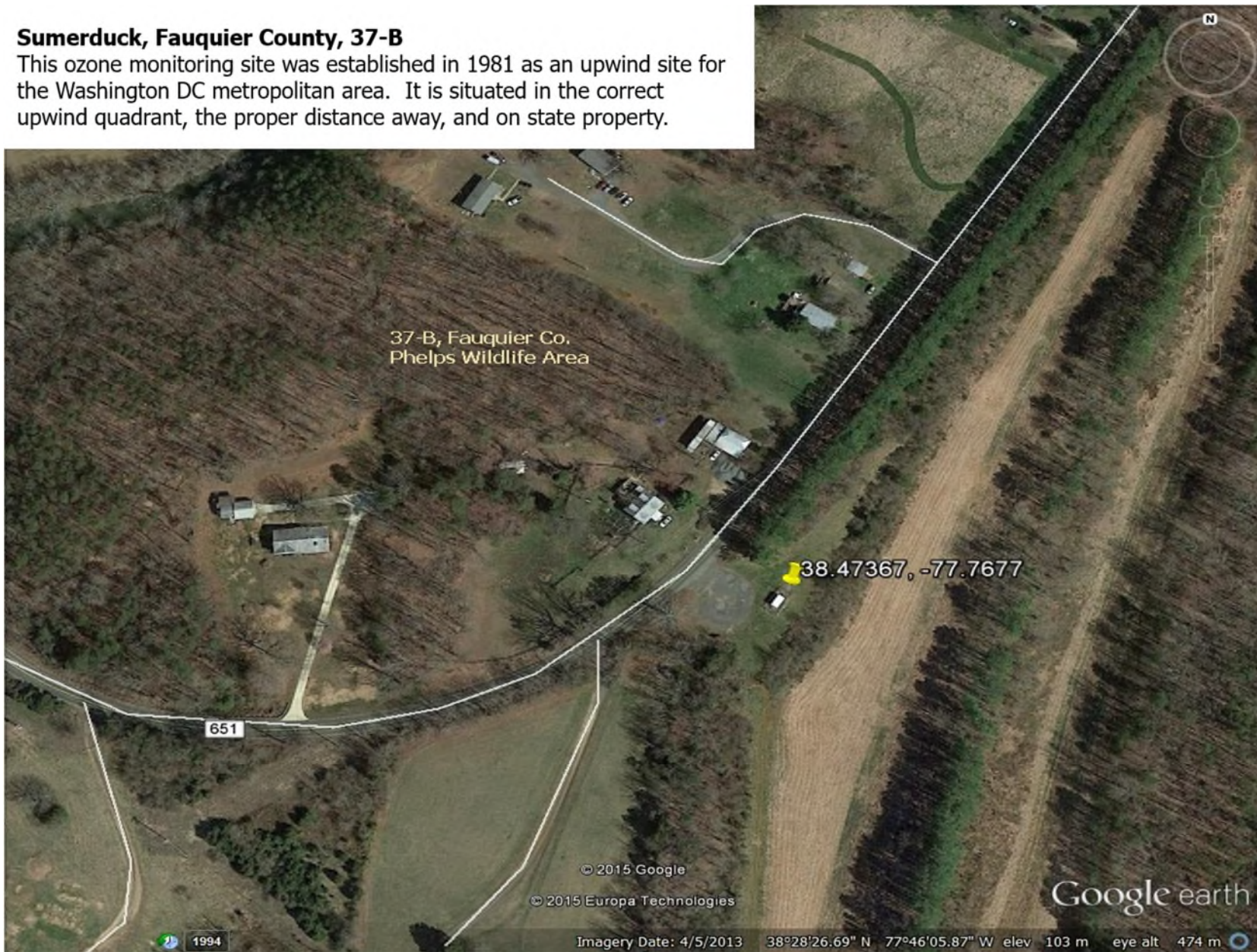
Corbin, Caroline County, 48-A

This site was established in June 1993 as the required "PAMS Type 1 upwind monitoring site to measure background pollutant concentrations of the air mass entering the Washington area on days conducive to ozone formation".



Sumerduck, Fauquier County, 37-B

This ozone monitoring site was established in 1981 as an upwind site for the Washington DC metropolitan area. It is situated in the correct upwind quadrant, the proper distance away, and on state property.



Widewater Elementary School, Stafford County, 44-A

The Ozone monitoring site at Widewater Elementary School was established to characterize ambient ozone concentrations in Stafford County. Ozone sampling began in September 1992, PM-10 sampling began in 2017.



Big Meadows, Shenandoah National Park, 35-A

This is a National Park Service air monitoring site. Their data was incorporated into the Virginia reported data in May 1983. The ozone analyzer and data collection equipment belongs to NPS. A TEOM PM2.5 purchased by VISTAS was installed by VA DEQ at the site in the second half of 2004. In 2007, TEOM ownership was turned over to VA DEQ.



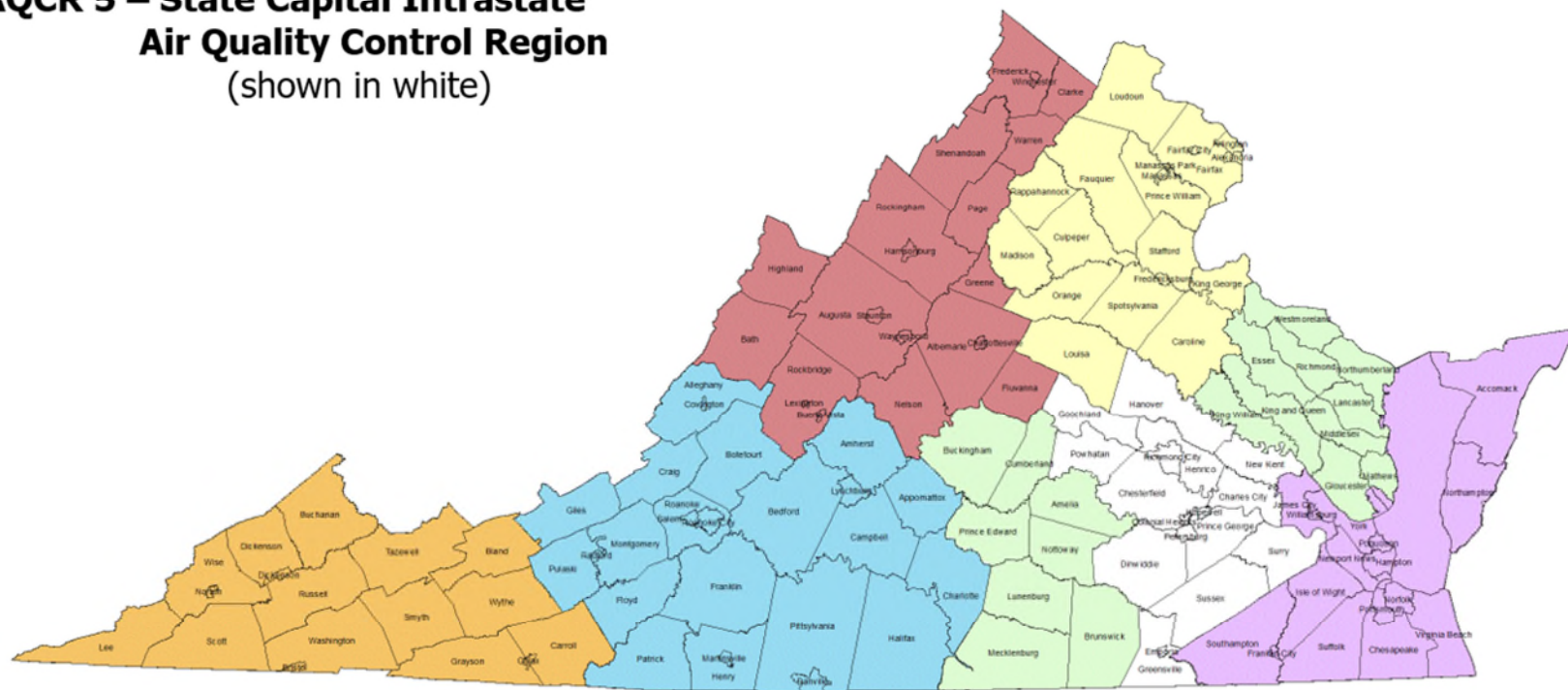
Albemarle High School, Albemarle County, 33-A

Since 2002, the Charlottesville area had been designated as a priority for Ozone and PM2.5 sampling. A monitoring site at Albemarle High School was finally found and eventually approved by the School Board. Inspected by EPA III, the site began operation in April of 2008.



VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

AQCR 5 – State Capital Intrastate Air Quality Control Region (shown in white)



Counties: Charles City, Chesterfield, Dinwiddie, Goochland, Greenville, Hanover, Henrico, New Kent, Powhatan, Prince George, Surry, Sussex

Cities: Colonial Heights, Emporia, Hopewell, Petersburg, Richmond

CBSA/MSA: 40060 – Richmond, VA

Charles City County, 75-B

Begun in 1987 to monitor Sulfur Dioxide in a downwind direction from Hopewell, this site was situated on private property as the best site in the modeled impact area. Later in 1987, Nitrogen Dioxide sampling was added in an attempt to consolidate sampling in the Hopewell area. The following spring, an Ozone analyzer was added to the site. A PM2.5 sampler was added and began sampling in January 1999.



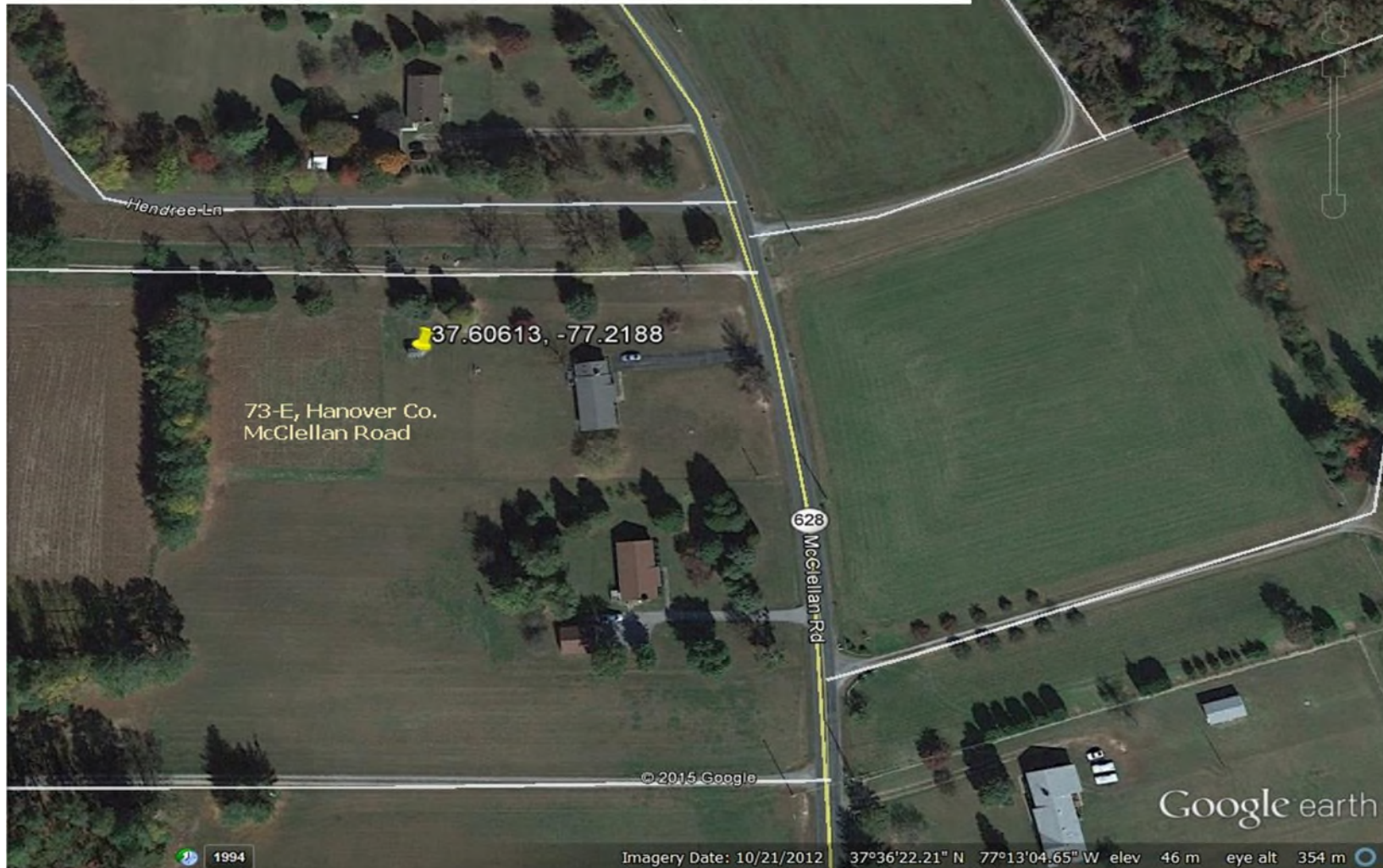
Beach Road, Chesterfield, 71-H

Air monitoring began in April 1980 at the Beach Road VDOT shop in Chesterfield County. Because of its location and security, this site was picked as the upwind Ozone site for the Richmond metropolitan area.



McClellan Road, Hanover County, 73-E

This site was established in 2001 as a replacement for the Richmond Metropolitan Area downwind ozone monitoring site. The original site was on county property and after many years of sampling, VA DEQ was asked to remove the shelter and sampling equipment. To maintain the correct distance and direction downwind of Richmond, the monitoring site had to be placed on private property.



MathScience Innovation Center, Henrico County, 72-M

This site began in 1981 as a replacement monitoring location for sites removed in the city of Richmond. Ozone and SO₂ were located in a storage room with a probe support extending above the roof. A shelter was later added as well as more instrumentation. In 2008 the MSIC site became a National Air Toxics Trend Site. In 2011 this also became the NCore location for DEQ as well.



VA DEQ Piedmont Office, Henrico County, 72-N

This PM2.5 site began operation in 1999 as a part of the new PM2.5 network. The location, on the roof of the DEQ office, was selected because of the ease of accessibility and security and because it was in the rapidly growing West End of the Richmond area.



Woodson Middle School, Hopewell, 154-M

The Woodson Middle School site is currently one of two Urban Air Toxics Sites in Virginia. The site was originally established as part of the Hopewell Community Air Toxics Study which began in 2009. When the Study was completed, the site was retained for further sampling in the Hopewell area and was designated the Urban Air Toxics Site due to the existence of a NATTS site in the Richmond area at the MSIC site.



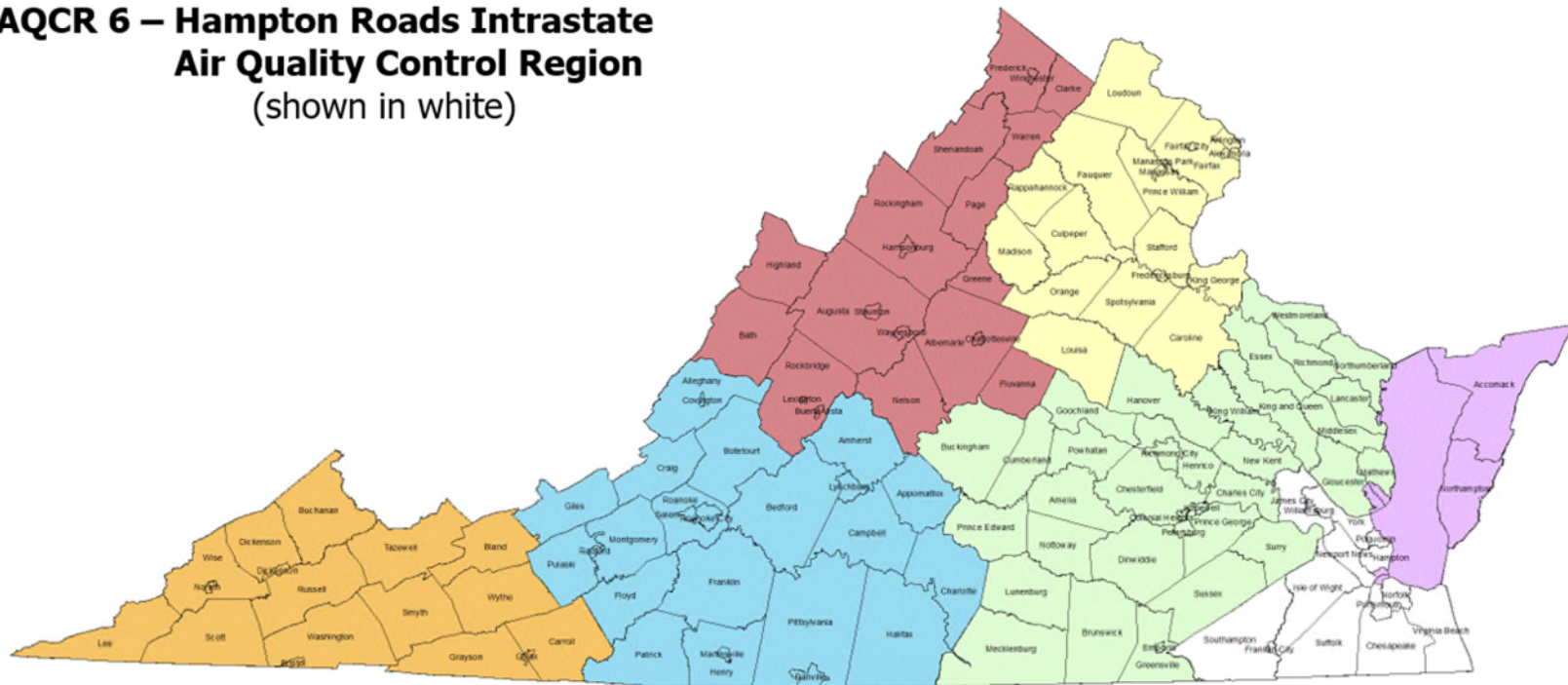
Bryan Park, Richmond, 158-X

Established in mid-2013 as part of the EPA mandated Near Road Monitoring program, this site is in Bryan Park alongside I-95 at its highest traffic volume stretch in the Richmond area.



VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

AQCR 6 – Hampton Roads Intrastate Air Quality Control Region (shown in white)



Counties: Isle of Wight, James City, Southampton, York

Cities: Chesapeake, Franklin, Hampton, Newport News, Norfolk, Poquoson, Portsmouth, Suffolk, Virginia Beach, Williamsburg

CBSA/MSA: 47260 – Virginia Beach-Norfolk-Newport News, VA-NC

NASA Langley Research Center, Hampton, 179-K

Sampling began in 2010 at this site. This location was a replacement site for the VA School in Hampton that had operated since 1972. The location on the northern portion of the NASA Langley Research Center property has free air flow and excellent security.



NOAA Storage Lot, Norfolk, 181-A1

This site was established in 2006 as a close-by replacement site for the Norfolk Post Office site that was shut down due to the post office closing. This site was chosen for representativeness of the sampling area, free air flow and excellent security.



Suffolk, 183-E

This monitoring site began operation in April 1987 as a NAMS ozone station. The site offered excellent security and is upwind of the Newport News-Hampton area on the Tidewater Peninsula (on the northern side of Hampton Roads).



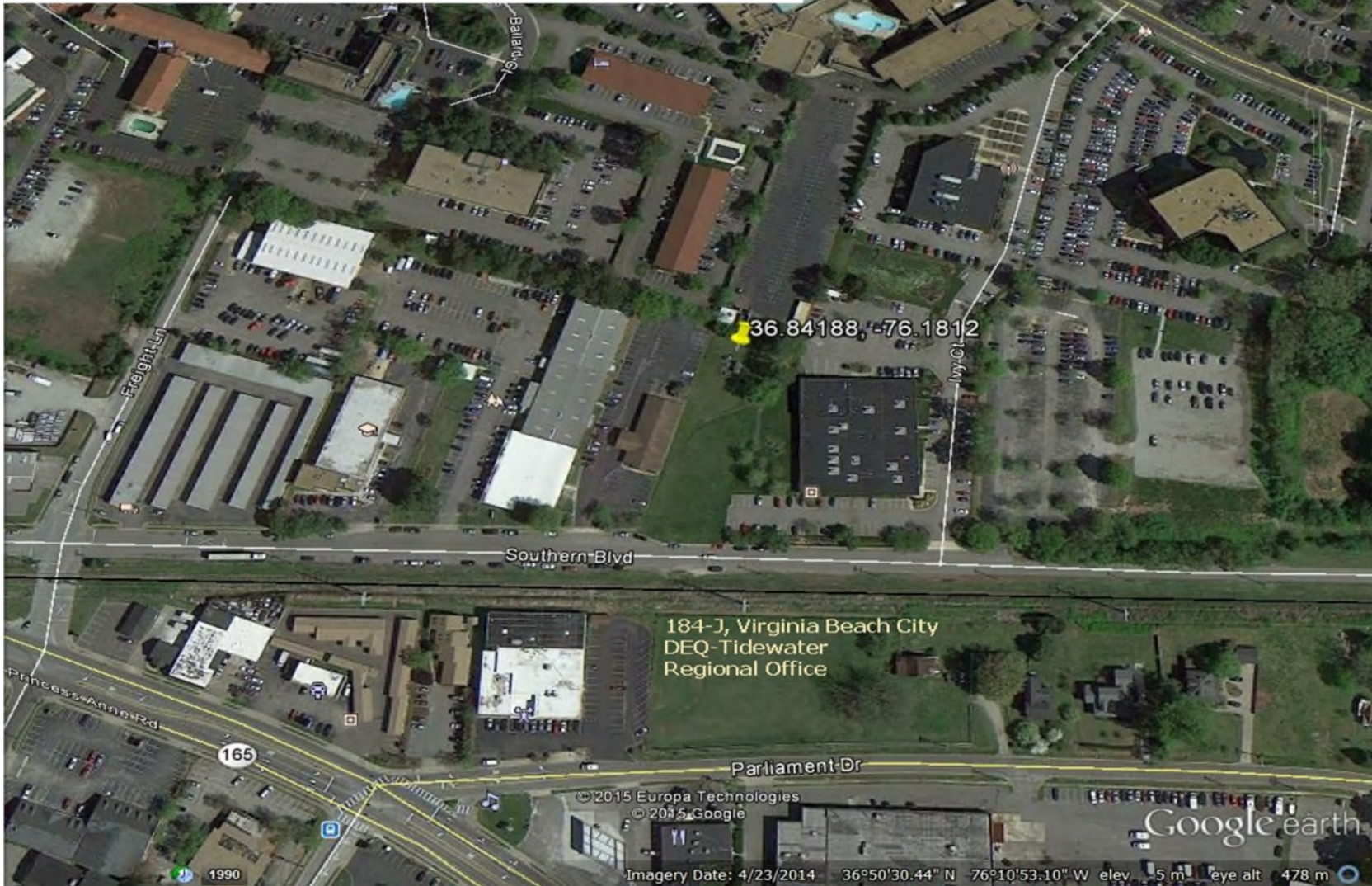
Suffolk, 183-F

This monitoring site was established in 1991 as an EPA required replacement for the terminated NAMS ozone monitoring site at the Cheriton Post Office on the eastern shore of Virginia.



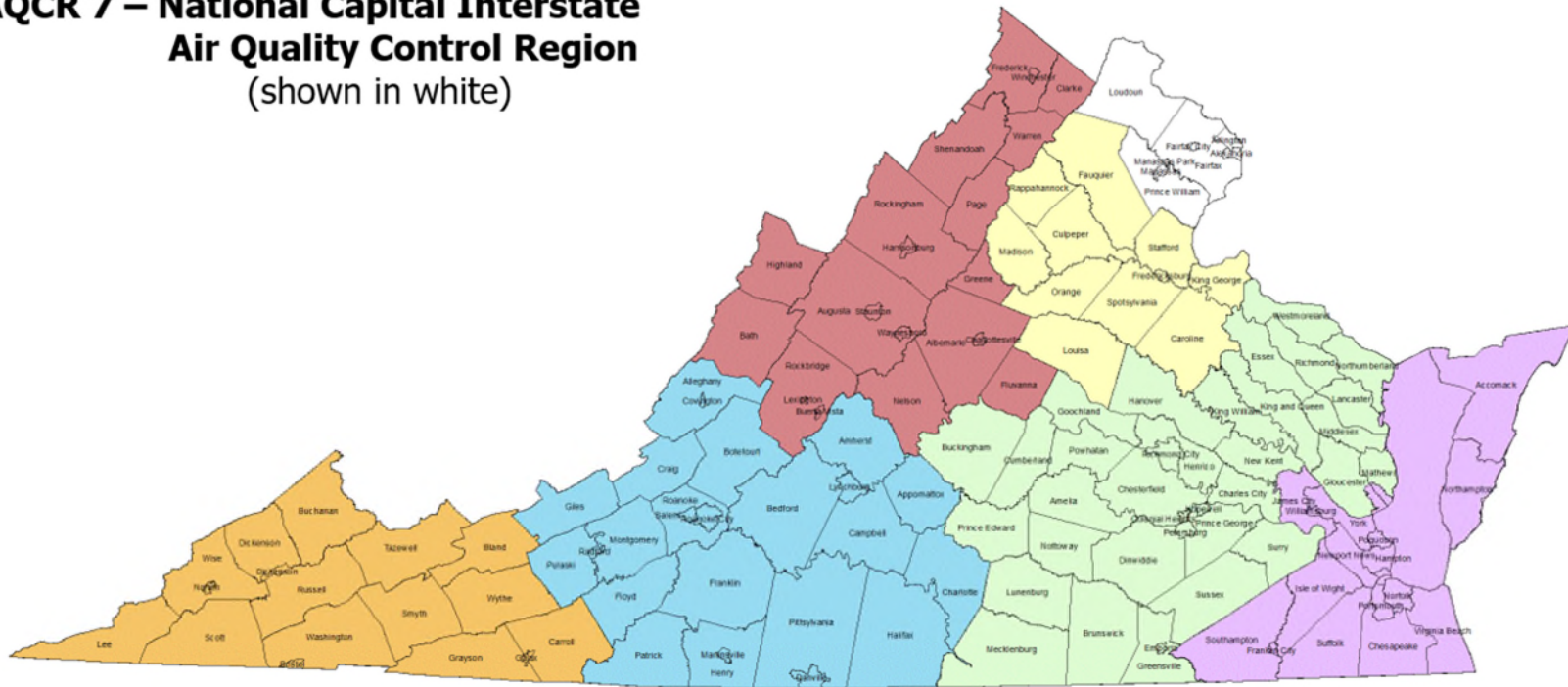
Tidewater DEQ Office, VA Beach, 184-J

This monitoring site was established in 1999 as part of the PM2.5 monitoring network. Also located on the side yard of the DEQ regional office, is the second Urban Air Toxics site in the Commonwealth.



VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

AQCR 7 – National Capital Interstate Air Quality Control Region (shown in white)



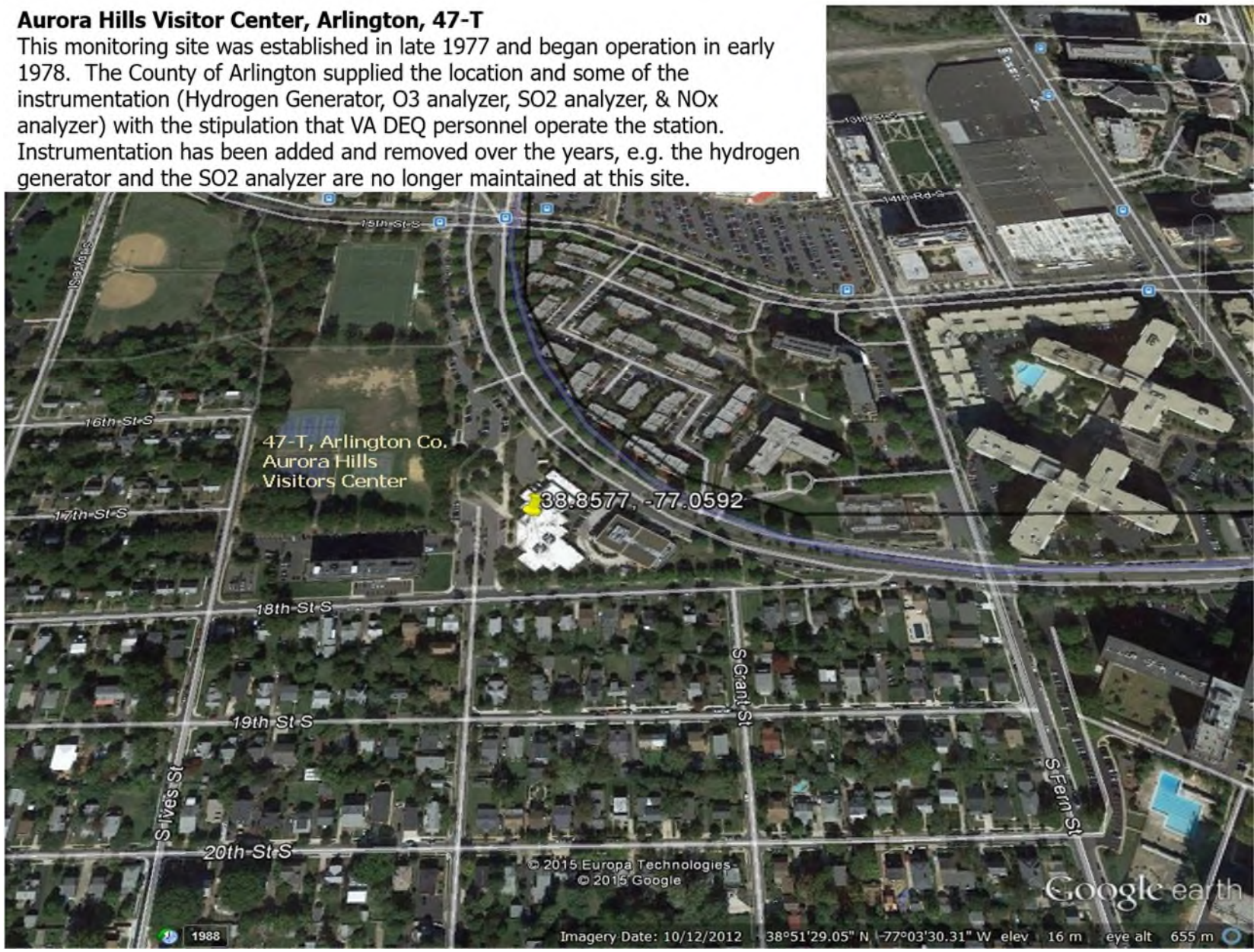
Counties: Arlington, Fairfax, Loudoun, Prince William

Cities: Alexandria, Fairfax, Falls Church, Manassas, Manassas Park

CBSA/MSA: 47900 – Washington-Arlington-Alexandria, DC-VA-MD-WV

Aurora Hills Visitor Center, Arlington, 47-T

This monitoring site was established in late 1977 and began operation in early 1978. The County of Arlington supplied the location and some of the instrumentation (Hydrogen Generator, O3 analyzer, SO2 analyzer, & NOx analyzer) with the stipulation that VA DEQ personnel operate the station. Instrumentation has been added and removed over the years, e.g. the hydrogen generator and the SO2 analyzer are no longer maintained at this site.



Lee District Park, Fairfax County, 46-B9

EPA required the Virginia DEQ to establish a PAMS in the secondary downwind direction from the area of maximum ozone precursor emissions for days when higher ozone concentrations were likely to occur. Lee District Park was in a good location for the establishment of this site, a PAMS Type II. Sampling began in July 1998.



Broad Run High School, Ashburn, Loudoun County, 38-I

In 1997 Virginia DEQ was looking for a suitable site in Loudoun County to monitor Ozone, Nitrogen Dioxide, and Particulate Matter to address citizen concerns. The site at Broad Run High School was deemed acceptable and sampling began in April 1998.



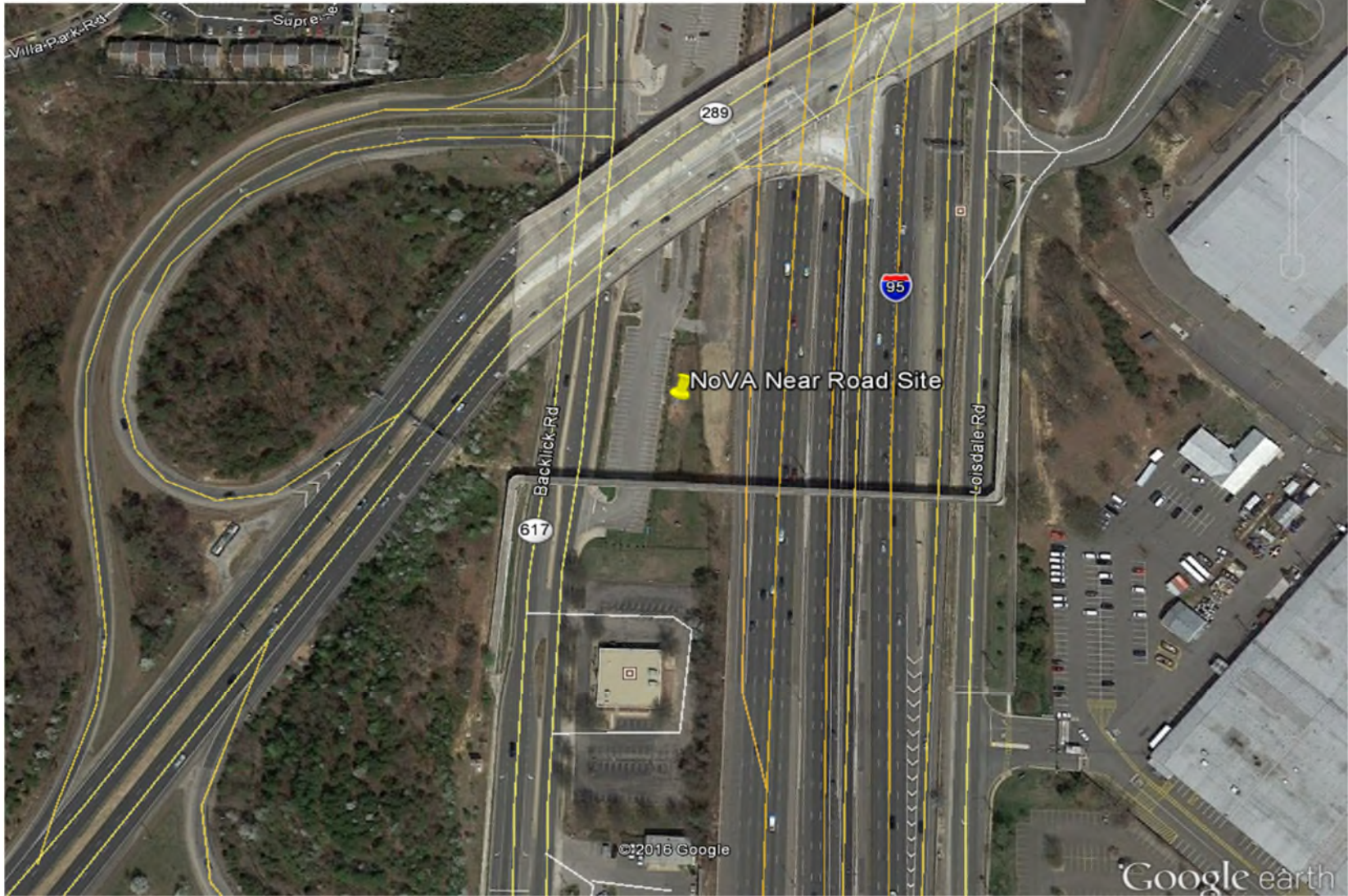
Long Park, Prince William County, 45-L

The agency Strategic Plan of 1990 identified Prince William County as an area requiring ozone monitoring. A suitable location in the James Long Park was selected and ozone sampling began in April 1991. In 1994, NOx sampling began at this site.



Backlick Road Park and Ride, Springfield, Fairfax County, 46-C2

Established in April 2015 as part of the EPA mandated Near Road Monitoring program, this site is located in the Backlick Road Park and Ride, along I-95 in the National Capital Interstate Air Quality Control Region.

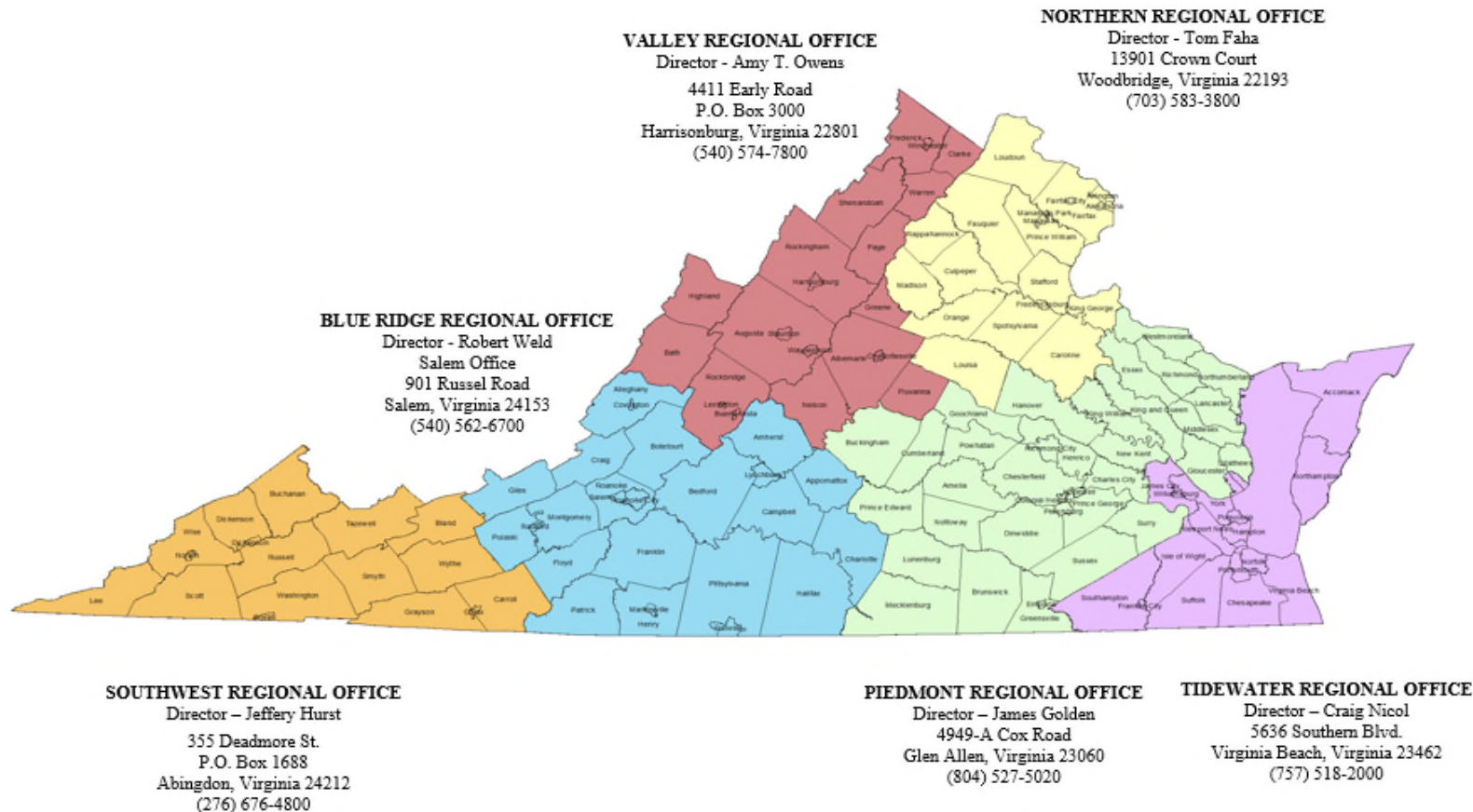


MONITOR LOCATIONS

SITE MAPS – MONITOR LOCATIONS

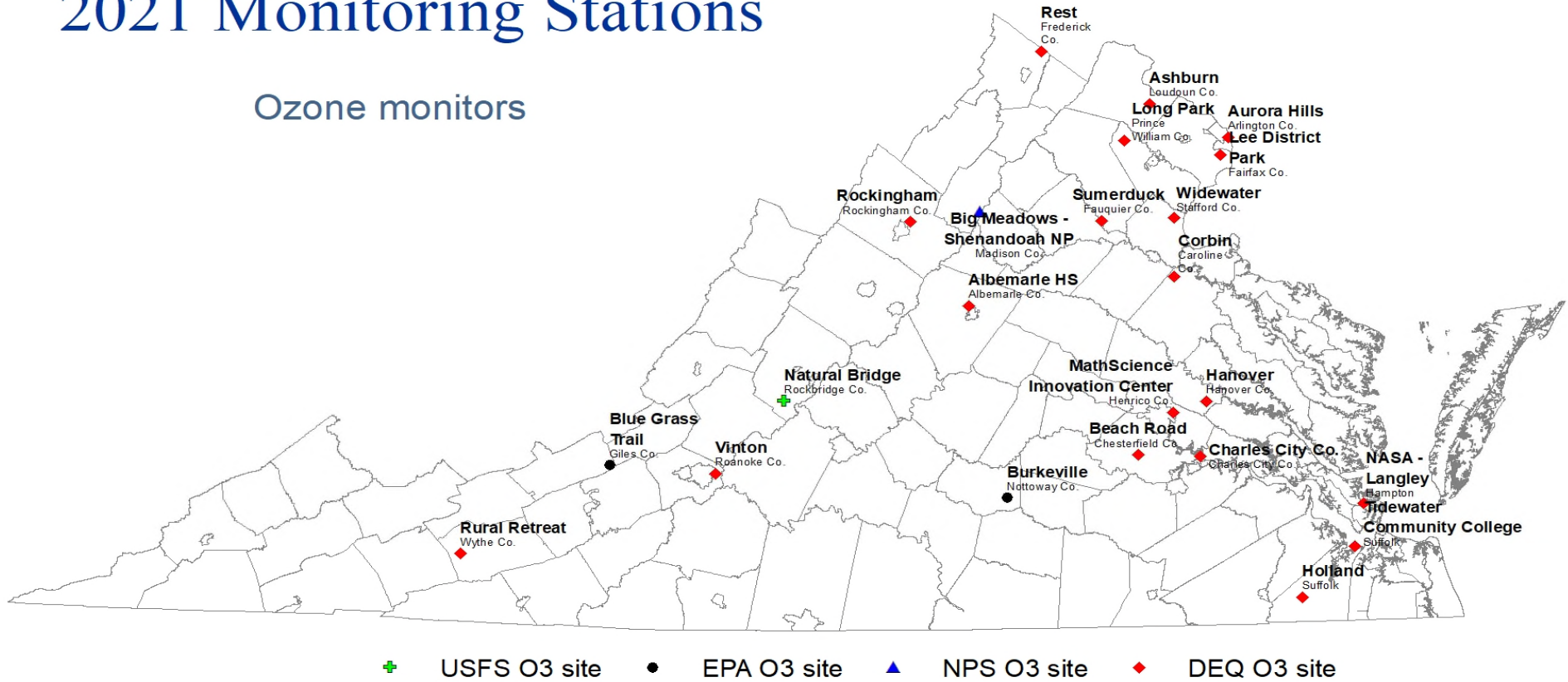
VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

Regional Offices



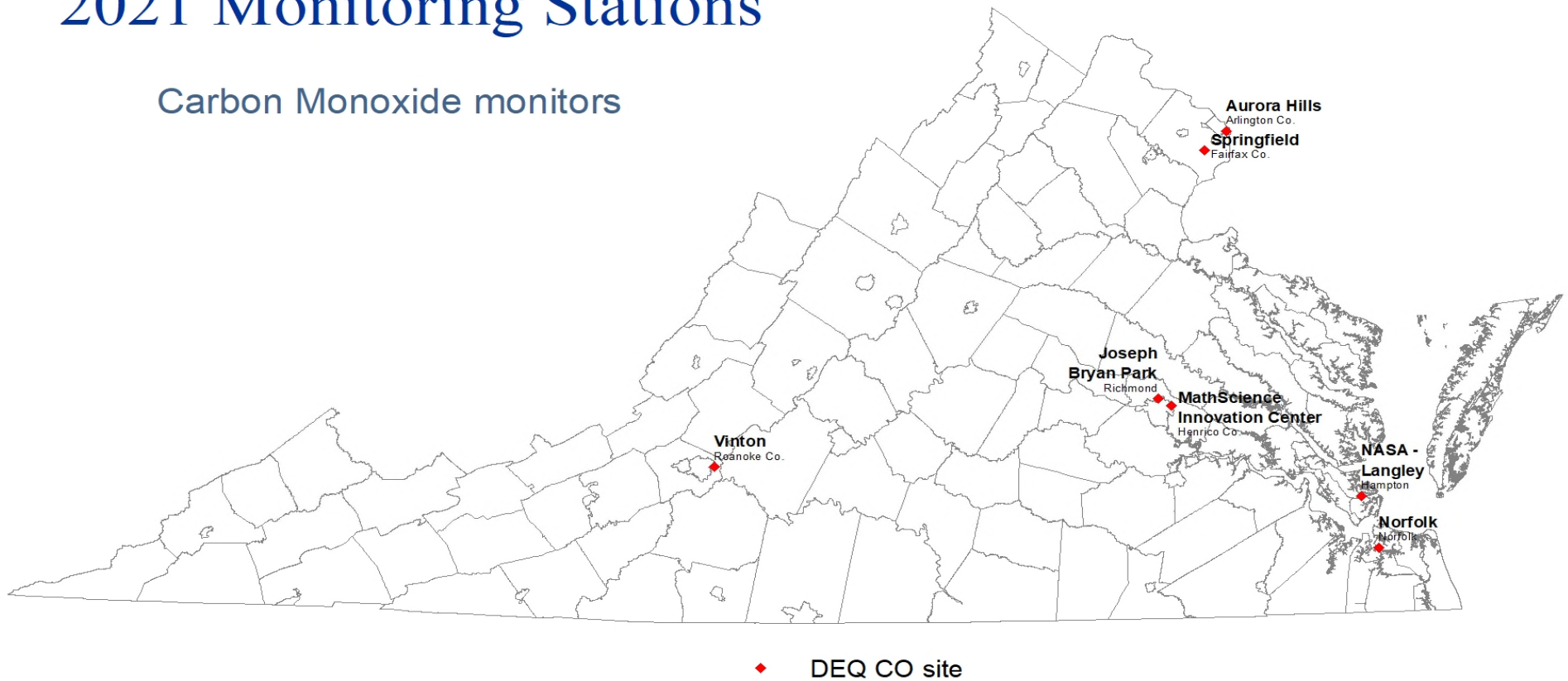
2021 Monitoring Stations

Ozone monitors



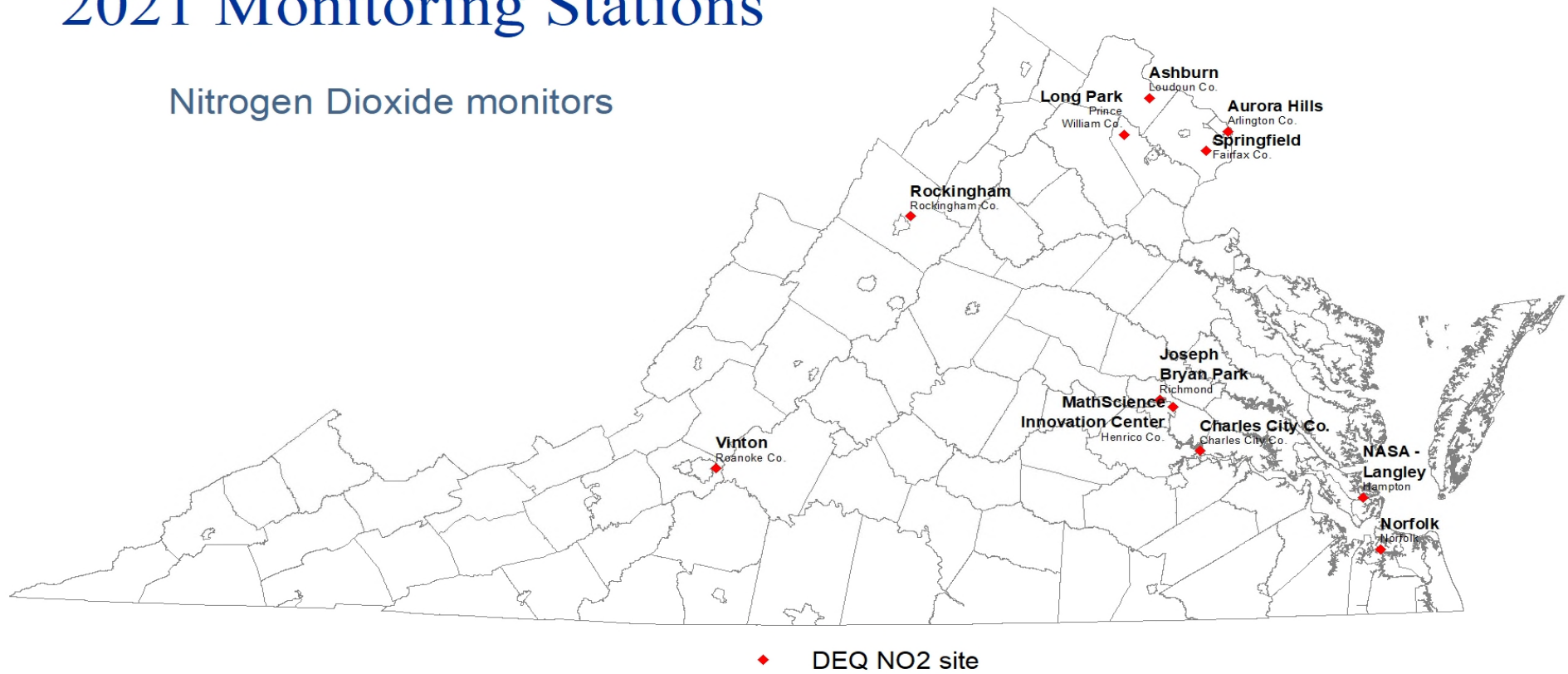
2021 Monitoring Stations

Carbon Monoxide monitors



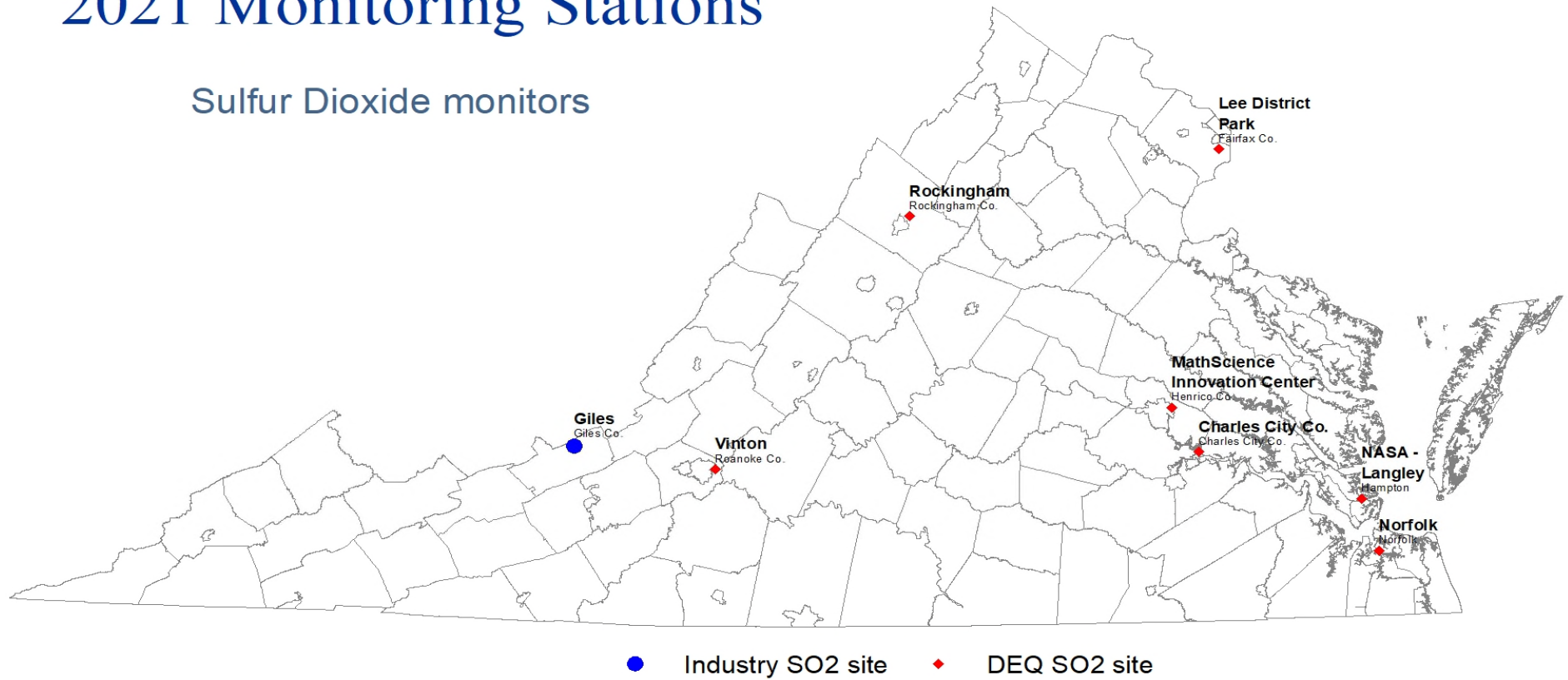
2021 Monitoring Stations

Nitrogen Dioxide monitors



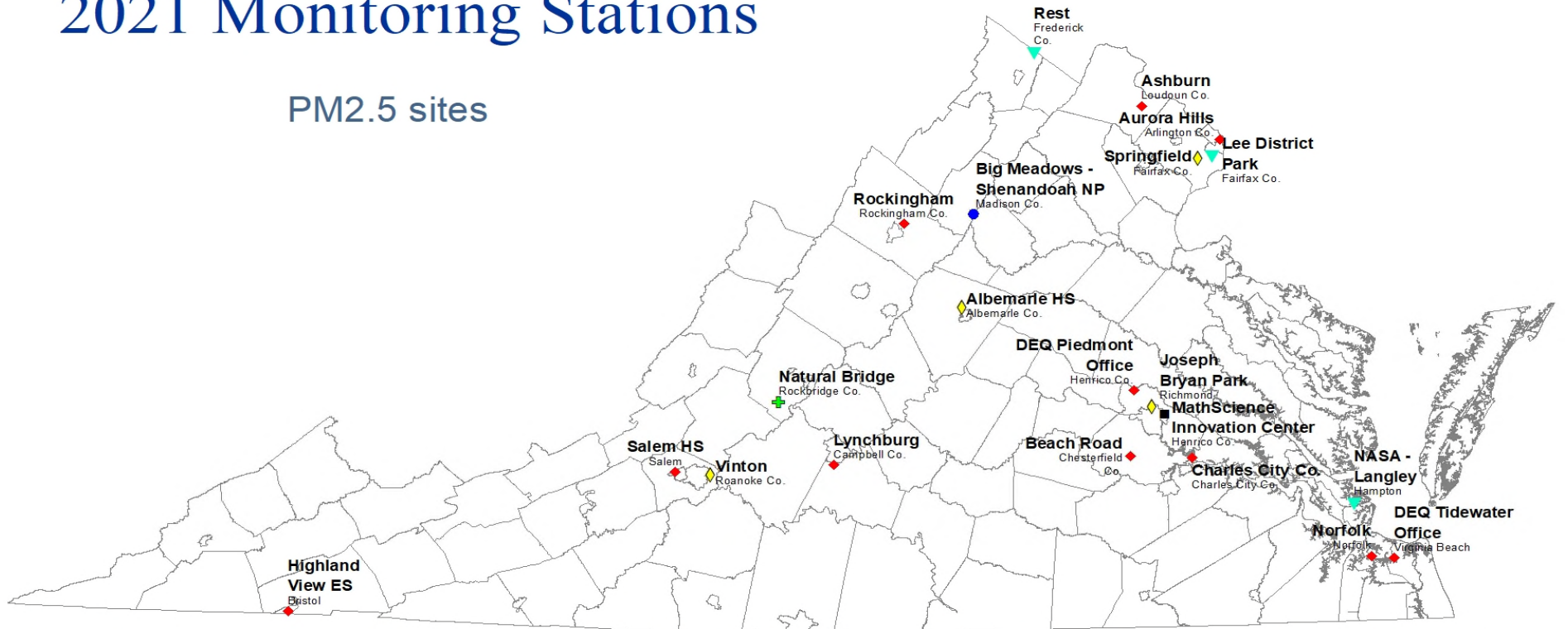
2021 Monitoring Stations

Sulfur Dioxide monitors



2021 Monitoring Stations

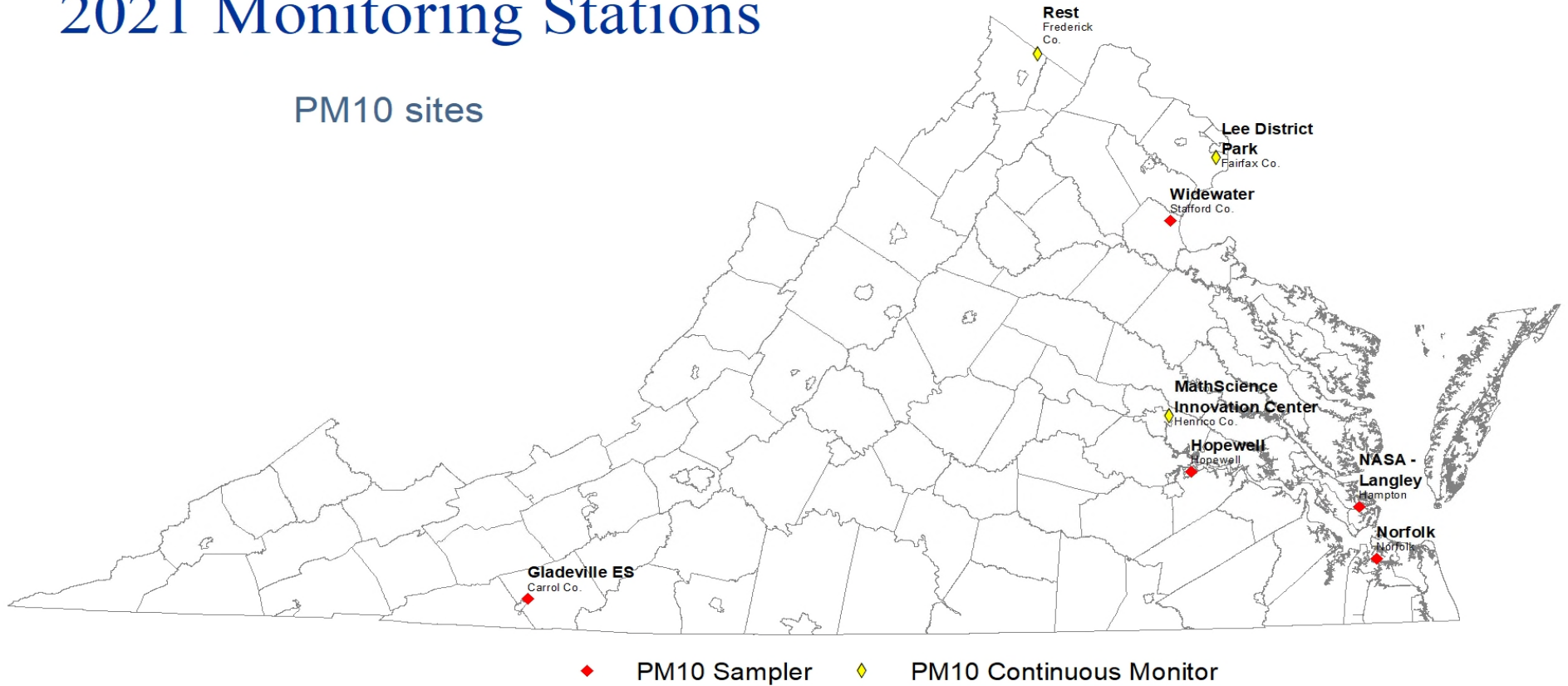
PM2.5 sites



- ◆ PM2.5 FEM Continuous Monitor
 ◆ PM2.5 FRM Sampler
■ FRM/FEM Continuous/Mass/Speciation/Carbon
- ▼ PM2.5 Sampler and Continuous Monitor
 + IMPROVE
● TEOM/IMPROVE

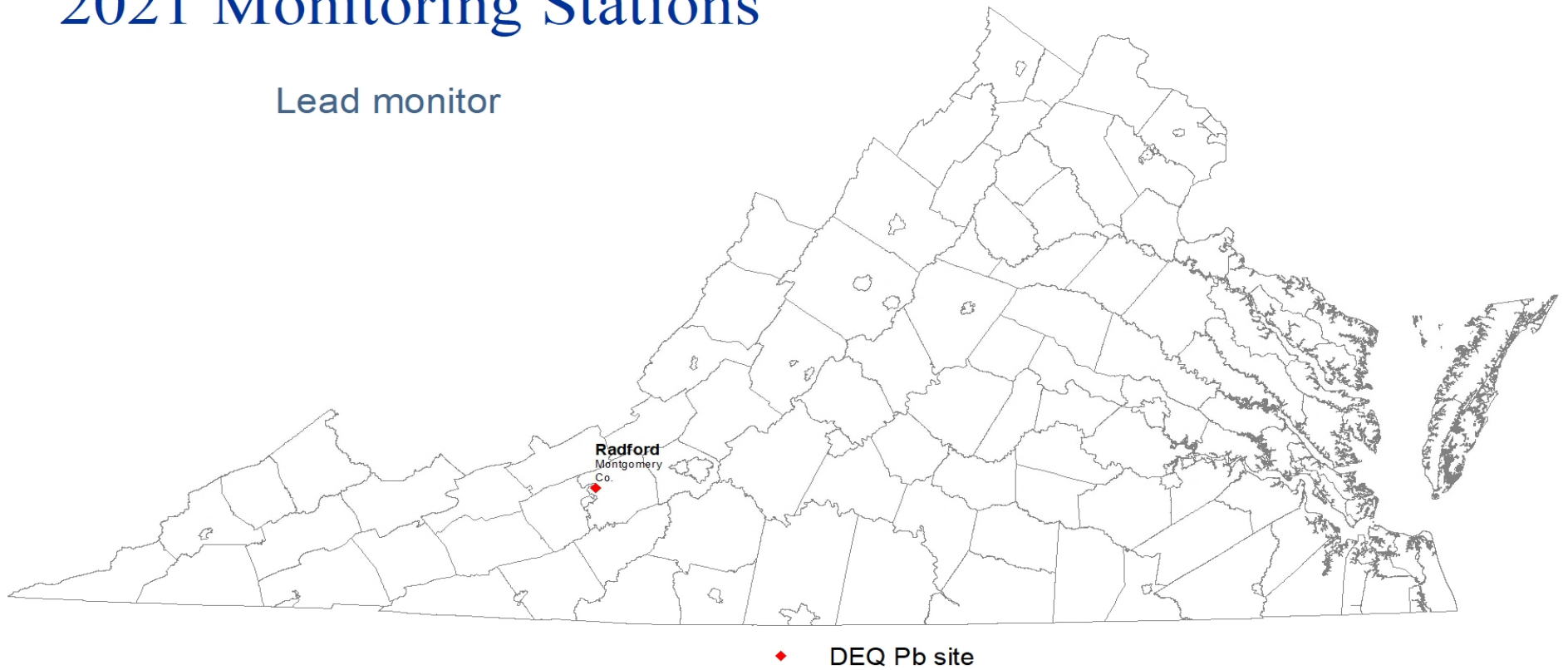
2021 Monitoring Stations

PM10 sites



2021 Monitoring Stations

Lead monitor



MONITORING SITE INFORMATION

Monitoring Site Listing by AQCR

Virginia Monitoring Network Minimum Requirements

Ozone MSA Monitor requirements – Table D-2 of Appendix D to Part 58

- Washington, DC-VA-MD-WV - 3 monitors,
- Virginia Beach-Norfolk-Newport News, VA-NC - 2 monitors
- Richmond, VA – 2 monitors
- Roanoke, VA - 1 monitor
- Blacksburg – Christiansburg, VA – 1 monitor

Ozone Monitors - Per 40 CFR 58.10(a) (9) all ozone monitors were in operation by March 1, 2021.

Table 9 Virginia Site Listing – Ozone Monitoring Requirements

MSA	Population	Operating Monitors	Sites
Washington, DC-VA-MD-WV	6,280,487	51-061-0002	Fauquier County
Washington, DC-VA-MD-WV	6,280,487	51-179-0001	Stafford County
Washington, DC-VA-MD-WV	6,280,487	51-013-0020	Arlington County
Washington, DC-VA-MD-WV	6,280,487	51-059-0030	Fairfax County
Washington, DC-VA-MD-WV	6,280,487	51-107-1005	Loudon County
Washington, DC-VA-MD-WV	6,280,487	51-153-0009	Prince William Co.
Virginia Beach-Norfolk-Newport News, VA-NC	1,726,907	51-650-0008	Hampton City
Virginia Beach-Norfolk-Newport News, VA-NC	1,726,907	51-800-0004	Suffolk City
Virginia Beach-Norfolk-Newport News, VA-NC	1,726,907	51-800-0005	Suffolk City
Richmond, VA	1,281,708	51-033-0001	Caroline County
Richmond, VA	1,281,708	51-036-0002	Charles City County
Richmond, VA	1,281,708	51-041-0004	Chesterfield County
Richmond, VA	1,281,708	51-085-0003	Hanover County
Richmond, VA	1,281,708	51-087-0014	Henrico County
Roanoke, VA	324,882	51-161-1004	Roanoke County
Blacksburg-Christiansburg, VA	181,863	51-071-9991	Giles County

Virginia Monitoring Network Minimum Requirements

PM_{2.5} MSA Monitor Requirements – Table D-5 of Appendix D to Part 58

Washington, DC-VA-MD-WV - 2 monitors,

Virginia Beach-Norfolk-Newport News, VA-NC - 2 monitors

Richmond, VA – 2 monitors

Table 10 Virginia Site Listing – PM_{2.5} Monitoring Requirements

MSA	Population	Operating Monitors	Sites	Design Value – 24 hr.	Design Value - Annual
Washington-Arlington-Alexandria, DC-VA-MD-WV	6,280,487	51-107-1005	Loudon County	19	6.8
Washington-Arlington-Alexandria, DC-VA-MD-WV	6,280,487	51-013-0020	Arlington County	18	7.3
Washington-Arlington-Alexandria, DC-VA-MD-WV	6,280,487	51-059-0030	Fairfax County	17	6.9
Washington-Arlington-Alexandria, DC-VA-MD-WV	6,280,487	51-059-0031	Fairfax County	20	8.6
Virginia Beach-Norfolk-Newport News, VA-NC	1,726,907	51-650-0008	Hampton City	13	6.1
Virginia Beach-Norfolk-Newport News, VA-NC	1,726,907	51-710-0024	Norfolk City	14	6.6
Virginia Beach-Norfolk-Newport News, VA-NC	1,726,907	51-810-0008	Virginia Beach City	16	6.6
Richmond, VA	1,281,708	51-760-0025	Richmond City	18	7.8
Richmond, VA	1,281,708	51-036-0002	Charles City County	13	6.2
Richmond, VA	1,281,708	51-041-0004	Chesterfield County	13	6.3
Richmond, VA	1,281,708	51-087-0015	Henrico County	13	6.4
Richmond, VA	1,281,708	51-087-0014	Henrico County	15	6.9

Virginia Monitoring Network Site Monitoring Listing

The detailed listing of all monitors at all sites in Virginia is contained in a spreadsheet that is included with this notice. Due to the size and complexity of the spreadsheet it is being posted separately from document. The document is entitled "VA SITE LISTING 2020 AQCR I-VI"

VA DEQ AQCR I SOUTHWEST VIRGINIA, July 1, 2020

SITE I.D.	POLLUTANT MEASURED	METHOD OR INSTRUMENT (method code)	SAMPLING INTERVAL	MONITORING OBJECTIVE	SCALE	START DATE**	BEGINNING DATE	MONITOR NETWORK	MONITOR TYPE	LOCATION	LONGITUDE	LATITUDE	CBSAs/ MSAs
51-035-0001/(23-A)	PM-10 (81102)	SSI HI VOL (062)	1/6	Population	Neighborhood	5/28/89	5/28/89	SLAMS	Carroll Co. - Gladeville Elem. Sch	-80.8798	36.7007	None	
51-197-0002/(16-B)	O3 (44201)	UV Absorption (047)	Continuous	Population Background	Regional	4/1/90	09/12/07	SLAMS	Rural Retreat - Wythe County Se	-81.2542	36.8912	None	
51-520-0006/(101-E)	PM2.5 FRM* (88101)	Sequential (145)	1/3	Population Highest Concentration	Neighborhood	1/1/99	12/28/16	SLAMS	Bristol - Highland View Elem. Sch	-82.1641	36.6080	28700/	Kingsport-Bristol-Bristol, TN-VA

There are no collocated monitors in AQCR I

* Per 58.10(b)(7) this site is suitable for comparison with the NAAQS as described in 40 CFR §58.30.

** Start Date is the date that sampling began . Beginning Date is the date that monitoring commenced using the current method code.

VA DEQ, AQCR II VALLEY OF VIRGINIA, July 1, 2020

	POLLUTANT	METHOD OR INSTRUMENT (method code)	SAMPLING INTERVAL	MONITORING OBJECTIVE	SCALE	START** DATE	BEGINNING DATE	MONITOR NETWORK	MONITOR TYPE	LOCATION	LONGITUDE	LATITUDE	CBSAs/ MSAs
51-069-0010 (28-J)	O3(44201)	UV Absorption (047)	Continuous	Population	Urban	4/1/91	4/6/06		SLAMS	Rest, Frederick County - Lester Buildings	-78.0816	39.2810	49020/ Winchester, VA-WV
	PM2.5 FRM* (88101)	Sequential (145)	1/3	Population	Urban	11/8/07	12/28/16		SLAMS				
	PM2.5 FEM (88501)	Broadband Spectroscopy (238)	Continuous	Population	Urban	11/6/07	10/20/20		SLAMS				
	PM10 FEM (81102)	Broadband Spectroscopy (239)	Continuous	Population	Urban	10/20/20	10/20/20		SLAMS				
51-161-1004 (19-A6)	NO2, True (42602)	CAPS (212)	Continuous	Population	Urban	1/1/81	9/23/20		SLAMS	Vinton - Roanoke Co. Herman Horn ES	-79.8845	37.2834	40220/ Roanoke, VA
	O3(44201)	UV Absorption (047)	Continuous	Population	Urban	1/1/81	4/1/07		SLAMS				
	SO2 (42401)	Fluorescence (060)	Continuous	Population	Urban	2/4/87	5/20/09		SLAMS				
	CO (42101)	Gas Filter Corr. (054)	Continuous	Population	Urban	2/4/87	3/18/13		SLAMS				
	PM2.5 (88101)	Broadband Spectroscopy (236)	Continuous	Background	Urban	10/16/20	1/1/21		SLAMS				
51-163-0003 (21-C)	O3(44201)	UV Absorption (047)	Continuous	Background	Regional	4/8/99	9/15/06	IMPROVE	SLAMS	Rockbridge Co. - Natural Bridge Station	-79.5126	37.6267	None
	PM2.5*** (88502)	IMPROVE (707)	1/3	Transport	Regional	9/1/94	9/1/94						
51-165-0003 (26-F)	SO2 (42401)	Fluorescence (060)	Continuous	Population	Urban	4/13/04	8/24/10		SLAMS	Rockingham Co. - VDOT	-78.8195	38.4775	25500/ Harrisonburg, VA
	NO2, True (42602)	CAPS (212)	Continuous	Population	Urban	4/13/04	9/2/20		SLAMS				
	PM2.5 FRM* (88101)	Sequential (145)	1/3	Population	Urban	1/3/07	12/27/16		SLAMS				
	O3(44201)	UV Absorption (047)	Continuous	Population	Urban	4/1/07	4/1/07		SLAMS				
51-775-0011 (110-C)	PM2.5 FRM* (88101)	Sequential (145)	1/3	Population	Neighborhood	11/1/08	12/28/16		SLAMS	Salem - Salem High School	-80.0810	37.2979	40220/ Roanoke, VA
51-121-0009 (18-C)	TSP-Lead (14129)	Hi-Vol/ICP-MS TSP Sampler (192)	1/6	Source Oriented	Middle	10/4/17	10/4/17		SLAMS	Montgomery County Stroubles Creek WWTP 5277 Prices Fork Rd.	-80.51606	37.18494	13980/ Blacksburg-Christiansburg-Radford, VA
51-071-0007 (9-I)	SO2 (42401)	Fluorescence (100)	Continuous	Source Oriented	Neighborhood	1/1/17	1/1/17		INDUSTRIAL (SLAMS-equivalent)	Giles County Lhoist North America 2093 Big Stony Creek Rd.	-80.6539	37.3863	

There are two collocated monitors in AQCR II. A collocated PM2.5 is located at 51-069-0010, Frederick County and a collocated TSP-Lead monitor is located at 51-121-0009, Montgomery County.

* Per 58.10(b)(7) this site is suitable for comparison with the NAAQS as described in 40 CFR §58.30.

** Start Date is the date that sampling began . Beginning Date is the date that monitoring commenced using the current method code.

*** Required Transport Site per 40 CFR Part 58 Appendix D paragraph 4.7.3

VA DEQ, AQCR III CENTRAL VIRGINIA, July 1, 2020

SITE I.D.	POLLUTANT MEASURED	METHOD OR INSTRUMENT	SAMPLING INTERVAL	MONITORING OBJECTIVE	SCALE	START** DATE	BEGINNING DATE	MONITOR NETWORK	MONITOR TYPE	LOCATION	LONGITUDE	LATITUDE	CBSAs/ MSAs
51-680-0015 (155-Q)	PM2.5 FRM* (88101)	Sequential (145)	1/3	Population	Neighborhood	4/1/03	12/28/16		SLAMS	Lynchburg - Water Tank	-79.2150	37.3327	31340/ Lynchburg, VA

*

Per 58.10(b)(7) this site is suitable for comparison with the NAAQS as described in 40 CFR §58.30.

** Start Date is the date that sampling began . Beginning Date is the date that monitoring commenced using the current method code.

VA DEQ. AQCR IV NORTHEAST VIRGINIA, July 1, 2020

SITE I.D.	POLLUTANT MEASURED	METHOD OR INSTRUMENT	SAMPLING INTERVAL	MONITORING OBJECTIVE	SCALE	START** DATE	BEGINNING DATE	MONITOR NETWORK	MONITOR TYPE	LOCATION	LONGITUDE	LATITUDE	CBSAs/ MSAs	
51-033-0001 (48-A)	O3(44201)	UV Absorption (047)	Continuous	Background	Regional	4/1/93	4/1/07		SLAMS	Caroline Co. - USGS Geomagnetic Center	-77.3774	38.2009	40060/	Richmond, VA
51-061-0002 (37-B)	O3(44201)	UV Absorption (047)	Continuous	Background	Regional	8/11/81	4/1/06		SLAMS	Fauquier Co. - Phelps Wildlife Area	-77.7677	38.4737	47900/	Washington-Arlington-Alexandria, DC-VA-MD-W
51-179-0001 (44-A)	O3(44201) PM-10 (81102)	UV Absorption (047) SSI HI VOL (062)	Continuous 1/6	Population Population	Urban Neighborhood	9/1/92 3/8/17	4/1/06 3/8/17		SLAMS	Stafford Co. - Widewater	-77.3704	38.4812	47900/	Washington-Arlington-Alexandria, DC-VA-MD-W
51-113-0003 (N-35-A)	O3(44201) PM2.5 (88502) PM2.5 (88501)	UV Absorption (047) IMPROVE TEOM (701)	Continuous 1/3 Continuous	Background Background	Regional Regional	5/1/83 5/12/04	4/1/95 5/12/04	CASNET IMPROVE	EPA OTHER	Madison County - Shenandoah Nat'l Park Big Meadows	-78.4347	38.5231	None	
51-003-0001	O3(44201)	UV Absorption (047) Broadband	Continuous	Population	Regional	4/1/08	4/1/08		SLAMS	Albemarle Co. -	-78.5040	38.0766	16820/	Charlottesville, VA
33-A	PM2.5 FEM (88101)	Spectroscopy (236)	Continuous	Population	Neighborhood	4/1/08	12/18/18		SLAMS	Albemarle HS				

There is a collocated PM2.5 sampler at the Albemarle (51-113-0003) in AQCR IV

* Per 58.10(b)(7) this site is suitable for comparison with the NAAQS as described in 40 CFR §58.30.

** Start Date is the date that sampling began . Beginning Date is the date that monitoring commenced using the current method code.

VA DEQ, AQCR V STATE CAPITOL, July 1, 2020

SITE I.D.	POLLUTANT MEASURED	METHOD OR INSTRUMENT	SAMPLING INTERVAL	MONITORING OBJECTIVE	SCALE	START** DATE	BEGINNING DATE	MONITOR NETWORK	MONITOR TYPE	LOCATION	LONGITUDE	LATITUDE	CBSAs/MSAs	
51-036-0002 (75-B)	O3(44201) SO2 (42401)	UV Absorption (047) Fluorescence (060)	Continuous	Population	Urban	4/1/88	3/5/08		SLAMS	Charles City Co. - Route #608 Shirley Plantation	-77.2593	37.3444	40060/	Richmond, VA
			Continuous	Highest Concentration	Urban	1/1/92	5/15/07		SLAMS					
	NO2, True (42602) PM2.5 FRM* (88101)	CAPS (212) Sequential (145)	Continuous 1/3	Population Population	Neighborhood Urban	3/9/93 1/1/99	7/22/20 12/12/16		SLAMS SLAMS					
51-041-0004 (71-H)	O3(44201) PM2.5 FRM* (88101)	UV Absorption (047) Sequential (145)	Continuous 1/3	Population Population	Neighborhood Neighborhood	1/1/81 1/1/17	4/1/06 8/9/16		SLAMS	Chesterfield Co. - Beach Rd. VDOT	-77.5936	37.3575	40060/	Richmond, VA
51-085-0003 (73-E)	O3(44201)	UV Absorption (047)	Continuous	Highest Concentration	Urban	4/1/01	4/4/06		SLAMS	Hanover Co. - McClellan Road	-77.2188	37.6061	40060/	Richmond, VA
51-087-0014 (72-M)	O3(44201) Trace CO (42101) Trace SO2 (42401) PM2.5 FRM* (88101) PM2.5 FEM (88101) PM10 FEM (81102) PMCoarse (86101) PM2.5 Speciation (88502) PM2.5 Carbon (88313) Metals Carbonyl VOCs PAH NOy (42600)	UV Absorption (047) Gas Filter Corr. (554) Fluorescence (560) Sequential (145) Broadband Spectroscopy (238) Broadband Spectroscopy (239) Broadband Spectroscopy (240) MetOne SASS (811,812) URG 3000N (838) SSI HI VOL (062) TO-11A TO-15 TSP Chemiluminescence (699)	Continuous	Population	Neighborhood	6/23/81	4/1/05		SLAMS	Henrico Co. - MathScience Center	-77.4003	37.5565	40060/	Richmond, VA
			Continuous	Population	Neighborhood	10/12/10	10/12/10	NCore	SLAMS					
			Continuous	Population	Neighborhood	01/01/82	10/12/10	NCore	SLAMS					
			Continuous	Population	Neighborhood	1/1/99	12/30/16		SLAMS					
			Continuous	Population	Neighborhood	2/17/00	1/1/21	Ncore	Other					
			Continuous	Population	Neighborhood	2/17/00	1/1/21	NCore	Other					
			Continuous	Population	Neighborhood	6/1/10	1/21/21	NCore						
			1/3 Mini-Trends	Population	Neighborhood	1/1/04	1/1/04	CSN, NCore	EPA					
			1/3 Mini-Trends	Population	Neighborhood	1/1/10	1/1/10	CSN, NCore	EPA					
			1/6	Population	Neighborhood	11/1/08	11/1/08	NATTS	SLAMS					
			1/6	Population	Neighborhood	11/1/08	11/1/08	NATTS	SLAMS					
			1/6	Population	Neighborhood	11/1/08	11/1/08	NATTS	SLAMS					
			1/6	Population	Neighborhood	11/1/08	11/1/08	NATTS	SLAMS					
			Continuous	Population	Neighborhood	1/1/12	9/26/19	NCore						
Continuous	Population	Neighborhood	1/1/10	9/1/18	NCore									
Continuous	Population	Neighborhood	11/1/18	11/1/18	PAMS									
Continuous	Population	Neighborhood	1/1/11	4/1/17	NCore/PAMS									
51-087-0015 (72-N)	PM2.5 FRM* (88101)	Sequential (145)	1/3	Population	Neighborhood	1/1/99	12/30/16		SLAMS	Henrico Co. - Piedmont DEQ	-77.5664	37.6713	40060/	Richmond, VA
51-670-0010 (154-M)	PM-10 (81102) Metals VOCs Carbonyl	SSI HI VOL (062) TSP/ICPMS (191) TO-15 TO-11	1/6	Population	Neighborhood	11/8/08	11/8/08		SLAMS	Hopewell - Carter G. Woodson Middle School	-77.2918	37.2896	40060/	Richmond, VA
			1/6	Population	Neighborhood	11/8/08	11/8/08		OTHER					
			1/6	Population	Neighborhood	11/8/08	11/8/08		OTHER					
			1/6	Population	Neighborhood	11/8/08	11/8/08		OTHER					
51-760-0025 (158-X)	NO2, True (42602) CO (42101) PM2.5 FEM (88101) PM2.5 FRM* (88101)	CAPS (212) Gas Filter Corr. (054) Beta Attenuation (183) Sequential (145)	Continuous	Population	Neighborhood	10/1/13	8/27/20	NEAR ROAD	SLAMS	City of Richmond - Joseph Bryan Park	77.4693	37.5909	40060/	Richmond, VA
			Continuous	Source Oriented	Microscale	10/1/13	10/1/13	NEAR ROAD	SLAMS					
			Continuous	Source Oriented	Microscale	1/1/15	1/1/15	NEAR ROAD	SLAMS					
			1/3	Source Oriented	Microscale	7/4/16	7/4/16	NEAR ROAD	SLAMS					

There are 2 collocated monitors in AQCR V. At Station 72-M, 510870014 - collocated PM2.5 FRM and a collocated PM2.5 Beta Attenuation monitor at 158-X, 517600025 .

* Per 58.10(b)(7) this site is suitable for comparison with the NAAQS as described in 40 CFR §58.30.

** Start Date is the date that sampling began . Beginning Date is the date that monitoring commenced using the current method code.

VA DEQ, AQCR VI HAMPTON ROADS, July 1, 2020

SITE I.D.	POLLUTANT MEASURED	METHOD OR INSTRUMENT	SAMPLING INTERVAL	MONITORING OBJECTIVE	SCALE	START** DATE	BEGINNING DATE	MONITOR NETWORK	MONITOR TYPE	LOCATION	LONGITUDE	LATITUDE	CBSAs/ MSAs
51-650-0008 (179-K)	O3(44201)	UV Absorption (047)	Continuous	Population	Neighborhood	4/2/10	4/2/10		SLAMS	Hampton City -	-76.3870	37.1037	47260/ Virginia Beach-Norfolk-Newport News, VA-†
	SO2 (42401)	Fluorescence (060)	Continuous	Population	Neighborhood	6/23/10	6/23/10		SLAMS	NASA Langley			
	NO2, True (42602)	CAPS (212)	Continuous	Population	Neighborhood	4/8/10	2/17/21		SLAMS	CAPABLE Site			
	CO (42101)	Gas Filter Corr. (054)	Continuous	Population	Neighborhood	6/23/10	6/23/10		SLAMS				
	PM2.5 FEM (88101)	Broadband Spectroscopy (238)	Continuous	Population	Neighborhood	6/23/10	4/13/21		SLAMS				
	PM10 FEM (81102)	Broadband Spectroscopy (239)	Continuous	Population	Neighborhood	6/23/10	4/13/21		SLAMS				
	PM-10 (81102)	SSI HI VOL (062)	1/6	Population	Neighborhood	6/23/10	6/23/10						
PM2.5 FRM* (88101)	Sequential (145)	1/3	Population	Neighborhood	6/23/10	6/23/10							
51-710-0024 (181-A1)	SO2 (42401)	Pulsed Fluorescence (100)	Continuous	Population	Neighborhood	10/27/06	4/1/18		SLAMS	Norfolk City -	-76.3014	36.8556	47260/ Virginia Beach-Norfolk-Newport News, VA-†
	NO2, True (42602)	CAPS (212)	Continuous	Population	Neighborhood	1/23/07	7/23/20		SLAMS	NOAA Storage Facility			
	CO (42101)	Gas Filter Corr. (054)	Continuous	Population	Neighborhood	10/27/06	1/06/11		SLAMS				
	PM10 (81102)	SSI HI VOL (062)	1/6	Population	Neighborhood	6/21/97	6/21/97		SLAMS				
	PM2.5 FRM* (88101)	Sequential (145)	1/3	Population	Neighborhood	1/1/99	12/28/16		SLAMS				
51-800-0004 (183-E)	O3(44201)	UV Absorption (047)	Continuous	Population	Urban	3/24/87	4/1/06		SLAMS	Suffolk City - Tidewater Community College	-76.4381	36.9012	47260/ Virginia Beach-Norfolk-Newport News, VA-†
51-800-0005 (183-F)	O3(44201)	UV Absorption (047)	Continuous	Population	Urban	4/1/91	4/1/05		SLAMS	Suffolk City - Tidewater Research Station, Holland	-76.7308	36.6653	47260/ Virginia Beach-Norfolk-Newport News, VA-†
51-810-0008 (184-J)	PM2.5 FRM* (88101)	Sequential (145)	1/3	Population	Neighborhood	1/1/99	12/30/16		SLAMS	VA Beach City - VA Beach DEQ Office	-76.1812	36.8419	47260/ Virginia Beach-Norfolk-Newport News, VA-†

There are two collocated monitors in AQCR VI. Collocated PM10 at 181-A1, 517100024, the NOAA Storage Facility in Norfolk, and collocated PM2.5 (FEM and FRM) at 179-K, 516500008, NASA Langley.

* Per 58.10(b)(7) this site is suitable for comparison with the NAAQS as described in 40 CFR §58.30.

** Start Date is the date that sampling began . Beginning Date is the date that monitoring commenced using the current method code.

VA DEQ. AQCR VII NORTHERN VIRGINIA. July 1, 2020

SITE I.D.	POLLUTANT MEASURED	METHOD OR INSTRUMENT	SAMPLING INTERVAL	MONITORING OBJECTIVE	SCALE	START** DATE	BEGINNING DATE	MONITOR NETWORK	MONITOR TYPE	LOCATION	LONGITUDE	LATITUDE	CBSAs/ MSAs
51-013-0020 (47-T)	O3(44201)	UV Absorption (047)	Continuous	Population	Neighborhood	1/1/78	4/1/05		SLAMS	Arlington -	-77.0592	38.8577	47900/ Washington-Arlington-Alexandria, DC-VA-MD-WV
	NO2, True (42602)	CAPS (212)	Continuous	Population	Neighborhood	1/1/78	7/16/20		SLAMS	Aurora Hills			
	CO (42101)	Gas Filter Corr. (054)	Continuous	Population	Neighborhood	1/1/78	5/1/09		SLAMS	Visitors Center			
	PM2.5 FRM* (88101)	Sequential (145)	1/3	Population	Neighborhood	1/1/99	12/30/16		SLAMS				
51-059-0030 (46-B9)	O3(44201)	UV Absorption (047)	Continuous	Population	Urban	7/1/98	4/1/06		SLAMS	Fairfax -	-77.1047	38.7734	47900/ Washington-Arlington-Alexandria, DC-VA-MD-WV
	SO2 (42401)	Fluorescence (060)	Continuous	Population	Neighborhood	01/08/14	01/08/14		SLAMS	Lee District park			
	PM2.5 FRM* (88101)	Sequential (145)	1/3	Population	Neighborhood	1/1/99	12/30/16		SLAMS				
	PM2.5 FEM (88101)	Broadband Spectroscopy (238)	Continuous	Population	Neighborhood	6/22/10	10/1/19		SLAMS				
51-107-1005 (38-I)	PM10 FEM (88101)	Broadband Spectroscopy (239)	Continuous	Population	Neighborhood	6/22/10	10/1/19		SLAMS				47900/ Washington-Arlington-Alexandria, DC-VA-MD-WV
	O3(44201)	UV Absorption (047)	Continuous	Population	Neighborhood	4/4/98	8/25/05		SLAMS	Loudoun Co. -	-77.4893	39.0247	
	NO2, True (42602)	CAPS (212)	Continuous	Population	Neighborhood	4/4/98	7/8/20		SLAMS	Broad Run H.S.			
51-153-0009 (45-L)	PM2.5 FRM* (88101)	Sequential (145)	1/3	Population	Neighborhood	1/1/99	12/30/16		SLAMS				47900/ Alexandria, DC-VA-MD-WV
	O3(44201)	UV Absorption (047)	Continuous	Population	Neighborhood	4/1/91	4/1/06		SLAMS	Prince Wm. Co. -	-77.6346	38.8529	
51-510-0020 (L-126-H)	NO2, True (42602)	CAPS (212)	Continuous	Population	Neighborhood	4/1/94	7/10/20		SLAMS	Prince Wm. Co. -	-77.6346	38.8529	47900/ Alexandria, DC-VA-MD-WV
	PM10 (81102)	SSI HI VOL (062)	1/3	Population	Source Oriented	6/4/06	1/1/09		SPM	Alexandria -	-77.1269	38.8049	
51-059-0031 (46-C2)	Tucker Elem. Sch.												47900/ Alexandria, DC-VA-MD-WV
	NO2, True (42602)	CAPS (212)	Continuous	Population	Neighborhood	4/5/16	7/16/20	NEAR ROAD	SLAMS	Fairfax County	-77.1835	38.7684	
	CO (42101)	Gas Filter Corr. (054)	Continuous	Source Orientec	Microscale	4/5/16	4/5/16	NEAR ROAD	SLAMS	Backlick Rd. Park			
	PM2.5 FEM (88101)	Beta Attenuation (183)	Continuous	Source Orientec	Microscale	4/5/16	4/5/16	NEAR ROAD	SLAMS	and Ride			

There is 1 collocated monitor in AQCR7.

A collocated PM2.5 FRM is located at Station 47-T, 510130020, Aurora Hills Visitor Center, Arlington

* Per 58.10(b)(7) this site is suitable for comparison with the NAAQS as described in 40 CFR §58.30.

** Start Date is the date that sampling began . Beginning Date is the date that monitoring commenced using the current method code.

USEPA, Federal Monitors, CASTNET, July 1, 2020

SITE I.D.	POLLUTANT MEASURED	METHOD OR INSTRUMENT	SAMPLING INTERVAL	MONITORING OBJECTIVE	SCALE	BEGINNING DATE	MONITOR NETWORK	MONITOR TYPE	LOCATION	LONGITUDE	LATITUDE	CBSAs/ MSAs
51-147-9991 PED108	O3(44201)	UV Adsorption (047)	Continuous	Highest Concentration	Regional	1/1/2011	CASTNET	EPA	Prince Edward Gallion State Forest Burkeville VA	-78.307067	37.165222	NA
51-071-9991 VPI120	O3(44201)	UV Adsorption (047)	Continuous	Highest Concentration	Regional	4/1/2011	CASTNET	EPA	Giles County Blue Grass Trail Giles County	-80.4572	37.3232	Blacksburg- Christiansburg