



July 1, 2017

Ms. Beverly Banister
Director, APTMD, U.S. EPA, Region 4
Sam Nunn Atlanta Federal Center
61 Forsyth Street, SW
Atlanta, GA 30303-8960

RE: Annual Air Network Monitoring Plan for 2018

Dear Ms. Banister:

In accordance with the requirements of 40 Code of Federal Regulations Part 58, Subpart B, the South Carolina Department of Health and Environmental Control (DHEC) respectfully submits the Annual Air Network Monitoring Plan for calendar year 2018. The DHEC is required by 40 CFR 58.10 to adopt and submit to the Regional Administrator an Annual Monitoring Network Plan which provides for the establishment and maintenance of an air quality surveillance system. This system is a network of State and Local Air Monitoring Stations (SLAMS) including Federal Reference Method (FRM) and Federal Equivalent Method (FEM) monitors that are part of SLAMS, National Core Monitoring Network (NCore) stations, Speciation Trends Network (STN) stations, and Special Purpose Monitor (SPM) monitoring stations. This plan is required to include a statement of purpose for each monitor and evidence that siting and operation of each monitor meets the requirements of 40 CFR 58, Appendices A, C, D and E.

The DHEC received one comment during the public comment period, which was held from May 25, 2017 through June 23, 2017. A complete package, including the Department's response to comments received is being sent to Gregg Worley of your office. Should you have any questions or need additional information regarding this matter, please contact Robert Brown of my staff at (803) 898-4105.

Sincerely,

Rhonda Banks Thompson, Bureau Chief
Bureau of Air Quality

cc: Gregg Worley, US EPA Region 4 (w/attachments)
ec: Ryan Brown, US EPA Region 4 (w/attachments)
Todd Rinck, USEPA Region 4 (w/o attachments)
Robert J. Brown, Jr., BAQ (w/o attachments)
Renee' Shealy, BEHS (w/o attachments)
Micheal Mattocks, BEHS (w/o attachments)

State of South Carolina

Network Description and
Ambient Air Network
Monitoring Plan

Calendar Year 2018



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Certification

This document contains the planned changes and final description of the sites and monitors of the South Carolina Ambient Air Monitoring Network (Monitoring Network) for criteria pollutants and related parameters for calendar year 2018. The South Carolina Department of Health and Environmental Control (Department) certifies that the network described herein meets or exceeds the minimum requirements needed to support the State Implementation Plan, national air quality assessments, and policy decisions as required in 40 Code of Federal Regulations (CFR) Part 58, Ambient Air Quality Surveillance, at the time of submittal to the United States Environmental Protection Agency (EPA), Region 4. Due to circumstances that may arise during the implementation of the plan in 2017 and during the 2018 monitoring year, some elements of the network may require modification. A notification of modifications will be posted on the Department website and provided to the EPA Region 4 office. Where necessary, a request for approval of deviations from this plan and supporting documentation will be submitted to the EPA Region 4 office.

Micheal Mattocks

Signature:

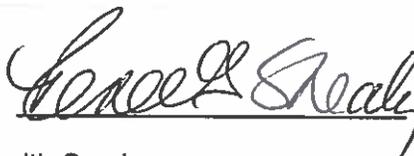


Date: 6/27/17

Director, Division of Air Quality Analysis, Bureau of Environmental Health Services
South Carolina Department of Health and Environmental Control

Renee G. Shealy

Signature:



Date: 6/27/2017

Bureau Chief, Bureau of Environmental Health Services
South Carolina Department of Health and Environmental Control

Robert J. Brown, Jr.

Signature:

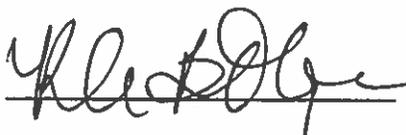


Date: 6/26/17

Director, Division of Air Assessment & Regulations, Bureau of Air Quality
South Carolina Department of Health and Environmental Control

Rhonda B. Thompson

Signature:



Date: 06/26/17

Bureau Chief, Bureau of Air Quality
South Carolina Department of Health and Environmental Control

Acronyms

AQI – Air Quality Index	NCore – National Core Monitoring Network
AQS – Air Quality System	NO – Nitric oxide
BAQ – Bureau of Air Quality	NO ₂ – Nitrogen Dioxide
BC – Black Carbon	NO _x – Nitrogen Oxides
CBSA – Core-Based Statistical Area	NO _y – NO _x and other oxidized species
CFR – Code of Federal Regulation	NPAP – National Performance Audit Program
CO – Carbon Monoxide	OMB – Office of Management and Budget
CSA – Combined Statistical Area	PEP – Performance Evaluation Program
CBSA – Core Based Statistical Area	PM _{2.5} – Particulate Matter < 2.5 microns
CSN – Chemical Speciation Network	PM ₁₀ – Particulate Matter < 10 microns
CMS – Continuous Monitoring Site	PPB – Parts Per Billion
DAQA – Division of Air Quality Analysis	PPM – Parts Per Million
Department – South Carolina Department of Health and Environmental Control	PSD – Prevention of Significant Deterioration
DNPH – Analysis method using 2,4-dinitrophenylhydrazine	PTFE – Polytetrafluoroethylene
EPA – Environmental Protection Agency	PUF – Polyurethane Foam
FEM – Federal Equivalent Method	QA – Quality Assurance
FRM – Federal Reference Method	QAPP – Quality Assurance Project Plan
GC/MS – Gas Chromatography / Mass Spectroscopy	QC – Quality Control
GFAA – Graphite Furnace Atomic Absorption Spectrometry	SLAMS – State and Local Air Monitoring Station
HPLC – High Performance Liquid Chromatography	SO ₂ – Sulfur Dioxide
IC – Ion Chromatography	SPM – Special Purpose Monitor
IMPROVE – Interagency Monitoring of Protected Visual Environments	STN – Speciation Trends Network
ICP/MS – Inductively Coupled Plasma Mass Spectroscopy	SVOC – Semi-volatile Organic Compound
ID – Site Identification	TEOM – Tapered Element Oscillating Microbalance
MET – Meteorology	TPY – Tons Per Year
MOA – Memorandum of Agreement	TSP – Total Suspended Particulate
MSA – Metropolitan Statistical Area	UV – Ultraviolet
mSA – Micropolitan Statistical Area	VOC – Volatile Organic Compound
µg/m ³ – Micrograms per cubic meter	WGS84 – World Geodetic System of 1984 revised in 2004
NAAQS – National Ambient Air Quality Standards	
NATTS – National Air Toxics Trends Site	
NADP-MDN – National Atmospheric Deposition Program Mercury Deposition Network	

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Introduction

The Department or its predecessors have operated an air quality monitoring network in South Carolina since 1959. During that time, the network has continually evolved to meet the requirements and needs of the Department's Air Program and to comply with federal requirements. In 2018, the network will be comprised of 96 monitors and samplers at 31 sites.

In October, 2006, the EPA published revisions to the ambient monitoring regulations (71 FR 61236, October 17, 2006) requiring quality assurance (QA), monitor designations, minimum requirements for both number and distribution of monitors among metropolitan statistical areas (MSAs), and probe siting changes. The regulation also included the requirement for an annual monitoring network plan and periodic network assessments.

This plan covers the eighteen month period from July 1, 2017 through December 31, 2018. This period includes a six month implementation period during which sites indicated as 'New' will be identified, secured, and prepared for the installation of monitoring equipment. It is expected that any monitoring indicated as 'New' or 'To be established' will be installed, calibrated, and operating in 2018 with the exception of some Ozone monitors, which may begin operation at the start of the South Carolina Ozone monitoring season (March 1-October 31). The annual Network Description and Ambient Air Network Monitoring Plan, as required and described in 40 CFR Part 58.10, and Periodic Network Assessment, must contain the following information for each monitoring station in the network:

- The Air Quality System (AQS) site identification number (ID) for existing stations,
- Location of each monitoring station, including street address and geographical coordinates,
- The sampling and analysis method used for each measured parameter,
- The operating schedule for each monitor,
- Any proposal to remove or relocate a monitoring station within a period of eighteen months following the plan submittal,
- The monitoring objective and spatial scale of representativeness for each monitor,
- The identification of any sites that are suitable for comparison against the Particulate Matter < 2.5 microns (PM_{2.5}) National Ambient Air Quality Standard (NAAQS), and
- The MSA, Core-Based Statistical Area (CBSA), Combined Statistical Area (CSA), or other area represented by the monitor.

This document constitutes the 2018 South Carolina Air Monitoring Network Plan. The site pages are organized into two main parts:

- **Network Summaries:** A table which presents the total number of sites and monitors for the State, including a list of all proposed changes to the current network, and
- **Air Monitoring Station Descriptions:** An outline of the designations, parameters, monitoring methods, and the purpose for each monitor at the site.

The Monitoring Network is reviewed annually. Planned changes are described in this 2018 Monitoring Plan and provided for public review and comment prior to submission to the EPA Region 4 Administrator.

Public Participation Opportunities

In response to public interest and the potential impact of the monitoring regulation changes, the Department's Air Program solicits involvement from both internal (to the Department) and external workgroups.

Individuals who had expressed interest in the development of the ambient air monitoring network were notified of the availability of the 2018 Monitoring Plan and were invited to provide comments. This group consists of representatives from the business, environmental and health communities, and concerned citizens.

Other opportunities for public involvement include:

- A webpage maintained for publication and access to current and draft monitoring plan reference documents and announcements¹.
- Availability of the proposed 2018 Monitoring Plan for public review and comment ran from May 25, 2017 through June 23, 2017. All recorded participants who registered in the outreach and discussion activities were notified when the 2018 Monitoring Plan became available for review. All public comments received will be summarized and addressed in Appendix A before submitting the final plan to the EPA.

The Department is committed to continuing the opportunities for input and participation in the development of the annual revisions of the Network Description and Ambient Air Network Monitoring Plan and the periodic assessments of the air quality surveillance system.

Network Operation

The primary responsibility for the operation of the Monitoring Network is assigned to the Division of Air Quality Analysis (DAQA) in the Bureau of Environmental Health Services (Division). The Division establishes, maintains, and operates the sites and instruments that make up the network and performs the analysis of samples collected as part of routine monitoring or special projects. Data generated by the network for comparison to the NAAQS is verified to be accurate and reported by the Division to the national AQS database for storage and public access.

Criteria pollutant monitoring for the purpose of comparison to the NAAQS is performed using the EPA designated Federal Reference Methods (FRM) or Federal Equivalent Methods (FEM) to ensure the precision and accuracy of the measurements across the air quality surveillance system.

Regular calibration and audits of the measurement systems are performed to verify that the instruments are operating correctly and data being collected is accurate. All monitors and samplers are calibrated at least once a year. Calibration is also performed whenever the monitor/sampler fails a bi-weekly Quality Control (QC)/precision check or multi-point audit, when maintenance is performed that may affect the monitor response, or if the monitor is located away from the building in which it was calibrated. If possible, a QC/precision check or flow check should precede any maintenance that would affect monitor response.

The QA activities supporting the Monitoring Network meet or exceed the QA requirements defined in 40 CFR Part 58, Appendix A (Quality Assurance Requirements for SLAMS and SPM Air Monitoring). Raw data is collected hourly from sites across the state and provided to internal data users (forecasters and data analysts) and to the AIRNow database for presentation to the public. Ozone monitors provide hourly data during Ozone Season (March 1-October 31).

¹<http://www.scdhec.gov/HomeAndEnvironment/Air/AmbientAir/>

Before the data is submitted to AQS, it is verified to be accurate through review of the instrument QC and QA performance documentation. Instrument QA/QC alone is not sufficient to assure monitoring data quality. In addition to periodic site assessments, the Department conducts additional visits to monitoring sites to document comparisons with applicable siting criteria.

It is the Department's intent that all criteria pollutant monitors and samplers be sited and operated in accordance with the requirements of 40 CFR Part 58. As required in 40 CFR Part 58, Appendix A, the DAQA in the Division establishes, maintains, and operates the sites and instruments and performs the analysis of samples collected. Data generated by the network for comparison to the NAAQS is verified to be accurate and reported by the Division to the national AQS database for storage and public access. Regular calibration and audits are performed to verify that the instruments are operating correctly and data being collected is accurate. As required in 40 CFR Part 58, Appendix C, all criteria pollutant monitoring in the South Carolina Monitoring Network for the purpose of comparison to the NAAQS is performed using the EPA designated FRM or FEM. Also, all criteria pollutant monitoring in the South Carolina Monitoring Network meets the monitoring objectives, spatial scales, and design criteria as described in 40 CFR Part 58, Appendix D. Finally, in this document, each site page contains a statement addressing compliance to 40 CFR Part 58, Appendix E. If the site is not in compliance, a plan is presented to address the deficiency.

An element of the Quality System² employed by the Division is periodic assessments of systems and monitor performance. As the primary QA organization for ambient air monitoring activities, the Division operates under the approved Environmental Quality Control Quality Assurance Management Plan, the Ambient Air Quality Monitoring Quality Assurance Project Plan, and approved plans for specific projects. The EPA Region 4 office may conduct audits of any component of the operation of the network or quality management system. The Division also participates in the National Performance Audit Program (NPAP) and the Performance Evaluation Program (PEP) administered by the EPA to provide independent audits.

Station Description Content

Specific siting information for each site and monitor is stored in the EPA's AQS, the national ambient air database. The AQS Site Description includes the exact location of the site, local and regional population, and description of the site location, monitor types, and monitoring objectives. This site and monitor information is routinely updated whenever there is a change in site characteristics or pollutants monitored.

The AQS is used as the primary repository for all South Carolina ambient air monitoring information, including site descriptions. All ambient air monitoring data is stored in AQS, including criteria pollutants, non-NAAQS parameters, ambient air toxics, total suspended particulate (TSP), and supporting QA data.

Each network station description contained in this document includes a Site Description and Monitor Details. An explanation of the information in each station description is presented below.

Site Description – The site description includes specific information about each ambient air monitoring site. The site description header includes the following:

- 1) Site Name – The name that is given to the site.

² The Quality System is the means by which the Department implements the quality management process through the Quality Assurance Management Plan for SC DHEC, March, 2014.

- 2) CSA/MSA – The area where the site is located as defined by the United States Census. (July, 2015).³
- 3) AQS Site ID – The unique site ID used in AQS is in the form of 45-cc-ssss where:
 - a) 45 is the federal identification code for South Carolina,
 - b) ccc is the county identification code, and
 - c) ssss is the site identification code within the county.
- 4) Location – Typically, the street address of the site, where available.
- 5) County – County in which the site is located.
- 6) Coordinates – Latitude (N), then Longitude (W) listed in decimal degrees using WGS84 projection.
- 7) Date Established – The date when each existing monitoring station was established is shown in the description. For new stations proposed in this Monitoring Plan, a date is provided when it is expected for the station to be in operation. Individual monitors at a site may have differing start and stop dates.
- 8) Site Evaluation (most recent date visited) – Each monitoring station in the network is periodically visited to determine whether all required probe exposure criteria for monitors are met. If necessary, corrective action is scheduled to address deficiencies. If a new monitoring site has not yet been evaluated, it will be denoted with the word “PENDING”.

Monitor Details – Each station description has a table that lists the parameter(s) and the descriptive information associated with that particular parameter. An explanation of the information in the tables is presented below.

- 1) Parameter – Criteria (compounds for which a NAAQS has been established), non-criteria, and/or supporting parameters (primarily meteorological measurements) measured at the site are listed.
- 2) Scale – Each monitor or sampler in the monitoring network is described in terms of the approximate physical dimensions of the air parcel nearest the monitoring station throughout which pollutant concentrations are expected to be reasonably similar. This is most often referred to as the *Scale* of the monitor. Different pollutants monitored at the same location may represent different scales depending on the characteristics of the pollutant. Area dimensions or scales of representativeness used in the network description are:
 - a) Microscale – Air volumes associated with area dimensions ranging from several meters up to about 100 meters.
 - b) Middle scale – Areas up to several city blocks in size with dimensions ranging from approximately 100 meters to 0.5 kilometers.
 - c) Neighborhood scale – Extended areas of a city that have relatively uniform land use with dimensions ranging from 0.5 to 4.0 kilometers.
 - d) Urban scale – Citywide or equivalent rural areas with dimensions ranging from 4 to 50 kilometers.
 - e) Regional scale – Areas ranging from 50 to hundreds of kilometers in diameter.

³ The US Census Bureau periodically adjusts CBSA names and boundaries. This plan uses the latest available revision.

The true representative area may best be described by an irregular shape of the approximate dimensions indicated above to account for local sources, topography, and differing land use.

The representative scale of a monitor is closely associated with the monitoring objective.

- 3) Objective – The ambient air monitoring network is designed to meet three primary objectives:
- a) Provide air pollution data to the public in a timely manner. Near real-time data is made available on the internet through AIRNow and Air Quality Index (AQI) reporting and forecasting in the major metropolitan areas.
 - b) Support compliance with ambient air quality standards and emissions strategy development. Monitors are operated to measure concentrations for comparison to NAAQS and to provide information to aid in the development of strategies to improve air quality.
 - c) Support air pollution research studies. Data from the monitoring network support greater understanding of the impacts and effects of ambient air pollution.

Individual monitors within a monitoring network that support these basic objectives generally serve one or more of the following purposes:

- a) Determine highest concentrations of pollutants,
- b) Determine representative concentrations in areas of high population density,
- c) Determine impact on air quality of significant sources or source categories,
- d) Determine general background concentrations,
- e) Determine extent of regional pollutant transport, and
- f) Determine welfare-related impacts in more rural and remote areas (ex. visibility impairment and impacts to vegetation).

The design intent in siting stations is to correctly match the area represented by the sample of monitored air with the scale most appropriate to meet the monitoring objective of the monitor. The relationship of appropriate scale to the six basic purposes as follows:

Monitoring Purpose	Siting Scale
Highest concentration	Micro, Middle, Neighborhood
Population exposure	Neighborhood, Urban
Source impact	Micro, Middle, Neighborhood
General/background	Neighborhood, Urban, Regional
Regional transport	Urban, Regional
Welfare-related impacts	Urban, Regional

Monitor and sampler data is regularly reviewed to assure the assigned scale is correct and appropriate for the intended objective.

- 4) Designation – Monitor designations that may be found in the tables include the State and Local Air Monitoring Station (SLAMS), special purpose monitor (SPM), National Core Monitoring Network (NCore), non-regulatory, QA collocated, and National Atmospheric Deposition Program Mercury Deposition Network (NADP-MDN) monitoring. Definitions of these designations are:
 - a) SLAMS – Monitors for which NAAQS have been established. These stations must meet requirements that relate to four major areas: QA, monitoring methodology, sampling interval, and siting of instruments and instrument probes.
 - b) SPM – Monitors which support investigations addressing complaints, areas and pollutants of concern, network refinement, modeling verification, and compliance. These monitors are committed to investigation and projects as described in the associated Quality Assurance Project Plan (QAPP). They may be located as separate monitoring stations or be included at existing monitoring locations. The SPM may also monitor for air toxics, particulate, Mercury, criteria pollutants, precipitation, and meteorology. Supplemental speciation is a type of SPM monitor that operates according to Chemical Speciation Network (CSN) protocols, but is not contained in the STN Network. This monitoring data will be reported to AQS where possible. Siting and probe exposure will conform to all requirements for SLAMS monitors whenever possible.
 - c) NCore – NCore is a national multi-pollutant network that utilizes advanced measurement systems for particles, pollutant gases, and meteorology. It provides data for long-term trends of criteria and non-criteria pollutants, and supports air quality model evaluation, scientific studies, and ecosystem assessments. Most NCore monitors are SLAMS.
 - d) Non-regulatory Monitor – A monitor that measures data on a pollutant that will not be used for regulatory purposes.
 - e) Collocated QA Sampler – A particulate matter sampler that is paired with but operated independent of a similar sampler. It is used to indicate measurement accuracy.
 - f) NADP-MDN – Monitors for the NADP-MDN provide data on the geographic distributions and trends of mercury in precipitation. These monitors are operated in the State of South Carolina in cooperation with the federal government, and are listed in the Site Description, but are not included in the Site Tables.
 - g) IMPROVE – The Interagency Monitoring of Protected Visual Environments (IMPROVE) network collects visibility related data. These monitors are operated in the State of South Carolina in cooperation with the federal government, and are listed in the Site Description, but are not included in the Site Tables.

The SLAMS and SPM data may be used in the reporting of an area's AQI. The AQI is a method of reporting that converts concentration levels of pollution to a simple number scale of 0-500. Index reporting is required for all urban areas with a population exceeding 350,000. Intervals on the AQI scale are related to potential health effects of the daily measured concentration of the measured pollutants. All stations in a metropolitan area provide data for daily index reporting. Data collected from continuous Ozone and PM_{2.5} monitors is collected hourly and reported as AQI maps on the EPA's

AIRNow website. A daily AQI is provided for the areas in and around Aiken, Charleston, Columbia, Florence/Darlington, Greenville-Spartanburg, Myrtle Beach, and York/Chester/Lancaster.

- 5) Probe Height – The monitor or sampler probe is the point where ambient air enters the analytical or sample collection system. Ideally, air would be sampled approximately at nose height, but due to operational, exposure, and security considerations, air may be sampled further from ground level. Proper probe height is specified in the monitoring regulations (typically between 2 and 15 meters) and is checked as part of the periodic site evaluations.
- 6) Analysis Methods – All sampling and analytical procedures used to determine ambient concentrations of criteria pollutants for comparison to the NAAQS will use either Federal Reference or Equivalent Methods (FRM or FEM). For the reactive gases, borosilicate glass or FEP Teflon are used in the sampling train. Where appropriate for specific monitoring objectives, well characterized, non-equivalent methods may be used. The analysis method for the parameters most commonly measured and listed in the station descriptions are described below.

- a) Particulate Matter less than 10 microns (PM_{10}) – PM_{10} samplers operated by the Department are designated as either FRM or FEM and are operated consistent with the requirements in 40 CFR Part 50, Appendix J and 40 CFR Part 58. Intermittent samplers collect a 24-hour sample no less than every sixth day on a filter. The filter is conditioned and weighed before and after the sample run. The weight of material collected on the filter and the volume of air sampled is used to calculate the average concentration, expressed as micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) for the sample period. The filters are equilibrated before each weighing for a minimum of 24 hours at a mean temperature between 15 - 30°C and a mean relative humidity between 25 and 45 percent.

Continuous PM_{10} samplers provide 24-hour concentration measurements every day. During sampling, ambient air passes through an inlet designed to pass only particles smaller than 10 microns in diameter. The flow rate, critical to precise particle size separation, is monitored and controlled constantly. Particulate in the sample stream is collected on a Teflon-coated glass fiber filter. The mass collected on the filter is also continuously monitored. The difference between the current filter weight and the previous weight gives the total mass of the collected particulate for that period. The mass concentration is calculated by dividing the mass gained by the flow through the filter for the period. The concentration measurements are averaged over 1-hour and 24-hour periods. Data is stored locally on redundant data acquisition systems and recovered hourly by a central office computer system (AirVision). Only 24-hour daily averages are used for comparison to the ambient standards.

- b) Particulate Matter less than 2.5 microns ($PM_{2.5}$) – All $PM_{2.5}$ samplers operated by the Department for comparison to the NAAQS are designated FRM samplers. Manual samplers are operated consistent with the requirements in 40 CFR Part 50, Appendix L. Samples are collected on 46.2 millimeter polytetrafluoroethylene (PTFE) filters over a 24-hour sampling period. Air flow through the filter is maintained at 16.7 liters per minute at local ambient temperature and pressure. The flow rate must be maintained within ± 5 percent throughout the sample period. Sample filters are collected within 96 hours of the end of the sample run and are kept cooled during transit to minimize potential sample loss.

The PTFE filters are equilibrated before each weighing for a minimum of 24 hours at a mean temperature between 20 and 23°C and 30 to 40 percent mean relative humidity. Filters are weighed before and after the sample period. Filters are used within thirty days

of initial weighing. Collected samples are typically weighed within two weeks of sampling. If the samples are maintained below 4°C after collection, they can be held for up to thirty days from the end of the sample period. The mass collected and the volume sampled are used to calculate the concentration, expressed in $\mu\text{g}/\text{m}^3$.

Unless designated FEM, continuous $\text{PM}_{2.5}$ monitors do not provide concentration data suitable for comparison to the NAAQS. Non-FEM continuous monitors that provide reasonably comparable measurements may be used to provide data for calculation of an area Air Quality Index (AQI). Continuous $\text{PM}_{2.5}$ samplers provide 24-hour concentration measurements every day. During sampling, ambient air passes through an inlet system designed to pass only particles smaller than 2.5 microns in diameter. The flow rate, critical to precise particle size separation, is monitored and controlled constantly. Particulate in the sample stream is collected on a Teflon-coated glass fiber filter. The mass collected on the filter is also continuously monitored. The difference between the current filter weight and the previous weight gives the total mass of the collected particulate for that period. The mass concentration is calculated by dividing the mass gained by the flow through the filter for the period. The concentration measurements are averaged over 1-hour and 24-hour periods. Data is stored locally on redundant data acquisition systems and recovered hourly by a central office computer system (AirVision). Only 24-hour daily averages from FEM monitors are used for comparison to the ambient standards.

- c) $\text{PM}_{2.5}$ Speciation sampling – In addition to operating $\text{PM}_{2.5}$ samplers that provide measurement of only the $\text{PM}_{2.5}$ mass concentration, the Department also operates $\text{PM}_{2.5}$ Speciation samplers to collect samples for analysis to determine the chemical makeup of the particulate. Speciation sample collections are part of the national CSN. Samples are collected on a set of two cartridges on the Met-One SASS sampler for nitrates, sulfates, and metals and on a single cartridge in the URG 3000N sampler for carbon containing material. The samples are collected over a 24-hour sampling period. The individual cartridges contain denuders and filters designed to efficiently capture the major components of $\text{PM}_{2.5}$.

After collection, the samples are shipped cold to an EPA contract laboratory for analysis. At the laboratory, the samples are analyzed using thermal optical analysis (for carbon), ion chromatography (IC) for nitrates and sulfates, and x-ray fluorescence for metals to determine the presence and concentration of specific compounds. Sample results are available on the EPA website.

- d) Sulfur Dioxide (SO_2) – Instruments used to continuously monitor SO_2 concentrations in the atmosphere use the Ultraviolet (UV) Fluorescence Federal Reference Method. The continuous data output from the instrument is stored locally on redundant data acquisition systems and recovered hourly by central office computer system (AirVision).
- e) Calibration of these instruments and audits of their performance are done using an EPA protocol gas mixtures containing a certified concentration of SO_2 in nitrogen. This gas is diluted to provide known concentrations of SO_2 . These known concentrations are supplied to the instrument, which is adjusted so the instrument output corresponds with the specific concentrations. Calibration curves are prepared for each instrument and each measurement is automatically compared to this curve before entry into the data acquisition system.

- f) Carbon Monoxide (CO) – Continuous monitoring for CO is performed using the FRM non-dispersive infrared correlation method. Data is stored locally on redundant data acquisition systems and recovered hourly by the DAQA central office computer system (AirVision).

Calibration of the instrument and audits of its performance are done using an EPA Protocol gas mixtures containing a certified concentration of CO in air. The gas is diluted to provide known concentrations of CO. Known concentrations are supplied to the instrument, which is adjusted so the instrument output corresponds with the specific concentrations. Calibration curves are prepared for each instrument which are used to calculate concentration measurements for storage in the data acquisition system.

- g) Ozone – Ozone is monitored using the FEM UV photometry method. The continuous data output from the instrument is stored locally on redundant data acquisition systems and recovered hourly by the central office computer system (AirVision).

Monitors are routinely calibrated and their performance audited using portable ozone transfer standards. Calibration curves are prepared for each instrument which are used to calculate the concentration measurements stored in the data acquisition system.

- h) Nitrogen Dioxide (NO₂) – The FRM UV chemiluminescence method is used for measurement of NO₂ concentration in the ambient air. The continuous data output from the instrument is stored locally on redundant data acquisition systems and recovered hourly by a central office computer system (AirVision).

Calibration of the instrument and audits of their performance are done using an EPA protocol gas mixtures containing a known concentration of Nitric Oxide (NO) and Nitrogen Oxides (NO_x) in nitrogen. The gas is diluted to present several known concentrations of the oxides. A converter is used to convert NO_x to NO for reaction with internally generated ozone and measurement of the light produced by the reaction of NO and Ozone. Known concentrations are supplied to the instrument, which is adjusted so the instrument output corresponds with the supplied concentrations. Calibration curves are prepared for each instrument which are then used to provide concentration measurements for storage in the data acquisition system.

- i) Lead – Lead concentrations are determined by the analysis of TSP collected using high volume particulate samplers as described in 40 CFR Part 50, Appendix G. Particulate samples are acid extracted from a portion of the filter to dissolve metals from the collected materials. The lead content is determined using Flameless (Graphite Furnace) Atomic Absorption Spectrometry or may be analyzed by an EPA national contract laboratory using Inductively Coupled Plasma Mass Spectroscopy (ICP/MS).

- j) Meteorology – Meteorology consists of wind direction, wind speed, precipitation, temperature, and pressure. Collection and/or analysis methods are discussed below.

- Wind Direction and Speed – Wind data is collected using systems that incorporate high precision 'Air Quality' systems. The systems use separate or combined wind vanes and anemometers mounted 10 meters above ground. The systems provide supporting information about the local meteorology.
- Precipitation – Precipitation is measured by tipping bucket gauges that provide a signal indicating the occurrence, rate, and amount of precipitation. The gauges are not heated, so they may not accurately provide the time and rate for frozen precipitation events. The monitors are checked periodically for operation and

accuracy using a known volume of water and compared with actual volumes of collected precipitation where there are collocated samplers.

- Ambient Temperature and Pressure – Ambient temperature is available from sensors that are part of the sampling systems for the FRM PM_{2.5} samplers. Ambient temperature measurement is necessary for the systems to maintain the required flow rate used to reproducibly separate the desired particulate size fractions as conditions change. Although the primary use of the measurement is for sampler flow control, the sensors are accurate and regularly audited. Temperature and pressure sensors are compared to reference systems at least once per month.
- k) Volatile Organic Compounds – Volatile organic compounds (VOCs) are collected into passivated or silica lined stainless steel canisters. The canisters are cleaned, tested, and evacuated at the laboratory prior to installation at the sampling site. At the sampling location, the canisters are filled and pressurized with ambient air throughout the sampling period (typically 24 hours). Measured portions of the captured air are concentrated at low temperature and analyzed using gas chromatography with a mass spectrometer detector (GC/MS) to identify and quantitate target compounds. The collection and analysis method is based on the EPA Method TO-15.
- l) Semi-volatile Organic Compounds – Semi-volatile organic compounds (SVOCs) are collected using polyurethane foam (PUF) and a solid adsorbant to trap the compounds from air pulled through the material by a high volume sampler. The SVOCs are extracted from the collection cartridge using a solvent, and the rinses are concentrated for analysis. Measured portions of the extract are analyzed using GC/MS to identify and quantitate the collected compounds. The collection and analysis method is based on the EPA Method TO-13.
- m) Carbonyls – Carbonyls (including aldehydes and ketones) are extracted from ambient air by reaction with a compound that stabilizes them enough to capture and hold. The reaction of the target compounds with Dinitrophenylhydrazine (DNPH) removes them from the sampled air and concentrates them in the sample cartridge. Solvent extraction of the DNPH derivatives from the cartridge is followed by analysis using High Pressure Liquid Chromatograph to identify and quantitate the collected Carbonyls. The collection and analysis method is based on the EPA Method TO-11.
- n) Metals – Metals in particulate are collected on filters using the TSP or PM₁₀ High Volume samplers. Metals are extracted from a portion of the filter using sonication in an acid solution. Detection, identification, and quantitation of the target metals use Graphite Furnace AA or inductively coupled plasma with a mass spectrometer (ICP/MS). The collection and analysis method is based on the EPA Method IO-3.
- o) Precipitation Chemistry – A portion of the precipitation sample collected each week is analyzed for pH and conductivity. To determine concentrations of dissolved material that contributes to acid rain, the collected material is analyzed for cations and anions using ion chromatography (IC).
- p) Sulfate – Sulfate in particulate can be measured by collecting samples and continuous monitoring. The continuous method thermally reduces Sulfate in ambient particulate to SO₂ for detection in a dedicated SO₂ monitor. Particulate samples collected on the species-specific denuders used in the CSN are analyzed for anions (SO₄²⁻ and NO₃⁻) using ion chromatography for separation and quantification of the

species. Samples are analyzed for anions at the DAQA lab. All other speciation analyses are performed by Amec-Forte-Wheeler.

- q) Light Absorbing Carbon (Black Carbon) – Light absorbing carbon is measured continuously by the use of an aethalometer. The transmittance of infrared light through a filter is measured as particulate and is captured to determine the amount of Black Carbon collected.
- r) Mercury in precipitation is sampled and analyzed as part of the National Atmospheric Deposition Program, Mercury Deposition Network (NADP/MDN). Details of the sampling and analysis are available on the NADP website at <http://nadp.sws.uiuc.edu/NADP/>.

Sampling frequency indicates how often a measurement is made. Sampling typically involves collection of a sample over a period (typically 24 hours, midnight to midnight EST) and the delivery of the sample to the laboratory for preparation and analysis. Samples are collected every day (1:1), every third day (1:3), every sixth day (1:6), every twelfth day (1:12), or weekly, depending on the data quality objectives of the project. Results are reported as averages for the sample period. The EPA publishes the 1:3 and 1:6 day sampling schedules used by the South Carolina Ambient Air Monitoring Network and nationwide⁴.

Monitoring typically uses on-site analyzers that continuously sample the air and measure the pollutant of interest. Results of the analysis are reported as hourly averages. Five minute averages are also reported for SO₂ concentrations. One minute averages are collected from many of the continuously monitored parameters for use in verification and validation of the reported monitoring data.

Changes for 2018

Any planned changes in parameters monitored, the configuration, or operations at the site planned for 2018 are described herein and summarized in the Summary of 2018 Network Changes. Unless otherwise indicated, changes at a site including the beginning of new monitoring activity will be effective January 1, 2018. Ozone monitoring for 2018 at new or special project sites may start at the beginning of the Ozone monitoring season (March 1-October 31).

⁴ <http://www.epa.gov/ttn/amtic/calendar.html>

Network Summary

Network Summary: Calendar Year 2018 Air Monitoring Stations																			
Region	Sites	PM _{2.5}	PM _{2.5} Cont.	Speciation	PM ₁₀	TSP/Lead	Ozone	SO ₂	NO ₂ /NO/NO _y	CO	Sulfate	BC	Carbonyls	SVOC	VOC	Mercury	Precip Chem.	Precip.	*MET
Augusta-Richmond County, GA-SC MSA	2	1	1	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0
Charleston-N. Charleston MSA	5	3	2	0	1	0	2	2	2	0	0	1	0	0	0	0	0	1	1
Charlotte-Concord-Gastonia, NC-SC MSA	1	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1
Columbia MSA	6	3	2	1	2	1	3	3	3	1	0	1	2	3	0	1	2	2	1
Florence MSA	5	1	1	0	0	4	1	0	0	0	0	0	0	0	0	0	0	0	0
Greenville-Anderson-Mauldin MSA	5	3	1	0	1	0	4	1	1	0	0	1	0	0	0	0	0	0	0
Myrtle Beach-Conway-North Myrtle Beach, SC-NC MSA	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
Spartanburg MSA	2	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
Remainder of State	4	1	3	1	3	0	3	1	0	0	0	1	2	2	2	0	0	0	1
TOTALS	31	13	11	2	7	5	18	8	6	1	0	4	4	5	2	1	2	3	4

This summary table presents the elements of the 2018 Monitoring Plan after implementation of changes described in this plan.

*MET data includes wind speed and wind direction.

2016 Criteria Pollutant Design Values

This section presents the 2016 design values for the South Carolina criteria pollutant monitoring network.

Site ID	County	Site Name	Ozone (ppm)	PM _{2.5} Annual (µg/m ³)	PM _{2.5} 24-hour (µg/m ³)	PM ₁₀ (# Expected Exceedances)	SO ₂ 1-hour (ppb)	NO ₂ 1-hour (ppb)	NO ₂ Annual (ppb)	CO 8-hour (ppm)	CO 1-hour (ppm)	Lead (µg/m ³) (2015-NOT 3 yrs DV)
001-0001	Abbeville	Due West	*0.058									
003-0003	Aiken	Jackson Middle School	0.060									
007-0005	Anderson	Big Creek	0.060									
015-0002	Berkeley	Bushy Park	*0.057									
019-0003	Charleston	Jenkins Avenue				0	9	*32	*5			
019-0046	Charleston	Cape Romain	*0.057				*4	*10	*2			
019-0048	Charleston	FAA		7.8	16							
019-0049	Charleston	Charleston Public Works		7.3	*15							
025-0001	Chesterfield	Chesterfield	0.060	7.8	15	0*						
029-0002	Colleton	Ashton	*0.056									
031-0003	Darlington	Pee Dee	0.062									
037-	Edgefield	Trenton	*0.058	8.7	18							

Site ID	County	Site Name	Ozone (ppm)	PM _{2.5} Annual (µg/m ³)	PM _{2.5} 24-hour (µg/m ³)	PM ₁₀ (# Expected Exceedances)	SO ₂ 1-hour (ppb)	NO ₂ 1-hour (ppb)	NO ₂ Annual (ppb)	CO 8-hour (ppm)	CO 1-hour (ppm)	Lead (µg/m ³) (2015-NOT 3 yrs DV)
0001												
041-0003	Florence	Williams		8.6	17							
041-8001	Florence	JCI Railroad										*
041-8002	Florence	JCI Entrance										*
041-8003	Florence	JCI River										*
043-0006	Georgetown	Georgetown CMS										
043-0011	Georgetown	Howard High #3				*0						
045-0015	Greenville	Greenville ESC		9.4	23	0	3	*44	*8			
045-0016	Greenville	Hillcrest	*0.063	8.6	18							
063-0008	Lexington	Irmo		9.4	20		29					
063-0009	Lexington	Cayce CMS										
063-0010	Lexington	Cayce City Hall				*0						
073-0001	Oconee	Long Creek	0.063	*6.0	*14		2					
077-0002	Pickens	Clemson	*0.063									
077-0003	Pickens	Wolf Creek	*0.060									
079-0007	Richland	Parklane	*0.059	8.5	17	*	8		*6	1	1	0

Site ID	County	Site Name	Ozone (ppm)	PM _{2.5} Annual (µg/m ³)	PM _{2.5} 24-hour (µg/m ³)	PM ₁₀ (# Expected Exceedances)	SO ₂ 1-hour (ppb)	NO ₂ 1-hour (ppb)	NO ₂ Annual (ppb)	CO 8-hour (ppm)	CO 1-hour (ppm)	Lead (µg/m ³) (2015-NOT 3 yrs DV)
079-0019	Richland	Bates House		8.9	19	*0						
079-0021	Richland	Congaree Bluff	*0.055				*12					
079-1001	Richland	Sandhill	*0.065						*4			
083-0009	Spartanburg	North Spartanburg	*0.067									
083-0011	Spartanburg	T.K. Gregg		8.9	19							
091-0006	York	York CMS	0.059				*5					

* denotes design values that did not meet completeness requirements.

Required Monitoring

The EPA regulation 40 CFR Part 58, Appendix D requires that each State maintain a minimum number of monitors to properly characterize air quality and to meet any required objectives of the monitoring network⁵. In general, these minimum requirements are based on the MSA population and current ambient air monitoring design values. The following sections discuss the minimum monitoring criteria for each of the criteria pollutants (Ozone, Particulate Matter (PM_{2.5} and PM₁₀), Lead, SO₂, NO₂, and CO), the CBSAs, and the MSA population. The final section shows the current South Carolina minimum monitoring requirements.

Minimum Monitoring for Ozone – The Ozone minimum monitoring criteria has two requirements:

- 1) Required Ozone SLAMS sites – A minimum number of required Ozone SLAMS sites for each CBSA that is determined by CBSA population and the peak Ozone concentrations.
- 2) NCore Requirement – Each NCore site must include an Ozone monitor. The Parklane (45-079-0007) site in Columbia, South Carolina is the NCore site for South Carolina.

Minimum Monitoring for PM_{2.5} – The PM_{2.5} minimum monitoring criteria has six requirements:

- 1) Required PM_{2.5} SLAMS sites – A minimum number of required PM_{2.5} SLAMS sites for each CBSA.
- 2) Continuous Requirement – A continuous PM_{2.5} monitoring requirement which is equal to at least one-half (round up) the minimum required PM_{2.5} SLAMS sites. Also, at least one required continuous analyzer in each CBSA must be collocated with one of the required FRM or FEM monitors, unless at least one of the required FRM/FEM monitors is itself a continuous FEM monitor, in which case, no collocation requirement applies.
- 3) Regional Background and Transport – At least one PM_{2.5} site must be established in each state to monitor for regional background and at least one PM_{2.5} site to monitor regional transport. The Ashton (45-029-0002) site in Colleton County is the regional background site and the Chesterfield (45-025-0001) site in Chesterfield County is the regional transport site.
- 4) NCore Requirement – Each state is required to operate at least one NCore site which measures PM_{2.5} using both continuous and integrated/filter-based samplers. The Parklane (45-079-0007) site in Columbia, South Carolina is the NCore site for South Carolina.
- 5) Near-road PM_{2.5} Monitoring – The EPA requires the collocation of one PM_{2.5} monitor with a near-road NO₂ monitor in urban areas having populations of 1,000,000 or more by January 1, 2017. The Charlotte-Concord-Gastonia, NC-SC MSA is the only MSA in South Carolina that meets the population requirement for a collocated PM_{2.5} monitor. The near-road monitoring requirement for the Charlotte-Concord-Gastonia, NC-SC MSA is being fulfilled at the Remount Road (37-119-0045) site by the Mecklenburg County Air Quality Commission.
- 6) Speciation Monitoring – Chemical speciation monitoring is conducted at the Parklane (45-079-0007) site and is funded as part of the PM_{2.5} Speciation Trends Network (STN). Speciation Monitoring is also conducted at the Chesterfield (45-025-0001) site.

Minimum Monitoring for PM₁₀ – The PM₁₀ minimum monitoring criteria has one requirement that is based on the CBSA population, the number of exceedances of the NAAQS, and the percentage of PM₁₀ concentrations over or under the NAAQS. Unlike other criteria pollutants, the minimum monitoring requirements for PM₁₀ is given as a range of required monitoring sites for a CBSA.

⁵ 40 CFR Part 58.11 paragraph (a)(3)(c) and Appendix D to 40 CFR Part 58.

Minimum Monitoring for Lead – The Lead minimum monitoring criteria has one requirement that any facility with annual Lead emissions exceeding 0.5 tpy will be required to have a Lead sampler. Based on the state-submitted 2014 National Emissions Inventory, there are no facilities in South Carolina with Lead emissions greater than 0.5 tpy.

On May 7, 2010, the Department issued an air synthetic minor construction permit to Johnson Controls Battery Group for the Florence Recycling Center (Permit No. 1040-0129-CA). Under a settlement agreement⁶ with several petitioners, the Florence Recycling Center supports source-oriented ambient Lead monitoring being conducted by the Department at several sites around the facility. Additional details of the monitoring of this facility can be found in the Florence MSA section of this Monitoring Plan under the site name “Johnson Controls.”

Minimum Monitoring for SO₂ – The SO₂ minimum monitoring criteria has three requirements:

- 1) Requirement for Monitoring by the Population Weighted Emissions Index – The population weighted emissions index (PWEI) is determined using the most current population of each CBSA and the most recent level of SO₂ emissions for each county within the CBSA. The emissions data is available from the National Emissions Inventory. For any CBSA with a calculated PWEI value equal to or greater than 1,000,000, a minimum of three SO₂ monitors are required. 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. 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.

The following table presents each CBSA’s 2016 population, 2014 SO₂ emissions, calculated index, and minimum monitoring requirements. The process for calculating the index can be found at the bottom of the table.

CBSA	2016 CBSA Population	2014 CBSA SO₂ Emissions (Tons)	PWEI	SO₂ Minimum Monitors Required
*Charlotte-Concord-Gastonia, NC-SC MSA	2,474,314	7,624	18864	1
Greenville-Anderson-Mauldin MSA	884,975	3,098	2742	0
Columbia MSA	817,488	17,706	14474	1
Charleston-North Charleston MSA	761,155	15,796	12023	1
*Augusta-Richmond County, GA-SC MSA	594,919	3,353	1995	0
*Myrtle Beach-Conway-North Myrtle Beach, SC-NC MSA	449,295	4,837	2173	0
Spartanburg MSA	329,136	398	131	0
Florence MSA	205,576	3,797	782	0
Hilton Head Island-Bluffton-Beaufort MSA	211,614	908	192	0
Sumter MSA	107,396	182	20	0
<p>The PWEI is calculated using US Census population data and state emission inventory data at the CBSA level. The population for each CBSA (based on the most recent US Census or Census estimate) is multiplied by the CBSA total SO₂ emissions (reported in tons using the latest National Emissions Inventory data). This product is divided by 1,000,000 to derive the index.</p> <ul style="list-style-type: none"> • CBSA with index greater than 1,000,000 will require 3 monitors. 				

⁶ http://www.scdhec.gov/HomeandEnvironment/docs/JCI/JCI-Settlement%20Agreement_07142010.pdf

CBSA	2016 CBSA Population	2014 CBSA SO ₂ Emissions (Tons)	PWEI	SO ₂ Minimum Monitors Required
<ul style="list-style-type: none"> • CBSA with index less than 1,000,000 but greater than 100,000 will require 2 monitors. • CBSA with index less than 100,000 but greater than 5,000 will require 1 monitor. • CBSA with index less than 5,000 will require no monitors. <p>*Monitors may be operated in the non-South Carolina portion of the CBSA.</p>				

- 2) Regional Administrator Required Monitoring – The Regional Administrator may require additional SO₂ monitoring sites above the minimum number of monitors required by the PWEI in areas that have the potential to have high SO₂ concentrations, in areas impacted by sources which are not conducive to modeling, or in locations with susceptible and vulnerable populations that are not otherwise being monitored. South Carolina does not have any SO₂ Regional Administrator Required Monitoring.
- 3) NCore Requirement – Each NCore site must include a SO₂ monitor. The Parklane (45-079-0007) site in Columbia, South Carolina is the NCore site for South Carolina.

Minimum Monitoring for NO₂ – The NO₂ minimum monitoring criteria has four requirements:

- 1) Near-road NO₂ Monitors – Each state must have one microscale near-road NO₂ monitoring site in each CBSA with a population of at least 1,000,000 or more persons. An additional near-road NO₂ monitoring site is required for any CBSA with a population of 2,500,000 or more, or in any CBSA with a population of 1,000,000 or more that has one or more roadway segments with 250,000 or greater Annual Average Daily Traffic (AADT) counts. The Charlotte-Gastonia-Concord NC-SC MSA meets the population requirement of at least 1,000,000 or more persons. The Remount Road site is located in Charlotte, North Carolina and has a near-road NO₂ monitor.
- 2) Requirements for Area-wide NO₂ Monitoring – Each state must have one monitoring site in each CBSA with a population of 1,000,000 or more persons which will monitor a location of expected highest NO₂ concentrations representing the neighborhood or larger spatial scales. The Garinger High School (37-119-0041) site in Charlotte, North Carolina operates an area-wide NO₂ monitor.
- 3) Regional Administrator Required Monitoring – The Regional Administrators, in collaboration with states, require a minimum of forty additional NO₂ monitoring sites above the minimum monitoring requirements (nationwide) in any area, with a primary focus on siting these monitors in locations to protect susceptible and vulnerable populations. The Greenville ESC (45-045-0015) site is a Regional Administrator Required Monitoring site.
- 4) NCore Requirement (NO/NO_y Monitoring) – Each NCore site must include a NO/NO_y monitor that will collect data to be used to produce conservative estimates for NO₂ and further Ozone research. The Parklane (45-079-0007) site in Columbia, South Carolina is the NCore site for South Carolina.

Minimum Monitoring for CO – The CO minimum monitoring criteria has two requirements:

- 1) Near-road CO Monitors – Each state with CBSAs having a population of 1,000,000 or more people must have one CO monitor collocated with one required near-road NO₂ monitor to be operational by January 1, 2017. The Charlotte-Concord-Gastonia, NC-SC MSA is the only CBSA in South Carolina that meets the population requirement for a collocated CO monitor. The Mecklenburg County Air Quality office will establish and operate a CO monitor at the Remount Road (37-119-0045) near road site in Charlotte, North Carolina by January 1, 2017.

- 2) NCore Requirement_– Each NCore site in a CBSA with a population of 500,000 or more must include a CO monitor. The Parklane (45-079-0007) monitoring site in the Columbia, SC MSA is the NCore site for South Carolina and supports one CO monitor. The Garinger (37-119-0041) monitoring site in Mecklenburg County is also an NCore site and supports a CO monitor.

Minimum Monitoring for the Photochemical Assessment Monitoring Stations (PAMS) – South Carolina does not meet and is not subject to the PAMS requirement.

The CBSAs and the Minimum Monitoring Requirements – The term CBSA is a collective term for the defined MSAs and Micropolitan Statistical Areas (mSA). A MSA area contains a core urban area of 50,000 or more population, and a mSA contains an urban core of at least 10,000 but less than 50,000 population. Each metropolitan or micropolitan area consists of one or more counties and includes the counties containing the core urban area, as well as any adjacent counties that have a high degree of social and economic integration (as measured by commuting to work) with the urban core⁷.

A MSA or mSA geographic composition, or list of geographic components at a particular point in time, is referred to as its "delineation". The MSA or mSA are delineated by the U.S. Office of Management and Budget (OMB) and are the result of the application of published standards based on Census Bureau data. The standards for delineating the areas are reviewed and revised once every ten years, prior to each decennial census. Generally, the areas are delineated using the most recent set of standards following each decennial census. Between censuses, the delineations are updated annually to reflect the most recent Census Bureau population estimates. Areas based on the 2010 standards and Census Bureau data were delineated in July of 2015^{8,9}.

While the Department understands the need for establishing minimum monitoring requirements, the EPA appropriately has mechanisms within the monitoring plan approval and network assessment process to allow states the flexibility to implement a monitoring network that meets the three basic monitoring objectives and addresses National and State needs. The recent changes in the MSA definitions are an example of the reasons for the incorporation of flexibility in the regulations and illustrate the necessity that the EPA uses the discretion available in the monitoring regulations to afford states flexibility and regulatory certainty.

Per 40 CFR Part 58, Appendix D, paragraph 2 (e), minimum monitoring requirements in multi-state MSAs can be met through a cooperative agreement. In the absence of an agreement between states, the minimum monitoring requirements must be met independently in each portion of the MSA. South Carolina has established a memorandum of agreement (MOA) with the Georgia Department of Natural Resources, Environmental Protection Division¹⁰, North Carolina Department of Environmental and Natural Resources Division of Air Quality, and

⁷ <http://www.census.gov/population/metro/>

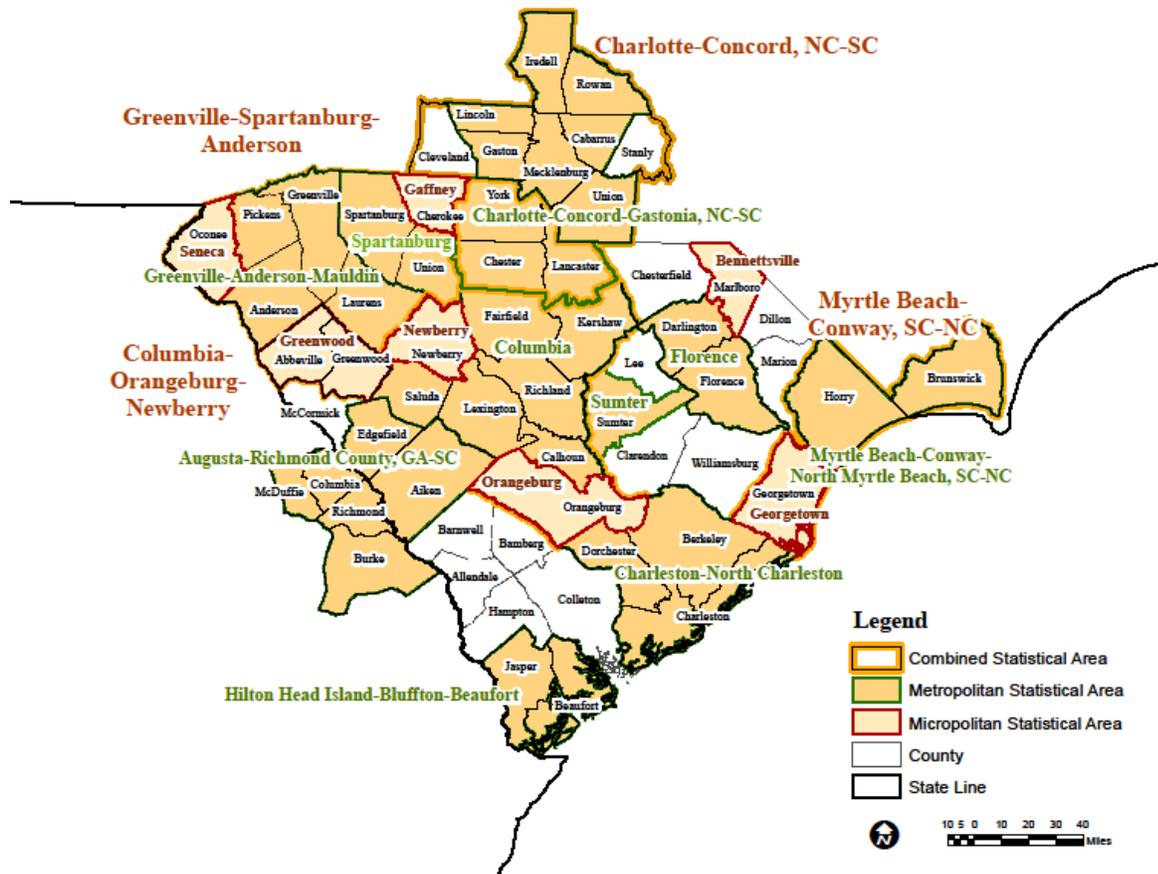
⁸ <http://www.census.gov/population/metro/data/>

⁹ OMB Bulletin No. 15-01-"Revised Delineations of Metropolitan Statistical Areas, Micropolitan Statistical Areas, and Combined Statistical Areas, and Guidance on Uses of the Delineations of These Areas", July 15, 2015.

¹⁰ The Memorandum of Agreement on Air Quality Monitoring for Criteria Pollutants for the Augusta-Richmond County Metropolitan Statistical Area (MSA) was signed on March 6, 2017 by the South Carolina DHEC Bureau of Air Quality and the Georgia Environmental Protection Division-Air Protection Branch.

Mecklenburg County, North Carolina^{11,12} which specifies the responsibilities of each party to develop a monitoring network that meets the appropriate monitoring objectives for the MSA.

The map below presents South Carolina's CBSAs based on the definitions published in July, 2016.



Population and the Minimum Monitoring Requirements – The minimum monitoring criteria only applies to MSAs. The table below presents the latest 2016* population estimates for each MSA in South Carolina and the total population of MSAs shared with North Carolina and Georgia.

¹¹ The Memorandum of Agreement on Air Quality Monitoring for Criteria Pollutants for the Myrtle Beach-Conway-North Myrtle Beach, SC-NC Metropolitan Statistical Area (MSA) was signed on June 22, 2015 by the South Carolina DHEC Bureau of Air Quality and the North Carolina Department of Environmental and Natural Resources-Division of Air Quality.

¹² The Memorandum of Agreement on Air Quality Monitoring for Criteria Pollutants for the Charlotte-Gastonia-Concord Metropolitan Statistical Area (MSA) was signed on January 12, 2006 by the South Carolina DHEC Bureau of Air Quality, the North Carolina Department of Environmental and Natural Resources-Division of Air Quality and the Mecklenburg County, North Carolina Land Use and Environmental Service Agency-Air Quality.

MSA	2016 Population
Charlotte-Concord-Gastonia, NC-SC MSA	2,474,314
Greenville-Anderson-Mauldin MSA	884,975
Columbia MSA	817,488
Charleston-North Charleston MSA	761,155
Augusta-Richmond County, GA-SC MSA	594,919
Myrtle Beach-Conway-North Myrtle Beach, SC-NC MSA	449,295
Spartanburg MSA	329,126
Florence MSA	205,976
Hilton Head Island-Bluffton-Beaufort MSA	211,614
Sumter MSA	107,396
*United States Census Bureau and CFR 40 Part 58, Appendix D	

South Carolina Minimum Monitoring Requirements – Based on the *latest available United States Census population estimates and the 2016 ambient air quality design values (page 13), the minimum monitoring requirements for each MSA are:

MSA	Ozone	PM _{2.5}	PM _{2.5} Cont.	PM ₁₀	Lead	SO ₂	NO ₂	CO
**Augusta-Richmond County, GA-SC MSA	2	1	1	1-2	0	0	0	0
Charleston-North Charleston, MSA	1	1	1	1-2	0	1	0	0
**Charlotte-Concord-Gastonia, NC-SC MSA	2	2	1	2-4	0	1	2	2
Columbia MSA (NCore)	2	1	1	1-2	0	1	1	1
Florence MSA	1	0	0	0	0	0	0	0
Greenville-Anderson-Mauldin MSA	2	1	1	1-2	0	0	1	0
Hilton Head Island-Bluffton-Beaufort MSA	0	0	0	0	0	0	0	0
Myrtle Beach-Conway-North Myrtle Beach, SC-NC MSA	1	0	0	0-1	0	0	0	0
Spartanburg MSA	1	0	0	0-1	0	0	0	0
Sumter MSA	0	0	0	0	0	0	0	0
*United States Census Bureau http://www.census.gov/population/metro/data/def.html and CFR 40 Part 58, Appendix D.								
** Minimum ambient air monitoring requirements are met cooperatively with the States of Georgia and North Carolina.								

Summary of 2018 Network Changes

Augusta-Richmond County, GA-SC MSA (South Carolina portion includes Aiken and Edgefield Counties)

No changes planned for 2018.

Charleston-North Charleston MSA

No changes planned for 2018.

Charlotte-Concord-Gastonia, NC-SC MSA

York Landfill (45-091-0008) - This new monitor has been established to replace the York CMS (45-091-0006) site.

Columbia MSA

Parklane (45-079-0007) - PM_{2.5} sampling was added to fulfill 40 CFR Part 58, Appendix A collocation requirement.

Florence MSA

No changes planned for 2018.

Greenville-Anderson-Mauldin MSA

No changes planned for 2018.

Hilton Head Island-Bluffton-Beaufort MSA

No changes planned for 2018.

Myrtle Beach-Conway-North Myrtle Beach SC-NC MSA

No changes planned for 2018.

Spartanburg MSA

No changes planned for 2018.

Sumter MSA

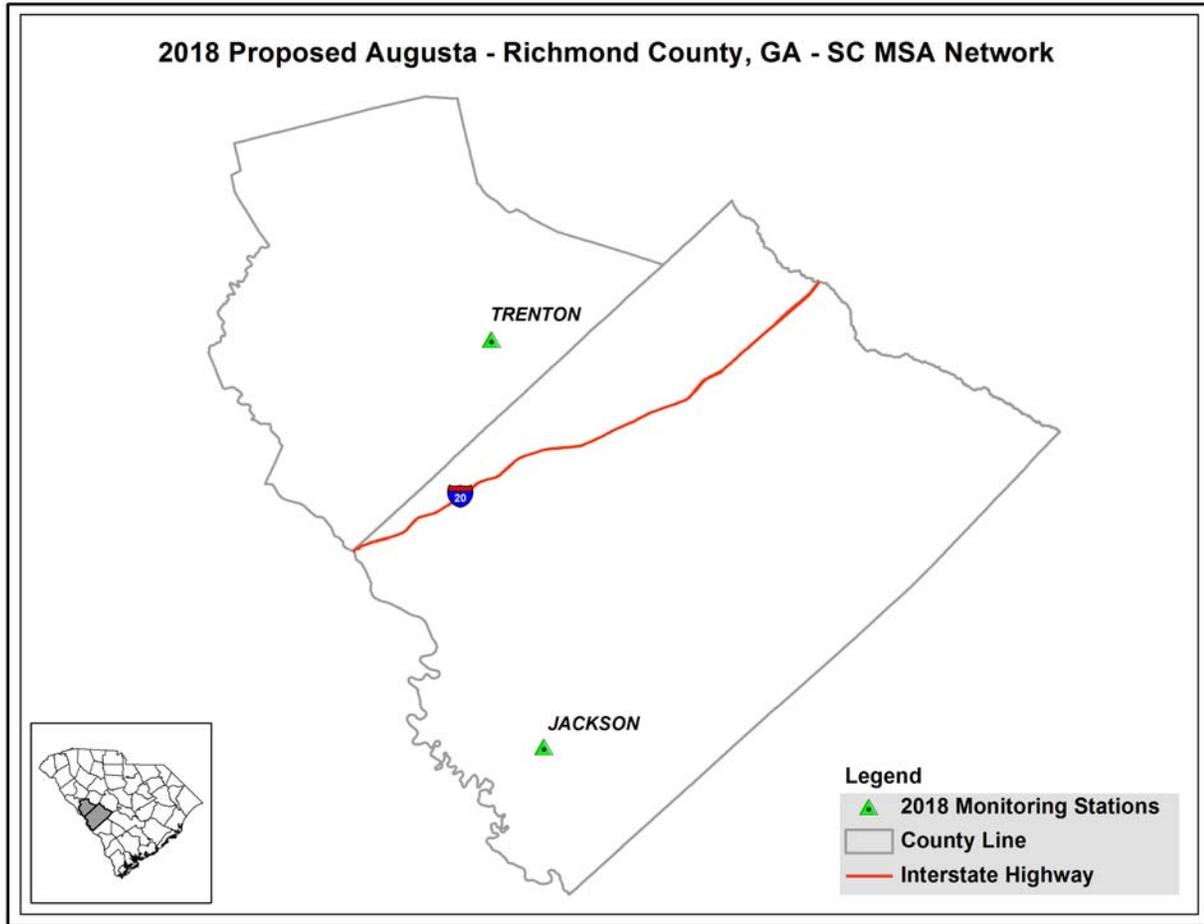
No changes planned for 2018.

Remainder of State

No changes planned for 2018.

Site Descriptions

Augusta-Richmond County, GA-SC MSA (part)



Classification of Monitoring Type by Site

Site ID	Site Name	PM _{2.5}	PM _{2.5} Cont.	Speciation	PM ₁₀	Lead	Ozone	SO ₂	NO ₂	CO
45-003-0003	Jackson Middle School						●			
45-037-0001	Trenton	○	○				●			
TOTAL		1	1	0	0	0	2	0	0	0
○ SPM / Other ● SLAMS ●●/○○ duplicate / QA monitors										

Jackson Middle School

CSA/MSA: none/Augusta-Richmond County MSA

AQS Site ID: 45-003-0003

Location: 8217 Atomic Road

County: Aiken

Coordinates: +33.34219, -81.78872

Date Established: October 24, 1985

Site Evaluation: January 4, 2017



The Jackson Middle School site is located in southwestern Aiken County, within the town limits of Jackson at the Jackson Middle School. Jackson is located in a suburban setting to monitor concentrations upwind of the Augusta urbanized area. The Jackson site monitors for Ozone. The sample inlet is 128 meters from the nearest road.

This site meets siting criteria found in 40 CFR Part 58 Appendix E. The Northeast tree does not meet the requirements for tree height in the 40 CFR Part 58 Appendix E Section 4 (Spacing from Obstructions), but there is still more than 270° unobstructed air flow around the probe.

Changes for 2018:

There are no changes planned for 2018.

Monitors:

Parameter	Scale	Objective	Designation	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
Ozone	Urban	Upwind Background	SLAMS	3.4	Ultraviolet Absorption (087)	Continuous

Trenton**CSA/MSA:** none/Augusta-Richmond County MSA**AQS Site ID:** 45-037-0001**Location:** 660 Woodyard Road (Hwy 121)**County:** Edgefield**Coordinates:** +33.73993, -81.85362**Date Established:** March 28, 1980**Site Evaluation:** January 4, 2017

The Trenton site is located in southeastern Edgefield County. Trenton was originally established to monitor for Ozone crossing into South Carolina from Georgia. The Trenton site monitors for Ozone, intermittent PM_{2.5}, and continuous PM_{2.5}. The sample inlets are 30 meters from the nearest road.

This site meets all 40 CFR Part 58, Appendix E requirements.

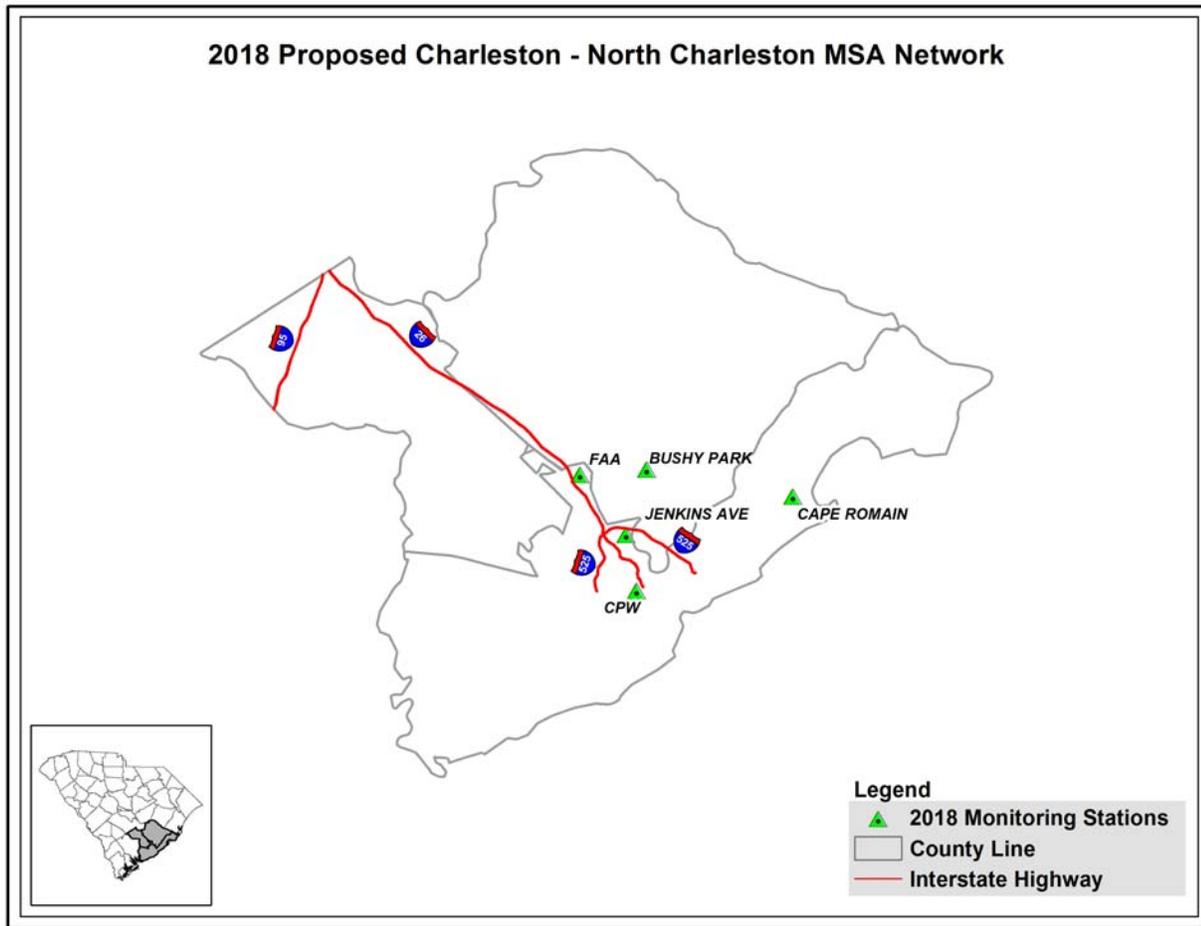
Changes for 2018:

There are no changes planned for 2018.

Monitors:

Parameter	Scale	Objective	Designation	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
PM _{2.5}	Urban	Extreme Downwind	SPM	4.5	Gravimetric (118)	1:3
Continuous PM _{2.5}	Urban	Extreme Downwind	SPM	4.3	TEOM Gravimetric 50°C (702)	Continuous
Ozone	Urban	Maximum Ozone Concentration/ Extreme Downwind	SLAMS	3.3	Ultraviolet Absorption (087)	Continuous

Charleston-North Charleston MSA



Classification of Monitoring Type by Site

Site ID	Site Name	PM _{2.5}	PM _{2.5} Cont.	Speciation	PM ₁₀	Lead	Ozone	SO ₂	NO ₂	CO	BC	Precip.	MET
45-015-0002	Bushy Park Pump Station						●						
45-019-0003	Jenkins Ave. Fire Station				●			●	○				
45-019-0046	Cape Romain		○				●	○	○		○	○	●
45-019-0048	FAA	○○											
45-019-0049	CPW	●	○										
TOTAL		3	2	0	1	0	2	2	2	0	1	1	1
○ SPM / Other ● SLAMS ●●/○○ duplicate / QA monitors													

Bushy Park Pump Station

CSA/MSA: none/Charleston-North Charleston MSA

AQS Site ID: 45-015-0002

Location: River Oak Drive (Goose Creek)

County: Berkeley

Coordinates: +32.98724, -79.93671

Date Established: June 20, 1978

Site Evaluation: April 26, 2017



The Bushy Park Pump Station site is located in southeastern Berkeley County downwind from the Charleston urban area. This site monitors for Ozone and the monitoring objective is maximum Ozone concentration. The sample inlets are 15 meters from the nearest road.

This site does not meet 40 CFR Part 58, Appendix E, Section 4, Section 5, and Section 11 requirements due to tree obstructions and drip line requirements. It is not feasible to cut or trim the trees. Currently, a suitable replacement site is being sought. Once an appropriate site has been located and established, the Bushy

Park Pump Station site will be terminated.

Changes for 2018:

Due to tree encroachment, this site will be terminated when a suitable replacement site is identified and established.

Monitors:

Parameter	Scale	Objective	Designation	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
Ozone	Urban	Max Ozone Concentration	SLAMS	3.8	Ultraviolet Absorption (087)	Continuous

Jenkins Ave. Fire Station

CSA/MSA: none/Charleston-North Charleston MSA

AQS Site ID: 45-019-0003

Location: 4830 Jenkins Ave.

County: Charleston

Coordinates: +32.88228, -79.97755

Date Established: February 14, 1969

Site Evaluation: April 18, 2017



The Jenkins Ave. Fire Station site is located in the city of North Charleston behind a fire station in an urban and central city setting. The Jenkins Ave. Fire Station site supports monitors for PM₁₀, SO₂, and NO₂. The sample inlets are 33.5 meters from the nearest road.

This site meets all 40 CFR Part 58, Appendix E requirements.

Changes for 2018:

There are no changes planned for 2018.

Monitors:

Parameter	Scale	Objective	Designation	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
PM ₁₀	Neighborhood	Highest Concentration	SLAMS	4.1	TEOM-Gravimetric (079)	Continuous
Sulfur Dioxide	Neighborhood	Population Exposure	SLAMS	4.6	Pulsed Fluorescent (560)	Continuous
Nitrogen Dioxide	Neighborhood	Highest Concentration Source Oriented	SPM	4.6	Chemiluminescence (599)	Continuous

Cape Romain

CSA/MSA: none/Charleston-North Charleston MSA

AQS Site ID: 45-019-0046

Location: 390 Bulls Island Road (Awendaw)

County: Charleston

Coordinates: +32.94101, -79.65719

Date Established: July 11, 1983

Site Evaluation: April 18, 2017



The Cape Romain site is located in Charleston County at the Cape Romain National Wildlife Refuge (NWR) near Moore's Landing. The Cape Romain NWR is a Class I area about 20 miles northeast of Charleston. The majority of the Refuge area is offshore, extending from Bull Island 20 miles northeast to Cape Romain. The Refuge is bordered on the west by the Intracoastal Waterway. Inland are large tracts of forests with scattered residences. Several miles inland, a primary coastal route, US Highway (Hwy) 17, parallels the coast, with some development along the section of highway that is closest to the Refuge.

The Cape Romain site has continuous monitors for SO₂, NO₂, Ozone, BC, Continuous PM_{2.5}, and meteorological parameters. The sample inlets are 86 meters from the nearest road.

This site meets siting criteria found in 40 CFR Part 58 Appendix E. The East tree does not meet the requirements for tree height in the 40 CFR Part 58 Appendix E Section 4 (Spacing from Obstructions), but there is still more than 270° unobstructed air flow around the probe.

Changes for 2018:

There are no changes planned for 2018.

Monitors:

(Table continues on next page)

Parameter	Scale	Objective	Designation	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
PM _{2.5}	Urban	General / Background	SPM	4.8	FDMS (183)	Continuous
Ozone	Regional	General / Background	SLAMS	4.5	Ultraviolet (047)	Continuous
Sulfur Dioxide	Regional	Source Oriented	SPM	4.5	Pulsed Fluorescent (560)	Continuous
Nitrogen Dioxide	Regional	General / Background	SPM	4.5	Chemiluminescence (599)	Continuous

Parameter	Scale	Objective	Designation	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
Black Carbon	Regional	General / Background	Non-regulatory	4.0	Optical absorption	Continuous
Wind Speed / Direction and Precipitation	Neighborhood	Local Conditions	SLAMS	10.0	Instruments for wind speed, direction, and precipitation (020)	Continuous

FAA

CSA/MSA: none/Charleston-North Charleston MSA

AQS Site ID: 45-019-0048

Location: 2670 Elms Plantation Blvd

County: Charleston

Coordinates: +32.98024, -80.06502

Date Established: April 9, 1999

Site Evaluation: April 26, 2017



The Charleston FAA Beacon site is located in Charleston County approximately five miles northwest of the Charleston International Airport near Charleston Southern University. This site has collocated PM_{2.5} samplers. The sample inlets are 160 meters from the nearest road.

This site does not meet 40 CFR Part 58, Appendix E, Section 4, Section 5, and Section 11 site obstruction and drip line requirements due to tree obstructions. The Department is currently working with the land owners to have the trees obstructions removed or trimmed or the site will be terminated.

Changes for 2018:

The Department is searching for a replacement site to meet the objective of the existing site.

Monitors:

Parameter	Scale	Objective	Designation	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
PM _{2.5}	Neighborhood	Population Exposure	SPM	2.4	Gravimetric (118)	1:1
Collocated PM _{2.5}	Neighborhood	Population Exposure	QA Collocated SPM	2.4	Gravimetric (118)	1:6

Charleston Public Works (CPW)

CSA/MSA: none/Charleston-North Charleston MSA

AQS Site ID: 45-019-0049

Location: 360 Fishburne Street

County: Charleston

Coordinates: +32.79097, -79.95871

Date Established: November 20, 1998

Site Evaluation: April 26, 2017



The CPW site is located on the western side of the Charleston peninsula near downtown Charleston. The CPW site supports the required PM_{2.5} monitors for the MSA. The sample inlets are 24.8 meters from the nearest road.

This site meets siting criteria found in 40 CFR Part 58 Appendix E. The Northeast tree does not meet the requirements for tree height or drip line in the 40 CFR Part 58 Appendix E, but there is still more than 270° unobstructed air flow around the probe. The Department is currently working with the land owners to have the trees obstructions removed or trimmed.

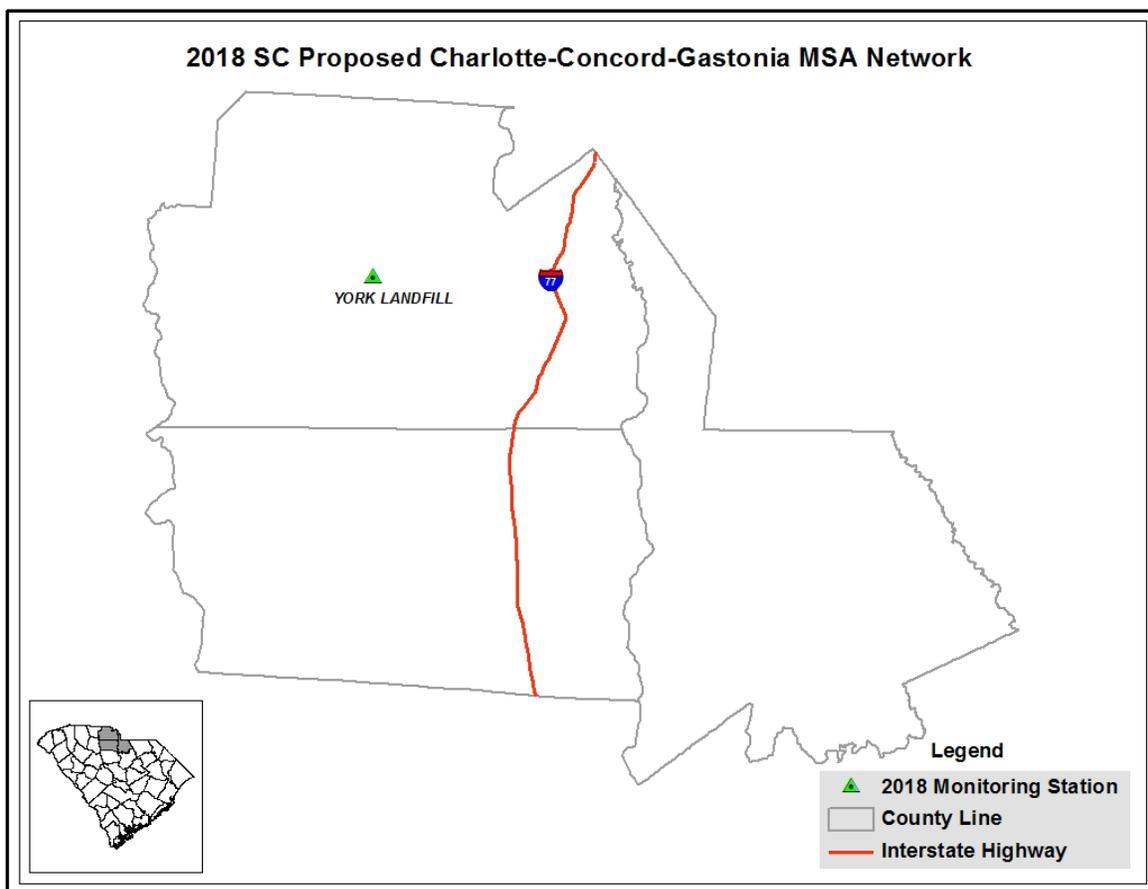
Changes for 2018:

The Department is searching for a replacement site to meet the objective of the existing site.

Monitors:

Parameter	Scale	Objective	Designation	Probe Height (m)	Analysis Method & (Method Code)	Sampling Frequency
PM _{2.5}	Neighborhood	Population Exposure	SLAMS	2.2	Gravimetric (118)	1:1
PM _{2.5}	Neighborhood	Population Exposure	SPM	2.8	TEOM Gravimetric 50°C (702)	Continuous

Charlotte-Concord-Gastonia MSA



Classification of Monitoring Type by Site

Site ID	Site Name	PM _{2.5}	PM _{2.5} Cont.	Speciation	PM ₁₀	Lead	Ozone	SO ₂	NO ₂	CO	MET
45-091-0008	York Landfill						●	○			○
TOTAL		0	0	0	0	0	1	1	0	0	1
○ SPM / Other		● SLAMS		●●/○○ duplicate / QA monitors							

York Landfill**CSA/MSA:** Charlotte-Concord CSA / Charlotte-Concord-Gastonia MSA**AQS Site ID:** 45-091-0008**Location:** 310 Langrum Branch Rd.**County:** York**Coordinates:** +34.9776, -81.2074**Date Established:** February 27, 2017**Site Evaluation:** January 9, 2017

The York Landfill site is located in south central York County in a rural setting. This site was established to replace the York Continuous Monitoring Site (45-091-0006) and represents background levels near the Charlotte urban area. The York Landfill Site currently operates a monitor for Ozone. *An SO₂ monitor and a wind tower are expected to be added in 2018 contingent on the ability to obtain the funds. The sample inlets are 34.8 meters from the nearest road

This site meets all 40 CFR Part 58, Appendix E requirements.

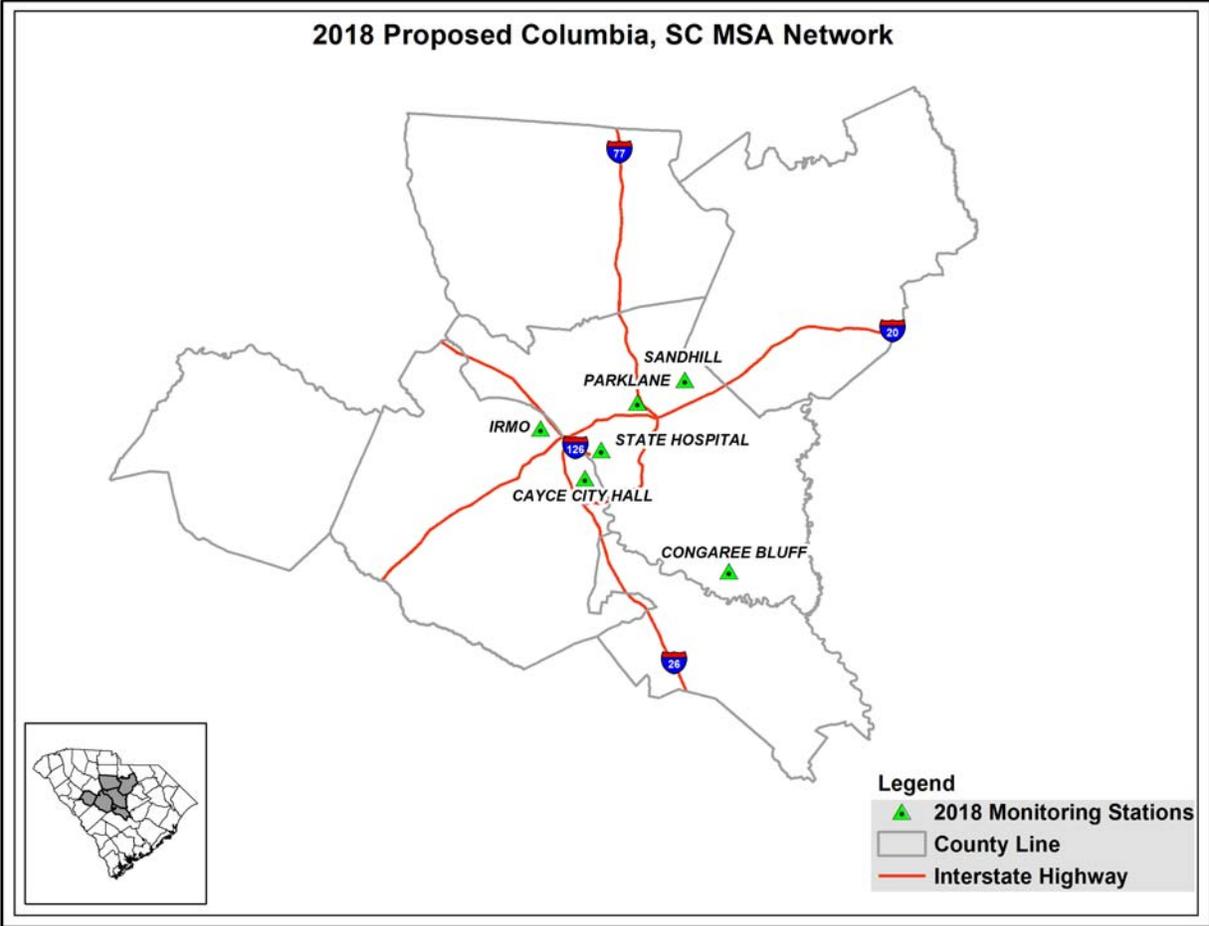
Changes for 2018:

This site is a replacement for the York Continuous Monitoring Site (45-091-0006).

Monitors:

Parameter	Scale	Objective	Designation	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
Ozone	Urban	Upwind Background	SLAMS	4.5	Ultraviolet Absorption (087)	Continuous
*Sulfur Dioxide	Urban	Upwind Background	SPM	TBD	Pulsed Fluorescence (560)	Continuous
*Wind Speed / Direction	Neighborhood	Local Conditions	Non-regulatory	TBD	Instruments for wind speed, wind direction (020)	Continuous

Columbia MSA



Classification of Monitoring Type by Site

Site ID	Site Name	PM _{2.5}	PM _{2.5} Cont.	Speciation	PM ₁₀	Lead	Ozone	SO ₂	NO ₂ /NO/NO _y	CO	BC	Carbonyls	SVOC	Mercury	Precip. Chem.	Precip.	MET
45-063-0008	Irmo	●	○					○			○	○	○				
45-063-0010	Cayce City Hall				●												
45-079-0007	Parklane (NCore)	●●	●	●	○	●	●	●	●●	●			○		○	○	●
45-079-0020	State Hospital											○	○				
45-079-0021	Congaree Bluff						○	○						○	○	○	
45-079-1001	Sandhill						●		○								
TOTAL		3	2	1	2	1	3	3	3	1	1	2	3	1	2	2	1
○ SPM / Other ● SLAMS ●●/○○ duplicate / QA monitors																	

Irmo**CSA/MSA:** Columbia-Orangeburg-Newberry CSA / Columbia MSA**AQS Site ID:** 45-063-0008**Location:** 200 Leisure Lane**County:** Lexington**Coordinates:** +34.051017, -81.15492**Date Established:** April 7, 1989**Site Evaluation:** January 17, 2017

The Irmo site is located in Lexington County near the Town of Irmo. This site has a sampler for PM_{2.5} and continuous monitors for SO₂, BC, and PM_{2.5}. Additionally, this site has samplers collecting Carbonyl and SVOC samples on a 1:6 schedule. The sample inlets are 39 meters from the nearest road.

This site meets all 40 CFR Part 58, Appendix E requirements.

Changes for 2018:

The landowner has requested that we relocate the site. We are working with the landowner to secure a new site on the same property. We will submit a request to the EPA to approve the site relocation once it has been identified.

Monitors:

(Table continues on next page)

Parameter	Scale	Objective	Designation	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
PM _{2.5}	Neighborhood	Population Exposure	SLAMS	4.8	Gravimetric (118)	1:1
PM _{2.5}	Neighborhood	Population Exposure	SPM	4.4	FDMS Gravimetric (581)	Continuous
Sulfur Dioxide	Neighborhood	Source-Oriented	SPM	3.3	Pulsed Fluorescent (560)	Continuous
Black Carbon	Urban	Population Exposure / General / Background	Non-regulatory	4.0	Optical absorption	Continuous
Carbonyls	Neighborhood	Population Exposure / General /	Non-regulatory	3.9	HPLC Ultraviolet Absorption	1:6

Parameter	Scale	Objective	Designation	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
		Background			(102)	
SVOC	Neighborhood	Population Exposure/ General / Background	Non-regulatory	3.9	PUF/GCMS	1:6

Cayce City Hall

CSA/MSA: Columbia-Orangeburg-Newberry CSA / Columbia MSA

AQS Site ID: 45-063-0010

Location: 1830 Morlaine Rd.

County: Lexington

Coordinates: +33.96914, -81.06629

Date Established: December 6, 2007

Site Evaluation: January 17, 2017



The Cayce City Hall site is located in the City of Cayce and measures PM₁₀. This site was established to measure PM₁₀ concentrations in populated areas and to determine the potential impact of occasional high concentrations on neighborhoods surrounding the industrialized area. The sample inlet is 24 meters from the nearest road.

This site meets all 40 CFR Part 58, Appendix E requirements.

Changes for 2018:

There are no changes planned for 2018.

Monitors:

Parameter	Scale	Objective	Designation	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
PM ₁₀	Neighborhood	Population Exposure	SLAMS	2.4	TEOM-Gravimetric (079)	Continuous

Parklane (NCore)

CSA/MSA: Columbia-Orangeburg-Newberry CSA / Columbia MSA

AQS Site ID: 45-079-0007

Location: 8311 Parklane Road

County: Richland

Coordinates: +34.09398, -80.96230

Date Established: April 3, 1980

Site Evaluation: January 26, 2017



The Parklane site is located in north central Richland County within the city limits of Columbia. Parklane was originally sited to provide downwind population exposure measurements at the edge of the Columbia urban area population and has been expanded to support the full complement of NCore parameters. The suite of samplers measure PM_{2.5}, speciated PM_{2.5}, Lead, precipitation chemistry, precipitation, and SVOC. The suite of continuous monitors measure PM_{2.5}, Ozone, SO₂, CO, NO, and nitrogen oxides (NO_y). The site also provides support for demonstration, training, and equipment evaluation convenient to the Department's Columbia air laboratory.

The sample inlets are 131 meters from the nearest road.

This site meets all 40 CFR Part 58, Appendix E requirements.

In 2017, the Bates House (45-079-0019) site, which operated the required collocated PM_{2.5} sampling, was terminated. The collocated PM_{2.5} sampling was moved to Parklane to fulfill duplicate sampling requirements found in 40 CFR Part 58, Appendix A.

Changes for 2018:

There are no changes planned for 2018.

Monitors:

*Bolded parameters are an NCore requirement.

(Table continues on next page)

Parameter *Required	Scale	Objective	Designation	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
PM_{2.5}	Neighbor- hood	Population Exposure	NCore SLAMS	4.8	Gravimetric (145)	1:3
PM_{2.5}	Neighbor- hood	Population Exposure	SLAMS	5.1	FDMS Gravimetric (183)	Continuous
Collocated PM_{2.5}	Neighbor- hood	Population Exposure	QA Collocated SLAMS	5.3	Gravimetric (145)	1:3
Speciated	Neighbor-	Population	NCore	2.4	CSN Protocol	1:3

Parameter *Required	Scale	Objective	Designation	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
PM_{2.5}	hood	Exposure	SLAMS		(811,812,826,838, 839,841, 842)	
PM ₁₀	Neighbor- hood	Population Exposure	NCore SPM	5.4	Gravimetric (127)	Continuous
PM_{10-2.5}	Neighbor- hood	Population Exposure	NCore SLAMS	4.4	Gravimetric FRM Pair (176)	1:3
Lead	Neighbor- hood	Population Exposure	NCore SLAMS	1.6	GFAA (044)	1:6
Ozone	Urban	Max Ozone Concentrati on	NCore SLAMS	4.4	Ultraviolet Absorption (087)	Continuous
Sulfur Dioxide	Neighbor- hood	Population Exposure/ Other	NCore SLAMS	4.4	Pulsed Fluorescent (560)	Continuous
Nitric Oxide	Neighbor- hood	Population Exposure	NCore SLAMS	10.0	Chemi- luminescence (674)	Continuous
NO_y	Neighbor- hood	Population Exposure	NCore SLAMS	10.0	Chemi- luminescence (674)	Continuous
Carbon Monoxide	Neighbor- hood	Population Exposure	NCore SLAMS	4.4	Gas filter Correlation (593)	Continuous
SVOC	Neighbor- hood	Population Exposure	SPM	2.5	PUF- GC/MS	1:6
Precipitation chemistry	Neighbor- hood	Regional Transport	Non- regulatory	1.4	Not applicable	Weekly- Tues-Tues
Precipitation	Neighbor- hood	General / Background	SPM	1.1	Tipping bucket (011)	Continuous and Sample
Wind Speed / Direction	Neighbor- hood	Local Conditions	SLAMS	10.0	Instruments for wind speed/wind direction (020)	Continuous

State Hospital

CSA/MSA: Columbia-Orangeburg-Newberry CSA / Columbia MSA

AQS Site ID: 45-079-0020

Location: 2100 Bull Street

County: Richland

Coordinates: +34.01549, -81.03418

Date Established: January 7, 1999

Site Evaluation: January 17, 2017



The State Hospital site is located in Columbia near the intersection of Elmwood Avenue and Bull Street on the grounds of the South Carolina State Hospital. State Hospital has samplers for Carbonyls and SVOC. The sample inlets are 10 meters from the nearest road.

Access to this site may be lost due to recent sale and expected redevelopment of the property.

Changes for 2018:

There are no changes planned for 2018.

Monitors:

Parameter	Scale	Objective	Designation	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
Carbonyls	Middle	Highest Concentration	Non-regulatory	4.23	HPLC Ultraviolet Absorption (102)	1:6
SVOC	Neighborhood	General / Background	Non-regulatory	2.87	PUF- GC/MS	1:6

Congaree Bluff

CSA/MSA: Columbia-Orangeburg-Newberry CSA / Columbia MSA

AQS Site ID: 45-079-0021

Location: 1850 South Cedar Creek Road

County: Richland

Coordinates: +33.81467, -80.78113

Date Established: December 27, 1999

Site Evaluation: January 24, 2017



The Congaree Bluff site is located in southern Richland County. The site is located in a rural setting within the boundaries of the Congaree National Park. The Congaree Bluff monitoring continues a data record begun in 1981 with the establishment of the Congaree Swamp site (45-079-1006). The original site was established in cooperation with the Department of the Interior and the support of the General Assembly to provide long term monitoring in this unique area. The Congaree Swamp site was located in the flood plain and had to be relocated to the current Congaree Bluff site in 2001. Monitoring activities at this site are

intended to represent conditions found in the National Park only.

The Congaree Bluff site has monitors for Ozone, SO₂, Mercury deposition, precipitation, and precipitation chemistry. The sample inlets are 188 meters from the nearest road.

The EPA has issued a waiver for 40 CFR Part 58, Appendix E, Section 4 and Section 11 for tree obstructions. This site meets all other siting criteria found in CFR 40 Part 58, Appendix E. Furthermore, there is a dripline issue with a large long-leaf pine to the east of the monitoring site. The drip line is approximately 7 meters away from the probe inlet. However, the branches of the tree are approximately 80 feet above the probe inlet. Due to the height of the branches and the fact that it is a pine tree (with little surface area for pollutants to collect on the leaves and branches) the Department does not believe that it impacts measurements of ambient air pollutant concentrations.

Changes for 2018:

There are no changes planned for 2018.

Monitors:

(Table continues on next page)

Parameter	Scale	Objective	Designation	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
Ozone	Neighborhood	General / Background	SPM	4.2	Ultraviolet (047)	Continuous
Sulfur Dioxide	Neighborhood	General / Background	SPM	4.2	Pulsed Fluorescent (560)	Continuous
Mercury Deposition	Urban	Source Oriented	NADP-MDN	1.71	MDN Protocol	Weekly

Parameter	Scale	Objective	Designation	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
Precipitation Chemistry	Regional	Regional Transport	Non-regulatory	1.50	IC	Weekly-Tue-Tue
Precipitation	Neighborhood	General/Background	SPM	1.73	Tipping Bucket (011)	Continuous and Sample

Sandhill Experimental Station**CSA/MSA:** Columbia-Orangeburg-Newberry CSA / Columbia MSA**AQS Site ID:** 45-079-1001**Location:** 900 Clemson Road**County:** Richland**Coordinates:** +34.13126, -80.86832**Date Established:** January 1, 1959**Site Evaluation:** January 24, 2017

The Sandhill Experimental Station site is located in northeastern Richland County, downwind from the Columbia metropolitan area. This site is located in a rapidly urbanizing portion of the city of Columbia. The Sandhill site measures Ozone and NO₂. The sample inlets are 31 meters from the nearest road.

This site meets all 40 CFR Part 58, Appendix E requirements.

A Nitrogen Dioxide monitor was added on September 15, 2015. It was inadvertently left out of the 2017 Monitoring Plan

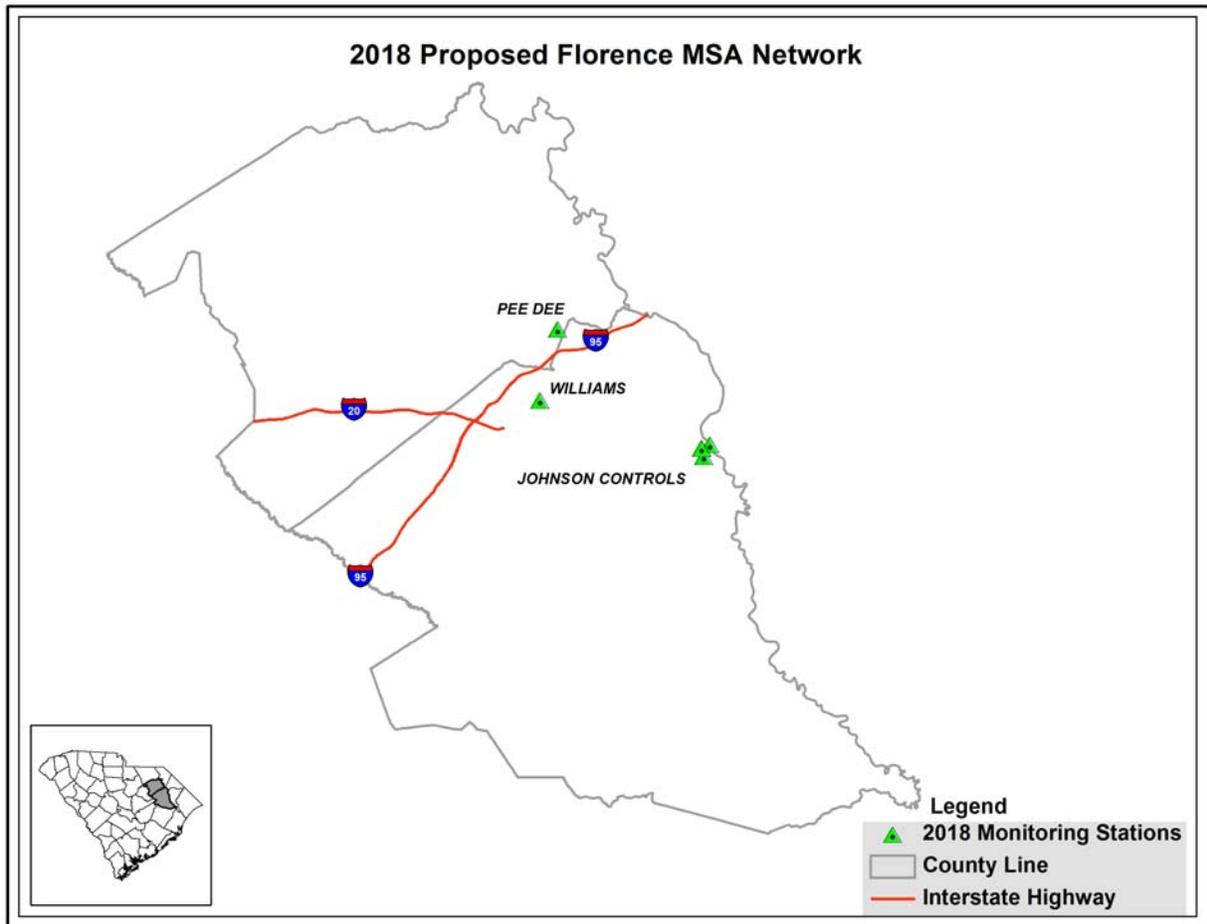
Changes for 2018:

There are no changes planned for 2018.

Monitors:

Parameter	Scale	Objective	Designation	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
Ozone	Urban	Max Ozone Concentration	SLAMS	4.1	Ultraviolet Absorption (087)	Continuous
Nitrogen Dioxide	Urban	General / Background Max Precursor Emissions	SPM	4.1	Chemiluminescence (599)	Continuous

Florence MSA



Classification of Monitoring Type by Site

Site ID	Site Name	PM _{2.5}	PM _{2.5} Cont.	Speciation	PM ₁₀	Lead	Ozone	SO ₂	NO ₂	CO
45-031-0003	Pee Dee Exp. Station						●			
45-041-0003	Williams Middle School	●	●							
45-041-8001, 8002, 8003	Johnson Controls					●*				
TOTAL		1	1	0	0	4	1	0	0	0
○ SPM / Other ● SLAMS ●●/○○ duplicate / QA monitors * See details on site page for number of samplers										

Pee Dee Experimental Station

CSA/MSA: none/Florence MSA

AQS Site ID: 45-031-0003

Location: 2200 Pocket Road (Darlington)

County: Darlington

Coordinates: +34.28569, -79.74485

Date Established: February 25, 1993

Site Evaluation: April 4, 2017



The Pee Dee Experimental Station site is located in northeastern Darlington County. This site serves as the required Ozone monitor in the Florence MSA. The sample inlets are 215.8 meters from the nearest road.

This site meets all 40 CFR Part 58, Appendix E requirements.

Changes for 2018:

There are no changes planned for 2018.

Monitors:

Parameter	Scale	Objective	Designation	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
Ozone	Urban	Max Ozone Concentration/ General / Background	SLAMS	3.8	Ultraviolet Absorption (087)	Continuous

Williams Middle School

CSA/MSA: none/Florence MSA

AQS Site ID: 45-041-0003

Location: 1119 N. Irby Street

County: Florence

Coordinates: +34.21427, -79.76735

Date Established: August 4, 2008

Site Evaluation: April 4, 2017



The Williams Middle School site is located in Florence County. The Department established the Williams site to meet the 40 CFR Part 58 Appendix D requirements for objective, collocated continuous monitoring, and reporting.

The Florence MSA has one PM_{2.5} sampler. A collocated continuous monitor is also required to provide timely reporting of concentrations to the public. The sample inlets are 110 meters from the nearest road.

This site meets all 40 CFR Part 58, Appendix E requirements.

Changes for 2018:

There are no changes planned for 2018.

Monitors:

Parameter	Scale	Objective	Designation	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
PM _{2.5}	Neighborhood	Population Exposure/ Highest Concentration	SLAMS	2.5	Gravimetric (118)	1:3
PM _{2.5}	Neighborhood	Population Exposure	SLAMS	2.7	TEOM Gravimetric 30° C (704)	Continuous

Johnson Controls (3 Sites-JCI Railroad, JCI Entrance, JCI Woods)

CSA/MSA: none/Florence MSA

AQS Site ID: 45-041-8001, 8002, 8003

Location: Liberty Chapel @ Bethel Rd., Liberty Chapel @ Paper Mill Rd., Liberty Chapel @ Paper Mill Rd.

County: Florence

Coordinates: +34.15567, -79.56981; +34.16413, -79.572330; +34.16747, -79.56266

Dates Established: January 4-10, 2012

Site Evaluation: June 1, 2017



Johnson Controls Incorporated (JCI) is located in Florence County. On May 7, 2010, the Department issued an air synthetic minor construction permit to Johnson Controls Battery Group for the Florence Recycling Center (Permit No. 1040-0129-CA). Under a settlement agreement with several petitioners¹³, the Florence Recycling Center will conduct source-oriented ambient Lead monitoring at three locations around the facility.

Sampling frequency may be increased if needed for special investigations.

The JCI Railroad (45-041-8001) site and JCI Entrance (45-041-8002) site meets all 40 CFR Part 58, Appendix E requirements.

The JCI Woods (45-041-8003) site does not meet 40 CFR Part 58, Appendix E, Section 4 and Section 11 siting requirements due to tree obstructions. However, the tree obstructions in the predominant wind direction toward the source have been removed.

Changes for 2018:

There are no changes planned for 2018.

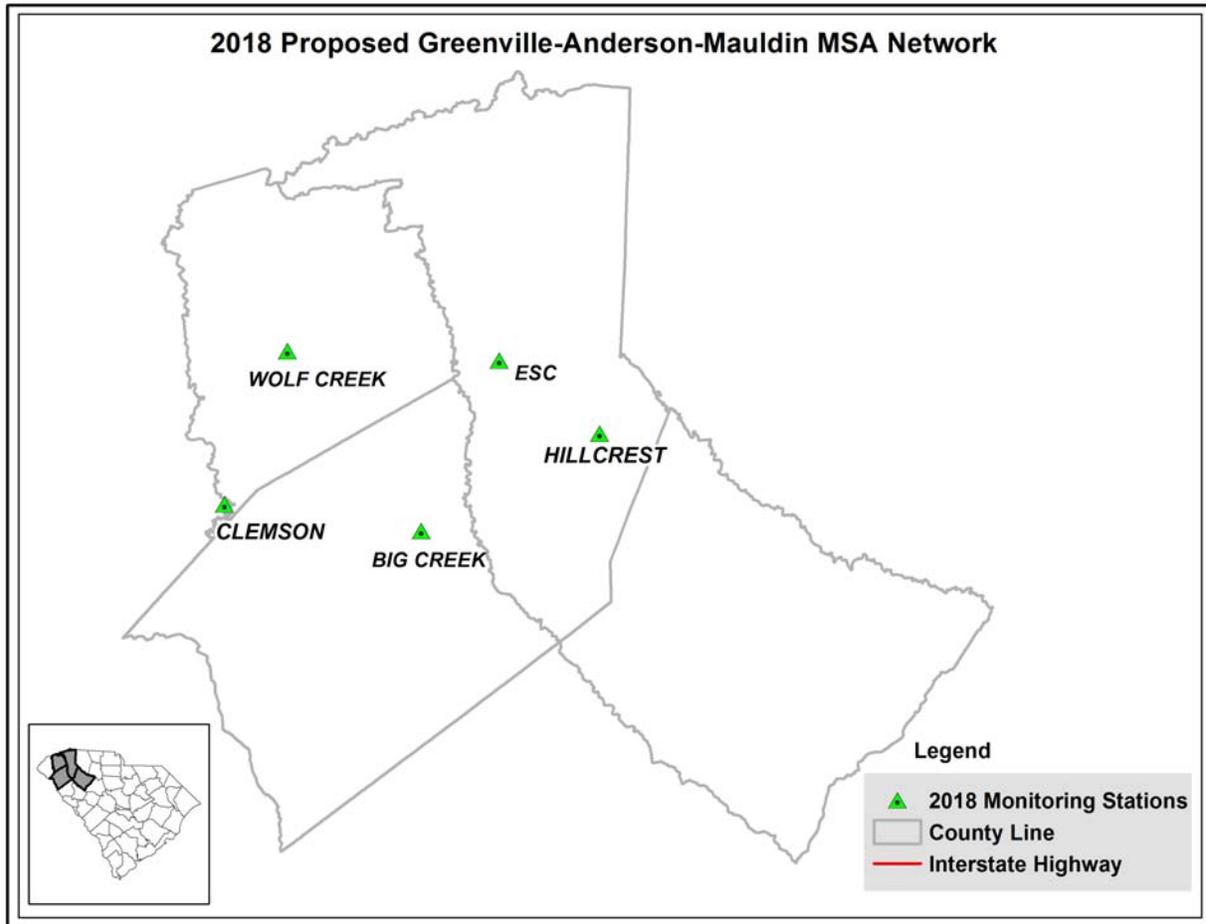
Monitors: (Table continues on next page)

Site ID	Parameter	Scale	Objective	Designation	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency*
041-8001	Lead	Middle	Source oriented	SPM	2.3	ICP/MS (108)	1:6
041-8002	Lead	Middle	Source oriented	SPM	2.4	ICP/MS (108)	1:6
041-8002	Collocated Lead	Middle	Source oriented	SPM	2.3	ICP/MS (108)	1:6
041-8003	Lead	Middle	Source oriented	SPM	2.6	ICP/MS (108)	1:6

*Sampling

¹³ Coastal Conservation League and League) of Women Voters of South Carolina vs South Carolina Department of Health and Environmental Control and Johnson Controls Battery Group, Inc., (State of SC, 2010).

Greenville-Anderson-Mauldin MSA



Classification of Monitoring Type by Site

Site ID	Site Name	PM _{2.5}	PM _{2.5} Cont.	Speciation	PM ₁₀	Lead	Ozone	SO ₂	NO ₂	CO	Sulfate	BC
45-007-0005	Big Creek						●					
45-045-0015	Greenville ESC	●	○		●			●	●			○
45-045-0016	Hillcrest	●●					●					
45-077-0002	Clemson CMS						●					
45-077-0003	Wolf Creek						○					
TOTAL		3	1	0	1	0	4	1	1	0	0	1
○ SPM / Other ● SLAMS ●●/○○ duplicate / QA monitors												

Big Creek**CSA/MSA:** Greenville-Spartanburg-Anderson CSA / Greenville-Anderson-Mauldin MSA**AQS Site ID:** 45-007-0005**Location:** 215 McAlister Road**County:** Anderson**Coordinates:** +34.62324, -82.53206**Date Established:** June 4, 2008**Site Evaluation:** February 16, 2017

The Big Creek site is located northeast of the City of Anderson. The site was established to represent maximum Ozone concentrations in the Anderson MSA, downwind of Anderson and upwind background for the Greenville MSA. In February 2013, the MSA definitions were changed, and this site is now contained within the Greenville-Anderson-Mauldin MSA. The sample inlet is 43.9 feet from the nearest road.

This site meets all 40 CFR Part 58, Appendix E requirements.

Changes for 2018:

There are no changes planned for 2018.

Monitors:

Parameter	Scale	Objective	Designation	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
Ozone	Urban	Max Ozone Concentration / Upwind Background	SLAMS	4.2	Ultraviolet Absorption (087)	Continuous

Greenville Employment Security Commission (ESC)

CSA/MSA: Greenville-Spartanburg-Anderson CSA / Greenville-Anderson-Mauldin MSA

AQS Site ID: 45-045-0015

Location: 133 Perry Avenue

County: Greenville

Coordinates: +34.84389, -82.41458

Date Established: April 11, 2008

Site Evaluation: March 3, 2017



The Greenville ESC site is located in the city of Greenville and was established on April 11, 2008. This site supports a PM_{2.5} sampler and continuous monitoring for PM_{2.5}. It also supports PM₁₀, SO₂, NO₂, Sulfate, BC, and measurements for wind speed and wind direction. The sample inlets are 15. meters from the nearest road.

The EPA Region 4 has selected this site as one of the locations for a Regional Administrator required NO₂ monitor to help protect susceptible and vulnerable populations, as required by 40 CFR, Part 58, Appendix D, Section 4.3.4.

This site meets siting criteria found in 40 CFR Part 58 Appendix E. The site has a Site Waiver from the EPA for 40 CFR Part 58 Appendix E, Section 4-Spacing from Obstructions for trees located to the Southeast and Southwest of the site. There is still 270° of airflow around the probes.

Changes for 2018:

There are no changes planned for 2018.

Monitors:

(Table continues on next page)

Parameter	Scale	Objective	Designation	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
PM _{2.5}	Neighborhood	Population Exposure / Welfare Related Impacts	SLAMS	3.5	Gravimetric (145)	1:1
PM _{2.5}	Neighborhood	Population Exposure/ Welfare Related Impacts/Required FEM Collocation	SPM	4.6	FDMS Gravimetric (581)	Continuous
PM ₁₀	Neighborhood	Population Exposure/ Welfare Impacts	SLAMS	4.3	TEOM Gravimetric (079)	Continuous
Sulfur	Neighborhood	Population	SLAMS	4.5	Pulsed	Continuous

Parameter	Scale	Objective	Designation	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
Dioxide	hood	Exposure			fluorescent (560)	
Nitrogen Dioxide	Neighborhood	Population Exposure	SLAMS	4.5	Chemiluminescence (599)	Continuous
Black Carbon	Neighborhood	Population Exposure / General /Background	Non-regulatory	4.4	Optical absorption	Continuous

Hillcrest Middle School**CSA/MSA:** Greenville-Spartanburg-Anderson CSA / Greenville-Anderson-Mauldin MSA**AQS Site ID:** 45-045-0016**Location:** 510 Garrison Road**County:** Greenville**Coordinates:** +34.75185, -82.25670**Date Established:** February 17, 2009**Site Evaluation:** March 3, 2017

The Hillcrest Middle School site represents suburban areas near the interstate corridors in the Greenville MSA. Initiated in 2008, this site was selected as a monitoring location based on results of the Greenville MSA Ozone study. This site supports an Ozone monitor, a PM_{2.5} sampler, and a collocated PM_{2.5} sampler. The sample inlets are 54 meters from the nearest road.

This site meets all 40 CFR Part 58, Appendix E requirements.

Changes for 2018:

There are no changes planned for 2018.

Monitors:

Parameter	Scale	Objective	Designation	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
PM _{2.5}	Urban	Population Exposure	SLAMS	3.4	Gravimetric (118)	1:3
Collocated PM _{2.5}	Urban	Population Exposure	QA Collocated SLAMS	3.4	Gravimetric (118)	1:3
Ozone	Urban	Population Exposure	SLAMS	3.9	Ultraviolet Adsorption (087)	Continuous

Clemson CMS

CSA/MSA: Greenville-Spartanburg-Anderson CSA / Greenville-Anderson-Mauldin MSA

AQS Site ID: 45-077-0002

Location: 106 Hope Well Road

County: Pickens

Coordinates: +34.65366, -82.83865

Date Established: July 14, 1979

Site Evaluation: February 21, 2017



The Clemson CMS site is located on the grounds of Clemson University near the western border of Pickens County. This monitor measures Ozone concentrations upwind of the Greenville-Spartanburg urbanized area.

This site was part of the Greenville MSA Ozone study, initiated in 2008 and designed to investigate Ozone concentration variability across the Upstate and provide information to help refine the monitoring network to better meet monitoring objectives. The sample inlets are 33.9 meters from the nearest road.

This site meets siting criteria found in 40 CFR Part 58 Appendix E. There are two trees that do not meet the requirements for tree height in the 40 CFR Part 58 Appendix E Section 4 (Spacing from Obstructions), but there is still more than 270° unobstructed air flow around the probe.

Changes for 2018:

There are no changes planned for 2018.

Monitors:

Parameter	Scale	Objective	Designation	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
Ozone	Urban	General / Background	SLAMS	4.5	Ultraviolet Absorption (087)	Continuous

Wolf Creek

CSA/MSA: Greenville-Spartanburg-Anderson CSA / Greenville-Anderson-Mauldin MSA

AQS Site ID: 45-077-0003

Location: 901 Allgood Bridge Road

County: Pickens

Coordinates: +34.85154, -82.74458

Date Established: August 10, 2010

Site Evaluation: February 16, 2017



The Wolf Creek site is located in central Pickens County and was established to gain an understanding of ambient Ozone concentrations in this area.

In 2013, Anderson County was reincorporated into a Greenville-Anderson-Mauldin MSA. The Department will continue to evaluate the Greenville-Spartanburg-Anderson CSA network to determine the configuration of Ozone monitors that most appropriately represents Ozone concentrations in the area. The sample inlet is 56.4 meters from the nearest road.

This site meets all 40 CFR Part 58, Appendix E requirements.

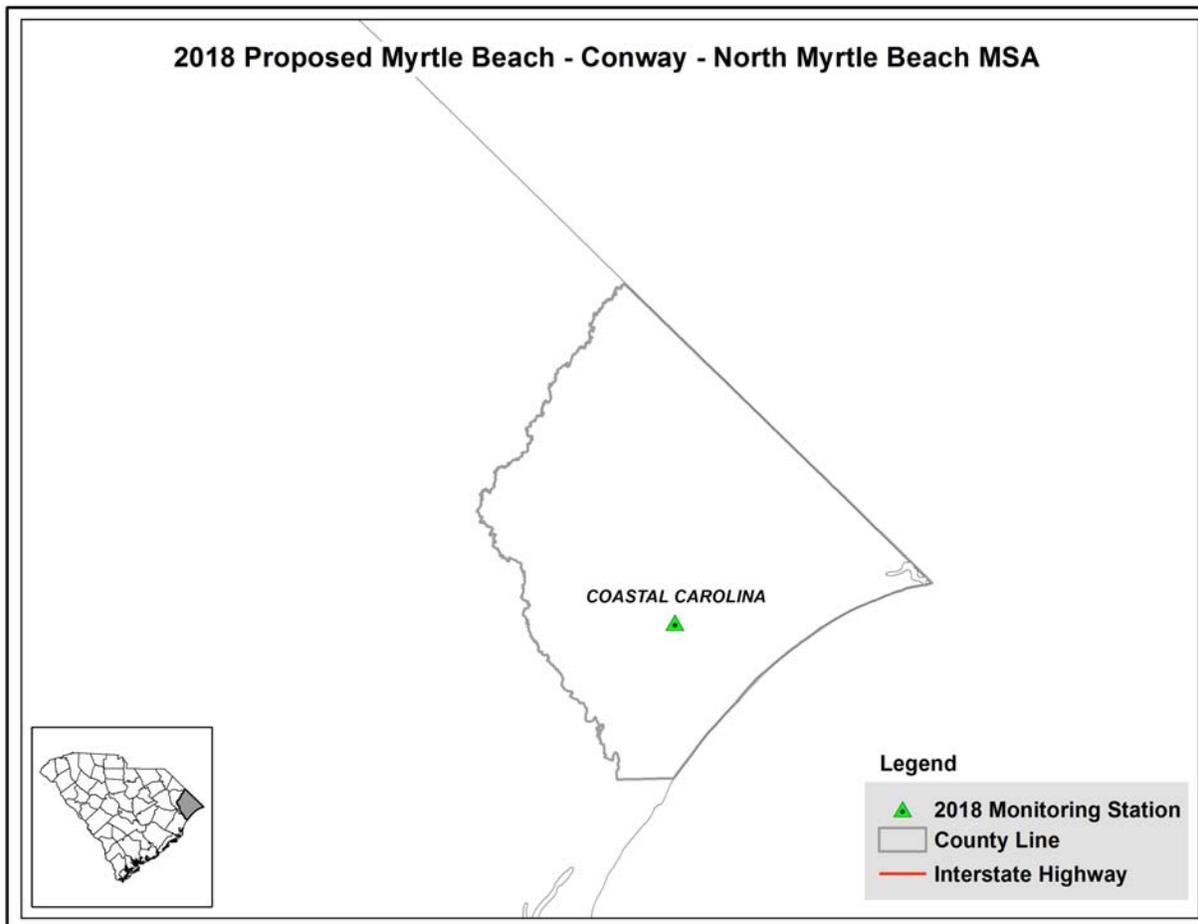
Changes for 2018:

There are no changes planned for 2018.

Monitors:

Parameter	Scale	Objective	Designation	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
Ozone	Urban	General / Background	SPM	4.2	Ultraviolet Absorption (087)	Continuous

Myrtle Beach-Conway-North Myrtle Beach, SC-NC MSA



Classification of Monitoring Type by Site

Site ID	Site Name	PM _{2.5}	PM _{2.5} Cont.	Speciation	PM ₁₀	Lead	Ozone	SO ₂	NO ₂	CO	MET
45-051-0008	Coastal Carolina						●				
TOTAL		0	0	0	0	0	1	0	0	0	0
○ SPM / Other ● SLAMS ●●/○○ duplicate / QA monitors											

Coastal Carolina

CSA/MSA: Myrtle Beach-Conway-North Myrtle Beach, SC-NC MSA

AQS Site ID: 45-051-0008

Location: Century Circle

County: Horry

Coordinates: 33.8007, -78.9939

Date Established: June 22, 2016

Site Evaluation: March 7, 2017



In February 2013, OMB combined Horry County with Brunswick County, NC to establish the Myrtle Beach-Conway-North Myrtle Beach, SC-NC MSA. In order to meet the minimum monitoring criteria in 40 CFR Part 58, Appendix D, at least one Ozone monitor is required in the MSA. In conjunction with the State of North Carolina, local government, and stakeholders, Department established the Coastal Carolina monitoring site to be representative of expected maximum Ozone concentrations in northeast South Carolina. The sample inlet is 18.3 meters from the nearest road.

This site meets all 40 CFR Part 58, Appendix E requirements.

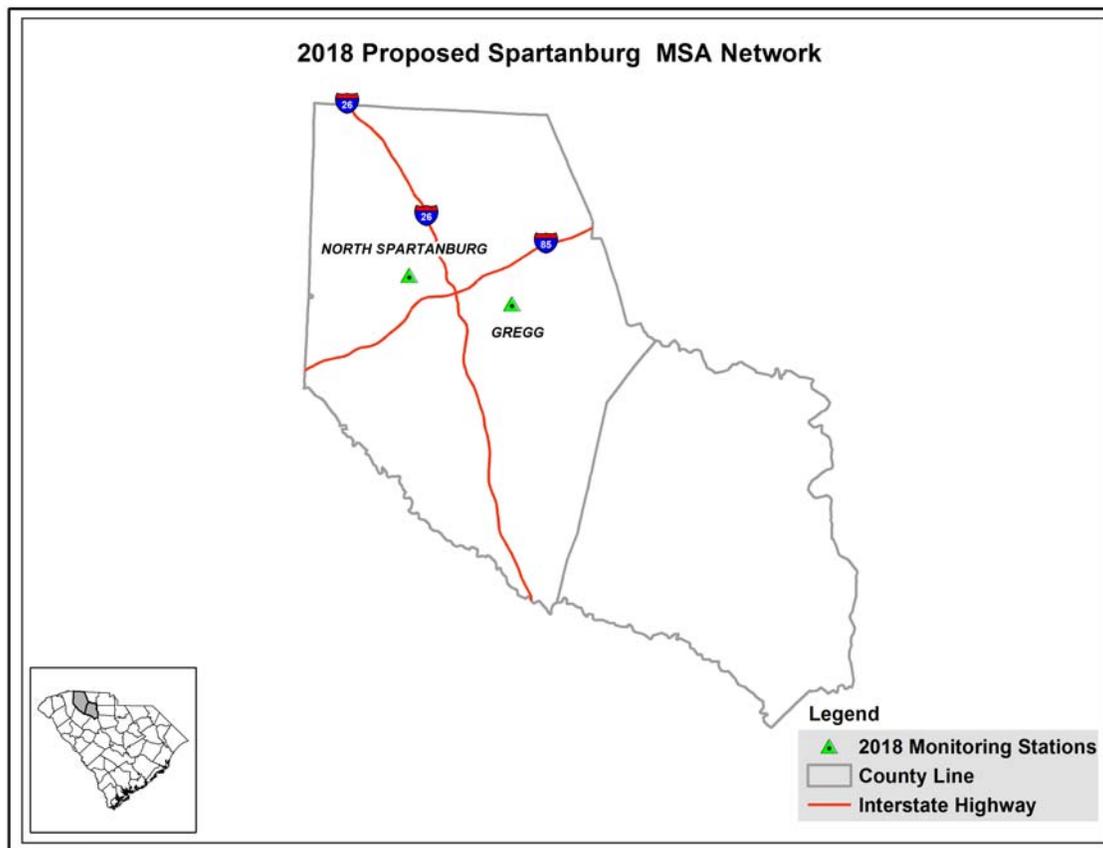
Changes for 2018:

There are no changes planned for 2018.

Monitors:

Parameter	Scale	Objective	Designation	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
Ozone	Urban	Population Exposure	SLAMS	4.1	Ultraviolet Absorption (087)	Continuous

Spartanburg MSA



Classification of Monitoring Type by Site

Site ID	Site Name	PM _{2.5}	PM _{2.5} Cont.	Speciation	PM ₁₀	Lead	Ozone	SO ₂	NO ₂	CO
45-083-0009	North Spartanburg Fire Station #2						●			
45-083-0011	T.K. Gregg	●	○							
TOTAL		1	1	0	0	0	1	0	0	0
○ SPM / Other		● SLAMS		●●/○○ duplicate / QA monitors						

North Spartanburg Fire Station #2

CSA/MSA: Greenville-Spartanburg-Anderson CSA / Spartanburg MSA

AQS Site ID: 45-083-0009

Location: 1556 John Dodd Road

County: Spartanburg

Coordinates: +34.98874, -82.07573

Date Established: April 4, 1990

Site Evaluation: January 31, 2017



The North Spartanburg Fire Station #2 site is located in rural Spartanburg County, northwest of the City of Spartanburg. This site supports an Ozone monitor and was established as a maximum Ozone concentration monitor for the Greenville-Spartanburg-Anderson urban area on April 4, 1990. This monitor is designated SLAMS and fulfills the requirement for a maximum concentration site for the Spartanburg MSA. The sample inlet is 92.5 meters from the nearest road.

This site meets siting criteria found in 40 CFR Part 58 Appendix E. There is a Northwest tree that does not meet the requirements for tree height in the 40 CFR Part 58 Appendix E Section 4 (Spacing from Obstructions), but there is still more than 270° unobstructed air flow around the probe.

Changes for 2018:

There are no changes planned for 2018.

Monitors:

Parameter	Scale	Objective	Designation	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
Ozone	Urban	Max Ozone Concentration	SLAMS	3.9	Ultraviolet Absorption (087)	Continuous

T.K. Gregg Recreation Center

CSA/MSA: Greenville-Spartanburg-Anderson CSA / Spartanburg MSA

AQS Site ID: 45-083-0011

Location: 267 Northview Street

County: Spartanburg

Coordinates: +34.95557, -81.92480

Date Established: December 29, 2008

Site Evaluation: January 31, 2017



The T. K Gregg Recreation Center site is located in Spartanburg County. With the cooperation of local government and stakeholders, the Department established this PM_{2.5} site in the downtown Spartanburg area to meet the 40 CFR Part 58, Appendix D requirements for monitoring objective, collocated continuous monitoring, and reporting. This site also supports a collocated PM_{2.5} continuous monitor for the Spartanburg MSA. The sample inlets are 48.2 meters from the nearest road.

This site meets all 40 CFR Part 58, Appendix E requirements.

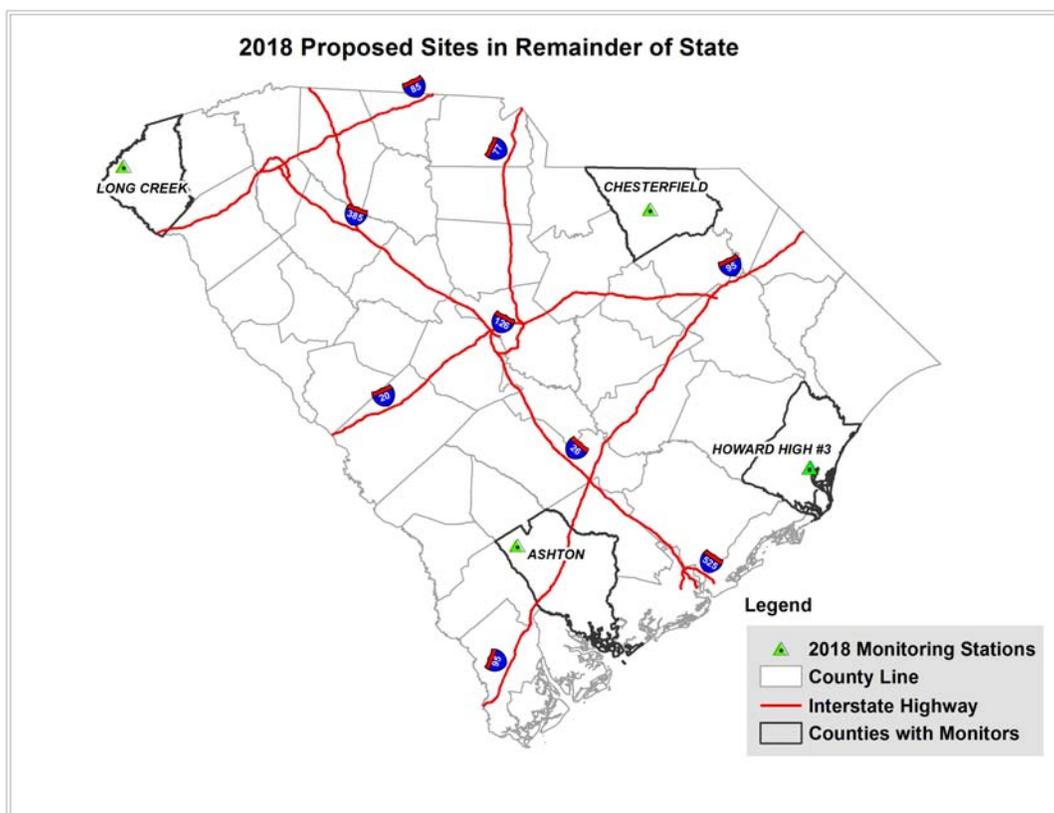
Changes for 2018:

There are no changes planned for 2018.

Monitors:

Parameter	Scale	Objective	Designation	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
PM _{2.5}	Neighbor-hood	Highest Concentration	SLAMS	2.4	Gravimetric (118)	1:1
PM _{2.5}	Neighbor-hood	Highest Concentration	SPM	2.5	TEOM Gravimetric 50°C (702)	Continuous

Remainder of State



Classification of Monitoring Type by Site

Site ID	Site Name	PM _{2.5}	PM _{2.5} Cont.	Speciation	PM ₁₀	Lead	Ozone	SO ₂	NO ₂	CO	BC	Carbonyls	SVOC	VOCs	MET
45-025-0001	Chesterfield	●	●	●	○○		○				○	○○	○○	○○	○
45-029-0002	Ashton		●				○								
45-043-0011	Howard High School #3				○										
45-073-0001	Long Creek		○				○	○							
TOTAL		1	3	1	3	0	3	1	0	0	1	2	2	2	1
○ SPM / Other		● SLAMS		●●/○○ duplicate / QA monitors											

Chesterfield (NATTS)

CSA/MSA: none/none

AQS Site ID: 45-025-0001

Location: SC Hwy 145, McBee (Route 2 Box 100)

County: Chesterfield

Coordinates: +34.61538, -80.19878

Date Established: January 6, 2000

Site Evaluation: March 21, 2017



The Chesterfield site is located in central Chesterfield County. The Chesterfield site has continuous monitors for BC, PM_{2.5}, Ozone, and meteorological parameters. Sampling is done for PM_{2.5} and PM₁₀. This site also serves as the required regional transport site for PM_{2.5}. In addition to the CSN protocol PM_{2.5} speciation sampling, this site is a precision site with collocated samplers for PM₁₀. The sample inlets are 43.9 meters from the nearest road. The Chesterfield site is also a rural National Air Toxics Trends Site (NATTS) which includes Carbonyls, VOC, SVOC, and metals sampling.

Federal funding for speciation sampling at this site was eliminated in 2015. Speciation sampling will continue as long as state resources are available. Also, there was a correction in the designation of Continuous PM_{2.5} from SPM to SLAMS.

This site meets all 40 CFR Part 58, Appendix E requirements.

Changes for 2018:

There are no changes planned for 2018.

Monitors:

(Table continues on next page)

Parameter	Scale	Objective	Designation	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
PM _{2.5}	Regional	Regional Transport	SLAMS	3.3	Gravimetric (118)	1:3
PM _{2.5}	Regional	Regional Transport	SLAMS	4.8	FDMS (183)	Continuous
Speciated PM _{2.5}	Regional	Regional Transport	SLAMS	2.1	CSN Protocol	1:6
PM ₁₀	Regional	General / Background	SPM	2.4	Gravimetric (063)	1:6
Collocated PM ₁₀	Regional	General / Background	QA Collocated SPM	2.4	Gravimetric (063)	1:6

Parameter	Scale	Objective	Designation	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
Ozone	Regional	General / Background	SPM	4.7	Ultraviolet Absorption (087)	Continuous
Black Carbon	Neighbor-hood	General / Background	Non-regulatory	3.9	Optical absorption	Continuous
Carbonyls	Urban	NATTS	Non-regulatory	3.0	DNPH/IC	1:6
Carbonyls	Urban	NATTS	Non-regulatory	3.0	DNPH/IC	1:6
SVOC	Urban	NATTS	SPM	3.0	PUF/GCMS	1:6
SVOC	Urban	NATTS	SPM	3.0	PUF/GCMS	1:6
Volatile Organic Compounds	Urban	NATTS	Non-regulatory	3.0	Canister/GCMS	1:6
Volatile Organic Compounds	Urban	NATTS	Non-regulatory	3.0	Canister/GCMS	1:6
Wind speed / direction	Neighbor-hood	Local Conditions	Non-regulatory	10.0	Instruments for wind speed/wind direction (020)	Continuous

Ashton**CSA/MSA:** none/none**AQS Site ID:** 45-029-0002**Location:** Ashton Road (S-13-18) Islandton**County:** Colleton**Coordinates:** +33.00784 -80.96504**Date Established:** March 7, 1990**Site Evaluation:** May 9, 2017

The Ashton site is located in northwestern Colleton County and was established on March 7, 1990. The site serves as a required regional background for PM_{2.5}, representing one of two major and different physiographic regions in South Carolina. It also monitors Ozone concentrations. The sample inlets are 8.4 meters from the nearest road.

This site does not meet 40 CFR Part 58, Appendix E, Section 4, Section 5, and Section 11 requirements due to tree obstructions and drip line requirements. The Department is working with the land owners to remove or trim the trees.

Changes for 2018:

There are no changes planned for 2018.

Monitors:

Parameter	Scale	Objective	Designation	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
PM _{2.5}	Regional	General / Background	SLAMS	4.2	TEOM 50°C (702)	Continuous
Ozone	Urban	General / Background	SPM	4.6	Ultraviolet (047)	Continuous

Howard High School #3

CSA/MSA: Myrtle Beach-Conway SC, NC CSA/none

AQS Site ID: 45-043-0011

Location: 594 Gilbert Street

County: Georgetown

Coordinates: +33.36892, -79.29662

Date Established: July, 15 2008

Site Evaluation: April 11, 2017



The Howard High #3 site is located in Georgetown County on the grounds of Howard High School and supports a PM₁₀ monitor. PM₁₀ monitoring in this area of Georgetown has been ongoing since 1970, when the original Howard High site was established. The sample inlet is 49.7 meters from the nearest road.

This site meets all 40 CFR Part 58, Appendix E requirements.

Changes for 2018:

There are no changes planned for 2018.

Monitors:

Parameter	Scale	Objective	Designation	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
PM ₁₀	Neighbor-hood	Population Exposure/ Highest Concentration	SPM	2.3	TEOM Gravimetric (079)	Continuous

Long Creek**CSA/MSA:** Greenville-Spartanburg-Anderson CSA/ none**AQS Site ID:** 45-073-0001**Location:** Round Mountain Tower Rd.**County:** Oconee**Coordinates:** +34.805333, -83.23777**Date Established:** August 1, 1983**Site Evaluation:** May 2, 2017

The Long Creek site is located on Round Mountain in northwest Oconee County. The Long Creek site was also established as part of the Southern Oxidant Study. It provides a unique vantage point for monitoring the impacts of transported pollutants. Long Creek has continuous monitors for Ozone, SO₂, and PM_{2.5}. The sample inlets are 30 meters from the nearest road.

Due to the importance of measuring region-wide SO₂, PM_{2.5}, and Ozone concentrations, the unique location, and collocated monitoring activity, the Department has determined that current monitoring at this site should be continued.

This site meets all 40 CFR Part 58, Appendix E requirements. A good bit of tree cutting has occurred since the last monitoring plan, improving site exposure. However, there are still trees that the Department needs to evaluate for distance from probe relative to height. Staff will evaluate the tree heights in 2017 and provide an update to the EPA on the site's status with Appendix E compliance.

Changes for 2018:

There are no changes planned for 2018.

Monitors:

Parameter	Scale	Objective	Designation	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
PM _{2.5}	Urban	General / Background	SPM	4.0	FDMS Gravimetric (581)	Continuous
Ozone	Regional	General / Background	SPM	4.1	Ultraviolet (047)	Continuous
Sulfur Dioxide	Regional	Regional Transport	SPM	4.1	Pulsed Fluorescent (560)	Continuous

Network Development

The Monitoring Network provides data to support an array of decisions ranging from development of emissions strategies to protect and improve air quality to the level of activity appropriate for individuals in sensitive populations. To support these varied data users, the network must provide both stable, long-term measures to document trends and rapid reporting of conditions to the public. In response to land use, population, and urban areas growth, the network must be evaluated and adjusted to meet the changing conditions and needs.

The Monitoring Network described in this plan continues to build upon a significant transition from the network that has evolved over the last thirty-five years. It reflects the successes in reducing ambient concentrations of TSP, Lead, CO, NO₂, and SO₂ and the increasing concern about the impact of fine particles and Ozone on public health and the environment.

A series of studies are planned for the major urban areas, as resources permit, to gain better understanding of the air quality, and provide information to improve the monitoring network. In addition to the intensive studies that provide a detailed 'snapshot,' it is intended that SPM sites be established and monitored in rotation to provide regular checks and long term tracking of the trends in air quality in all areas of the state including smaller cities, towns, and rural areas. The implementation of this long term strategy is contingent on sufficient federal funding to support the core-required monitoring and will be developed and evaluated as resources become available. Project plans will be developed for the monitoring and data analysis activity to better define the scope of these strategies prior to implementation. These studies are long term needs the Department has identified and are important tools for evaluating and improving the representativeness of the ambient air monitoring network and our knowledge of air quality in the State.

Areas where long term strategies are being considered include:

- Charleston Port Monitoring – the Charleston Port Expansion project has a projected completion date of 2017-2019. At that time, the Department will work with local stakeholders to identify and establish an appropriate PM_{2.5} site.
- Columbia MSA Ozone Study – an addition of supplementary SPM Ozone sites may be added to investigate variability and refine the monitoring network to meet monitoring objectives.

APPENDIX A: Summary of Public Comments Received

Below is a summary of the comments received and the Department's response. A copy of the actual comments (emails and mail) received will be submitted to the EPA Region 4 staff along with the final 2018 Monitoring Plan.

Monitoring Plan – Comment Received

On May 25, 2017, the Department published the draft 2018 Ambient Air Network Monitoring Plan (2018 Monitoring Plan) and held an open public comment period from May 25 – June 23, 2017. The Department received one comment via email. Below is a summary of the comment received and the Department's response.

Comment: The commenter is from Conway, South Carolina and expressed health concerns about particulate matter in the air in Horry County and suggested the Department add a PM_{2.5} monitor to the Coastal Carolina Monitoring Site. Also, they requested e-mail updates on the monitoring data.

Department Response: In accordance with EPA regulation Appendix D to 40 CFR 58, ambient air monitors are required to be placed in areas with the highest population and where the highest pollutant concentrations are predicted. The nearest ambient air monitoring station to Conway, South Carolina is Williams Middle School in Georgetown, South Carolina, which is approximately 50 miles from Conway, South Carolina. This site has a continuous PM_{2.5} monitor and a PM_{2.5} sampler that samples every 3 days. Both monitors have demonstrated that PM_{2.5} concentrations are well below the health-protective national ambient air quality standards.

Although the Department does not send out daily e-mails on any criteria pollutants, monitoring data from the E.P.A.'s Outdoor Air Quality Data Monitor Values Report from the Williams Middle School Site can be downloaded at any time from:

<https://www.epa.gov/outdoor-air-quality-data/monitor-values-report>

Also, you can sign-up for the E.P.A.'s daily EnviroFlash Ozone updates for your area at the Air Now web site at:

www.airnow.gov

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APPENDIX B: Termination Requests

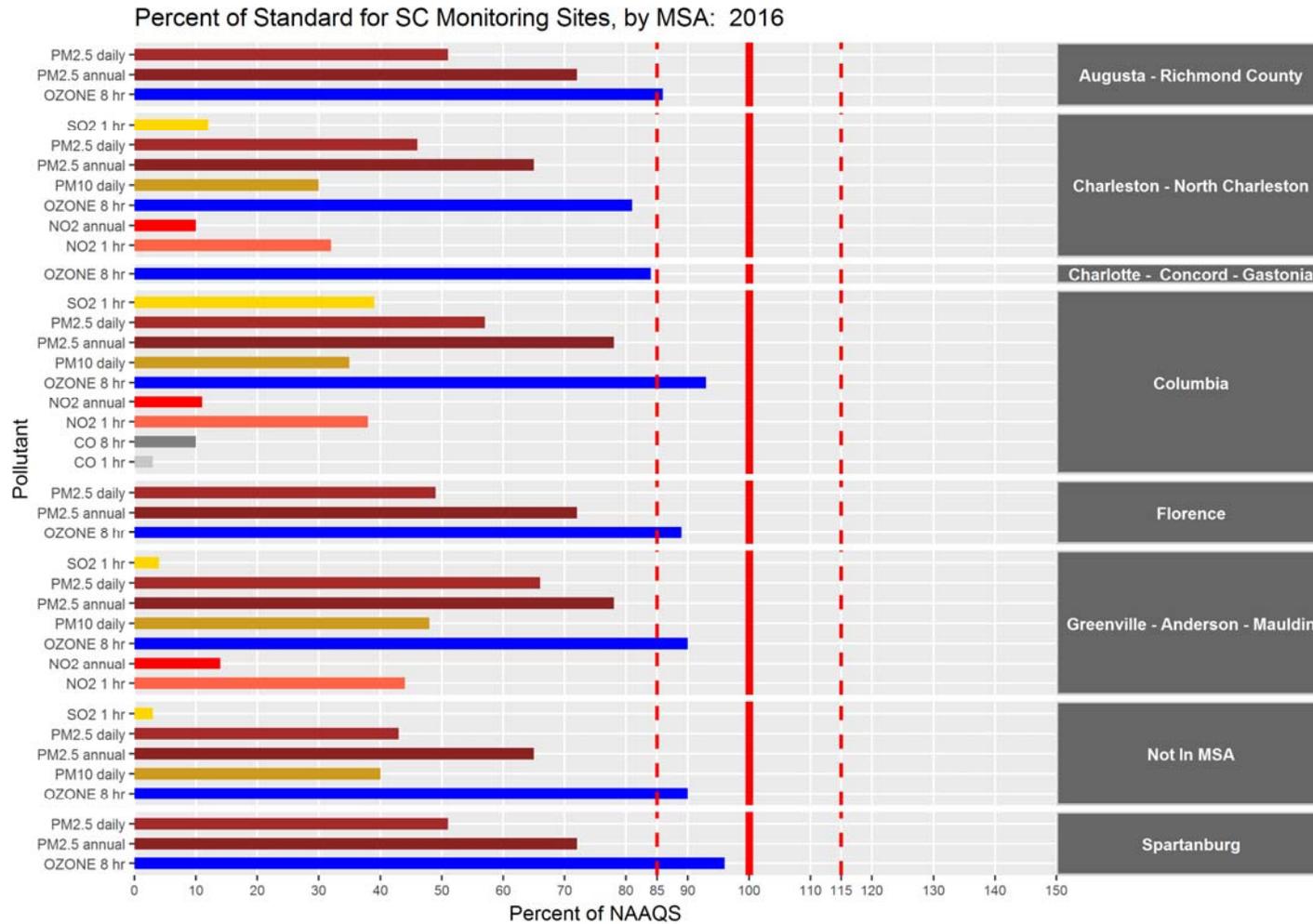
The Table below contains information on the monitoring sites the Department has scheduled for discontinuance.

Site	ID	Date Established	Notes

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APPENDIX C: Design Value Graphs

The following graph demonstrates the highest design value for each criteria pollutant in each MSA in comparison with its NAAQS. The MSAs are listed on the far right. Each individual criteria pollutant and averaging time are listed on the far left. The colored bar after the criteria pollutant's name shows the highest 2016 design value. The solid red vertical line is the NAAQS standard. The red dash lines show 15 percent of the Standard (85% and 115%).



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APPENDIX D: Site Evaluations Summary for CFR 40 Part 58, Appendix E Table

The following two tables give information about the latest Site Evaluations for each monitoring site. The first table gives the column number and the shortened Column Name listed in the columns of the second table. It also gives the Section number and the regulatory requirement it represents from the CFR 40, Part 58, Appendix E. The second table lists each monitoring site, their individual criteria pollutant monitors, and the fulfillment and/or measurements of the CFR 40 Part 58, Appendix E requirements. For brevity, the column titles in the second table have been shortened as follows:

Column	Column Name	CFR 40 Part 58, Appendix E Requirements
Column 1:	Site ID, Site Name and Date Visited	Site Identification information and date the Site Evaluation was conducted.
Column 2:	Parameter	Criteria Pollutant
Column 3:	Sampling Train	Section 9. For reactive gases, is sampling train made of borosilicate glass, FEP Teflon® or their equivalent?
Column 4:	Sampling Time	Section 9. For reactive gases, is sampling time <20 seconds?
Column 5:	Probe Height	Section 2. Horizontal and Vertical Placement: Height from ground to probe must be 2-15 meters
Column 6:	Support Structure	Section 2. Horizontal and Vertical Placement: Is Horizontal and vertical distance from supporting structure >1 meter.
Column 7:	Collocation Placement	Section 11. Horizontal and Vertical Placement: Collocated monitors must be within 4 meters of each other.
Column 8:	Flow Rates	Section 11. Horizontal and Vertical Placement: For PM collocation, flow rates greater than 200 liters/min must be at least 2 meters apart or at least 1 meter flow rates for less than 200 liters/min.
Column 9:	Minor Sources	Section 3. Spacing from Minor Sources: Probe should be away from minor sources.
Column 10:	Obstructions	Section 4. Spacing from Obstructions: Distance from probe to obstacle must be at least twice the height the obstacle protrudes above the probe.
Column 11:	Airflow	Section 4. Spacing from Obstructions: Must have unrestricted airflow 270 degrees around probe.
Column 12:	Dripline	Section 5. Spacing from Trees: Distance from dripline of trees to probe must be <10 meters.
Column 13:	Roadway	Section 6. Spacing from Roadways: Does it meet distance from roadway to probe?

Site ID, Site Name and Date Visited	Parameter	Sampling Train	Sampling Time	Probe Height (m)		Support Structure	Collocation Placement (m)		Flow Rate	Minor Sources	Obstructions	Airflow	Dripline (m)		Roadway (m)	
				Yes	3.4		Yes						Yes	Yes	Yes	11.5
003-0003 Jackson 1/4/2017	Ozone	Yes	Yes	Yes	3.4	Yes	N/A		Yes	Yes	No	Yes	Yes	11.5	Yes	128.0
037-0001 Trenton 1/4/2017	PM2.5	N/A	N/A	Yes	4.5	Yes	Yes	1.9	Yes	Yes	Yes	Yes	Yes	No trees	Yes	30.3
037-0001 Trenton 1/4/2017	PM2.5 C	N/A	N/A	Yes	4.3	Yes	Yes	1.9	Yes	Yes	Yes	Yes	Yes	No trees	Yes	30.3
037-0001 Trenton 1/4/2017	Ozone	Yes	Yes	Yes	3.3	Yes	N/A		Yes	Yes	Yes	Yes	Yes	No trees	Yes	30.3
015-0002 Bushy Park 4/26/2017	Ozone	Yes	Yes	Yes	3.8	Yes	N/A		Yes	Yes	No	No	No	3.9	Yes	15.2
019-0003 Jenkins Ave. 4/18/2017	PM10	N/A	N/A	Yes	4.1	Yes	N/A		Yes	Yes	Yes	Yes	Yes	17.6	Yes	33.5
019-0003 Jenkins Ave. 4/18/2017	SO2	Yes	Yes	Yes	4.6	Yes	N/A		Yes	Yes	Yes	Yes	Yes	17.6	Yes	33.5
019-0003 Jenkins Ave. 4/18/2017	NO2	Yes	Yes	Yes	4.6	Yes	N/A		Yes	Yes	N/A	N/A	Yes	17.6	Yes	33.5
019-0046 Cape Romain 4/18/2017	PM2.5	N/A	N/A	Yes	4.8	Yes	N/A		Yes	Yes	No	N/A	Yes	11.0	Yes	86.0
019-0046 Cape Romain 4/18/2017	Ozone	Yes	Yes	Yes	4.5	Yes	N/A		Yes	Yes	No	Yes	Yes	17.7	Yes	86.0
019-0046 Cape Romain 4/18/2017	SO2	Yes	Yes	Yes	4.5	Yes	N/A		Yes	Yes	No	Yes	Yes	17.7	Yes	86.0
019-0046 Cape Romain	NO2	Yes	Yes	Yes	4.5	Yes	N/A		Yes	Yes	No	Yes	Yes	17.7	Yes	86.0

Site ID, Site Name and Date Visited	Parameter	Sampling Train	Sampling Time	Probe Height (m)		Support Structure	Collocation Placement (m)		Flow Rate	Minor Sources	Obstructions	Airflow	Dripline (m)		Roadway (m)	
4/18/2017																
019-0048 FAA 4/26/2017	PM2.5	N/A	N/A	Yes	2.4	Yes	Yes	1.6	Yes	Yes	No	No	No	8.5	Yes	160.0
019-0048 FAA 4/26/2017	PM2.5	N/A	N/A	Yes	2.4	Yes	Yes	1.6	Yes	Yes	No	No	No	7.6	Yes	160.0
019-0049 CPW 4/26/2017	PM2.5	N/A	N/A	Yes	2.2	Yes	Yes	1.2	Yes	Yes	No	Yes	No	4.7	Yes	24.8
019-0049 CPW 4/26/2017	PM2.5C	N/A	N/A	Yes	2.8	Yes	Yes	1.2	Yes	Yes	No	Yes	No	5.9	Yes	24.8
091-0008 York Landfill 1/9/2017	Ozone	Yes	Yes	Yes	4.5	Yes	N/A		Yes	Yes	Yes	Yes	Yes	27.40	Yes	34.8
091-0008 York Landfill 1/9/2017	SO2	Yes	Yes	Yes	4.5	Yes	N/A		Yes	Yes	Yes	Yes	Yes	27.40	Yes	34.8
063-0008 Irmo 1/17/2017	PM2.5C	N/A	N/A	Yes	4.4	Yes	Yes	1.6	Yes	Yes	Yes	Yes	Yes	26.8	Yes	39.0
063-0008 Irmo 1/17/2017	PM2.5	N/A	N/A	Yes	4.8	Yes	Yes	1.6	Yes	Yes	Yes	Yes	Yes	26.8	Yes	39.0
063-0008 Irmo 1/17/2017	SO2	Yes	Yes	Yes	3.3	Yes	N/A		Yes	Yes	Yes	Yes	Yes	26.8	Yes	39.0
063-0010 Cayce CH 1/17/2017	PM10	N/A	N/A	Yes	2.4	Yes	N/A		Yes	Yes	Yes	Yes	Yes	10.8	Yes	24.0
079-0007 Parklane 1/26/2017	PM2.5	N/A	N/A	Yes	4.8	Yes	Yes	2.4	Yes	Yes	Yes	Yes	Yes	16.7	Yes	131.0
079-0007 Parklane 1/26/2017	PM2.5	N/A	N/A	Yes	5.3	Yes	Yes	2.4	Yes	Yes	Yes	Yes	Yes	16.7	Yes	131.0
079-0007	PM2.5C	N/A	N/A	Yes	5.1	Yes	N/A		Yes	Yes	Yes	Yes	Yes	20.7	Yes	131.0

Site ID, Site Name and Date Visited	Parameter	Sampling Train	Sampling Time	Probe Height (m)		Support Structure	Collocation Placement (m)		Flow Rate	Minor Sources	Obstructions	Airflow	Dripline (m)		Roadway (m)	
Parklane 1/26/2017																
079-0007 Parklane 1/26/2017	Speciated PM2.5	N/A	N/A	Yes	2.4	Yes	N/A		Yes	Yes	Yes	Yes	Yes	15.3	Yes	145.8
079-0007 Parklane 1/26/2017	PM10C	N/A	N/A	Yes	5.4	Yes	N/A		Yes	Yes	Yes	Yes	Yes	17.9	Yes	131.0
079-0007 Parklane 1/26/2017	Ozone	Yes	Yes	Yes	4.4	Yes	N/A		Yes	Yes	Yes	Yes	Yes	22.3	Yes	131.0
079-0007 Parklane 1/26/2017	SO2	Yes	Yes	Yes	4.4	Yes	N/A		Yes	Yes	Yes	Yes	Yes	22.3	Yes	131.0
079-0007 Parklane 1/26/2017	CO	Yes	Yes	Yes	4.4	Yes	N/A		Yes	Yes	Yes	Yes	Yes	22.3	Yes	131.0
079-0007 Parklane 1/26/2017	NO/NOy	Yes	Yes	Yes	10.0	Yes	N/A		Yes	Yes	Yes	Yes	Yes	22.3	Yes	131.0
079-0007 Parklane 1/26/2017	Lead	N/A	N/A	Yes	1.6	Yes	N/A		Yes	Yes	Yes	Yes	Yes	15.3	Yes	145.8
079-0021 Congaree Bluff 1/24/2017	Ozone	Yes	Yes	Yes	4.2	Yes	N/A		Yes	Yes	No	No	No	7.4	Yes	187.5
079-0021 Congaree Bluff 1/24/2017	SO2	Yes	Yes	Yes	4.2	Yes	N/A		Yes	Yes	No	No	No	7.4	Yes	187.5
079-1001 Sandhill 1/24/2017	Ozone	Yes	Yes	Yes	4.1	Yes	N/A		Yes	Yes	Yes	Yes	Yes	17.8	Yes	31.1
079-1001 Sandhill 1/24/2017	NO2	Yes	Yes	Yes	4.1	Yes	N/A		Yes	Yes	Yes	Yes	Yes	17.8	Yes	31.1
031-0003 Pee Dee	Ozone	Yes	Yes	Yes	3.8	Yes	N/A		Yes	Yes	Yes	Yes	Yes	No trees	Yes	215.8

Site ID, Site Name and Date Visited	Parameter	Sampling Train	Sampling Time	Probe Height (m)		Support Structure	Collocation Placement (m)		Flow Rate	Minor Sources	Obstructions	Airflow	Dripline (m)		Roadway (m)	
4/4/2017																
041-0003 Williams MS 4/4/2017	PM2.5C	N/A	N/A	Yes	2.7	Yes	Yes	1.6	Yes	Yes	Yes	Yes	Yes	20.6	Yes	110.0
041-0003 Williams MS 4/4/2017	PM2.5	N/A	N/A	Yes	2.5	Yes	Yes	1.6	Yes	Yes	Yes	Yes	Yes	20.6	Yes	110.0
041-8001 JCI Railroad 7/1/2017	Lead	N/A	N/A	Yes	2.3	Yes	Yes	3.1	Yes	Yes	Yes	Yes	Yes	No trees	Yes	99.0
041-8002 JCI Entrance 7/1/2017	Lead	N/A	N/A	Yes	2.4	Yes	Yes	3.1	Yes	Yes	Yes	Yes	Yes	17.2	Yes	37.0
041-8002 JCI Entrance 7/1/2017	Lead	N/A	N/A	Yes	2.3	Yes	Yes	3.1	Yes	Yes	Yes	Yes	Yes	19.3	Yes	37.0
041-8003 JCI Woods 7/1/2017	Lead	N/A	N/A	Yes	2.6	Yes			Yes	Yes	No	No	Yes	33.0	Yes	1030.0
007-0005 Big Creek 2/16/2017	Ozone	Yes	Yes	Yes	4.2	Yes	N/A		Yes	Yes	Yes	Yes	Yes	No trees	Yes	43.9
045-0015 ESC 3/3/2017	PM2.5	N/A	N/A	Yes	3.5	Yes	Yes	2.8	Yes	Yes	No	Yes	Yes	17.4	Yes	15.9
045-0015 ESC 3/3/2017	PM2.5C	N/A	N/A	Yes	4.6	Yes	Yes	2.8	Yes	Yes	No	Yes	Yes	15.3	Yes	13.8
045-0015 ESC 3/3/2017	PM10	N/A	N/A	Yes	4.3	Yes	N/A		Yes	Yes	No	Yes	Yes	18.1	Yes	12.4
045-0015 ESC 3/3/2017	SO2	Yes	Yes	Yes	4.5	Yes	N/A		Yes	Yes	No	Yes	Yes	15.8	Yes	13.0
045-0015 ESC 3/3/2017	NO2	Yes	Yes	Yes	4.5	Yes	N/A		Yes	Yes	No	Yes	Yes	15.8	Yes	13.0

Site ID, Site Name and Date Visited	Parameter	Sampling Train	Sampling Time	Probe Height (m)		Support Structure	Collocation Placement (m)		Flow Rate	Minor Sources	Obstructions	Airflow	Dripline (m)		Roadway (m)	
				Yes	3.4		Yes	1.7					Yes	69.0	Yes	54.0
045-0016 Hillcrest 3/3/2017	PM2.5	N/A	N/A	Yes	3.4	Yes	Yes	1.7	Yes	Yes	Yes	Yes	Yes	69.0	Yes	54.0
045-0016 Hillcrest 3/3/2017	PM2.5	N/A	N/A	Yes	3.4	Yes	Yes	1.7	Yes	Yes	Yes	Yes	Yes	69.0	Yes	54.0
045-0016 Hillcrest 3/3/2017	Ozone	Yes	Yes	Yes	3.9	Yes	N/A		Yes	Yes	Yes	Yes	Yes	69.0	Yes	54.0
077-0002 Clemson 2/21/2017	Ozone	Yes	Yes	Yes	4.5	Yes	N/A		Yes	Yes	No	Yes	Yes	12.3	Yes	33.9
077-0003 Wolf Creek 2/16/2017	Ozone	Yes	Yes	Yes	4.2	Yes	N/A		Yes	Yes	Yes	Yes	Yes	26.3	Yes	56.4
051-0008 Coastal Carolina 3/7/2017	Ozone	Yes	Yes	Yes	4.1	Yes	N/A		Yes	Yes	Yes	Yes	Yes	11.3	Yes	18.3
083-0009 NSFS#2 1/31/2017	Ozone	Yes	Yes	Yes	3.9	Yes	N/A		Yes	Yes	Yes	Yes	Yes	25.4	Yes	92.5
083-0011 TK Gregg 1/31/2017	PM2.5	N/A	N/A	Yes	2.4	Yes	Yes	1.6	Yes	Yes	Yes	Yes	Yes	36.3	Yes	48.2
083-0011 TK Gregg 1/31/2017	PM2.5C	N/A	N/A	Yes	2.5	Yes	Yes	1.6	Yes	Yes	Yes	Yes	Yes	36.3	Yes	48.2
025-0001 Chesterfield 3/21/2017	PM2.5	N/A	N/A	Yes	3.3	Yes	N/A		Yes	Yes	Yes	Yes	Yes	36.7	Yes	43.9
025-0001 Chesterfield 3/21/2017	PM2.5C	N/A	N/A	Yes	4.8	Yes	N/A		Yes	Yes	Yes	Yes	Yes	44.1	Yes	33.1
025-0001 Chesterfield 3/21/2017	Speciated PM2.5	N/A	N/A	Yes	2.1	Yes	N/A		Yes	Yes	Yes	Yes	Yes	36.7	Yes	43.9
025-0001 Chesterfield	PM10	N/A	N/A	Yes	2.4	Yes	Yes	2.3	Yes	Yes	Yes	Yes	Yes	19.0	Yes	43.9

Site ID, Site Name and Date Visited	Parameter	Sampling Train	Sampling Time	Probe Height (m)		Support Structure	Collocation Placement (m)		Flow Rate	Minor Sources	Obstructions	Airflow	Dripline (m)		Roadway (m)	
3/21/2017																
025-0001 Chesterfield 3/21/2017	PM10	N/A	N/A	Yes	2.4	Yes	Yes	2.3	Yes	Yes	Yes	Yes	Yes	21.3	Yes	43.9
025-0001 Chesterfield 3/21/2017	Ozone	Yes	Yes	Yes	4.7	Yes	N/A		Yes	Yes	Yes	Yes	Yes	14.6	Yes	33.1
029-0002 Ashton 5/9/2017	PM2.5C	N/A	N/A	Yes	4.2	Yes	N/A		Yes	Yes	No	Yes	No	8.2	No	*8.4
029-0002 Ashton 5/9/2017	Ozone	Yes	Yes	Yes	4.6	Yes	N/A		Yes	Yes	No	Yes	No	9.3	No	*8.4
043-0011 Howard High #3 4/11/2017	PM10	N/A	N/A	Yes	2.3	Yes	N/A		Yes	Yes	Yes	Yes	Yes	No trees	Yes	49.7
073-0001 Long Creek 5/2/2017	PM2.5C	N/A	N/A	Yes	4.0	Yes	N/A		Yes	Yes	Yes	Yes	Yes	10.2	Yes	30.0
073-0001 Long Creek 5/2/2017	Ozone	Yes	Yes	Yes	4.1	Yes	N/A		Yes	Yes	Yes	Yes	Yes	11.8	Yes	30.0
073-0001 Long Creek 5/2/2017	SO2	Yes	Yes	Yes	4.1	Yes	N/A		Yes	Yes	Yes	Yes	Yes	11.8	Yes	30.0

*Road is in very rural area with less than 100 AADT.

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APPENDIX E: The EPA Correspondence for Amendments to Previous Monitoring Plan

Establishment of York Landfill (45-091-0008) Monitoring Site

Email Correspondence

Tue 1/17, 1:10 PM

Tommy Flynn

Hi Ryan,

On November 30, 2016 the USEPA provided conditional approval for establishing the York County Monitoring site (450910008), which has replaced the York CMS site (450910009). The letter stated that the South Carolina DHEC needed to submit information to demonstrate that the York County Monitoring site meets all siting criteria found in Appendix E to 40 CFR Part 58 by January 31, 2017. The letter also stated that the information should include a zoomed in photo or site location map, site photos facing N,S, E, and W from the site, applicable measurements to any obstructions, trees, and roadways, and the probe height of the monitor.

The attached site evaluation document contains all of this information and demonstrates that the York County Monitoring site meets all of the Appendix E to 40 CFR Part 58 requirements. This information will also be included in the 2018 Ambient Air Monitoring Network plan which is due July 1, 2017.

Please let me know if you have any further questions regarding the site conditions at the York County Monitoring site. We will retain the original copy of this report in our files.

Thanks,

Tommy

Thomas J. Flynn, III
Program Manager
Bureau of Air Quality
S.C. Dept. of Health & Environmental Control
Office: (803) 898-3251

**Site Evaluation Report for:
York County Monitoring Station
(45-091-0008)**

Date of Evaluation: January 9, 2017

**South Carolina Department of Health and Environmental
Control
Bureau of Air Quality
Data Analysis and Support Section**

PREPARED BY: _____ DATE: _____
NAME: G. Renee' Madden

REVIEWED BY: _____ DATE: _____
NAME: Thomas J. Flynn, III

APPROVED BY: _____ DATE: _____
NAME: Robert J. Brown, Jr.

York County (45-091-0008) Site Evaluation Report

South Carolina Ambient Air Quality Monitoring Site Evaluation Report	
Name of Site: York County	Local Site ID: 45-091-0008
Personnel: G. Renee' Madden, Joel Hodges	Date Site Visited: December 9, 2017
New: X	Revised:
<p>Summary of Site Evaluation: Monitoring building, ozone probe and wind tower in place. There are no obstructions. This site meets all criteria from 40 CFR Appendix E Part 58 for ozone and sulfur dioxide.</p> <p>Note: The ozone and sulfur dioxide information marked with an * is the anticipated information.</p>	

General Site Information

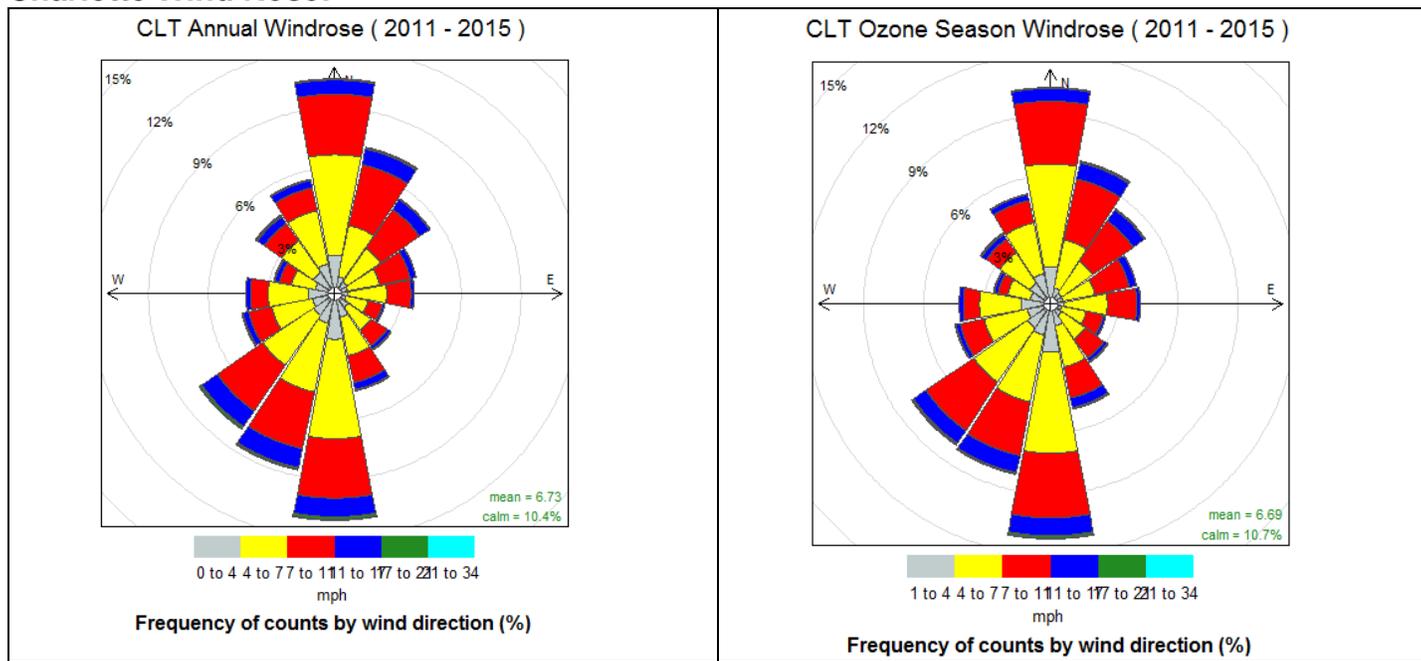
Date Report Started: January 5, 2017	Date Report Completed: January 10, 2017
Street Address: 310 Langrum Branch Rd.	
City: York	Zip Code: 29745-8803
County: York	Declination: 7.41° W ± 0.34° changing by 0.06° W per year
Date Site Established:	September 30, 2015
Latitude: +34.9776	Longitude: -81.2074
Horizontal Collection Method:	"Latitude Longitude" application
Vertical Collection Method:	Topographic Map Interpolation
Vertical Measure (m) (elevation):	215 ft.
<p>Pollutants Being Monitored: Ozone - The probe on top of the building has been installed, but the equipment has not been brought in yet.</p> <p>2/28/2017 Update-The monitor is now fully functional.</p>	
<p>Meteorological Parameters Being Monitored: Wind tower is present, but equipment has not been installed.</p>	

Mobile Sources Information

Roadway Name:	Langrum Branch Road	Recycle Center Road	McFarland Road
Road Number:	1566	None given	324
Direction to Road:	The road runs South and East of Site.	South	West
Distance to Road (m):	34.81 (Bearing 144°) (rolling wheel)	55 (Bearing 182.45° Google Earth)	310 (Bearing 249.53° Google Earth)
Daily Traffic Count:	None listed	None listed	None listed
Daily Traffic Year:	2010	2010	2010
Source of Traffic Count:	SCDOT	SCDOT	SCDOT
Is dust re-entrained?	No	No	No

Field Data for York County Site			
Parking Lot Measurements (nearest the site)			
Direction from Site to Parking Lot:			North
Distance from Site to Parking Lot (m): (rolling wheel)			84.9
Monitor Building			
Building Temperature: Air Conditioner is not on Building Asset Number: None			
The equipment has not been installed.			
Dimensions	Height (m): 2.40	Width (m): 2.39	Depth (m): 3.09
Distance to Nearest Tree (m):			28.7
Direction of Nearest Tree:			Southeast
List pollutants on top of monitor building: There will be Ozone and Sulfur Dioxide (probe is present)			
Support Structure (Stand) #1 N/A			
Dimensions	Height (m): N/A	Width (m): N/A	Depth (m): N/A
Distance to Nearest Tree (m):(Evergreen tree Bearing 48° Southeast)			N/A
Direction of Nearest Tree: (Evergreen tree Bearing 48° Southeast)			N/A
List pollutants on stand: N/A			

Charlotte Wind Rose:



***Parameter Information - Ozone**

Parameter:	Ozone
Parameter Code:	44201
POC:	1
Measurement Scale:	1Urban
Begin Date:	February 27, 2017
Monitor Type:	SLAMS
Method Code and Sample Collection:	087, Instrumental
Sample Analysis:	Ultraviolet Absorption
Sample duration/frequency/time interval (hourly, etc.):	Continuous, Hourly
Sample Residency Time-Is sampling time less than 20 seconds? (Yes/No)	Yes
Monitor Objective(s):	
1. Upwind Background	
Doe this monitor use a Federal Reference or Equivalent method? (Yes/No)	Yes
Probe Material-Is it borosilicate glass, FEP Teflon or equivalent? (Yes/No)	Yes
Field Data	
Distance to Nearest Road (m):	34.81
Direction from Monitor to Road:	Southeast
Is dust re-entrained?	No
Spacing from Roads-Does distance meet requirement of Table E-1? (Yes/No)	Yes
Instrument Asset #: TBD	Data Logger Asset #: TBD
Instrument Manufacturer:	TBD
Instrument Model Number:	TBD
Probe Location:	On top of monitor building
Support (stand) Height (m):	2.52
Height Above Support (m):	2.00
Probe Height Above Ground (m):	4.52
Distance to Supporting Structure (m):	2.00
Height from Ground to Probe-Is probe between 2-15 m? (Yes/No)	Yes
Probe Horizontal Distance or Vertical Distance- Is probe >1m from vertically or horizontally away from supporting structures, walls, parapets, penthouses, etc.? (Yes/No)	Yes
If probe is located near side of building or wall, is it on windward side of building relative to prevailing wind during season of highest concentration potential? (Yes/No)	N/A
Is probe away from incineration flues or minor sources of NO or SO₂? (Yes/No)	Yes
Airflow-Does monitor have unrestricted airflow 270 degrees around the probe or sampler or 180 degrees if the probe is on the side of a building or a wall? (Yes/No)	Yes
Name of Nearest Monitor/Sampler:	None
Distance from Nearest Monitor/Sampler:	N/A
Distance to Drip Line:	27.4 (Evergreen tree Bearing 48° Southeast)
Distance to Tree:	28.7 (Evergreen tree Bearing 48° Southeast)
Spacing from Trees-Is probe greater than 10 meters away from trees? (Yes/No)	Yes
Is the probe away from obstacles? (Yes/No)	Yes

***Parameter Information - Sulfur Dioxide**

Parameter:	Sulfur Dioxide	
Parameter Code:	42401	
POC:	TBD	
Measurement Scale:	*Urban	
Begin Date:	Not yet established	
Monitor Type	SPM	
Method Code and Sample Collection:	TBD	
Sample Analysis:	TBD	
Sample duration/frequency/time interval (hourly,etc.):	*Continuous, Hourly	
Sample Residency Time-Is sampling time less than 20 seconds? (Yes/No)		Yes
Monitor Objective(s):		
1. Upwind Background		
Doe this monitor use a Federal Reference or Equivalent method? (Yes/No)		Yes
Probe material-Is it borosilicate glass, FEP Teflon or equivalent? (Yes/No)		Yes
Field Data		
Distance to Nearest Road (m):	34.81	
Direction from Monitor to Road:	Southeast	
Is dust re-entrained?		No
Instrument Asset #: TBD	Data Logger Asset #: TBD	
Instrument Manufacturer:	TBD	
Instrument Model Number:	TBD	
Probe Location:	On top of monitor building	
Support (stand) Height (m):	2.52	
Height Above Support (m):	2.00	
Probe Height Above Ground (m):	4.52	
Distance from Supporting Structure (m):	2.00	
Height from Ground to Probe-Is probe between 2-15 m? (Yes/No)		Yes
Probe Horizontal Distance or Vertical Distance- Is probe >1m from vertically or horizontally away from supporting structures, walls, parapets, penthouses, etc.? (Yes/No)		Yes
If probe is located near side of building or wall, is it on windward side of building relative to prevailing wind during season of highest concentration potential? (Yes/No)		N/A
Is probe away from incineration flues or minor sources of NO or SO₂? (Yes/No)		Yes
Airflow-Does it have unrestricted airflow 270 degrees around the probe or sampler or 180 degrees if the probe is on the side of a building or a wall? (Yes/No)		Yes
Name of Nearest Monitor/Sampler:	None	
Distance from Nearest Monitor/Sampler (m):	N/A	
Distance to Drip Line (m):	27.4 (Evergreen tree Bearing 48° Southeast)	
Distance to Tree (m):	28.7 (Evergreen tree Bearing 48° Southeast)	
Spacing from Trees-Is probe greater than 10 meters away from trees? (Yes/No)		Yes
Is the probe away from obstacles? (Yes/No)		Yes

*anticipated information

Non-Criteria Pollutant Information (optional)

Parameter:	Wind Direction	Wind Speed		
Parameter Code:	61104	61103		
POC:	TBD	TBD		
Measurement Scale:	TBD	TBD		
Begin Date:	TBD	TBD		
Monitor Type:	TBD	TBD		
Method and Code:	TBD	TBD		
Sample Analysis:	TBD	TBD		
Sample duration/frequency/time interval (hourly, etc.):	TBD	TBD		
Monitor Objective Type:	TBD	TBD		
Field Data				
Asset Number:	TBD	TBD		
Distance to Nearest Road:	34.81	34.81		
Direction from Monitor to Road:	Southeast	Southeast		
Is dust re-entrained?	No	No		
Instrument Manufacturer:	TBD	TBD		
Instrument Model Number:	TBD	TBD		
Probe Location:	Adjacent to building	Adjacent to building		

Comments:

Required Photographs

Note: When taking pictures, get the cardinal signs in as many of the pictures as possible.

From East	
To West	
From North	
To South	

From West



To East



From South



To North



Approaching Site

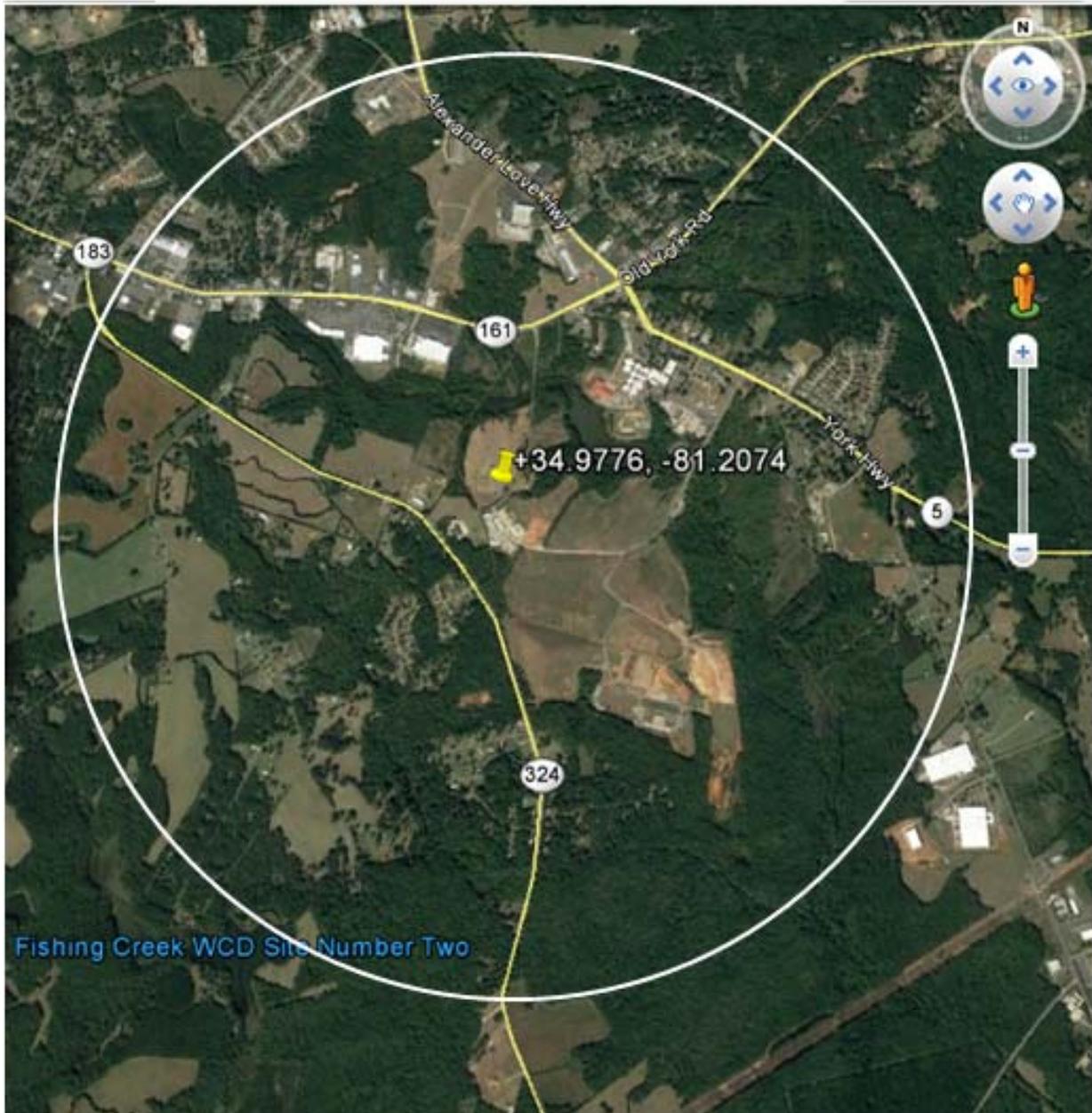


Note: Photos to include looking toward and away from the four (4) primary cardinal compass points (N,S,E,W) and approaching the site.

When you are facing toward the monitor, it is consider “to” or “toward”. You are shooting ‘toward’ the direction you can read on the cardinal direction cards. When you are standing at the monitor facing outward, it is considered “from”. You are shooting ‘from’ the direction you can read on the cardinal direction cards.

Maps and Pictures of Site

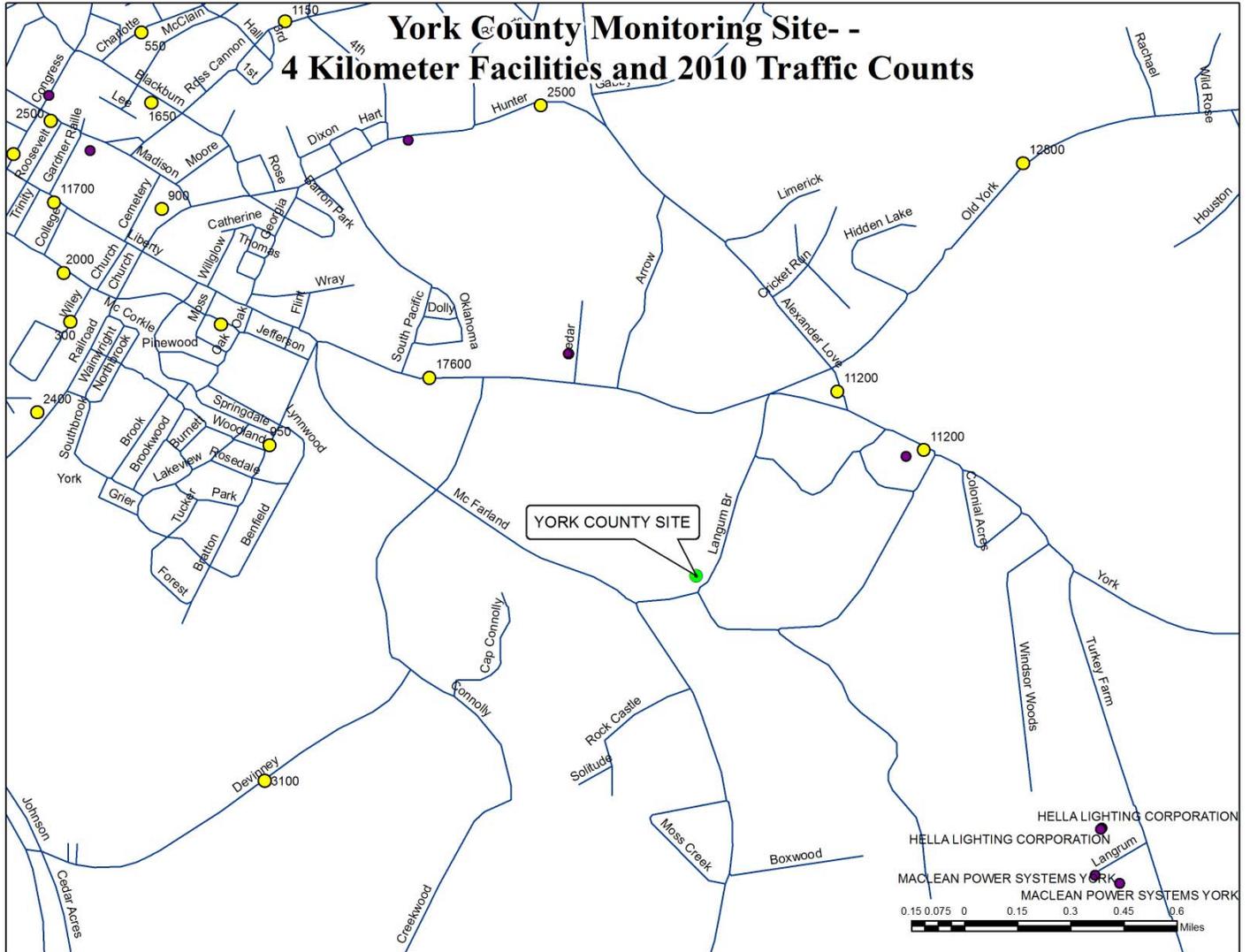
4.0 Kilometer Aerial Map



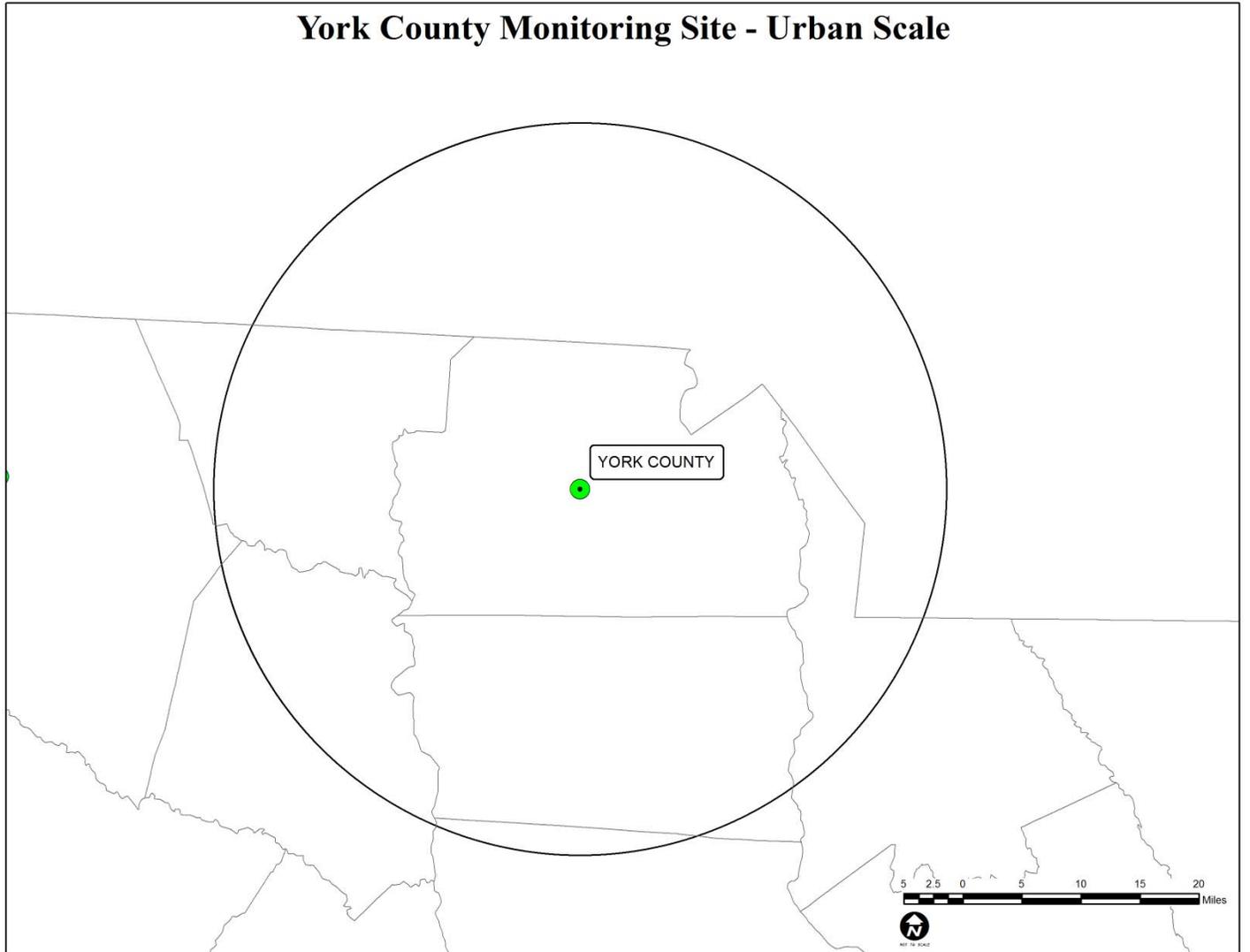
Close Up (0.5 Kilometer) Aerial Map



2017 Facilities and 2010 Traffic Counts Map



York County-Urban Scale Map



Monitoring Plan Page

York County Site

CSA/MSA: Charlotte-Concord CSA / Charlotte-Concord-Gastonia MSA

AQS Site ID: 45-091-0008

Location: Langrum Branch Rd.

County: York

Coordinates: +34.9776, -81.2074

Date Established: PENDING

Site Evaluation: January 9, 2017



The York County site is located in south central York County in a rural setting. This site was established to replace the York Continuous Monitoring Site (45-091-0006) and represents background levels near the Charlotte urban area. The York County Site monitors for Ozone and Sulfur Dioxide.

Changes for 2018:

This site is a replacement for the York Continuous Monitoring Site (45-091-0006).

Monitors:

Parameter	Scale	Objective	Designation	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
Ozone	Urban	Upwind Background	SLAMS	4.52	Ultraviolet Absorption (087)	Continuous
Sulfur Dioxide	Urban	Upwind Background	SPM	4.52	Pulsed Fluorescence (560)	Continuous
Wind Speed / Direction	Neighborhood	Local Conditions	Non-regulatory		Instruments for wind speed, wind direction (020)	Continuous

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Appendix F: Alphabetical Order of Monitoring Sites

Monitoring Site Name	MSA/County	Page
Ashton	Colleton County	65
Big Creek	Greenville-Anderson-Mauldin MSA	51
Bushy Park Pump Station	Charleston-North Charleston MSA	27
Cape Romain	Charleston-North Charleston MSA	29
Cayce City Hall	Columbia MSA	39
Charleston Public Works (CPW)	Charleston-North Charleston MSA	32
Chesterfield	Chesterfield County	63
Coastal Carolina	Myrtle Beach-Conway-North Myrtle Beach SC-NC MSA	58
Congaree Bluff	Columbia MSA	43
FAA	Charleston-North Charleston MSA	31
Greenville Employment Security Commission (ESC)	Greenville-Anderson-Mauldin MSA	52
Hillcrest Middle School	Greenville-Anderson-Mauldin MSA	54
Howard High School #3	Georgetown County	66
Irmo	Columbia MSA	37
Jackson Middle School	Augusta-Richmond County, GA-SC MSA (part)	24
Jenkins Ave. Fire Station	Charleston-North Charleston MSA	28
Johnson Controls-JCI Railroad	Florence MSA	49
Johnson Controls-JCI Entrance	Florence MSA	49
Johnson Controls-JCI Woods	Florence MSA	49
Long Creek	Oconee County	67
North Spartanburg Fire Station #2	Spartanburg MSA	60
Parklane (NCore)	Columbia MSA	40
Pee Dee Experimental Station	Florence MSA	47
Sandhill Experimental Station	Columbia MSA	45
State Hospital	Columbia MSA	42
T.K. Gregg Recreational Center	Spartanburg MSA	61
Trenton	Augusta-Richmond County, GA-SC MSA (part)	25
Williams Middle School	Florence MSA	48
Wolf Creek	Greenville-Anderson-Mauldin MSA	56
York Landfill	Charlotte-Concord-Gastonia MSA	34

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APPENDIX G: Memorandum of Agreements

MEMORANDUM OF AGREEMENT
ON AIR QUALITY MONITORING FOR CRITERIA POLLUTANTS FOR
THE CHARLOTTE-CONCORD-GASTONIA
METROPOLITAN STATISTICAL AREA (MSA)

July 1, 2016

Participating Agencies:

North Carolina
Department of Environmental Quality (NCDEQ)
Division of Air Quality (NCDAQ)

South Carolina
Department of Health and Environmental Control (SCDHEC)
Bureau of Air Quality

Mecklenburg County, North Carolina
Land Use and Environmental Services Agency
Air Quality (MCAQ)

RECEIVED
JUL 01 2016
BUREAU OF AIR QUALITY

I. PURPOSE/OBJECTIVES/GOALS

The purpose of this Memorandum of Agreement (MOA) is to establish the Charlotte-Concord-Gastonia Metropolitan Statistical Area (MSA) Criteria Pollutant Air Quality Monitoring Agreement among NCDAQ, SCDHEC, and the MCAQ (collectively referred to as the “affected agencies”) to collectively meet United States Environmental Protection Agency (EPA) minimum monitoring requirements for criteria pollutants deemed necessary to meet the needs of the MSA as determined reasonable by all parties. This MOA will renew the terms and conditions of this collective agreement to provide adequate criteria pollutant monitoring for the Charlotte-Concord-Gastonia MSA as required by 40 CFR 58 Appendix D, Section 2(e).

II. BACKGROUND

The Charlotte-Concord-Gastonia MSA consists of

Cabarrus County, NC
Gaston County, NC
Iredell County, NC
Lincoln County, NC
Mecklenburg County, NC
Rowan County, NC
Union County, NC
Chester County, SC
Lancaster County, SC

York County, SC

NCDAQ has jurisdiction over Cabarrus, Gaston, Iredell, Lincoln, Rowan, and Union Counties; SCDHEC has jurisdiction over Chester, Lancaster, and York Counties; MCAQ has jurisdiction over Mecklenburg County.

The NCDAQ, SCDHEC, and MCAQ are required by the Clean Air Act to measure for certain criteria pollutants in the ambient air in the Charlotte-Concord-Gastonia MSA. The EPA has established minimum monitoring requirements based on the size of the MSA and the quality of the air in the MSA.

40 CFR 58 Appendix D, Section 2 (e) states (in part):

“... The EPA recognizes that State or local agencies must consider MSA/CSA boundaries and their own political boundaries and geographical characteristics in designing their air monitoring networks. The EPA recognizes that there may be situations where the EPA Regional Administrator and the affected State or local agencies may need to augment or to divide the overall MSA/CSA monitoring responsibilities and requirements among these various agencies to achieve an effective network design. Full monitoring requirements apply separately to each affected State or local agency in the absence of an agreement between the affected agencies and the EPA Regional Administrator.”

Currently each air pollution control agency (affected agency) conducts monitoring in its respective jurisdiction and coordinates monitoring with the other air pollution control agencies within the MSA.

III. ROLES AND RESPONSIBILITIES

The parties agree to the following terms and conditions:

- NCDAQ, SCDHEC, and MCAQ (the “affected agencies”) commit to conducting appropriate monitoring in their respective jurisdictions of the MSA; as needed, to collectively meet EPA minimum monitoring requirements for the entire MSA for criteria air pollutant monitoring deemed necessary to meet the needs of the MSA as determined reasonable by all affected agencies. The minimum air quality monitoring requirements for the MSA shall apply to the MSA in its entirety and shall not apply to any sole affected agency within the MSA unless agreed upon by all affected agencies.
- The affected agencies commit to coordinating monitoring responsibilities and requirements to achieve an effective network design regarding criteria air pollutant monitoring conducted in the MSA and commit to communicate unexpected or unplanned changes in monitoring activities within their jurisdictions to the other affected agencies. As conditions warrant, the affected agencies may conduct telephone conference calls, meetings, or other communications to discuss monitoring activities for the MSA. Each affected party shall inform the others via telephone or e-mail of any monitoring changes occurring in its jurisdiction of the MSA at its earliest convenience after learning of the need for the change or making the changes. Such unforeseen changes may include evictions from monitoring sites, destruction of monitoring sites due to

natural disaster, or similar occurrences that result in extended change (greater than one quarter) or permanent change in the monitoring network. At least once a year in the second quarter or before June 15th, each agency shall make available to the other agency a copy of its proposed monitoring plan for its jurisdiction with the MSA for the next year.

- Each party reserves the right to revoke or terminate this MOA at any time for any reason by giving thirty (30) days written notice prior to the date of termination.

IV. LIMITATIONS

A. All commitments made in this MOA are subject to the availability of funds and each party's budget priorities. Nothing in this MOA, in and of itself, obligates NCDAQ, SCDHEC, or MCAQ to expend funds or to enter into any contract, assistance agreement, interagency agreement, or other financial obligation.

B. This MOA is neither a fiscal nor a funds obligation document. Any endeavor involving reimbursement or contribution of funds between parties to this MOA will be handled in accordance with applicable laws, regulations, and procedures, and will be subject to separate subsidiary agreements what will be effected in writing by representatives of the parties.

C. Except as provided in Section III, this MOA does not create any right or benefit, substantive or procedural, enforceable by law or equity against NCDAQ, SCDHEC, or MCAQ, their officers or employees, or any other person. This MOA does not direct or apply to any person outside NCDAQ, SCDHEC, or MCAQ.

V. PROPRIETARY INFORMATION AND INTELLECTUAL PROPERTY

No proprietary information or intellectual property is anticipated to arise out of this MOA.

VI. POINTS OF CONTACT

The following individuals are designated points of contact for the MOA:

NCDEQ DAQ: Joette Steger
 NC DENR Division of Air Quality
 1641 Mail Service Center
 Raleigh, NC 27699-1641

joette.steger@ncdenr.gov
Voice/fax: 919-707-8449

SCDHEC: Scott Reynolds
 SCDHEC Bureau of Environmental Health Services
 2600 Bull Street
 Columbia, SC 29201

reynolds@dhec.sc.gov

Voice: 803-896-0902

MCAQ: Jeff Francis
Mecklenburg County Land Use and Environmental Services Agency –
Air Quality
2145 Suttle Avenue
Charlotte, NC 28208-5237

Jeff.Francis@mecklenburgcountync.gov

Phone 704-336-5430

Fax 704-336-4391

In the event that a point of contact needs to be changed, notification may be made via email to the other parties.

VII. MODIFICATION/DURATION/TERMINATION

This MOA will be effective when signed by all parties. This MOA may be amended at any time by the mutual written consent of all parties. The parties will review this MOA at least once every 10 years to determine whether it should be revised, renewed, or cancelled. This MOA may be revoked or terminated by an affected party at any time and for any reason by giving thirty (30) days written notice prior to the date of termination.

VIII. REFERENCE

United States Environmental Protection Agency, Title 40 Code of Federal Regulations, Part 58, Appendix D, "Network Design Criteria for Ambient Air Quality Monitoring", Section 2 (e), "General Monitoring Requirements"

IX. APPROVALS

North Carolina Department of Environmental Quality
Division of Air Quality (NCDAQ)

BY: Shirley C. Holman

TITLE: Director, Division of Air Quality

DATE: 6/27/2016

South Carolina Department of Health and Environmental Control (SCDHEC)
Bureau of Air Quality

BY: Ally B. Dyer

TITLE: Chief, Bureau of Air Quality

DATE: 07/05/2016

Mecklenburg County Land Use and Environmental Services Agency – Air Quality (MCAQ)
Mecklenburg County Air Quality

BY: Kevin H. Phelan

TITLE: Director, Air Quality

DATE: 6/29/2014



Catherine E. Heigel, Director

Promoting and protecting the health of the public and the environment

MEMORANDUM

July 5, 2016

Subject: Change of Point of Contact for South Carolina

Memorandum of Agreement on Air Quality Monitoring for Criteria Pollutants for the Charlotte-Concord-Gastonia Metropolitan Statistical Area (MSA)

**From: Rhonda B. Thompson, SC DHEC
Chief, Bureau of Air Quality**

As of July 5, 2016, the Point of Contact for South Carolina will be Micheal Mattocks, instead of Scott Reynolds.

Micheal's contact information is below:

Micheal Mattocks
SC DHEC – Bureau of Environmental Health Services
2600 Bull Street
Columbia, SC 29201
(803)896-0856
mattock@dhec.sc.gov

MEMORANDUM OF AGREEMENT
ON AIR QUALITY MONITORING FOR CRITERIA POLLUTANTS FOR
THE MYRTLE BEACH-CONWAY-NORTH MYRTLE BEACH
METROPOLITAN STATISTICAL AREA (MSA)

July 1, 2015

Participating Agencies:

North Carolina
Department of Environment and Natural Resources (NCDENR)
Division of Air Quality (NCDAQ)

South Carolina
Department of Health and Environmental Control (SCDHEC)
Bureau of Air Quality

I. PURPOSE/OBJECTIVES/GOALS

The purpose of this Memorandum of Agreement (MOA) is to establish the Myrtle Beach-Conway-North Myrtle Beach Metropolitan Statistical Area (MSA) Criteria Pollutant Air Quality Monitoring Agreement between NCDAQ and SCDHEC (collectively referred to as the “affected agencies”) to collectively meet United States Environmental Protection Agency (EPA) minimum monitoring requirements for ozone, as well as other criteria pollutants air quality monitoring deemed necessary to meet the needs of the MSA as determined reasonable by all parties. This MOA will establish the terms and conditions of this collective agreement to provide adequate criteria pollutant monitoring for the Myrtle Beach-Conway-North Myrtle Beach MSA as required by 40 CFR 58 Appendix D, Section 2(e).

II. BACKGROUND

The Myrtle Beach-Conway-North Myrtle Beach MSA consists of Horry County and Brunswick County. NCDAQ has jurisdiction over Brunswick County and SCDHEC has jurisdiction over Horry County. Brunswick County was previously included in the Wilmington (NC) MSA with New Hanover and Pender Counties. However, the United States Office of Management and Budget revised the geographic delineation in February 2013 to include Brunswick County in the Myrtle Beach-Conway-North Myrtle Beach MSA instead.

The NCDAQ and SCDHEC are required by the Clean Air Act to measure for certain criteria pollutants in the ambient air in the Myrtle Beach-Conway-North Myrtle Beach MSA. The EPA has established minimum monitoring requirements based on the size of the MSA and the quality of the air in the MSA for ozone.

40 CFR 58 Appendix D, Section 2 (e) states (in part):

“... The EPA recognizes that State or local agencies must consider MSA/CSA boundaries and their own political boundaries and geographical characteristics in designing their air monitoring networks. The EPA recognizes that there may be situations where the EPA Regional Administrator and the affected State or local agencies may need to augment or to

divide the overall MSA/CSA monitoring responsibilities and requirements among these various agencies to achieve an effective network design. Full monitoring requirements apply separately to each affected State or local agency in the absence of an agreement between the affected agencies and the EPA Regional Administrator.”

Currently each air pollution control agency (affected agency) conducts monitoring in its respective jurisdiction and coordinates monitoring with the other air pollution control agencies with the MSA.

III. ROLES AND RESPONSIBILITIES

The parties agree to the following terms and conditions:

- NCDAQ and SCDHEC (the “affected agencies”) commit to conducting appropriate monitoring in their respective jurisdictions of the MSA; as needed, to collectively meet EPA minimum monitoring requirements for the entire MSA for ozone, as well as other criteria air pollutant monitoring deemed necessary to meet the needs of the MSA as determined reasonable by both affected agencies. The minimum air quality monitoring requirements for the MSA shall apply to the MSA in its entirety and shall not apply to any sole affected agency within the MSA unless agreed upon by all affected agencies.
- The affected agencies commit to coordinating monitoring responsibilities and requirements to achieve an effective network design regarding criteria air pollutant monitoring conducted in the MSA and commit to communicate unexpected or unplanned changes in monitoring activities within their jurisdictions to the other affected agency. As conditions warrant, the affected agencies may conduct telephone conference calls, meetings, or other communications to discuss monitoring activities for the MSA. Each affected party shall inform the other via telephone or e-mail of any monitoring changes occurring in its jurisdiction of the MSA at its earliest convenience after learning of the need for the change or making the changes. Such unforeseen changes may include evictions from monitoring sites, destruction of monitoring sites due to natural disaster, or similar occurrences that result in extend (greater than one quarter) or permanent change in the monitoring network. At least once a year in the second quarter or before June 15th, each agency shall deliver to the other agency a copy of its proposed monitoring plan for its jurisdiction with the MSA for the next year.
- Each party reserves the right to revoke or terminate this MOA at any time for any reason by giving thirty (30) days written notice prior to the date of termination.

IV. LIMITATIONS

A. All commitments made in this MOA are subject to the availability of funds and each party’s budget priorities. Nothing in this MOA, in and of itself, obligates NCDAQ or SCDHEC to expend funds or to enter into any contract, assistance agreement, interagency agreement, or other financial obligation.

B. This MOA is neither a fiscal nor a funds obligation document. Any endeavor involving reimbursement or contribution of funds between parties to this MOA will be handled in accordance

with applicable laws, regulations, and procedures, and will be subject to separate subsidiary agreements what will be effected in writing by representatives of the parties.

C. Except as provided in Section III, this MOA does not create any right or benefit, substantive or procedural, enforceable by law or equity against NCDAQ or SCDHEC, their officers or employees, or any other person. This MOA does not direct or apply to any person outside NCDAQ or SCDHEC.

V. PROPRIETARY INFORMATION AND INTELLUCTUAL PROPERTY

No proprietary information or intellectual property is anticipated to arise out of this MOA.

VI. POINTS OF CONTACT

The following individuals are designated points of contact for the MOA:

NC DENR DAQ: Donnie Redmond
NC DENR Division of Air Quality
1641 Mail Service Center
Raleigh, NC 27699-1641

donnie.redmond@ncdenr.gov
Voice/fax: 919-707-8468

SCDHEC: Scott Reynolds
SCDHEC Bureau of Air Quality
2600 Bull Street
Columbia, SC 29201

reynolds@dhec.sc.gov
Voice: 803-896-0902

VII. MODIFICATION/DURATION/TERMINATION

This MOA will be effective when signed by all parties. This MOA may be amended at any time by the mutual written consent of all parties. The parties will review this MOA at least once every 10 years to determine whether it should be revised, renewed, or cancelled. This MOA may be revoked or terminated by an affected party at any time and for any reason by giving thirty (30) days written notice prior to the date of termination.

VIII. REFERENCE

United States Environmental Protection Agency, Title 40 Code of Federal Regulations, Part 58, Appendix D, "Network Design Criteria for Ambient Air Quality Monitoring", Section 2 (e), "General Monitoring Requirements"

IX. APPROVALS

North Carolina Department of Environment and Natural Resources
Division of Air Quality (NCDAQ)

BY: Shirley C. Holman
TITLE: Director, Division of Air Quality
DATE: 6/12/2015

South Carolina Department of Health and Environmental Control (SCDHEC)
Bureau of Air Quality

BY: Myra A. Reed
TITLE: Bureau Chief, Air Quality Bureau
DATE: 6/22/15



DHEC MOA#: 2017-429

MEMORANDUM OF AGREEMENT
ON AIR QUALITY MONITORING FOR CRITERIA POLLUTANTS FOR
THE AUGUSTA - RICHMOND COUNTY
METROPOLITAN STATISTICAL AREA (MSA)

January 2017

Participating Agencies:

Georgia
Georgia Department of Natural Resources
Environmental Protection Division
Air Protection Branch (GA EPD)

South Carolina
Department of Health and Environmental Control (SCDHEC)
Bureau of Air Quality

I. PURPOSE/OBJECTIVES/GOALS

The purpose of this Memorandum of Agreement (MOA) is to renew the Augusta - Richmond County Metropolitan Statistical Area (MSA) Criteria Pollutant Air Quality Monitoring Agreement between SCDHEC and GA EPD (collectively referred to as the "affected agencies") to collectively meet United States Environmental Protection Agency (EPA) minimum monitoring requirements for particles of an aerodynamic diameter of 10 micrometers and less (PM10), particles of an aerodynamic diameter of 2.5 micrometers and less (PM2.5), and ozone; as well as any other criteria pollutant air quality monitoring deemed necessary to meet the needs of the MSA as determined reasonable by all parties. This MOA will establish the terms and conditions of this collective agreement to provide adequate criteria pollutant monitoring for the Augusta - Richmond County MSA as required by 40 CFR 58 Appendix D, Section 2(e).

II. BACKGROUND

The Augusta - Richmond County MSA consists of the following counties: Burke, Columbia, McDuffie, Lincoln, Richmond, Aiken and Edgefield. GA EPD has jurisdiction over Burke, Columbia, McDuffie, Lincoln, and Richmond Counties in Georgia and SCDHEC has jurisdiction over Aiken and Edgefield Counties, South Carolina. The SCDHEC and GA EPD are required by the Clean Air Act to measure for certain criteria pollutants in the ambient air in the Augusta - Richmond County Metropolitan Statistical Area (MSA). The EPA has established minimum monitoring requirements based on the size of the MSA and the quality of the air in the MSA for PM10, PM2.5, and ozone.

40 CFR 58 Appendix D, Section 2(e) states (in part):

“...The EPA recognizes that there may be situations where the EPA Regional Administrator and the affected State or local agencies may need to augment or to divide the overall MSA/CSA monitoring responsibilities and requirements among these various agencies to achieve an effective network design. Full monitoring requirements apply separately to each affected State or local agency in the absence of an agreement between the affected agencies and the EPA Regional Administrator.”

Currently each air pollution control agency (affected agency) conducts monitoring in its respective jurisdiction and coordinates its monitoring with the other air pollution control agency within the MSA.

III. ROLES AND RESPONSIBILITIES

The parties agree to the following terms and conditions:

- SCDHEC, and GA EPD (the “affected agencies”) commit to conducting appropriate monitoring in their respective jurisdictions of the MSA; as needed, to collectively meet EPA minimum monitoring requirements for the entire MSA for PM10, PM2.5, and ozone, as well as any other criteria air pollutant monitoring deemed necessary to meet the needs of the MSA as determined reasonable by all affected agencies. The minimum air quality monitoring requirements (for PM10, PM2.5, and ozone described in 40 CFR 58) for the MSA shall apply to the MSA in its entirety and shall not apply to any sole affected agency within the MSA unless agreed upon by all affected agencies.
- The affected agencies commit to coordinating monitoring “responsibilities and requirements...to achieve an effective network design” regarding criteria air pollutant monitoring conducted in the MSA and commit to communicate unexpected or unplanned changes in monitoring activities within their jurisdictions to the other affected agency. As conditions warrant, the affected agencies may conduct telephone conference calls, meetings, or other

communications to discuss monitoring activities for the MSA. Each affected agency shall inform the other affected agency via telephone or e-mail of any monitoring changes occurring in its jurisdiction of the MSA at its earliest convenience after learning of the need for the change or making the changes. Such unforeseen changes may include evictions from monitoring sites, destruction of monitoring sites due to natural disasters, or similar occurrences that result in an extended (greater than 1 quarter) or permanent change in the monitoring network. At least once a year in the second quarter of the year or before June 15th, each affected agency shall make available to the other affected agency, a copy of its proposed monitoring plan for its jurisdiction within the MSA for the next year.

- Each party reserves the right to revoke or terminate this MOA at any time and for any reason by giving thirty (30) days written notice prior to the date of termination.

IV. LIMITATIONS

A. All commitments made in this MOA are subject to the availability of appropriated funds and each party's budget priorities. Nothing in this MOA, in and of itself, obligates SCDHEC or GA EPD to expend appropriations or to enter into any contract, assistance agreement, interagency agreement or other financial obligation.

B. This MOA is neither a fiscal nor a funds obligation document. Any endeavor involving reimbursement or contribution of funds between parties to this MOA will be handled in accordance with applicable laws, regulations, and procedures, and will be subject to separate subsidiary agreements that will be effected in writing by representatives of the parties.

C. Except as provided in Section III, this MOA does not create any right or benefit, substantive or procedural, enforceable by law or equity against SCDHEC or GA EPD, their officers or employees, or any other person. This MOA does not direct or apply to any person outside SCDHEC or GA EPD.

V. PROPRIETARY INFORMATION AND INTELLECTUAL PROPERTY

No proprietary information or intellectual property is anticipated to arise out of this MOA.

VI. POINTS OF CONTACT

The following individuals are designated points of contact for the MOA:

GA EPD: DeAnna Oser
GA EPD Ambient Monitoring Program
4244 International Parkway, Suite 120
Atlanta, GA 30354

DeAnna.Oser@dnr.ga.gov
Voice: (404) 363-7004
FAX: (404) 363-7100

SCDHEC: Micheal Mattocks
SCDHEC Bureau of Environmental Services
8231 Parklane Road
Columbia, SC 29223

mattocm@dhec.sc.gov
Voice: (803) 896-0902
FAX: (803) 896-0980

In the event that a point of contact needs to be changed, notification may be made via email to the other parties.

VII. MODIFICATION/DURATION/TERMINATION

This MOA will be effective when signed by all parties. This MOA may be amended at any time by the mutual written consent of the parties. The parties will review this MOA at least once every 10 years to determine whether it should be revised, renewed, or cancelled. This MOA may be revoked or terminated by an affected agency at any time and for any reason by giving thirty (30) days written notice prior to the date of termination.

VIII. REFERENCE

United States Environmental Protection Agency, Title 40 Code of Federal Regulations, Part 58, Appendix D, "Network Design Criteria for Ambient Air Quality Monitoring", Section 2 (e), "General Monitoring Requirements."

IX. APPROVALS

**Georgia Department of Natural Resources, Environmental Protection Division
(GA EPD)**

BY: Richard J. Riley
TITLE: Director
DATE: 2/21/17

**South Carolina Department of Health and Environmental Control (SCDHEC)
Bureau of Air Quality**

BY: Hubert D. Jones
TITLE: Bureau Chief
DATE: 03/02/17

THIS AGREEMENT IS NOT OFFICIAL AND BINDING UNTIL SIGNED BY THE
DHEC CONTRACTS MANAGER.

Francine J. Miller
Francine Miller
DHEC Contracts Manager
DATE: 3-6-17