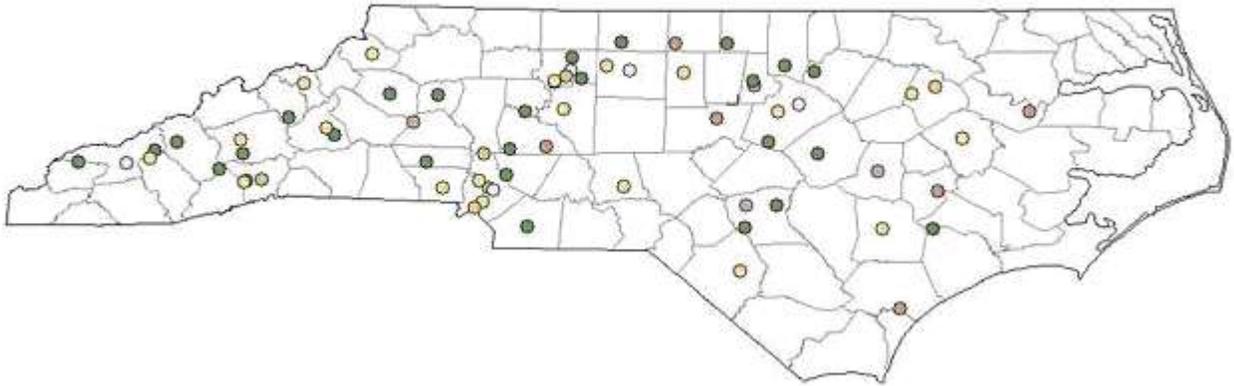


2010 ANNUAL MONITORING NETWORK PLAN FOR THE NORTH CAROLINA DIVISION OF AIR QUALITY

VOLUME 1

NETWORK DESCRIPTIONS



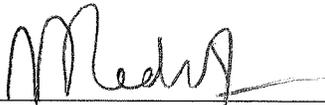
July 1, 2010

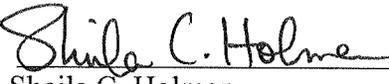
North Carolina Division of Air Quality
A Division of the North Carolina Department
of Environment and Natural Resources
Mail Service Center 1641
Raleigh, North Carolina 27699-1641



CERTIFICATION

By the signatures below, the North Carolina Division of Air Quality (NC-DAQ) certifies that the information contained in the 2010 Annual Monitoring Network Plan is complete and accurate at the time of submittal to EPA Region 4. However, due to circumstances that may arise during the sampling year, some network information may change. A notification of change and a request for approval will be submitted to EPA region 4 at that time.

Signature  Date 7/1/10
Donald D. Redmond, Jr.
Ambient Monitoring Section Chief, NC-DAQ

Signature  Date 7/1/10
Sheila C. Holman
Director, NC-DAQ

I. Introduction

The North Carolina Division of Air Quality (NC-DAQ) works with the state's citizens to protect and improve outdoor, or ambient, air quality in North Carolina for the health and benefit of all. To carry out this mission, the NC-DAQ has programs for monitoring air quality, permitting and inspecting air emissions sources, developing plans for improving air quality, and educating and informing the public about air quality issues.

The NC-DAQ, which is part of the N.C. Department of Environment and Natural Resources (DENR), also enforces state and federal air pollution regulations. In North Carolina, the General Assembly enacts state air pollution laws, and the Environmental Management Commission adopts most regulations dealing with air quality. In addition, the U.S. Environmental Protection Agency (EPA) has designated the NC-DAQ as the lead agency for enforcing federal laws and regulations dealing with air pollution in North Carolina.

The Ambient Monitoring Section (AMS) of the NC-DAQ operates an air quality-monitoring program for the state. The AMS is responsible for measuring levels of regulated pollutants in the ambient (outdoor) air by maintaining a network of 60 monitoring stations across the state and measuring the concentration of pollutants such as ozone, lead, particles (dust), nitrogen oxides, sulfur dioxide, and carbon monoxide. The AMS provides these monitoring services in accordance with U.S. EPA regulatory requirements. The criteria pollutant monitoring system is designed to make measurements to assess compliance with the National Ambient Air Quality Standards (NAAQS) as set by the EPA. The NAAQS define air pollutant concentration level thresholds judged necessary to protect the public health and welfare.

The law as defined in Title 40 of the Code of Federal Regulations (CFR) Part 58.10 *Annual Monitoring Network Plan and Periodic Network Assessment* requires an annual monitoring network plan. This plan must provide the following information for each monitoring station in the network:

- The Air Quality System (AQS) site identification number;
- The location, including street address and geographical coordinates;
- The sampling and analysis method(s) for each measured parameter;
- The operating schedules for each monitor;
- Any proposals to remove or move a monitoring station within a period of 18 months following plan submittal;
- The monitoring objective and spatial scale of representativeness for each monitor as defined in appendix D to this part;
- The identification of any sites that are suitable and sites that are not suitable for comparison against the annual fine particle (PM_{2.5}) NAAQS as described in §58.30; and
- The Metropolitan Statistical Area (MSA), Core-Based Statistical Area (CBSA), Combined Statistical Area (CSA) or other area represented by the monitor.
- The designation of any Pb monitors as either source-oriented or nonsource-oriented according to Appendix D to 40 CFR Part 58.

- Any source-oriented monitors for which a waiver has been requested or granted by the EPA Regional Administrator as allowed for under paragraph 4.5(a)(ii) of Appendix D to 40 CFR part 58.
- Any source-oriented or nonsource-oriented site for which a waiver has been requested or granted by the EPA Regional Administrator for the use of Pb-PM10 monitoring in lieu of Pb-TSP monitoring as allowed for under paragraph 2.10 of Appendix C to 40 CFR part 58.

This plan contains information on the criteria pollutant monitoring networks operated by the NC-DAQ and continues in the following sections outlined below:

- II. Summary of Proposed Changes
- III. Carbon Monoxide (CO) Monitoring Network
- IV. Sulfur Dioxide Monitoring Network
- V. Ozone Monitoring Network
- VI. Particle Monitoring Network for Particles with Aerodynamic Diameters of 10 Micrometers or Less (PM₁₀)
- VII. Fine Particle (PM_{2.5}) Monitoring Network
- VIII. Lead Monitoring Network
- IX. NC-DAQ NCore Monitoring Network
- X. EPA Approval Dates for Quality Management Plan and Quality Assurance Project Plans
- XI. Equipment Condition of North Carolina Monitoring Sites

A table summarizing the monitoring network and providing the types of monitors operated at each station is provided in Appendix A. Summary of Monitoring Sites and Types of Monitors. The annual network review forms filled out each year for each of the monitoring sites operated by the NC-DAQ and the Western North Carolina Regional Air Quality Agency are attached as an appendix to each regional section in Volume 2 and are also available for review at the Division of Air Quality in room 1E243, 2728 Capital Boulevard, Raleigh, North Carolina, 27604. The Mecklenburg County Air Quality 2010 Annual Monitoring Network Plan is provided in Appendix B. The Forsyth County Environmental Affairs Department 2010 Annual Monitoring Network Plan is provided in Appendix C.

Volume II of the annual network plan discusses the monitoring network by Metropolitan Statistical Areas (MSAs) organized by the area of the state in which they are located. The Clean Air Act divided North Carolina into eight Air Quality Control Regions (AQCR): The Western Mountains, the Eastern Mountains, Metropolitan Charlotte, the Northern Piedmont, the Eastern Piedmont, the Sand Hills, the Northern Coastal Plain and the Southern Coastal Plain. The day-to-day operations of the monitors in each of these AQCRs are managed by regional office monitoring staff located in one of the seven regional Division of Air Quality Offices located in Asheville, Mooresville, Winston-Salem, Raleigh, Fayetteville, Washington, and Wilmington. Volume II of the monitoring plan discusses the monitoring network for each AQCR starting with the Western Mountains in the west and moving to the Southern Coastal Plain in the east. Each AQCR is subdivided into sections based on Metropolitan Statistical Areas. Volume II discusses the current monitoring as well as future monitoring plans or needs.

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II. Summary of Proposed Changes

Table 1 presents a summary of proposed changes listed by Metropolitan Statistical Area (MSA) and AQS Site Identification Number. Table 2 contains a list of fastest growing counties in North Carolina for reference in the discussions in this section and the following sections of the report, which described monitoring changes required because of population growth in the MSA. The discussion in this section follows the same organization as the table. The last portion of this discussion explains the projected impact on the fine particle-monitoring network of potential changes to the fine particle monitoring method used for determination of compliance with the National Ambient Air Quality Standards (NAAQS) and discusses the status of some of the special studies conducted by the NC-DAQ.

A. Changes to Monitoring in the Charlotte-Gastonia-Concord MSA

Changes to the monitors operated by Mecklenburg County Air Quality are discussed in Appendix D. The only changes discussed here are those applying to the two monitoring sites operated by the NC-DAQ: Grier Middle School (37-071-0016) and Monroe Middle School (37-179-0003).



Figure 1. Grier Middle School Fine Particle Monitoring Site (37-071-0016)

At the **Grier Middle School** (37-071-0016) site the NC-DAQ operates a one-in-three day fine particle FRM monitor and a continuous fine particle monitor. A picture of the site is provided in Figure 1. This fine-particle monitoring site is one of four fine-particle monitoring sites for the MSA. 40 CFR 58 Appendix D requires the Charlotte-Gastonia-Concord MSA to have only two fine-particle monitoring sites. The site is collocated with wind speed and wind direction sensors. In 2012 the NC-DAQ plans to add a background PM10 or PM10-2.5 monitor to the site that will run every third year to provide data for Prevention of Significant Deterioration modeling for industrial expansion. Long term plans (2011 or later) for this site are to discontinue the manual fine particle monitor and only maintain a continuous fine particle monitor at the site.

**Table 1. Summary of Proposed Changes to the North Carolina Monitoring Network
Charlotte-Gastonia-Concord Metropolitan Statistical Area**

| AQS Site Id Number | Site Name | Monitor or Pollutant | Proposed Change | Time Frame |
|------------------------|----------------------------------|--|---|-------------------|
| 370710016 | Grier Middle School/ Gastonia | Fine Particles (PM _{2.5}) | Shut down manual PM _{2.5} FRM monitor when continuous PM _{2.5} monitor is approved as ARM | 1/1/2011 or later |
| | | PM ₁₀ /PM _{10-2.5} | PM ₁₀ or PM _{10-2.5} Special Purpose Background Monitoring will begin | 1/1/2012 |
| 371190041 ^d | Garinger | Lead | Low volume PM ₁₀ lead monitoring will begin | 1/1/2011 |
| 371190042 ^d | Montclair | Lead | Low volume PM ₁₀ lead monitoring will begin | 1/1/2011 |

Raleigh-Cary Metropolitan Statistical Area

| AQS Site Id Number | Site Name | Monitor or Pollutant | Proposed Change | Time Frame |
|--------------------|---------------|-------------------------------------|---|------------------------|
| 370690001 | Franklinton | NO ₂ | Background NO ₂ monitoring will begin if site is relocated. | 1/1/2012 |
| | | Ozone | The ozone monitor will either be relocated or shut down because of construction of a road next to the site. | 7/1/2010 |
| 371010002 | West Johnston | Fine Particles (PM _{2.5}) | A continuous PM _{2.5} monitor will be added to this site in the future to meet minimum monitoring requirements for the MSA when the PM _{2.5} standard is lowered. | 1/1/2012 or later |
| 371830014 | Millbrook | Fine Particles (PM _{2.5}) | Either the special purpose BAM or NCore TEOM continuous fine particle monitor may end at the end of the year when the BAM study ends | 12/31/2010 - 3/31/2011 |
| | | | The FRM monitoring schedule will reduce to 1-in-3 day when the BAM study ends | |
| | | Lead | Low volume PM ₁₀ lead monitoring will begin | 1/1/2011 |

Greensboro-High Point Metropolitan Statistical Area

| AQS Site Id Number | Site Name | Monitor or Pollutant | Proposed Change | Time Frame |
|------------------------|------------|-------------------------------------|--|-------------------|
| 370810013 | Mendenhall | PM ₁₀ | The PM ₁₀ Wedding monitor will be upgraded to a 2025 sequential monitor to allow PM ₁₀ and PM _{10-2.5} measurements to be obtained. | 1/1/2011 or later |
| | | Fine Particles (PM _{2.5}) | The collocated monitor will be shut down | 12/31/2010 |
| | | | The primary monitor sample schedule will be reduced to 1-in-3 day. | 12/31/2010 |
| 370810014 ^c | Colfax | WS/WD | A 10 meter tower with wind speed and wind direction sensors will be added to the site in 2010 | 6/30/2010 |
| 37-1570099 | Bethany | NO ₂ | Background NO ₂ monitoring will begin | 1/1/2012 |
| | | SO ₂ | Background SO ₂ monitoring will begin | 1/1/2011 |

Durham-Chapel Hill Metropolitan Statistical Area

| AQS Site Id Number | Site Name | Monitor or Pollutant | Proposed Change | Time Frame |
|------------------------|---------------|---|---|------------|
| 370630015 ^d | Durham Armory | Coarse Particles (PM _{10-2.5}) & PM ₁₀ | Start coarse particle (PM _{10-2.5}) monitoring to meet minimum PM ₁₀ monitoring requirements | 1/1/2011 |
| | | WS/WD | A 10 meter tower with wind speed and wind direction sensors will be added to the site | 10/1/2010 |
| 371450003 | Bushy Fork | Ozone | Monitor may be relocated closer to Burlington if EPA requires ozone monitoring there | 3/1/2012 |

Table 1. Summary of Proposed Changes to the North Carolina Monitoring Network

Winston-Salem Metropolitan Statistical Area

| AQS Site Id Number | Site Name | Monitor or Pollutant | Proposed Change | Time Frame |
|--------------------|------------|----------------------|---|------------|
| 370590003 | Mocksville | Ozone | Site started-up to replace the Cooleemee site | 4/1/2010 |

Asheville Metropolitan Statistical Area

| AQS Site Id Number | Site Name | Monitor or Pollutant | Proposed Change | Time Frame |
|--------------------|------------------|----------------------|--|------------|
| 370870004 | Waynesville H.D. | Ozone | Site will shut down at the end of the season | 10/31/2010 |
| 370870008 | Junaluska E.S. | Ozone | Site will replace the Waynesville Health Dept site | 4/1/2011 |

Hickory Metropolitan Statistical Area

| AQS Site Id Number | Site Name | Monitor or Pollutant | Proposed Change | Time Frame |
|--------------------|-----------|----------------------|--|------------|
| 370270003 | Lenoir | NO ₂ | Background NO ₂ monitoring may begin | 1/1/2012 |
| | | SO ₂ | Background SO ₂ monitoring will begin | 1/1/2013 |

Fayetteville Metropolitan Statistical Area

| AQS Site Id Number | Site Name | Monitor or Pollutant | Proposed Change | Time Frame |
|--------------------|--------------|-------------------------------------|--|-------------------|
| 370510009 | William Owen | Fine Particles (PM _{2.5}) | Add precision TEOM monitor if the TEOM monitor is approved as an ARM | 1/1/2011 or later |
| 370511003 | Golfview | NO ₂ | Background NO ₂ monitoring may begin | 1/1/2014 |

Wilmington Metropolitan Statistical Area

| AQS Site Id Number | Site Name | Monitor or Pollutant | Proposed Change | Time Frame |
|--------------------|--------------|-------------------------------------|---|---------------------|
| 371290002 | Castle Hayne | Fine Particles (PM _{2.5}) | The special purpose PM _{2.5} FRM monitor and either the TEOM or BAM will be shutdown | 6/30/2011-9/30/2011 |
| | | | The continuous PM _{2.5} monitor may be relocated to another site in Wilmington depending on the status of the Titan permit and whether the NC-DAQ determines the site no longer meets siting criteria because of Titan | 1/1/2012-1/12013 |
| | | NO ₂ | Background NO ₂ monitoring may begin | 1/1/2013 |
| | | Ozone | The ozone monitor may be relocated to another site in Wilmington depending on the status of the Titan permit and whether the NC-DAQ determines the site no longer meets siting criteria because of Titan | 3/1/2012 |
| TBD | TBD | Ozone | A second ozone monitor for the MSA will be deployed in Brunswick County near Leland | 4/1/2011 |

Greenville Metropolitan Statistical Area

| AQS Site Id Number | Site Name | Monitor or Pollutant | Proposed Change | Time Frame |
|--------------------|---------------------------------|----------------------|---|------------|
| 371470006 | Pitt County Agricultural Center | WS/WD | A 10 meter tower with wind speed and wind direction sensors will be added to the site in 2010 | 9/1/2010 |

Rocky Mount Metropolitan Statistical Area

| AQS Site Id Number | Site Name | Monitor or Pollutant | Proposed Change | Time Frame |
|--------------------|----------------|-------------------------------------|--|-------------------|
| 370650004 | Springfield Rd | Fine Particles (PM _{2.5}) | A continuous fine particle monitor (TEOM) will be added to this site | 6/1/2010 or later |

Burlington Metropolitan Statistical Area

| AQS Site Id Number | Site Name | Monitor or Pollutant | Proposed Change | Time Frame |
|--------------------|----------------------|-------------------------------------|--|-------------------|
| 370010002 | Hopedale/ Burlington | Fine Particles (PM _{2.5}) | Shut down manual PM _{2.5} FRM monitor if the continuous PM _{2.5} monitor is approved as an ARM | 1/1/2011 or later |

Table 1. Summary of Proposed Changes to the North Carolina Monitoring Network

Goldsboro Metropolitan Statistical Area

| AQS Site Id Number | Site Name | Monitor or Pollutant | Proposed Change | Time Frame |
|---------------------------|-----------------------|-------------------------------------|--|-------------------|
| 371910005 | Dillard/ Goldsboro | Fine Particles (PM _{2.5}) | Shut down manual PM _{2.5} FRM monitor if the continuous PM _{2.5} monitor is approved as an ARM | 1/1/2011 or later |

Not In A Metropolitan Statistical Area

| AQS Site Id Number | Site Name | Monitor or Pollutant | Proposed Change | Time Frame |
|---------------------------|--------------------------|--|---|------------------------|
| 370330001 ^c | Cherry Grove | PM ₁₀ /PM _{10-2.5} | PM ₁₀ or PM _{10-2.5} Special Purpose Background Monitoring will begin | 1/1/2013 |
| | | Fine Particles (PM _{2.5}) | Shut down manual PM _{2.5} FRM monitor if the continuous PM _{2.5} monitor is approved as an ARM | 1/1/2011 or later |
| 370610002 | Kenansville | PM ₁₀ | The PM ₁₀ monitor will be shut down and converted to a special purpose background monitor that operates every three years | 12/31/2010 |
| 371070004 | Lenoir community College | Fine Particles (PM _{2.5}) | Manual PM _{2.5} FRM monitor maybe moved to another location on the property | 7/1/2010 or later |
| | | | Manual PM _{2.5} FRM monitor may be converted to a rotating monitor that samples every 2 years out of 4 | 12/31/2010 or later |
| | | Ozone | Monitor will be relocated on the property | 7/1/2010 |
| 371110004 | East Marion | Fine Particles (PM _{2.5}) | Shut down manual PM _{2.5} FRM and collocated monitor if the continuous PM _{2.5} monitor is approved as an ARM | 1/1/2010 or later |
| | | PM ₁₀ /PM _{10-2.5} | PM ₁₀ or PM _{10-2.5} Special Purpose Background Monitoring will begin | 1/1/2011 |
| 371170001 | Jamesville | Fine Particles (PM _{2.5}) | Shut down manual PM _{2.5} FRM monitor if the continuous PM _{2.5} monitor is approved as an ARM or shut down both FRM & TEOM and replace them with a BAM | 1/1/2011 or later |
| | | NO ₂ | Background NO ₂ monitoring may begin | 1/1/2014 |
| | | PM ₁₀ /PM _{10-2.5} | PM ₁₀ or PM _{10-2.5} Special Purpose Background Monitoring will begin | 1/1/2012 |
| 371230001 | Candor | PM ₁₀ /PM _{10-2.5} | PM ₁₀ or PM _{10-2.5} Special Purpose Background Monitoring will begin | 1/1/2011 |
| 371590021 | Rockwell | Carbon Monoxide | Monitor will convert from a Thermo 48S to a Thermo 48i (RFCA-0981-054) | 1/1/2011 or earlier |
| | | Reactive Oxides of Nitrogen | Monitor will convert from a TECO 42S to a 42 TLE | |
| | | Sulfur Dioxide | Add year-round trace-level sulfur dioxide monitor for fine particle precursor monitoring | |
| 371630001 | Clinton Crops | Ammonia | Continuous Monitor may shut down | As early as 12/31/2010 |
| | | | NC DAQ may begin passive ammonia monitoring using Alphas | 7/1/2010 or later |
| 371730002 | Bryson City | Fine Particles (PM _{2.5}) | Shut down manual PM _{2.5} monitor when TEOM monitor is approved as an ARM | 1/1/2011 or later |
| | | | End 20 month BAM study | 12/31/2010 |
| | | SO ₂ | The SO ₂ monitor was shut down | 4/1/2010 |

Table 1. Summary of Proposed Changes to the North Carolina Monitoring Network

| | | | | |
|-----------|-------|-------------------------------------|---|-------------------|
| 371890003 | Boone | Fine Particles (PM _{2.5}) | Add a continuous PM _{2.5} monitor when one becomes available | 1/1/2011 or later |
|-----------|-------|-------------------------------------|---|-------------------|

Table 2. Alphabetical List of Fastest Growing Counties in North Carolina based on population change between either April 1, 2000 or July 1, 2008 and July 1, 2009.

| County Name | Population Estimates July 1, 2009 | State Ranking of Counties by Population Estimate | Reason for Selection as one of the Fastest Growing Counties in North Carolina |
|--------------------|--|---|---|
| Brunswick | 107,062 | 25 | Estimated growth of 2.8 % between July 1, 2008, and July 1, 2009, and 46 % between April 1, 2000 and July 1, 2009; 38 th fastest growing county (with over 10,000 people) in the nation. |
| Camden | 9,730 | 97 | Estimated growth of 41 % between April 1, 2000, and July 1, 2009. |
| Cumberland | 315,207 | 5 | Estimated growth of 4,521 people between July 1, 2008, and July 1, 2009. |
| Currituck | 24,216 | 75 | Estimated growth of 33 % between April 1, 2000 and July 1, 2009; 98 th fastest growing county (with over 10,000 people) in the nation. |
| Durham | 269,706 | 6 | Estimated growth of 6,658 people between July 1, 2008, and July 1, 2009, and 46,392 people between April 1, 2000, and July 1, 2009. |
| Forsyth | 359,638 | 4 | Estimated growth of 4,498 people between July 1, 2008, and July 1, 2009, and 53,571 people between April 1, 2000, and July 1, 2009. |
| Guilford | 480,362 | 3 | Estimated growth of 6,254 people between July 1, 2008, and July 1, 2009, and 59,314 people between April 1, 2000, and July 1, 2009. |
| Harnett | 115,761 | 23 | Estimated growth of 3.3 % between July 1, 2008, and July 1, 2009. |

Table 1. Summary of Proposed Changes to the North Carolina Monitoring Network

| | | | |
|-------------|---------|----|--|
| Hoke | 45,148 | 57 | Estimated growth of 3.4 % between July 1, 2008, and July 1, 2009, and 34.0 % between April 1, 2000, and July 1, 2009; 95 th fastest growing county (with more than 10,000 people) in the nation. |
| Johnston | 168,525 | 13 | Estimated growth of 5,214 people and 3.2 % between July 1, 2008, and July 1, 2009, and 46,559 people and 38.0 % between April 1, 2000, and July 1, 2009; 66 th fastest growing county (with more than 10,000 people) in the nation. |
| Mecklenburg | 913,639 | 1 | Estimated growth of 21,183 people between July 1, 2008, and July 1, 2009, and 218,261 people between April 1, 2000, and July 1, 2009. |
| Union | 198,645 | 9 | Estimated growth of 5,245 people and 2.7 % between July 1, 2008, and July 1, 2009, and 74,868 people and 60 % between April 1, 2000, and July 1, 2009; 14 th fastest growing county (with more than 10,000 people) in the nation. |
| Wake | 897,214 | 2 | Estimated growth of 29,146 people and 3.4 % between July 1, 2008, and July 1, 2009, and 269,335 people and 43.0 % between April 1, 2000, and July 1, 2009; 45 th fastest growing county (with more than 10,000 people) in the nation. |

B. Changes to Monitoring in the Raleigh-Cary MSA

At the **Franklinton** (37-069-0001) site the NC-DAQ operates a seasonal ozone monitor. The site is located at a school. In July 2010, the school will be adding a road within 2 meters of the monitoring shelter. As a result the NC-DAQ will need to move the shelter and monitor to another location on the school grounds. As shown in Figure 2 there is space at the existing site to move the monitor back so that it would be far enough away from the road. The NC-DAQ will move this monitor in July. A one-in-three year special purpose background nitrogen dioxide monitor may be added to the site in 2012. This monitor will collect data to use for prevention of significant deterioration modeling for industrial expansion.



Figure 2. The Franklinton Ozone Monitoring Site

At the **West Johnston** (37-101-0002) site the NC-DAQ operates a seasonal ozone monitor. A picture of the site is provided in Figure 3. In January 2009, a one-in-three day fine particle monitor was added to the site to meet the minimum monitoring requirements for the Raleigh-Cary MSA. In the future, the NC-DAQ will be adding a fine particle continuous monitor to the site to meet increased monitoring requirements that will occur if the fine particle standard is lowered in 2011.



Figure 3. West Johnson Ozone and Fine Particle Monitoring Site

At the **Millbrook** (37-183-0014) site the NC-DAQ operates a year-round ozone monitor, a one-in-one day fine particle FRM monitor, a one-in-six day collocated fine particle FRM monitor, one-in-three day manual speciation monitors, two continuous fine particle monitors – one TEOM and one BAM, a one-in-three day low-volume manual PM₁₀ monitor, a trace-level sulfur dioxide monitor, and trace-level carbon monoxide and reactive oxides of nitrogen monitors. In addition the NC-DAQ also operates continuous fine particle monitors for sulfate, nitrate and black carbon at this site. A picture of the site is provided in Figure 4. Because the Millbrook site is an NCore site, the NC-DAQ will begin analyzing the low-volume PM₁₀ samples for lead, starting January 1, 2011 or sometime thereafter, whenever EPA designates monitoring to begin. The NC-DAQ is evaluating a fine particle Beta Attenuation Monitor (BAM) at the site. The BAM was installed on March 9, 2009. Due to operational problems, it did not begin reporting data until July 1, 2009, and will operate as a special purpose monitor through the end of 2010 or early 2011. During July 2010, the NC-DAQ will also install a 10-meter tower suitable for supporting the weight of the converter for the reactive oxides of nitrogen monitor so that the converter can be installed at a height of 10 meters as required for NCore sites.



Figure 4. Millbrook Proposed NCore Monitoring Site

C. Changes to Monitoring in the Greensboro-High Point MSA

The Greensboro-High-Point MSA has three monitoring sites: one combined ozone and fine particle monitoring site at Mendenhall School (37-081-0013) in Greensboro, one fine particle monitoring site at Colfax (37-081-0014) and one ozone site at Bethany School in Rockingham County. Based on EPA's review of the 2008

monitoring plan, the NC-DAQ made changes to the Mendenhall site on January 1, 2009 and proposes additional changes in 2010. Sometime in 2010 changes will also occur at the Colfax monitoring site. The NC-DAQ also proposes to add the Bethany site to the rotating industrial expansion sulfur dioxide and nitrogen dioxide monitoring sites.

At the **Mendenhall** (37-081-0013) site the NC-DAQ operates a seasonal ozone monitor, a one-in-one-day fine particle monitor, a one-in-six day collocated fine particle monitor, a continuous fine particle monitor, and a one-in-six day PM₁₀ monitor. A picture of the site is provided in Figure 5. The NC-DAQ proposes shutting down the one-in-six day collocated fine particle monitor and converting the one-in-one day fine particle monitor to a one-in-three day fine particle monitor sometime between July 1, 2010 and December 31, 2010.



Figure 5. Mendenhall Ozone and Particle Monitoring Site (37-081-0013)



Figure 6. Colfax Fine Particle Monitoring Site

At the **Colfax** (37-081-0014) site the NC-DAQ operates a one-in-three day fine particle monitor. The NC-DAQ plans to add a 10-meter tower with wind speed and wind direction sensors to the site in 2010. A picture of the site is provided in Figure 6.

At the **Bethany** monitoring site in Rockingham County the NC-DAQ operates a seasonal ozone monitor. In 2011 the NC-DAQ plans to expand the industrial expansion monitoring program for sulfur dioxide by adding a monitor to this site. The NC-DAQ is also proposing that the Rockingham site be used as one of the background nitrogen dioxide sites for industrial expansion monitoring. If the background nitrogen dioxide

proposal is funded, the NC-DAQ plans to operate the nitrogen dioxide monitor on a one-in-three year schedule starting January 1, 2012.



Figure 7. The Bethany Ozone Monitoring Site

D. Changes to Monitoring in the Durham-Chapel Hill MSA

The Durham-Chapel Hill MSA has three monitoring sites: one ozone-monitoring site at Bushy Fork (37-145-0003) in Person County and two combined ozone and fine particle monitoring sites at Pittsboro (37-037-0004) in Chatham County and the Durham Armory (37-063-0015) in Durham County. The 2006 monitoring regulations require the Durham-Chapel Hill MSA to have only two ozone monitors and one fine particle monitor. However, as indicated in

Table 2, Durham County (one of the four counties making up the MSA) is among one of the fastest growing counties in the state. As a result, the population estimate for the Durham-Chapel Hill MSA exceeded 500,000 people in July 2009. Crossing the 500,000 estimated population threshold requires additional monitoring in the Durham-Chapel Hill MSA: a PM₁₀ monitor will be required now and in 2013 a near-roadway nitrogen dioxide monitor will be required.

At the **Durham Armory** (37-063-0015) site, the NC-DAQ operates a seasonal ozone monitor, a one-in-three day fine particle FRM monitor, and a continuous fine particle monitor. The site is shown in Figure 8. This fine particle monitoring site is the design value site for the MSA.



Figure 8. The Durham Armory Ozone and Fine Particle Site (37-063-0015)

The site, located on Duke Street north of downtown Durham, started monitoring for ozone and ozone precursors in 2007. The monitors located at this site were relocated from the other side of Duke Street to create a monitoring location where the ozone and ozone precursor monitors could be collocated with the monitors from the Durham Health particle monitoring site. The original Duke Street site was located in a gravel-covered area that did not meet the siting criteria for particle monitors. At the end of 2007 a manual and a continuous fine particle monitor began sampling at the Durham Armory site. In 2010 the NC-DAQ also plans to install a 10-meter tower with wind speed and direction sensors.

At the end of the ozone precursor season on September 15, 2009, the NC-DAQ shut down the high-sensitivity carbon monoxide and reactive oxides of nitrogen monitors at this site. The NC-DAQ plans to shut down an extra collocated 2025 fine particle FRM at the Mendenhall site in Greensboro. When this manual fine particle monitor becomes available, the NC-DAQ plans to deploy it at the Durham Armory site as a PM₁₀ monitor to measure ambient PM₁₀ concentrations and allow coarse particle concentrations to be determined.

At the **Bushy Fork** (37-145-0003) site the NC-DAQ operates a seasonal ozone monitor. A picture of the site is provided in Figure 9. The Bushy Fork site was established as the downwind site for the Burlington MSA. This site is the third ozone-monitoring site in the Durham-Chapel Hill MSA. 40 CFR 58 Appendix D requires the Durham-Chapel Hill MSA to have two ozone monitoring sites. Because this site is not required by the EPA and is a single pollutant site, the NC-DAQ is considering relocating this site closer to the Burlington MSA if EPA revises the ozone monitoring network requirements to require the Burlington MSA to have an ozone monitor.



Figure 9. Bushy Fork Ozone Monitoring Site (37-145-0003)

E. Changes to Monitoring in the Winston-Salem MSA

The Winston-Salem MSA has six monitoring sites: the NC-DAQ currently operates one ozone monitoring site and the Forsyth County Environmental Affairs Department (FCEAD) operates five monitoring sites described in Appendix C. The only changes discussed here are those applying to the ozone monitoring site operated by the NC-DAQ: Mocksville (37-059-0003).

In 2009 the NC-DAQ was informed that the **Cooleemee** (37-059-0002) ozone monitor would need to be relocated at the end of the 2009 ozone monitoring season. The site was located at a drinking water treatment facility and the host site informed the NC-DAQ that the area where the monitor was located was needed for an emergency generator. As a result the NC-DAQ shut down the Cooleemee site on 10/31/2009. The ozone monitor was relocated to a new site in Davie County located in **Mocksville** (37-059-0003). The Mocksville ozone monitoring site is shown Figure 10.



Figure 10. The Mocksville Ozone Monitoring Site

F. Changes to Monitoring in the Asheville MSA

The Asheville MSA has four monitoring sites: The NC-DAQ currently operates two monitoring sites and the Western North Carolina Regional Air Quality Agency (WNCRAQA) operates two. These sites are located at the Board of Education (37-021-0034) and Bent Creek (37-021-0024), the Waynesville Health Department (37-087-0004) and Recreation Center (37-087-0012). The Allen Street site in Hendersonville (37-089-1006) was shut down on December 31, 2009. In addition to these four sites located in the Asheville MSA, the NC-DAQ operates two additional high-elevation sites in Haywood County located in or near Class 1 Areas: Fry Pan (in the Shining Rock Wilderness Area) and Purchase Knob (in the Great Smoky Mountains National Park). Only the one site with proposed changes is discussed further in this section.

At the **Waynesville Health Department** (37-087-0004) site the NC-DAQ operates a seasonal ozone monitor. The site is shown in Figure 11. This site is one of two urban ozone monitoring sites in the MSA. 40 CFR 58 Appendix D requires the Asheville MSA to have two ozone monitoring sites. The NC-DAQ will be evicted from this site sometime in 2011 because the hosts are moving to a new location and selling the building.



Figure 11. The Waynesville Health Department Ozone Monitoring Site



Figure 16. Looking West from the Proposed Site



Figure 17. Looking South from the proposed site

G. Changes to Monitoring in the Hickory MSA

The Hickory MSA has three monitoring sites: two ozone-monitoring sites at Lenoir (37-027-0003) and Waggin Trail (37-051-1003) in Taylorsville and one particle monitoring site at the Hickory Water Tower (37-035-0004) in Hickory. Only the Lenoir site is discussed in this section.

At the **Lenoir** (37-027-0004) site the NC-DAQ operates a seasonal ozone monitor. The NC-DAQ is proposing to expand the industrial expansion monitoring program to Lenoir by adding a one-in-three year special purpose sulfur dioxide monitor to the site in 2013 and a special purpose nitrogen dioxide monitor to the site in 2012, if funding for the nitrogen dioxide industrial expansion network is obtained.

H. Changes to Monitoring in the Fayetteville MSA



Figure 18. The William Owen Particle Monitoring Site (37-051-0009)

The Fayetteville MSA has three monitoring sites: two ozone-monitoring sites at Wade (37-051-0008) and Golfview (37-051-1003) in Hopedale and one particle-monitoring site at William Owen School (37-051-0009) in Fayetteville. The NC-DAQ is proposing changes to the William Owen monitoring site shown in Figure 18 and to the Golfview monitoring site.

The only proposed change to the William Owen site is that when the TEOM is approved as an ARM, the William Owen site will be the collocated TEOM site for the TEOM ARM network. This change will occur January 1, 2011, or later depending on whether the ARM study is successful.

The change proposed to the Golfview monitoring site is the addition of a special purpose nitrogen dioxide monitor that would operate on a one-in-three year schedule to provide data for Prevention of Significant Deterioration modeling for the purposes of industrial expansion. This special purpose monitor may begin operation in 2014 if funding is approved for the nitrogen dioxide industrial expansion network.

I. Changes to Monitoring in the Wilmington MSA

The Wilmington MSA has two monitoring sites: one sulfur dioxide monitoring site in New Hanover County (37-129-0006) and one ozone and fine particle monitoring site at Castle Hayne (37-129-0002). The NC-DAQ proposes changes to the Castle Hayne monitoring site shown in

Figure 19 and will need to add an additional ozone monitoring site to the MSA to meet the minimum monitoring requirements in 40 CFR 58 Appendix D.

At the **Castle Hayne** (37-129-0002) site the NC-DAQ operates an ozone monitor, a one-in-three day fine particle FRM monitor, and two continuous fine particle monitors. Because of its location on the coastal plain, the NC-DAQ is using this site as one of three sites for a 20 to 22 month BAM study.



Figure 19. Castle Hayne Ozone and Particle Monitoring Site (37-129-0002)

For the BAM study, the NC-DAQ added a Special Purpose Beta Attenuation Monitor (BAM) and a Special Purpose one-in-three day FRM fine particle monitor to the site in early 2010. At this time the TEOM was also removed from the building and placed in a shelter on the ground so that all three monitors are at the same vertical height. The sharp cut cyclone on the TEOM was also replaced with a very sharp cut cyclone.

Last year the NC-DAQ also conducted an evaluation of the Wilmington area to ascertain if the Castle Hayne location is the best location for the ozone and fine-particle monitoring site. Because of the marine air weather patterns, local and interstate traffic patterns, and growth patterns in Wilmington, the NC-DAQ thought other areas in the MSA may be better suited as the maximum fine particle concentration site for the Wilmington area. The NC-DAQ looked at 4 km grid modeling results for ozone and fine particles. Example model results for 8-hour ozone and 24-hour fine particles are shown in Figure 20 and Figure 21. Based on studying 30 maps for 8-hour ozone and 60 maps for 24-hour fine particles, the NC-DAQ determined that the ambient air at the Castle Hayne site based on the models is representative of the Wilmington area. As a result the NC-DAQ has decided to maintain the Castle Hayne monitoring site for at least two more years for ozone and fine particles.

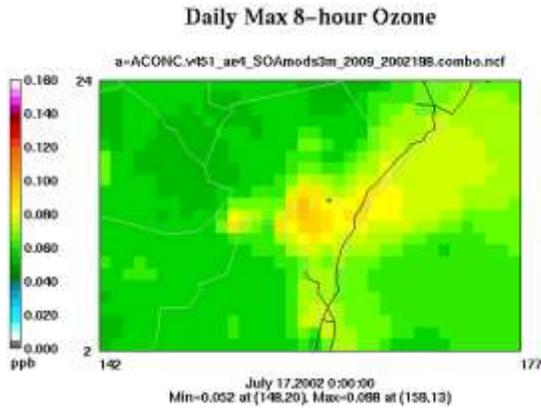


Figure 20. Example 4 Km Grid Model Results for 8-Hour Ozone

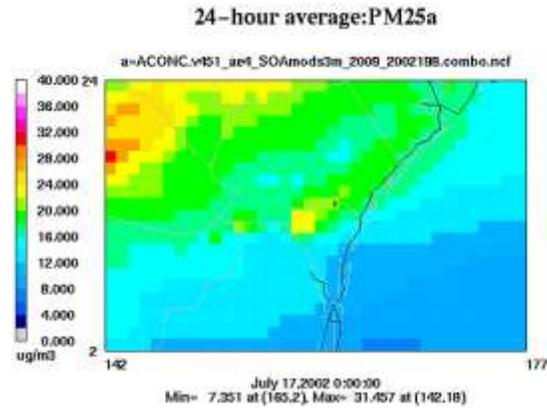


Figure 21. Example 4 Km Grid Model Results for 24- Hour Fine Particles

The circles show the approximate location of the Castle Hayne monitoring site. Wilmington is located to the south and southwest of Castle Hayne.

A cement manufacturing facility has submitted a permit application to the NC-DAQ indicating plans to build a facility across the street about one mile from the current Castle Hayne site. The NC-DAQ is evaluating the impact this facility could have on the Castle Hayne site and may relocate the site to an area near the Wilmington International Airport in a couple of years after the cement plant becomes operational.

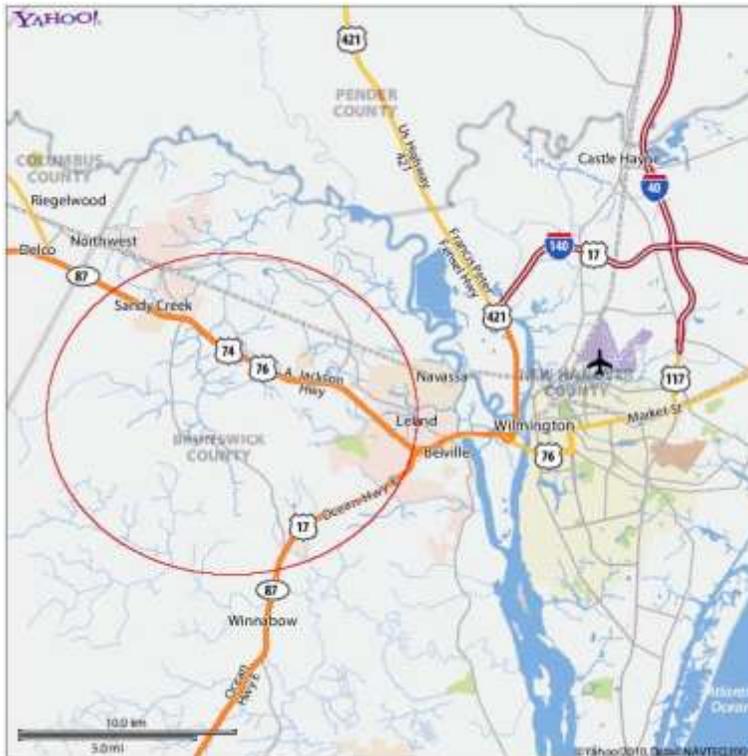


Figure 22. Selected area for Second Ozone Monitor for the Wilmington MSA

The estimated population of the Wilmington MSA crossed the 350,000 mark in July 2009, requiring a second ozone monitor for the MSA. After preliminary discussions, the NC-DAQ is seeking appropriate ozone monitoring sites in Brunswick County in the area west of Leland as shown in Figure 22. The NC-DAQ chose this area because this is a rapidly growing area of the MSA and a monitor located in this area may provide additional insight into the formation and source of ozone in the Wilmington MSA.

J. Changes to Monitoring in the Greenville MSA

The Greenville MSA has one monitoring site: a collocated ozone and fine particle monitoring site at the Pitt County Agricultural Center in Greenville shown in Figure 23. The fine particle monitoring site at Greenville South also in Greenville was shut down on December 31, 2008. The NC-DAQ plans to add a 10-meter tower with wind speed and wind direction sensors to the site sometime in 2010.



Figure 23. The Pitt Co Ag Center Ozone and Fine Particle Monitoring Site

K. Changes to Monitoring in the Rocky Mount MSA

At the **Springfield Road** (37-065-0004) site in Rocky Mount the NC-DAQ operates a one-in-three day fine particle FRM monitor. During 2010, the NC-DAQ plans to add a continuous fine particle monitor to the site to enable real time fine particle air quality index reporting and fine particle forecasting.

L. Changes to Monitoring in the Burlington MSA



Figure 24. The Hopedale (Burlington) Fine Particle Monitoring Site

The NC-DAQ operates one monitoring site in the Burlington MSA, a fine particle monitoring site located on Hopedale road. The site has a fine particle Federal Reference Monitor (FRM) that monitors on a 1-in-3 day schedule as well as a fine particle continuous monitor that provides hourly data for real time air quality index (AQI) reporting and for fine particle AQI forecasting. The site is shown in Figure 24. If the fine particle continuous monitor located at the site is approved as an ARM, the FRM monitor will be shut down on December 31, 2010.

M. Changes to Monitoring in the Goldsboro MSA

At the **Dillard Middle School** (37-191-0005) site in Goldsboro the NC-DAQ operates a one-in-three day fine particle FRM monitor, a fine particle continuous monitor that provides hourly data for real time air quality index (AQI) reporting and for fine particle AQI forecasting, and wind speed and wind direction sensors. The site is shown in Figure 25. If the fine particle continuous monitor located at the site is approved as an ARM, the FRM monitor will be shut down on December 31, 2010.



Figure 25. The Dillard Fine Particle Monitoring Site

N. Changes to Monitoring in Areas that are not in an MSA

1. The Cherry Grove Site



Figure 26. Cherry Grove Ozone, Ozone Precursor, and Fine Particle Monitoring Site (37-033-0001)

At the **Cherry Grove** (37-033-0001) site the NC-DAQ operates a seasonal ozone monitor, a one-in-six day fine particle FRM monitor, a continuous fine particle monitor, and wind speed and direction sensors. A picture of the site is provided in Figure 26. Due to changes in the wording of 40 CFR 58.12(d) (1), the site may not meet the requirements for 1-in-6 day operation and may resume 1-in-3 day operation on July 1, 2010. If the fine particle continuous monitor located at the site is approved in 2010 by the EPA as an ARM, the FRM monitor will be shut down on December 31, 2010. Another change planned for this site is the addition of either a background PM_{10} or $PM_{10-2.5}$ monitor (the type of monitor depends on the changes made to the National Ambient Air Quality Standards in 2011) that will run every third year beginning January 1, 2013.

2. The Kenansville (37-061-0002) Particle Monitoring Site



A PM₁₀ monitor was located at Kenansville (shown in Figure 27) in second quarter 2009. The NC-DAQ requires PM₁₀ data in the coastal area for prevention of significant deterioration (PSD) modeling for industrial expansion. The NC-DAQ is proposing to convert this monitor to a special purpose monitor that operates every third year.

Figure 27. The Kenansville Particle Monitoring Site

3. The Lenoir Community College (37-107-0004) Site

At the **Lenoir Community College** (37-107-0004) site the NC-DAQ operates a seasonal ozone monitor and a one-in-three day fine particle FRM monitor. The site is collocated with a meteorological tower measuring wind speed, wind direction, two-meter and 10-meter ambient temperature, relative humidity, solar radiation, and rain fall. This fine particle monitor is not a required monitor and measured ambient fine particle concentrations at the site are less than 80 % of the standard. As a result the NC-DAQ is considering making this site a rotational fine particle site where the monitor would operate for two years out of every four.



Met Tower

Tree line

Observatory Top

Ozone Site

In 2007, the Lenoir Community College (LCC) athletic department installed a large structure known as a "Batter's Eye" immediately behind center field adjacent to the air

quality monitoring site. This structure was added to address reflected light from a newly installed small telescope observatory dome interfering with the batter's ability to see the incoming pitch. In the picture below, taken from behind home plate, the dome can be seen directly behind the pitcher's mound. To the right of the screen is the monitoring shelter for gas phase pollutants and immediately behind the screen can be seen the meteorological tower. The NC-DAQ is concerned that this newly constructed screen negatively impacts airflow around the monitoring site and the pollutant measurements made at LCC. As a result, the NC-DAQ has identified and prepared another location on the campus a couple of hundred meters from the current location and plans to relocate the ozone monitor sometime in 2010.

4. The East Marion (37-111-0001) Site

At the **East Marion** site the NC-DAQ operates a one-in-three day fine particle manual FRM monitor, a one-in six-day collocated manual FRM fine particle monitor, and a continuous fine particle monitor. The site is also collocated with wind speed and wind direction sensors on a 10-meter tower. Starting on January 1, 2011, the NC-DAQ plans to begin PM₁₀ monitoring at the site to provide data for Prevention of Significant Deterioration modeling for industrial expansion. The monitor would be a special purpose monitor that operated every third year. Long term plans (2011 or later) for this site are to discontinue the manual fine particle monitors and only maintain a continuous fine particle monitor at the site. At that time the one-in-six day collocated manual fine particle monitor would be shut down because it would no longer be needed.

5. The Jamesville (37-117-0001) Site

At the **Jamesville** (37-117-0001) site the NC-DAQ operates a seasonal ozone monitor, a one-in-three day fine particle FRM monitor, a continuous fine particle monitor, and a special purpose sulfur dioxide monitor that operates for 12 months every three years. This fine particle monitoring site is a regional transport site for the inner coastal plain. The NC-DAQ may expand the amount of industrial expansion monitoring done at this site by adding a special purpose nitrogen dioxide monitor to the site in 2014. This monitor would operate for 12 months every three years to provide background data for PSD modeling for industrial expansion. In 2012, the NC-DAQ plans to add a PM₁₀ (or PM_{10-2.5} depending on changes to the standard in 2011) monitor to the site to provide background PM₁₀ data for PSD modeling. This monitor would operate every third year. Long term plans (2011 or later) are to discontinue the manual fine particle monitor and maintain a continuous fine particle monitor at the site. This continuous fine particle monitor would either be an ARM or an FEM. The site is shown in Figure 28.



Figure 28. Jamesville Ozone, Particle, Sulfur Dioxide, and Nitrogen Dioxide Monitoring Site

6. The Candor (37-123-0001) Site

At the **Candor** (37-123-0001) site the NC-DAQ operates a one-in-three day fine particle FRM monitor. This fine particle monitoring site is a general background site for the piedmont. In 2011, the NC-DAQ plans to expand the amount of industrial expansion monitoring done at this site by adding a special purpose background PM₁₀ (or PM_{10-2.5} depending on changes to the standard in 2011) monitor to the site to provide background PM₁₀ data for PSD modeling. This monitor would operate every third year.

7. The Rockwell (37-159-0021) Site



The NC-DAQ is adding monitors to make the Rockwell site a continuous fine particle speciation site and also a fine particle precursor monitoring site. In 2010 the year-round carbon monoxide monitor at this site will convert from a Thermo Scientific 48S monitor to a 48i monitor.

Sometime this year the NC-DAQ will also add a year-round trace-level sulfur dioxide monitor for fine particle precursor monitoring as well as a continuous fine particle sulfate monitor. The year-round reactive oxides of nitrogen (NO_y) monitor will also convert to a new trace level monitor by the end of the year and the converter and probe will be moved from the roof of the building and installed on top of the 10-meter meteorological tower. During the summer of 2009 a URG 3000 Carbon Monitor was added to the Rockwell site as part of the chemical speciation network upgrade. The Carbon Monitor operates on a one-in-six day schedule and replaces the carbon channel on the Met One SASS monitor also operating at the site. The Carbon Monitor is located next to the Met One SASS monitor.

The Clinton Crops (37-163-0004) Site

At the **Clinton Crops** (37-163-0004) site the NC-DAQ operates a special purpose ammonia monitor. The site, shown in Figure 29, is collocated with a meteorological tower operated by the State Climate Office. Ammonia and reactive oxide of nitrogen monitoring were established in 2000 to provide information on nitrogen compounds in the ambient air for a five-year NC-DAQ study on ambient ammonia concentration levels in the inner coastal plain as a result of the expansion of the hog industry in the area. The study was extended when the moratorium on hog lagoons was extended. When the hog lagoon moratorium was made permanent in 2007, the NC-DAQ decided to operate the site an additional two years. After evaluating the data in September 2009, the NC-DAQ decided to shut down the reactive oxides of nitrogen monitors in late 2009. In 2010 the NC-DAQ plans to transition from continuous ammonia monitoring to passive ammonia

monitoring using Alpha passive monitors at this site. As a result, the NC-DAQ may shut down the ammonia monitor on December 31, 2010.



Figure 29. Clinton Crop Ammonia and Reactive Oxides of Nitrogen Monitoring Site

9. *The Bryson City (37-173-0002) Site*

At the **Bryson City (37-173-0002)** site in Swain County the NC-DAQ operates an ozone monitor, a one-in-three day fine particle FRM monitor, two continuous fine particle monitors, and a sulfur dioxide monitor that operates for 12 months every three years. The site is shown in Figure 30. Because of its location in the mountains, the NC-DAQ is using this site as one of three sites for a 20 to 22 month BAM study. For the BAM study, the NC-DAQ added a Special Purpose BAM to the site in June 2009. In June the TEOM was also removed from the building and placed in a shelter on the ground so all three monitor probes are at the same height. The sharp cut cyclone on the TEOM was also replaced with a very sharp cut cyclone. When the BAM study is completed in 2011, the NC-DAQ plans to shut down the FRM monitor and only operate a continuous monitor at this site (either the BAM as an FEM or the TEOM as an ARM). In December 2009, Swain County, the hosts of the Bryson City (371730002) site, informed the NC-DAQ that the hospital at the current site would be expanded to 4 stories and the current site location would be paved over as a parking lot. As a result of this plan, the site was relocated in early April 2010. The host site provided an alternate location approximately 173 meters southeast of the original site. The locations of the two sites are shown in Figure 31.



Figure 30. The Bryson City Ozone, Particle, and Sulfur Dioxide Monitoring Site



Figure 31. Locations of the Original Bryson City Monitoring Site (A) and the Current Site (B)

10. The Boone (37-189-0003) Site

At the **Boone** (37-189-0003) site in Watauga County the NC-DAQ operates a one-in-three day fine particle FRM monitor. The site is shown in Figure 32. At sometime in the future when a continuous fine particle monitor becomes available, the NC-DAQ plans to either add a continuous fine particle monitor to the site or replace the current FRM monitor with either a Federal Equivalent Method monitor or an Approved Regional Method monitor.



Figure 32. The Boone Fine Particle Monitoring Site (37-189-0003)

O. Changes to the Methods Used to Measure Fine Particles for Comparison to the NAAQS and the Projected Impact on the NC-DAQ Fine Particle Network

Currently the NC-DAQ uses an R & P Model 2025 PM_{2.5} Sequential Monitor with a WINS impactor (Air Quality System (AQS) Method Code 118) and U.S. EPA reference method designation RFPS-0498-118 for determining compliance with the fine particle NAAQS. The NC-DAQ uses a Ruprecht & Patshneck TEOM Series 1400a for continuous (averaged on an hourly basis) measurement of fine particles. The TEOM is ineligible to become an equivalent method for fine particles because it does not work as well in other parts of the nation as it does in North Carolina. Reference and equivalent methods need to work the same throughout the nation.

The monitoring regulations promulgated in 2006 allow the NC-DAQ to apply to the U.S. EPA to have the TEOM approved as an Approved Regional Method (ARM). However, to apply for the TEOM to be approved as an ARM, the NC-DAQ must submit 12 months of data comparing the TEOM with the FRM and the TEOM must be operated using a very sharp cut cyclone. The NC-DAQ operated its TEOM network with a sharp cut cyclone so the data previously collected could not be used for the ARM application. The very sharp cut cyclones were installed on the TEOMs at Millbrook (37-183-0014) and Jamesville (37-117-0001) in February 2008 to begin collecting the required 12 months of data. The MCAQ installed very sharp cut cyclones on the TEOMs at Garinger and Montclair in December 2007. The NC-DAQ has evaluated the data collected by the fine particle monitors at these sites and has made modifications to the standard operating practices for the TEOM to establish procedures that will allow the TEOM to be used as an ARM. To date, the NC-DAQ has been unable to get all three monitors to pass the ARM evaluation so that an ARM application can be submitted to the EPA. If the TEOM is approved as an ARM, the TEOM data will become eligible to be compared to the NAAQS to demonstrate attainment of the standard. When this occurs, the NC-DAQ will have the option to shut down some of the R & P Model 2025 PM_{2.5} Sequential Monitors located at sites with TEOMs.

At this time, the NC-DAQ anticipates that the ARM application for the TEOM might be approved late in 2010. If the ARM is approved before 1/1/2011, The NC-DAQ will shut down the seven Federal Reference Method (FRM) fine particle monitors by December 31, 2010 located at the following sites:

- Hopedale/ Burlington (370010002) in the Burlington MSA;
- Cherry Grove (370330001) in Caswell County;
- Springfield Road (370650004) in Edgecombe County;
- Grier Middle School/Gastonia (370710016) in the Charlotte MSA;
- East Marion (371110004) in McDowell County;
- Jamesville (371170001) in Martin County; and
- Dillard/Goldsboro (371910005) in the Goldsboro MSA.

These sites will all have continuous ARM monitors that will continue operating after the manual monitors are shut down. Because the continuous ARM monitors will be approved for determining compliance to the NAAQS, the network will meet the minimum monitoring requirements of 40CFR58 Appendix D, the health and welfare of

the citizens in these areas will continue to be protected, and reporting of the fine particle concentrations in real-time will continue.

The FRM fine particle monitors at Castle Hayne (371290002) in the Wilmington MSA and at Bryson City (371730002) in Swain County will continue to operate until the BAM study discussed below is completed. At the end of the BAM study in 2011 these two FRM monitors will also be shutdown.

Also, in early 2008 the Met One Beta Attenuation Monitor (BAM) was approved as a Federal Equivalent Method (FEM). As a result, the NC-DAQ received a demonstration BAM from Met One to evaluate at the Millbrook monitoring site. The unit was installed and began operation in January 2008 for a brief period of time. However, it turned out this demonstration BAM was not a FEM. The MCAQ ordered a BAM early in 2008. The NC-DAQ also ordered two BAMs in March and purchased the demonstration model installed at the Millbrook site after it was upgraded to a FEM.

In 2009 the NC-DAQ began a BAM study to evaluate the operation of the BAM in North Carolina. The NC-DAQ deployed one of the three new BAM monitors at the Millbrook (37-183-0014) site in Raleigh in late June 2009. The second BAM was deployed at the Castle Hayne site in Wilmington in early 2010. The third BAM was deployed at Bryson City in late June 2009. All three BAMs will be collocated with an FRM fine particle monitor and a TEOM with a very sharp cut cyclone and will be operated for 20 to 23 months to provide comparative data to determine how well the BAM functions in the mountains, piedmont, and coastal areas of North Carolina. At the end of the BAM study in early 2011 the NC-DAQ will decide whether to use the BAM as a FEM or to operate as a nonequivalent method as a replacement to the TEOMs, which are no longer being manufactured and soon will not be supported.

If after the BAM study, the NC-DAQ decides to use the BAM as an equivalent method, the NC-DAQ plans to collocate one of the BAMs at the Millbrook site in Raleigh and will keep the other two BAMs at the two test sites (Bryson City and Castle Hayne) and shut down the FRM and TEOM monitors at those sites. If the NC-DAQ purchases additional BAMs in 2010 to use as FEMs, the NC-DAQ plans to deploy these monitors at the Boone site in Watauga County and either the Jamesville site in Martin County or the Lenoir Community College site in Lenoir County.

P. Special Studies

Ammonia monitoring was established at three sites in 2000 to support a five-year NC-DAQ study on ambient ammonia concentration levels in the inner coastal plain as a result of the expansion of the hog industry in the area. Sites were established at Clinton Crops in Sampson County, at Lenoir Community College (LCC) in Lenoir County, and at Jamesville (371170001) in Martin County. The Jamesville site was established as a background site. The study was extended when the moratorium on hog lagoons was extended. When the hog lagoon moratorium was made permanent in 2007, the NC-DAQ shutdown the ammonia monitor at LCC on December 31, 2007. The Clinton Crop and Jamesville site were continued for two additional years. The NC-DAQ shut down the background site at Jamesville in late 2009.

The NC-DAQ plans to establish a passive monitoring network at seven sites throughout NC in the second half of 2010. The proposed locations overlaid on the locations of animal operations, lagoons, and 2018 VISTA ammonia inventory projections are shown in Figure 33 and listed in Table 3. The use of the passive Alpha samplers for one to two years would provide the NC-DAQ with a relatively inexpensive way to monitor for ammonia in the ambient air in several areas of the state, while the EPA continues their work on developing other methods for measuring ammonia in ambient air. Sometime after the passive ammonia network is established, the NC-DAQ may move forward with terminating the ammonia monitor at Clinton Crops, perhaps as early as December 31, 2010.

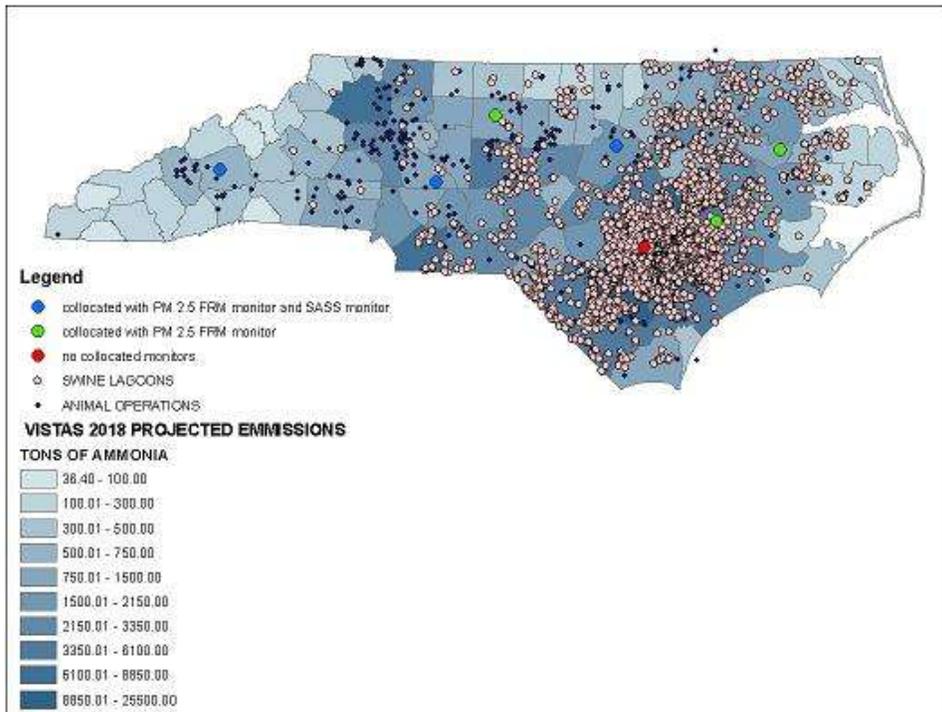


Figure 33. Proposed Passive Ammonia Monitoring Sites for 2010-2011

Table 3. Proposed Passive Ammonia Monitoring Sites for 2010-2011

| Proposed Site | Location | Reason for Selection | Exposure Time |
|----------------------|-----------------|---|----------------------|
| Clinton Crops | Sampson County | Area of Highest Concentration of Animal Operations | 1 week |
| Jamesville | Martin County | Background Rural Site | 2 weeks |
| Millbrook | Wake County | Urban/Suburban Area | 2 weeks |
| Rockwell | Rowan County | Nonurban area subject to pollutant transport from large urban areas | 2 weeks |
| Board of Education | Buncombe County | Urban area in mountains with high occurrence of wood burning | 2 weeks |
| LCC | Lenoir County | Nonurban area with large concentrations of animal operations | 2 weeks |
| Greensboro | Guilford County | Urban area downwind from Rockwell area | 2 weeks |

III. Carbon Monoxide (CO) Monitoring Network

Carbon Monoxide monitoring is conducted in several major urban areas of the State. The 2009-2010 State-operated Network consisted of a monitor in the Raleigh-Durham-Cary-Chapel Hill Combined Statistical Area, that collect data using a Federal Reference Method for comparison to the National Ambient Air Quality Standards (NAAQS). The U.S. EPA granted permission for all carbon monoxide sites operated for comparison to the NAAQS by the North Carolina Division of Air Quality (NC-DAQ) to operate seasonally from October 1 through March 31 of each year. Local program agencies operate carbon monoxide monitors in Charlotte and Winston-Salem year-round. These state and local agency sites are in three of the five largest urban areas in North Carolina. The NC-DAQ and Peters Creek Winston-Salem locations are micro-scale sites that provide maximum carbon monoxide concentrations for the monitoring areas. The site in Charlotte is a neighborhood scale site. These sites did not report any exceedances of the one or eight hour ambient air quality standard from 2005 to 2009.

The State also operates a trace level carbon monoxide ozone precursor (OPN) monitoring network. Carbon monoxide is also a precursor to fine particle (PM_{2.5}) formation. In 2009 the state of North Carolina operated three sites that collected trace level CO data. Since the U.S. EPA has not designated the monitors currently used by the NC DAQ as an EPA reference or equivalent method, these data cannot be used for comparison to the NAAQS. These monitors are located at Raleigh in Wake County at Durham in Durham County, at Rockwell in Rowan County, and at Charlotte in Mecklenburg County. The Raleigh and Charlotte sites operate year round because these sites are proposed National Core (NCore) monitoring sites. The Rockwell site also operates year round because it is a proposed fine particle precursor-monitoring site. The Durham site operated from May 15 to September 15. Another seasonal site at Cherry Grove was shut down in September 2008. The Durham site was shut down in September 2009.

Table 4 provides the highest maximum 1-hour and 8-hour concentrations for each operating site for 2005 through 2009. Table 3 provides the locations of the sites for the North Carolina Carbon Monoxide Monitoring Network. Table 6 provides the statement of purpose for each current and proposed monitoring site in the North Carolina Carbon Monoxide Monitoring Network. [Table 5](#) summarizes the status for each current and proposed monitoring site regarding whether it is suitable for comparison to the NAAQS and meets the requirements in Appendices A, C, D, and E of 40CFR58. [Table 5](#) also provides a summary of proposed and planned changes to the carbon monoxide monitoring network.

Table 4 Carbon Monoxide Concentrations Measured by the North Carolina Carbon Monoxide Monitoring Network 2005 to 2009 ^a

Charlotte-Gastonia-Concord Metropolitan Statistical Area

| AQS Site Identification Number | Site Name | Highest 1-hr 1 st max for 2005 to 2009 | | | Highest 8-hr 1 st max for 2005 to 2009 | | |
|--------------------------------|-----------|---|-------------------------------|------|---|-------------------------------|------|
| | | Value (parts per million) | Percent of NAAQS ^b | Year | Value (parts per million) | Percent of NAAQS ^b | Year |
| 371190041 ^{c, d} | Garinger | 3.6 | 10 % | 2006 | 2.7 | 30 % | 2005 |
| 371190041 ^{c, e} | Garinger | 3.1 | - | 2006 | 2.1 | - | 2007 |

Raleigh-Cary Metropolitan Statistical Area

| AQS Site Identification Number | Site Name | Highest 1-hr 1 st max for 2005 to 2009 | | | Highest 8-hr 1 st max for 2005 to 2009 | | |
|--------------------------------|-----------|---|-------------------------------|------|---|-------------------------------|------|
| | | Value (parts per million) | Percent of NAAQS ^b | Year | Value (parts per million) | Percent of NAAQS ^b | Year |
| 371830014 ^{c, f} | Millbrook | 4.0 | - | 2007 | 2.4 | - | 2007 |
| 371830018 ^d | Crabtree | 3.8 | 11 % | 2005 | 2.6 | 29 % | 2006 |

Greensboro-High Point Metropolitan Statistical Area

| AQS Site Identification Number | Site Name | Highest 1-hr 1 st max for 2005 to 2009 | | | Highest 8-hr 1 st max for 2005 to 2009 | | |
|--------------------------------|-------------|---|-------------------------------|------|---|-------------------------------|------|
| | | Value (parts per million) | Percent of NAAQS ^b | Year | Value (parts per million) | Percent of NAAQS ^b | Year |
| 370811011 ^{d, g} | Latham Park | 5.0 | 14 % | 2005 | 2.6 | 29 % | 2006 |

Durham-Chapel Hill Metropolitan Statistical Area

| AQS Site Identification Number | Site Name | Highest 1-hr 1 st max for 2005 to 2009 | | | Highest 8-hr 1 st max for 2005 to 2009 | | |
|--------------------------------|---------------|---|-------------------------------|------|---|-------------------------------|------|
| | | Value (parts per million) | Percent of NAAQS ^b | Year | Value (parts per million) | Percent of NAAQS ^b | Year |
| 370630013 ^{c, g} | Duke Street | 1.8 | - | 2006 | 0.9 | - | 2006 |
| 370630015 ^e | Durham Armory | 1.9 | | 2008 | 1.5 | | 2008 |

Winston-Salem Metropolitan Statistical Area

| AQS Site Identification Number | Site Name | Highest 1-hr 1 st max for 2005 to 2009 | | | Highest 8-hr 1 st max for 2005 to 2009 | | |
|--------------------------------|--------------|---|-------------------------------|------|---|-------------------------------|------|
| | | Value (parts per million) | Percent of NAAQS ^b | Year | Value (parts per million) | Percent of NAAQS ^b | Year |
| 370670023 ^{d, h} | Peters Creek | 3.9 | 11 % | 2009 | 2.9 | 32 % | 2005 |

Fayetteville Metropolitan Statistical Area

| AQS Site Identification Number | Site Name | Highest 1-hr 1 st max for 2004 to 2008 | | | Highest 8-hr 1 st max for 2004 to 2008 | | |
|--------------------------------|------------------|---|-------------------------------|------|---|-------------------------------|------|
| | | Value (parts per million) | Percent of NAAQS ^b | Year | Value (parts per million) | Percent of NAAQS ^b | Year |
| 370510007 ^{d, g} | Fayetteville ABC | 4.0 | 11 % | 2006 | 3.0 | 33 % | 2006 |

Not in an Metropolitan Statistical Area

| AQS Site Identification Number | Site Name | Highest 1-hr 1 st max for 2004 to 2008 | | | Highest 8-hr 1 st max for 2004 to 2008 | | |
|--------------------------------|--------------|---|-------------------------------|------|---|-------------------------------|------|
| | | Value (parts per million) | Percent of NAAQS ^b | Year | Value (parts per million) | Percent of NAAQS ^b | Year |
| 370330001 ^{c, g, i} | Cherry Grove | 3.0 | - | 2007 | 1.3 | - | 2008 |
| 371590021 ^{c, f, j} | Rockwell | 2.0 | - | 2005 | 1.0 | - | 2005 |

^a All monitors use an Instrumental Nondispersive Infrared Thermo Electron 48C Method (Air Quality System (AQS) Method Code 054) except one of the monitors operated by the Mecklenburg County Air Quality which uses an Instrumental Gas Filter Correlation Teledyne API 300 EU (AQS Method Code 593)

^b The National Ambient Air Quality Standard (NAAQS) for a 1-hour period is 35 parts per million and 9 for an 8-hour period. Attainment is based on the second highest average for the calendar year.

^c Operated by the Mecklenburg County Air Quality (AQS Reporting Agency 0669)

Table 4 Carbon Monoxide Concentrations Measured by the North Carolina Carbon Monoxide Monitoring Network 2005 to 2009 ^a

^d Monitor method suitable for comparing to the NAAQS
^e Monitor method unsuitable for comparing to the NAAQS
^f Year-round trace-level CO
^g This site was shut down
^h Operated by the Forsyth County Environmental Affairs Department (AQS Reporting Agency 0403)
ⁱ The Cherry Grove monitor was located in Caswell County and was a downwind monitor for the Greensboro-High Point Metropolitan Statistical Area (MSA).
^j The Rockwell monitor is located in Rowan County and is a downwind site for the Charlotte MSA and an upwind site for the Greensboro-High Point MSA.

Table 5 North Carolina Carbon Monoxide Monitoring Network – Monitor Locations^a
Charlotte-Gastonia-Concord Metropolitan Statistical Area

| AQS Site Identification Number | Site Name | Site Location | | | | MSA, CSA, or CBSA represented |
|--------------------------------|-----------|--------------------|-----------|------------|----------|-------------------------------|
| | | Street Address | City | Longitude | Latitude | |
| 371190041 ^b | Garinger | 1130 Eastway Drive | Charlotte | -80.785683 | 35.24028 | Charlotte |
| 371190041 ^b | Garinger | 1130 Eastway Drive | Charlotte | -80.785683 | 35.24028 | Charlotte |

Raleigh-Cary Metropolitan Statistical Area

| AQS Site Identification Number | Site Name | Site Location | | | | MSA, CSA, or CBSA represented |
|--------------------------------|-----------|-------------------------|---------|------------|-----------|-------------------------------|
| | | Street Address | City | Longitude | Latitude | |
| 371830014 | Millbrook | 3801 Spring Forest Road | Raleigh | -78.574167 | 35.856111 | Raleigh |
| 371830018 | Crabtree | 4300 Glenwood Ave | Raleigh | -78.679722 | 35.842778 | Raleigh |

Winston-Salem Metropolitan Statistical Area

| AQS Site Identification Number | Site Name | Site Location | | | | MSA, CSA, or CBSA represented |
|--------------------------------|--------------|--------------------------|---------------|------------|-----------|-------------------------------|
| | | Street Address | City | Longitude | Latitude | |
| 370670023 ^c | Peters Creek | 1401 Silas Creek Parkway | Winston-Salem | -80.258333 | 36.065833 | Winston-Salem |

Not in an Metropolitan Statistical Area

| AQS Site Identification Number | Site Name | Site Location | | | | MSA, CSA, or CBSA represented |
|--------------------------------|-----------|-----------------|----------|------------|-----------|-------------------------------|
| | | Street Address | City | Longitude | Latitude | |
| 371590021 ^d | Rockwell | 301 West Street | Rockwell | -80.395039 | 35.551868 | None |

^a All monitors use an Instrumental Nondispersive Infrared Thermo Electron 48C or 48 i Method (Air Quality System (AQS) Method Code 054) except one of the monitors operated by the Mecklenburg County Air Quality which uses an Instrumental Gas Filter Correlation Teledyne API 300 EU (AQS Method Code 593)
^b Operated by the Mecklenburg County Air Quality (Air Quality System (AQS) Reporting Agency 0669)
^c Operated by the Forsyth County Environmental Affairs Department (AQS Reporting Agency 0403)
^d The Rockwell monitor is located in Rowan County and is a downwind site for the Charlotte MSA and an upwind site for the Greensboro-High Point MSA.

Table 6 Statement of Purpose for North Carolina Carbon Monoxide Monitoring Network^a

Table 6 Statement of Purpose for North Carolina Carbon Monoxide Monitoring Network^a

| Charlotte-Gastonia-Concord Metropolitan Statistical Area | | | | | | |
|---|-----------|----------------|---------------------------------|--|----------------------|--------------|
| AQS Site Identification Number | Site Name | Monitor Type | Operating Schedule ^b | Statement of Purpose | Monitoring Objective | Scale |
| 371190041 ^c | Garinger | SLAMS | 1/1 to 12/31 | Required in SIP. Compliance with the NAAQS | Population Exposure | Neighborhood |
| 371190041 ^c | Garinger | Proposed NCORE | 1/1 to 12/31 | Ozone and fine particle precursor monitoring | Population Exposure | Neighborhood |

| Raleigh-Cary Metropolitan Statistical Area | | | | | | |
|---|-----------|----------------|---------------------------------|---|-----------------------|--------|
| AQS Site Identification Number | Site Name | Monitor Type | Operating Schedule ^b | Statement of Purpose | Monitoring Objective | Scale |
| 371830014 | Millbrook | Proposed NCORE | 1/1 to 12/31 | Ozone and fine particle precursor monitoring. | General/ Background | Middle |
| 371830018 | Crabtree | SLAMS | 10/1 to 3/31 | Required in SIP. Compliance with the NAAQS. | Highest Concentration | Micro |

| Winston-Salem Metropolitan Statistical Area | | | | | | |
|--|--------------|--------------|---------------------------------|--|-----------------------|-------|
| AQS Site Identification Number | Site Name | Monitor Type | Operating Schedule ^b | Statement of Purpose | Monitoring Objective | Scale |
| 370670023 ^d | Peters Creek | SLAMS | 1/1 to 12/31 | Required in SIP. Compliance with the NAAQS | Highest Concentration | Micro |

| Not in an Metropolitan Statistical Area | | | | | | |
|--|-----------|--------------|---------------------------------|---|----------------------|-------|
| AQS Site Identification Number | Site Name | Monitor Type | Operating Schedule ^b | Statement of Purpose | Monitoring Objective | Scale |
| 371590021 ^e | Rockwell | OTHER | 1/1 to 12/31 | Ozone and fine particle precursor monitoring. | General/ Background | Urban |

^a All monitors use an Instrumental Nondispersive Infrared Thermo Electron 48C or 48i Method (Air Quality System (AQS) Method Code 054) except one of the monitors operated by the Mecklenburg County Air Quality which uses an Instrumental Gas Filter Correlation Teledyne API 300 EU (AQS Method Code 593)

^b All monitors operate on an hourly schedule and operate every year during the time frames indicated.

^c Operated by the Mecklenburg County Air Quality (Air Quality System (AQS) Reporting Agency 0669)

^d Operated by the Forsyth County Environmental Affairs Department (AQS Reporting Agency 0403)

^e The Rockwell monitor is located in Rowan County and is a downwind site for the Charlotte MSA and an upwind site for the Greensboro-High Point MSA.

Table 7 Status of North Carolina Carbon Monoxide Monitoring Network in Meeting the Requirements of Part 58 and Proposed Changes to the Network^a

| Charlotte-Gastonia-Concord Metropolitan Statistical Area | | | | | |
|---|-----------|----------------------------------|---|-------------|----------------------------|
| AQS Site Identification Number | Site Name | Suitable for Comparison to NAAQS | Meets Requirements of Part 58 Appendices A, C, D & E ^b | | Proposal to Move or Change |
| | | | C ^c | D | |
| 371190041 ^d | Garinger | Yes | Yes: RFCA-0981-054 | No Criteria | None |
| 371190041 ^d | Garinger | Yes | RFCA-1093-093 | Yes - NCore | None |

Table 7 Status of North Carolina Carbon Monoxide Monitoring Network in Meeting the Requirements of Part 58 and Proposed Changes to the Network^a

Raleigh-Cary Metropolitan Statistical Area

| AQS Site Identification Number | Site Name | Suitable for Comparison to NAAQS | Meets Requirements of Part 58 Appendices A, C, D & E ^b | | Proposal to Move or Change |
|--------------------------------|-----------|----------------------------------|---|--------------------|----------------------------|
| | | | C ^c | D | |
| 371830014 | Millbrook | No | Yes RFCA-0981-054 | Yes - NCore | None |
| 371830018 | Crabtree | Yes | Yes: RFCA-0981-054 | Required by SIP | None |

Winston-Salem Metropolitan Statistical Area

| AQS Site Identification Number | Site Name | Suitable for Comparison to NAAQS | Meets Requirements of Part 58 Appendices A, C, D & E ^b | | Proposal to Move or Change |
|--------------------------------|--------------|----------------------------------|---|-------------|----------------------------|
| | | | C ^c | D | |
| 370670023 ^e | Peters Creek | Yes | Yes: RFCA-0981-054 | No Criteria | None |

Not in an Metropolitan Statistical Area

| AQS Site Identification Number | Site Name | Suitable for Comparison to NAAQS | Meets Requirements of Part 58 Appendices A, C, D & E ^b | | Proposal to Move or Change |
|--------------------------------|-----------|----------------------------------|---|----------------|--|
| | | | C ^c | D ^c | |
| 371590021 ^f | Rockwell | No | No: Not FEM | No Criteria | Monitor will convert from a Thermo 48S to a Thermo 48i (RFCA-0981-054) in 2010 |

^a All monitors use an Instrumental Nondispersive Infrared Thermo Electron 48C or 48i Method (Air Quality System (AQS) Method Code 054) except one of the monitors operated by the Mecklenburg County Air Quality which uses an Instrumental Gas Filter Correlation Teledyne API 300 EU (AQS Method Code 593)

^b All monitors meet the requirements of 40CFR58 Appendix A. The only monitors required in Appendix D are for NCore. All sites meet the appropriate siting criteria in Appendix E of 40CFR58 promulgated in 2006.

^c RFCA-0981-054 is the code assigned by the U.S. EPA to reference and equivalent methods that are suitable for comparison to the National Ambient Air Quality Standards. The list of reference and equivalent methods is available at <http://www.epa.gov/ttn/amtic/files/ambient/criteria/reference-equivalent-methods-list.pdf>.

^d Operated by the Mecklenburg County Air Quality (Air Quality System (AQS) Reporting Agency 0669)

^e Operated by the Forsyth County Environmental Affairs Department (AQS Reporting Agency 0403)

^f The Rockwell monitor is located in Rowan County and is a downwind site for the Charlotte MSA and an upwind site for the Greensboro-High Point MSA.

IV. Sulfur Dioxide Monitoring Network

Sulfur Dioxide (SO₂) monitoring is currently conducted in North Carolina at eight sites operated by the North Carolina Division of Air Quality (NC-DAQ) and at two sites operated by local programs.

The data collected will be used to determine human health effect exposures in Metropolitan Statistical Areas (MSAs) with over one million people, to collect background levels for Prevention of Significant Deterioration (PSD) permit modeling, and to determine the impact on SO₂ levels due to facilities that burn large quantities of fossil fuels or manufacture sulfuric acid. Though few major cities are being monitored for sulfur dioxide, data from previous years show these cities to have sulfur dioxide concentrations well below the current limits established by the U.S. Environmental Protection Agency (EPA). However, the EPA has proposed lowering the SO₂ standard to levels low enough that the SO₂ monitor in New Hanover County could violate the new standard.

[Table 8](#) lists the highest concentrations of sulfur dioxide measured in North Carolina between 2005 and 2009 as compared to the existing National Ambient Air Quality Standards (NAAQS). [Table 7](#) provides the locations of the current and proposed sites through 2012 for the North Carolina Sulfur Dioxide Monitoring Network. [Table 10](#) provides the statement of purpose for each current and proposed monitoring site in the North Carolina Sulfur Dioxide Monitoring Network. [Table 11](#) summarizes the status of each current and proposed monitoring site regarding the suitability for comparison to the NAAQS and whether or not it meets the requirements as outlined in Appendices A, C, D, and E of 40CFR58. [Table 11](#) also provides a summary of proposed and planned changes to the sulfur dioxide monitoring network.

The NC-DAQ also operates one trace-level SO₂ monitor on a 100 ppb scale because low levels of SO₂ are a precursor for fine particle formation. The current network consists of one site in Wake County. Sometime in 2010, the trace-level network will expand to a second site in Rowan County. The Wake County site is a National Core (NCore) monitoring site. The NC DAQ monitors for these trace-level-particle precursor pollutants year-round because monitoring for fine particles is required on a year-round basis.

In 2002 NC-DAQ eliminated 6 of its 12 Industrial Expansion Monitoring sites by replacing two sites with trace-level fine particle precursor monitoring sites and establishing four rotating sites that operate one year in every 3 years. In 2007, NC-DAQ relocated one of these sites from Castle Hayne, North Carolina (New Hanover County), to Pittsboro, North Carolina (Chatham County). This year, the NC-DAQ proposes to modify the network by shutting down the Bryson City SO₂ monitor (Swain County) and adding SO₂ monitors at Lenoir (Caldwell County) and Bethany (Rockingham County). Assessment of the SO₂ monitoring network indicated that the ability of NC-DAQ to meet its obligation to provide relevant background SO₂ data for PSD modeling could be improved by these changes.

Recently, the NC-DAQ discovered that the PCS Phosphate manufacturing facility has started logging near the 37-013-0007 Aurora source-oriented SO₂ monitoring site, located on the fence-line of the PCS Phosphate manufacturing facility in Beaufort

County. As a result, the NC-DAQ is working with PCS Phosphate to determine if it will be necessary to identify a new site for the monitor. Recently the very rarely used dirt road located next to the monitor is in constant use as trucks go in and out of the area to remove trees. Soon the remaining growth will be burned to clear the area before mining begins sometime in the 2015 timeframe. The NC-DAQ is contacting PCS to obtain information on how extensive the logging will be and how long it will last.

The NC-DAQ had started to consider moving the monitor last year. While working on the annual network review in April 2009, the NC DAQ noticed that the maximum measured sulfur dioxide concentrations measured by the Aurora monitor had decreased by about half since the monitor was moved to its current location in September of 2005. (See Figure 34 and Figure 35.) However, this effort to relocate the monitor was put on hold because of proposed changes to the sulfur dioxide monitoring regulations to support changes to the standard that will be announced in June 2010.

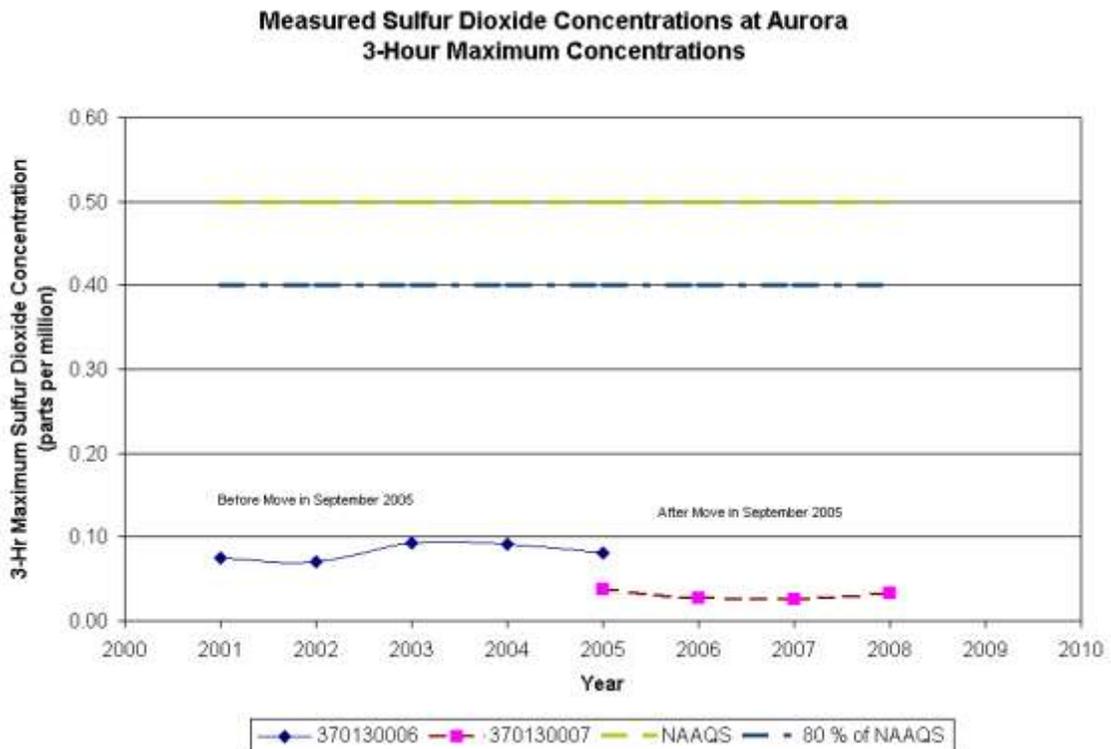


Figure 34. 3-Hour Maximum Concentrations Measured at the Aurora Monitoring Site

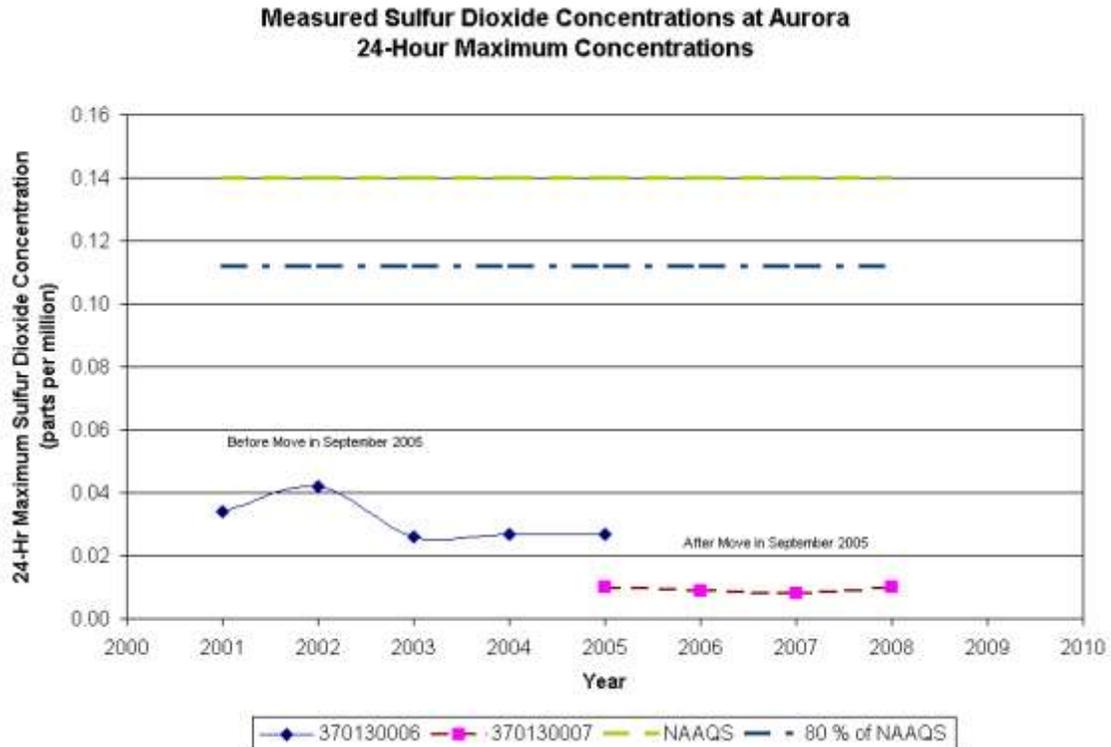


Figure 35. Maximum 24-Hour Sulfur Dioxide Concentrations at the Aurora Monitoring Site

In 2008 the NC-DAQ received a permit application for a new sulfuric acid facility in New Hanover County. The NC-DAQ currently operates a SLAMS SO₂ monitor in New Hanover County. The site was established thirty years ago based on modeling performed by the U.S. EPA that indicated that maximum ambient sulfur dioxide concentrations for New Hanover County were expected to be present in the area surrounding the monitor. In 2008 in doing the annual network review the NC-DAQ noted that the area had changed since EPA conducted the original modeling and some of the facilities modeled at that time are no longer in operation and new facilities are planned. As a result of the changes that have occurred in the area and are expected to occur in the future, the NC-DAQ ran a model of seven to nine SO₂ sources in the area along with the most current weather data to determine if the highest ambient concentrations of SO₂ in the New Hanover County area are still expected to occur at the current monitoring site. Based on the modeling results, the NC-DAQ determined the existing monitor is still in the best location to measure the maximum SO₂ impact on the Wilmington area.

Table 8 Highest Sulfur Dioxide Concentration and Year Measured by the North Carolina Sulfur Dioxide Monitoring Network (2005 through 2009) ^a

Charlotte-Gastonia-Concord Metropolitan Statistical Area

| AQS Site Identification Number | Site Name | Highest 24-hr Average Observed (1 st max) for 2005 to 2009 | | | Highest 3-hr average observed (1 st max) for 2005 to 2009 | | |
|--------------------------------|-----------|---|-------------------------------|------|--|-------------------------------|------|
| | | Value (parts per million) | Percent of NAAQS ^b | Year | Value (parts per million) | Percent of NAAQS ^b | Year |
| 371190041 ^c | Garinger | 0.026 | 19% | 2007 | 0.074 | 15% | 2007 |

Raleigh-Cary Metropolitan Statistical Area

| AQS Site Identification Number | Site Name | Highest 24-hr Average Observed (1 st max) for 2005 to 2009 | | | Highest 3-hr average observed (1 st max) for 2005 to 2009 | | |
|--------------------------------|-----------|---|-------------------------------|------|--|-------------------------------|------|
| | | Value (parts per million) | Percent of NAAQS ^b | Year | Value (parts per million) | Percent of NAAQS ^b | Year |
| 371830014 | Millbrook | 0.012 | 9 % | 2005 | 0.035 | 7 % | 2009 |

Durham-Chapel Hill Metropolitan Statistical Area

| AQS Site Identification Number | Site Name | Highest 24-hr Average Observed (1 st max) for 2005 to 2009 | | | Highest 3-hr average observed (1 st max) for 2005 to 2009 | | |
|--------------------------------|-----------|---|-------------------------------|------|--|-------------------------------|------|
| | | Value (parts per million) | Percent of NAAQS ^b | Year | Value (parts per million) | Percent of NAAQS ^b | Year |
| 370370004 | Pittsboro | 0.009 | 6.4 % | 2008 | 0.017 | 3.4 % | 2008 |

Winston-Salem Metropolitan Statistical Area

| AQS Site Identification Number | Site Name | Highest 24-hr Average Observed (1 st max) for 2005 to 2009 | | | Highest 3-hr average observed (1 st max) for 2005 to 2009 | | |
|--------------------------------|---------------|---|-------------------------------|------|--|-------------------------------|------|
| | | Value (parts per million) | Percent of NAAQS ^b | Year | Value (parts per million) | Percent of NAAQS ^b | Year |
| 370670022 ^d | Hattie Avenue | 0.030 | 21 % | 2007 | 0.083 | 17 % | 2007 |

Fayetteville Metropolitan Statistical Area

| AQS Site Identification Number | Site Name | Highest 24-hr Average Observed (1 st max) for 2005 to 2009 | | | Highest 3-hr average observed (1 st max) for 2005 to 2009 | | |
|--------------------------------|-----------|---|-------------------------------|------|--|-------------------------------|------|
| | | Value (parts per million) | Percent of NAAQS ^b | Year | Value (parts per million) | Percent of NAAQS ^b | Year |
| 370511003 | Golfview | 0.007 | 5 % | 2006 | 0.012 | 2 % | 2006 |

Wilmington Metropolitan Statistical Area

| AQS Site Identification Number | Site Name | Highest 24-hr Average Observed (1 st max) for 2005 to 2009 | | | Highest 3-hr average observed (1 st max) for 2005 to 2009 | | |
|--------------------------------|--------------|---|-------------------------------|------|--|-------------------------------|------|
| | | Value (parts per million) | Percent of NAAQS ^b | Year | Value (parts per million) | Percent of NAAQS ^b | Year |
| 371290002 ^e | Castle Hayne | .009 | 6 % | 2005 | 0.037 | 7 % | 2005 |
| 371290006 | New Hanover | 0.042 | 30 % | 2009 | 0.142 | 28 % | 2008 |

Table 8 Highest Sulfur Dioxide Concentration and Year Measured by the North Carolina Sulfur Dioxide Monitoring Network (2005 through 2009) ^a

Not in an Metropolitan Statistical Area

| AQS Site Identification Number | Site Name | Highest 24-hr Average Observed (1 st max) for 2005 to 2009 | | | Highest 3-hr average observed (1 st max) for 2005 to 2009 | | |
|--------------------------------|-------------|---|-------------------------------|------|--|-------------------------------|------|
| | | Value (parts per million) | Percent of NAAQS ^b | Year | Value (parts per million) | Percent of NAAQS ^b | Year |
| 370130006 ^f | Old Aurora | 0.027 | 19 % | 2005 | 0.081 | 16 % | 2005 |
| 370130007 ^g | New Aurora | 0.010 | 7 % | 2008 | 0.038 | 8 % | 2005 |
| 371730002 ^h | Bryson City | 0.004 | 3 % | 2007 | 0.007 | 1 % | 2007 |

^a Monitors at all sites use an Automated Equivalent Method. The NC-DAQ monitors use an Instrumental Pulsed Fluorescence method using a Thermo Electron 43C (Air Quality System (AQS) Method Code 009). The monitor operated by Mecklenburg County Air Quality uses an Instrumental Pulsed Fluorescence method using a Thermo Electron 43C-TLE (AQS Method Code 560). The monitor operated by Forsyth County Environmental Affairs Department (AQS Reporting Agency 0403) uses an Instrumental Ultraviolet Fluorescence method using an API Model 100 A SO₂ Analyzer (AQS Method Code 100).

^b The National Ambient Air Quality Standard for a 24-hour period is 0.14 parts per million and 0.5 for a 3-hour period. Attainment is based on the second highest average for the calendar year.

^c Operated by the Mecklenburg County Air Quality (AQS Reporting Agency 0669)

^d Operated by the Forsyth County Environmental Affairs Department (AQS Reporting Agency 0403)

^e This monitor was shut down on December 31, 2005.

^f The Old Aurora monitor is located in Beaufort County on the fence line of the PCS Phosphate facility. This site was shut down in September 2005 because the facility expanded its phosphate mining operations to the area where the site was located.

^g The New Aurora monitor is located in Beaufort County on the fence line of the PCS Phosphate facility. This site is located approximately 2 miles northeast of the old site (370130006). It began operation in September 2005.

^h The Bryson City monitor was located in Swain County and was operated every three years to provide background data for permit modeling to meet requirements for prevention of significant deterioration. The monitor was shut down in April 2010 because the site was moved, the monitor broke during the site move, the NC-DAQ learned that the data was not required for PSD modeling because of the terrain, the measured values were low, and no users of the data could be identified.

Table 9 North Carolina Sulfur Dioxide Monitoring Network – 2010 and Proposed Monitor Locations^a

Charlotte-Gastonia-Concord Metropolitan Statistical Area

| AQS Site Identification Number | Site Location | | | | | MSA, CSA, or CBSA represented |
|--------------------------------|---------------|--------------------|-----------|------------|----------|-------------------------------|
| | Site Name | Street Address | City | Longitude | Latitude | |
| 371190041 ^b | Garinger | 1130 Eastway Drive | Charlotte | -80.785683 | 35.24028 | Charlotte |

Raleigh-Cary Metropolitan Statistical Area

| AQS Site Identification Number | Site Location | | | | | MSA, CSA, or CBSA represented |
|--------------------------------|---------------|-------------------------|---------|------------|-----------|-------------------------------|
| | Site Name | Street Address | City | Longitude | Latitude | |
| 371830014 | Millbrook | 3801 Spring Forest Road | Raleigh | -78.574167 | 35.856111 | Raleigh |

Greensboro-High Point Metropolitan Statistical Area

| AQS Site Identification Number | Site Location | | | | | MSA, CSA, or CBSA represented |
|--------------------------------|---------------|----------------|---------|---------------|--------------|-------------------------------|
| | Site Name | Street Address | City | Longitude | Latitude | |
| 37-157-0099 ^c | Bethany | 6371 NC 65 | Bethany | W 079 51' 31" | N 36 18' 32" | Greensboro |

Durham-Chapel Hill Metropolitan Statistical Area

| AQS Site Identification Number | Site Location | | | | | MSA, CSA, or CBSA represented |
|--------------------------------|---------------|-------------------------------------|-----------|------------|-----------|-------------------------------|
| | Site Name | Street Address | City | Longitude | Latitude | |
| 370370004 | Pittsboro | Route 4, Box 62 Russett Run Road | Pittsboro | -79.159722 | 35.757222 | Durham |

Winston-Salem Metropolitan Statistical Area

| AQS Site Identification Number | Site Location | | | | | MSA, CSA, or CBSA represented |
|--------------------------------|---------------|--|---------------|------------|-----------|-------------------------------|
| | Site Name | Street Address | City | Longitude | Latitude | |
| 370670022 ^d | Hattie Avenue | Corner of 13 th & Hattie Avenue | Winston-Salem | -80.226667 | 36.110556 | Winston-Salem |

Hickory Metropolitan Statistical Area

| AQS Site Identification Number | Site Location | | | | | MSA, CSA, or CBSA represented |
|--------------------------------|---------------|---------------------|--------|--------------|-------------|-------------------------------|
| | Site Name | Street Address | City | Longitude | Latitude | |
| 37-027-0003 ^e | Lenoir | 110 Nuway Circle NE | Lenoir | W081 32' 00" | N35 56' 10" | Hickory |

Fayetteville Metropolitan Statistical Area

| AQS Site Identification Number | Site Location | | | | | MSA, CSA, or CBSA represented |
|--------------------------------|---------------|--------------------|------------|-----------|-----------|-------------------------------|
| | Site Name | Street Address | City | Longitude | Latitude | |
| 370511003 | Golfview | 3625 Golfview Road | Hope Mills | -78.9625 | 34.968889 | Fayetteville |

Wilmington Metropolitan Statistical Area

| AQS Site Identification Number | Site Location | | | | | MSA, CSA, or CBSA represented |
|--------------------------------|---------------|-----------------------|------------|------------|-----------|-------------------------------|
| | Site Name | Street Address | City | Longitude | Latitude | |
| 371290006 | New Hanover | 2400 US Highway 421 N | Wilmington | -77.956529 | 34.268403 | Wilmington |

Table 9 North Carolina Sulfur Dioxide Monitoring Network – 2010 and Proposed Monitor Locations^a

Not in an Metropolitan Statistical Area

| AQS Site Identification Number | Site Location | | | | | MSA, CSA, or CBSA represented |
|--------------------------------|---------------|---------------------------------|-------------|------------|-----------|-------------------------------|
| | Site Name | Street Address | City | Longitude | Latitude | |
| 370130007 ^f | New Aurora | 1945 Sandy Landing | Aurora | -76.77988 | 35.34036 | None |
| 370130008 ^g | Aurora #3 | To be determined | TBD | TBD | TBD | None |
| 371170001 | Jamesville | 1210 Hayes Street | Jamesville | -76.89782 | 35.81069 | None |
| 371590021 ^h | Rockwell | 301 West Street | Rockwell | -80.395039 | 35.551868 | None |
| 371730002 ⁱ | Bryson City | Parks & Rec Bldg, Center Street | Bryson City | -83.443697 | 35.435509 | None |

^a Monitors at all sites use an Automated Equivalent Method. The NC-DAQ monitors, except the monitor at the Millbrook NCore site, use an Instrumental Pulsed Fluorescence method using a Thermo Electron 43C (Air Quality System (AQS) Method Code 009). The monitor at the Millbrook NCore site and the monitor operated by Mecklenburg County Air Quality use an Instrumental Pulsed Fluorescence method using a Thermo Electron 43C-TLE (AQS Method Code 560). The monitor operated by Forsyth County Environmental Affairs Department (AQS Reporting Agency 0403) uses an Instrumental Ultraviolet Fluorescence method using an API Model 100 A SO₂ Analyzer (AQS Method Code 100).

^b Operated by the Mecklenburg County Air Quality (AQS Reporting Agency 0669)

^c This monitor will start operating on 1/1/2011 on a 1-in-3 year schedule.

^d Operated by the Forsyth County Environmental Affairs Department (AQS Reporting Agency 0403)

^e This monitor will start operating on 1/1/2013 on a 1-in-3 year schedule. It will replace the Bryson monitor.

^f The New Aurora monitor is located in Beaufort County on the fence line of the PCS Phosphate facility. This site is located approximately 2 miles northeast of the previous site (370130006). It began operation in September 2005 and will be relocated later in 2010 because of current land clearing and future mining activities at the site.

^g This monitor will be located in Beaufort County on the fence line of the PCS Phosphate facility. It will replace the current site (370130007) that is being dislocated by nearby current land clearing and future mining activities.

^h This monitor has been proposed for several years to support fine particle precursor monitoring at this site.

ⁱ The Bryson City monitor was located in Swain County and was operated every three years to provide background data for permit modeling to meet requirements for prevention of significant deterioration. The monitor was shut down in April 2010 because the site was moved, the monitor broke during the site move, the NC-DAQ learned that the data was not required for PSD modeling because of the terrain, the measured values were low, and no users of the data could be identified.

Table 10 Statement of Purpose for North Carolina Sulfur Dioxide Monitoring Network^a

Charlotte-Gastonia-Concord Metropolitan Statistical Area

| AQS Site Identification Number | Site Name | Monitor Type | Operating Schedule ^b | Statement of Purpose | Monitoring Objective | Scale |
|--------------------------------|-----------|--------------|---------------------------------|---|----------------------|--------------|
| 371190041 ^c | Garinger | NCORE | 1/1 to 12/31, every year | Required monitor for NCore. Compliance with the NAAQS | Population Exposure | Neighborhood |

Raleigh-Cary Metropolitan Statistical Area

| AQS Site Identification Number | Site Name | Monitor Type | Operating Schedule ^b | Statement of Purpose | Monitoring Objective | Scale |
|--------------------------------|-----------|--------------|---------------------------------|---|----------------------|--------------|
| 371830014 | Millbrook | NCORE | 1/1 to 12/31, every year; | Required monitor for NCore. SO ₂ fine particle precursor monitoring. Compliance w/NAAQS. | General/Background | Neighborhood |

Greensboro-High Point Metropolitan Statistical Area

| AQS Site Identification Number | Site Name | Monitor Type | Operating Schedule ^b | Statement of Purpose | Monitoring Objective | Scale |
|--------------------------------|-----------|-----------------|---|---|----------------------|-------|
| 37-157-0099 ^d | Bethany | Special Purpose | 1/1 to 12/31, every 3rd year. Site will operate in 2011 | Industrial expansion monitoring for PSD modeling. | General/Background | Urban |

Durham-Chapel Hill Metropolitan Statistical Area

| AQS Site ID Number | Site Name | Monitor Type | Operating Schedule ^b | Statement of Purpose | Monitoring Objective | Scale |
|--------------------|-----------|-----------------|--|---|---|-------|
| 370370004 | Pittsboro | Special Purpose | 1/1 to 12/31, every 3rd year. Site operated in '08 & will operate in '11 | Industrial expansion monitoring for PSD modeling. Compliance w/NAAQS. | Upwind/Background General/Background | Urban |

Winston-Salem Metropolitan Statistical Area

| AQS Site ID Number | Site Name | Monitor Type | Operating Schedule ^b | Statement of Purpose | Monitoring Objective | Scale |
|------------------------|---------------|--------------|---------------------------------|---------------------------|----------------------|--------------|
| 370670022 ^e | Hattie Avenue | SLAMS | 1/1 to 12/31, every year | Compliance with the NAAQS | Population Exposure | Neighborhood |

Hickory Metropolitan Statistical Area

| AQS Site ID Number | Site Name | Monitor Type | Operating Schedule ^b | Statement of Purpose | Monitoring Objective | Scale |
|------------------------|-----------|-----------------|---|---|----------------------|----------|
| 370270003 ^f | Lenoir | Special Purpose | 1/1 to 12/31, every 3rd year. Site will operate in 2013 | Industrial expansion monitoring for PSD modeling. | General/Background | Regional |

Fayetteville Metropolitan Statistical Area

| AQS Site ID Number | Site Name | Monitor Type | Operating Schedule ^b | Statement of Purpose | Monitoring Objective | Scale |
|--------------------|-----------|-----------------|--|--|----------------------|-------|
| 370511003 | Golfview | Special Purpose | 1/1 to 12/31, every 3rd year. Site is operating in '09 & will operate in '12 | Industrial expansion monitoring for PSD modeling. Compliance with the NAAQS. | General/Background | Urban |

Table 10 Statement of Purpose for North Carolina Sulfur Dioxide Monitoring Network^a

Wilmington Metropolitan Statistical Area

| AQS Site Id Number | Site Name | Monitor Type | Operating Schedule ^b | Statement of Purpose | Monitoring Objective | Scale |
|--------------------|-------------|--------------|---------------------------------|---|---|-------|
| 371290006 | New Hanover | SLAMS | 1/1 to 12/31, every year | Maximum concentration site to ensure compliance w/NAAQS | Population Exposure/ Highest Concentration | Urban |

Not in an Metropolitan Statistical Area

| AQS Site Id Number | Site Name | Monitor Type | Operating Schedule ^b | Statement of Purpose | Monitoring Objective | Scale |
|------------------------|-------------|-----------------|---|--|---|--------------|
| 370130007 ^g | New Aurora | SLAMS | 1/1 to 12/31, every year | Fence-line monitoring at PCS Phosphate facility to ensure compliance with the NAAQS | Source Oriented | Neighborhood |
| 370130008 ^h | Aurora #3 | SLAMS | 1/1 to 12/31, every year | Fence-line monitoring at PCS Phosphate facility to ensure compliance with the NAAQS | Source Oriented | Neighborhood |
| 371170001 | Jamesville | Special Purpose | 1/1 to 12/31, every 3rd year. Site operated in '07 & will operate in '10. | Industrial expansion monitoring for PSD modeling. Compliance with the NAAQS. | Upwind/ Background General/ Background | Urban |
| 371590021 ⁱ | Rockwell | Proposed SLAMS | 1/1 to 12/31, every year; Will begin trace-level monitoring in 2009 | SO ₂ fine particle precursor monitoring. Compliance with the NAAQS. | General/ Background | Urban |
| 371730002 ^j | Bryson City | Special Purpose | 1/1 to 12/31, every 3rd year. Site operated in '07 & will operate in '10 | Industrial expansion monitoring for PSD modeling for areas west of I-77 in North Carolina. Compliance w/NAAQS. | General/ Background | Neighborhood |

^a Monitors at all sites use an Automated Equivalent Method. The NC-DAQ monitors use an Instrumental Pulsed Fluorescence method using a Thermo Electron 43C (Air Quality System (AQS) Method Code 009). The monitor operated by Mecklenburg County Air Quality uses an Instrumental Pulsed Fluorescence method using a Thermo Electron 43C-TLE (AQS Method Code 560). The monitor operated by Forsyth County Environmental Affairs Department (AQS Reporting Agency 0403) uses an Instrumental Ultraviolet Fluorescence method using an API Model 100 A SO₂ Analyzer (AQS Method Code 100).

^b All monitors operate on an hourly schedule.

^c Operated by the Mecklenburg County Air Quality (AQS Reporting Agency 0669)

^d This monitor will start operating on 1/1/2011 on a 1-in-3 year schedule.

^e Operated by the Forsyth County Environmental Affairs Department (AQS Reporting Agency 0403)

^f This monitor will start operating on 1/1/2013 on a 1-in-3 year schedule. It will replace the Bryson monitor.

^g The New Aurora monitor is located in Beaufort County on the fence line of the PCS Phosphate facility. This site is located approximately 2 miles northeast of the previous site (370130006). It began operation in September 2005 and will be relocated later in 2010 because of current land clearing and future mining activities at the site.

^h This monitor will be located in Beaufort County on the fence line of the PCS Phosphate facility. It will replace the current site (370130007) that is being dislocated by nearby current land clearing and future mining activities.

ⁱ This monitor has been proposed for several years to support fine particle precursor monitoring at this site.

^j The Bryson City monitor was located in Swain County and was operated every three years to provide background data for permit modeling to meet requirements for prevention of significant deterioration. The monitor was shut down in April 2010 because the site was moved, the monitor broke during the site move, the NC-DAQ learned that the data was not required for PSD modeling because of the terrain, the measured values were low, and no users of the data could be identified.

Table 11 Status of North Carolina Sulfur Dioxide Monitoring Network in Meeting the Requirements of Part 58 and Proposed Changes to the Network ^a

Charlotte-Gastonia-Concord Metropolitan Statistical Area

| AQS Site Id Number | Site Name | Suitable for Comparison to NAAQS | Meets Requirements of Part 58 Appendices A, C, D, & E ^{b, c} | Proposal to Move or Change |
|------------------------|-----------|----------------------------------|---|----------------------------|
| 371190041 ^d | Garinger | Yes | Yes: EQSA-0486-060 | None |

Raleigh-Cary Metropolitan Statistical Area

| AQS Site Id Number | Site Name | Suitable for Comparison to NAAQS | Meets Requirements of Part 58 Appendices A, C, D, & E ^{b, c} | Proposal to Move or Change |
|--------------------|-----------|----------------------------------|---|----------------------------|
| 371830014 | Millbrook | Yes | Yes: EQSA-0486-060 | None |

Greensboro-High Point Metropolitan Statistical Area

| AQS Site Id Number | Site Name | Suitable for Comparison to NAAQS | Meets Requirements of Part 58 Appendices A, C, D, & E ^{b, c} | Proposal to Move or Change |
|------------------------|-----------|----------------------------------|---|-----------------------------------|
| 371570099 ^e | Bethany | Yes | Yes: EQSA-0486-060 | Site will begin operating in 2011 |

Durham-Chapel Hill Metropolitan Statistical Area

| AQS Site Id Number | Site Name | Suitable for Comparison to NAAQS | Meets Requirements of Part 58 Appendices A, C, D, & E ^{b, c} | Proposal to Move or Change |
|--------------------|-----------|----------------------------------|---|--|
| 370370004 | Pittsboro | Yes | Yes: EQSA-0486-060 | Site operated in 2008 and will operate again in 2011 |

Winston-Salem Metropolitan Statistical Area

| AQS Site Id Number | Site Name | Suitable for Comparison to NAAQS | Meets Requirements of Part 58 Appendices A, C, D, & E ^{b, c} | Proposal to Move or Change |
|------------------------|---------------|----------------------------------|---|----------------------------|
| 370670022 ^f | Hattie Avenue | Yes | Yes: EQSA-0495-100 | None |

Hickory Metropolitan Statistical Area

| AQS Site Id Number | Site Name | Suitable for Comparison to NAAQS | Meets Requirements of Part 58 Appendices A, C, D, & E ^{b, c} | Proposal to Move or Change |
|------------------------|-----------|----------------------------------|---|-----------------------------------|
| 370270003 ^g | Lenoir | Yes | Yes: EQSA-0486-060 | Site will begin operating in 2013 |

Fayetteville Metropolitan Statistical Area

| AQS Site Id Number | Site Name | Suitable for Comparison to NAAQS | Meets Requirements of Part 58 Appendices A, C, D, & E ^{b, c} | Proposal to Move or Change |
|--------------------|-----------|----------------------------------|---|--|
| 370511003 | Golfview | Yes | Yes: EQSA-0486-060 | Site operated in 2009 and will operate again in 2012 |

Wilmington Metropolitan Statistical Area

| AQS Site Id Number | Site Name | Suitable for Comparison to NAAQS | Meets Requirements of Part 58 Appendices A, C, D, & E ^{b, c} | Proposal to Move or Change |
|--------------------|-------------|----------------------------------|---|----------------------------|
| 371290006 | New Hanover | Yes | Yes: EQSA-0486-060 | None |

Not in an Metropolitan Statistical Area

| AQS Site Id Number | Site Name | Suitable for Comparison to NAAQS | Meets Requirements of Part 58 Appendices A, C, D, & E ^{b, c} | Proposal to Move or Change |
|------------------------|------------|----------------------------------|---|---|
| 370130007 ^h | New Aurora | Yes | Yes: EQSA-0486-060 | Site will be moved because of mining operations at PCS Phosphate. |
| 370130008 ⁱ | Aurora #3 | Yes | Yes: EQSA-0486-060 | Site will be started to replace the New Aurora site. |
| 371170001 | Jamesville | Yes | Yes: EQSA-0486-060 | Site is operating in 2010 & will operate again in 2013 |

Table 11 Status of North Carolina Sulfur Dioxide Monitoring Network in Meeting the Requirements of Part 58 and Proposed Changes to the Network ^a

| | | | | |
|------------------------|-------------|-----|--------------------|---|
| 371590021 ^j | Rockwell | Yes | Yes: EQSA-0486-060 | Site not yet operating; will begin trace-level monitoring by 1/1/2011 |
| 371730002 ^k | Bryson City | Yes | Yes: EQSA-0486-060 | Site was shut down in April 2010 |

^a Monitors at all sites use an Automated Equivalent Method. The NC-DAQ monitors use an Instrumental Pulsed Fluorescence method using a Thermo Electron 43C (Air Quality System (AQS) Method Code 009). The monitor operated by Mecklenburg County Air Quality uses an Instrumental Pulsed Fluorescence method using a Thermo Electron 43C-TLE (AQS Method Code 560). The monitor operated by Forsyth County Environmental Affairs Department (AQS Reporting Agency 0403) uses an Instrumental Ultraviolet Fluorescence method using an API Model 100 A SO₂ Analyzer (AQS Method Code 100).

^b All monitors meet the requirements of 40CFR58 Appendix A. The Quality Assurance Project Plan and Standard Operating Procedures are being revised to reflect the changes to Appendix A of Part 58 promulgated in 2006. Appendix D has no minimum requirements for Sulfur Dioxide Monitoring. All sites meet the appropriate siting criteria in Appendix E of 40CFR58 promulgated in 2006.

^c EQSA-0486-060 and EQSA-0495-100 are codes assigned by the U.S. EPA to reference and equivalent methods that are suitable for comparison to the National Ambient Air Quality Standards. The list of reference and equivalent methods is available <http://www.epa.gov/ttn/amtic/files/ambient/criteria/reference-equivalent-methods-list.pdf>.

^d Operated by the Mecklenburg County Air Quality (AQS Reporting Agency 0669)

^e This monitor will start operating on 1/1/2011 on a 1-in-3 year schedule.

^f Operated by the Forsyth County Environmental Affairs Department (AQS Reporting Agency 0403)

^g This monitor will start operating on 1/1/2013 on a 1-in-3 year schedule. It will replace the Bryson monitor.

^h The New Aurora monitor is located in Beaufort County on the fence line of the PCS Phosphate facility. This site is located approximately 2 miles northeast of the previous site (370130006). It began operation in September 2005 and will be relocated later in 2010 because of current land clearing and future mining activities at the site.

ⁱ This monitor will be located in Beaufort County on the fence line of the PCS Phosphate facility. It will replace the current site (370130007) that is being dislocated by nearby current land clearing and future mining activities.

^j This monitor has been proposed for several years to support fine particle precursor monitoring at this site.

^k The Bryson City monitor was located in Swain County and was operated every three years to provide background data for permit modeling to meet requirements for prevention of significant deterioration. The monitor was shut down in April 2010 because the site was moved, the monitor broke during the site move, the NC-DAQ learned that the data was not required for PSD modeling because of the terrain, the measured values were low, and no users of the data could be identified.

V. Ozone Monitoring Network

The North Carolina Division of Air Quality (NC-DAQ) currently operates one of the largest ozone monitoring networks in the Southeast. This strong network has greatly benefited the state by enabling the NC-DAQ to learn about how ozone is transported to and within the state, to identify the parts of the state where the formation of ozone results in peak concentrations, and to know where ozone concentrations do and do not exceed the National Ambient Air Quality Standards (NAAQS). By having sufficient monitors to provide understanding of ozone formation in an area, NC-DAQ was able to make strong arguments with the United States Environmental Protection Agency (EPA) to prevent certain areas of the state from being designated as nonattainment and was able to develop effective implementation plans.

Table 12 provides the highest ozone design values for the monitors in North Carolina for the past five years. This information is important because the monitoring regulations promulgated by the U.S. EPA in 2006 require a monitor to be attaining the NAAQS for the past five years before the monitor can be shut down. On March 12, 2007, the U.S. EPA lowered the 8-hour ozone standard to 0.075 parts per million. Only 5 of the 40 monitors currently operating statewide have met the new 8-hour ozone standard of 0.075 parts per million for the past five years (see Figure 36). Those monitors are located at Bryson City (37-173-0002) in Swain County, Waynesville (37-087-0004) in Haywood County, Linville Falls (37-011-0002) in Avery County, Pittsboro (37-037-0004) in Chatham County, and Castle Hayne (37-129-0002) in New Hanover County. However, none of these monitors meets the additional requirement of having less than 10 % probability of exceeding 80 % of the NAAQS during the next three years. Thus, they are not eligible to be shut down.

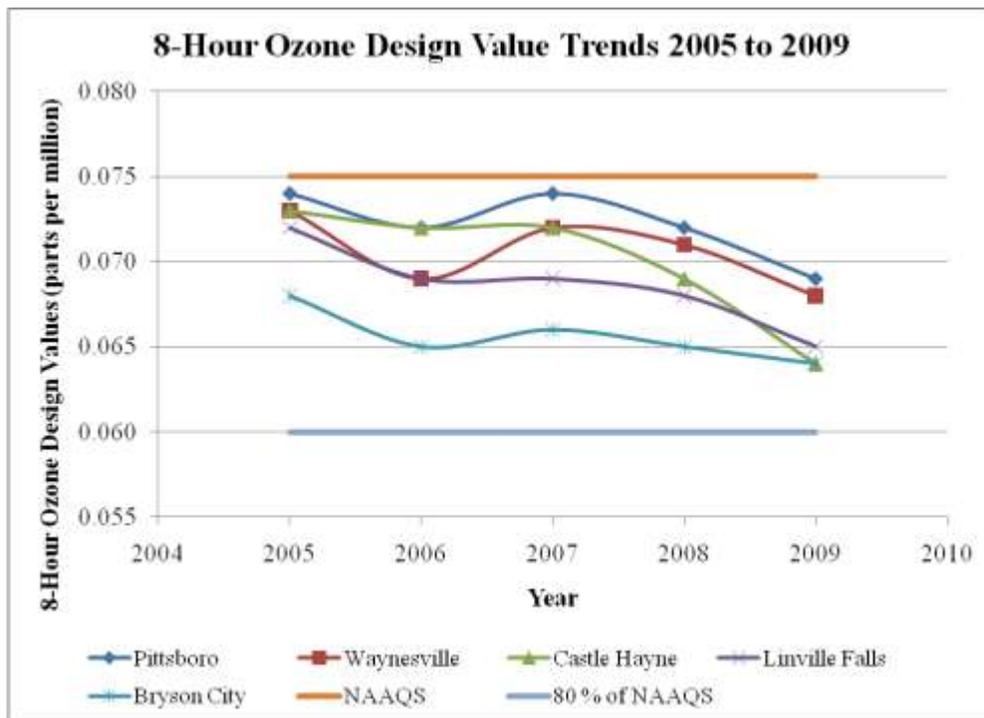


Figure 36. 8-Hour Ozone Design Value Trends.

Other ozone monitors that could be considered for shut down are those monitors that exceed the minimum number of monitors required in 40CFR58 Appendix D Table D-2 provided in Figure 37. The latest estimated population of the Metropolitan Statistical Area (MSA) and the most recent ozone 8-hour design value for the area determines the number of required monitors for an area.

Table 13 provides the 2009 population estimates for the MSAs in North Carolina, the design values for 2007-2009, the number of required monitors based on Appendix D and the number of current monitors operated by the NC-DAQ and the local programs. Currently, the NC-DAQ and the local programs are operating at least the minimum number of required monitors in every MSA except for Virginia Beach-Norfolk-New Port News MSA. The NC-DAQ has a written agreement with the Virginia Department of Environmental Quality (VDEQ), Office of Air Quality Monitoring, that VDEQ will maintain the minimum required number of monitors for the Virginia Beach-Norfolk-New Port News MSA.

**TABLE D-2 OF APPENDIX D TO PART 58.—
SLAMS MINIMUM O₃ MONITORING REQUIREMENTS**

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

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

² Population based on latest available census figures.

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

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

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

Figure 37. 40 CFR 58 Appendix D Table D-2

The NC-DAQ evaluated each MSA with more than the required monitors to determine if all of the current monitors in the MSA are still needed and providing valuable information. The local program monitors were not included in this analysis. The local program monitors were excluded because the decision on whether to continue to operate them or shut them down is up to the local program and not the NC-DAQ. Thus, five monitors were considered in this evaluation:

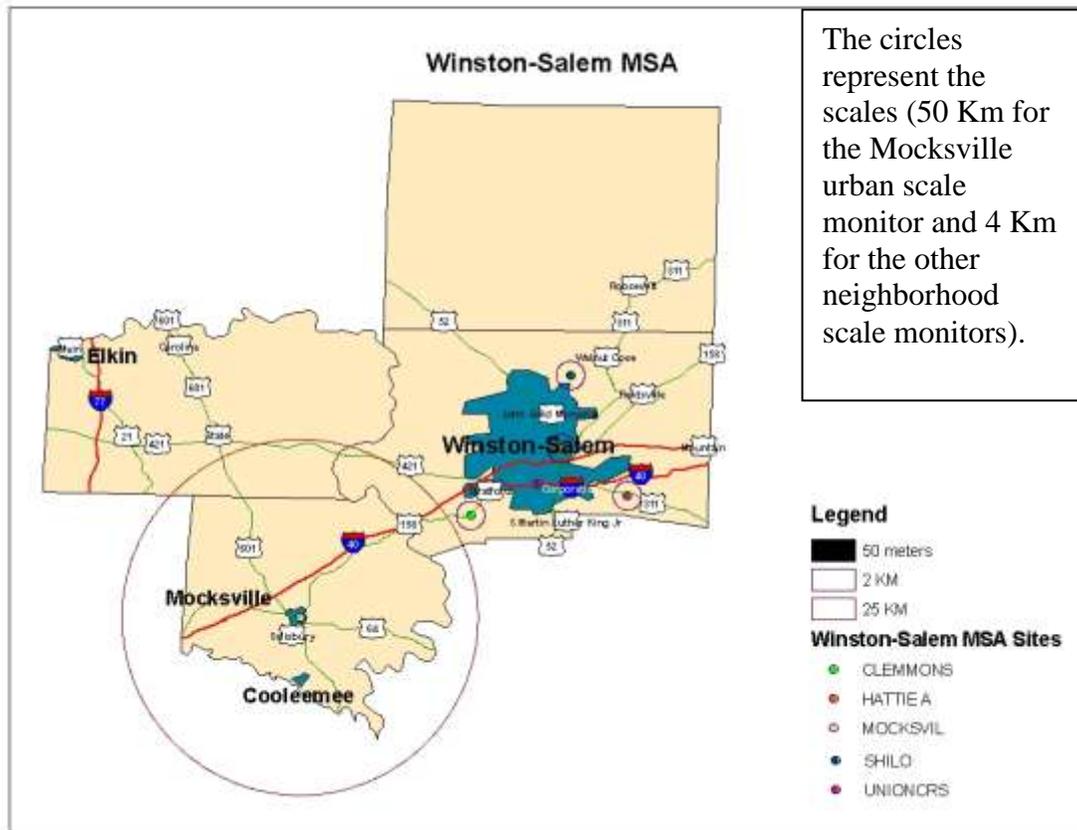
- Pittsboro (37-037-0004) in the Durham-Chapel Hill MSA (see Figure 38) – this monitor provides valuable information on model performance. As indicated in Table 1, Durham County is one of the fastest growing counties in North Carolina.



A is the Bushy Fork monitoring site; B is the the Durham Armory monitoring site; C is the Pittsboro monitoring site. Circles show the scale of representation for the monitor: urban scale for Pittsboro and Bushy Fork (4 to 50 kilometers) and neighborhood scale for Durham Armory (0.5 to 4 kilometers).

Figure 38. Location of Ozone Monitors in the Durham-Chapel Hill MSA.

Mocksville (37-059-0003) in the Winston-Salem MSA (see Figure 39) – this monitor was established this year to replace the Cooleemee monitor which was the 8-hour ozone design value monitor in the MSA. Model results indicate that the Mocksville monitor will also measure maximum ozone concentrations. Because of its potential higher readings and its strategic location between the Charlotte and Winston-Salem MSAs, this monitor provides valuable information for planning and forecasting.



The circles represent the scales (50 Km for the Mocksville urban scale monitor and 4 Km for the other neighborhood scale monitors).

Figure 39. Winston Salem MSA Ozone Monitor Locations.



A is Monroe; B is Garinger; C is Arrowood; D is County Line. Circles represent scale (30 Km for the urban scale County Line monitors and 4 Km for the other neighborhood scale monitors).

Figure 41. Charlotte MSA North Carolina Ozone Monitors.

Because all of the current monitors above the minimum requirements in these MSAs are continuing to provide important and necessary information to help the NC-DAQ effectively perform its job, NC-DAQ plans to continue operating these monitors if a suitable new location for the Franklinton monitor can be found.

The NC DAQ also evaluated the fastest growing areas in the state. Of the 13 fastest growing counties in North Carolina listed in Table 2, five of those counties currently do not have an ozone monitor:

- Brunswick County (estimated growth of 33 % between April 1, 2000, and July 1, 2009 and in the top 100 nationwide) – This County is impacted by growth in the Wilmington, North Carolina, and North Myrtle Beach, South Carolina, areas. Brunswick County is one of the three counties making up the Wilmington MSA, which now has an estimated population exceeding the 350,000 threshold. The NC-DAQ is investigating putting a monitor in this county in the area to the south and west of Leland to meet the minimum ozone monitoring requirements of two ozone monitors for the Wilmington MSA.
- Camden County and Currituck County are located south of the North Carolina-Virginia State Line and Currituck County is part of the Virginia Beach-Norfolk-New Port News MSA. The NC DAQ used to operate a monitor in Camden County (indicated by the furthest star to the east in Figure 42). The ozone concentrations it measured were among the lowest in the state. In addition, the VISTAS Unmonitored Areas Analysis indicates that expected ozone levels in these two counties are relatively low. As a result the NC DAQ has no plans to monitor for ozone in either of these counties at this time.

Legend

* Monitoring Sites
vistas12km_grid

O3 2009g4a DVF

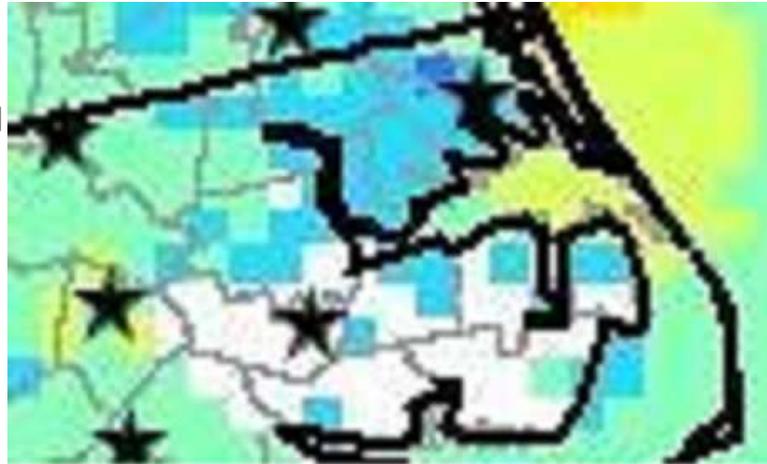
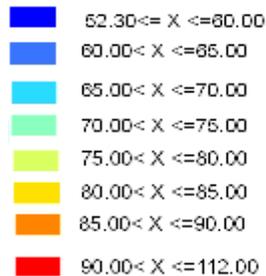


Figure 42. VISTAS Unmonitored Areas Analysis Map

- Harnett County and Hoke County are located in the Sand Hills area of North Carolina and Hoke County is part of the Fayetteville MSA. The NC DAQ currently operates two ozone monitors in the Fayetteville MSA as required by 40 CFR 58 Appendix D. The VISTAS Unmonitored Areas Analysis for ozone in 2012 (see Figure 43) indicates that expected ozone levels in these two counties would be similar to the concentrations measured by the Wade monitor in Cumberland County. Currently this monitor has a design value below the current standard of 0.075 parts per million. As a result the NC DAQ has no plans to monitor for ozone in either of these counties at this time.

Legend

* Monitoring Sites
vistas12km_grid

O3 2012g4a DVF

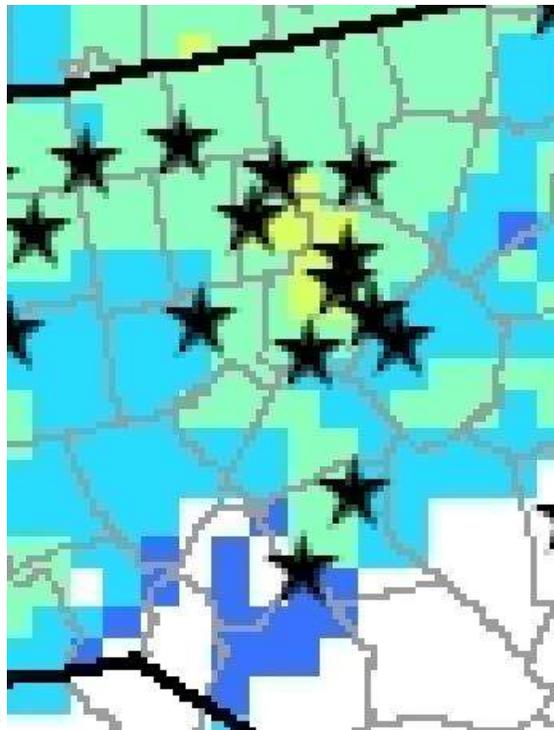
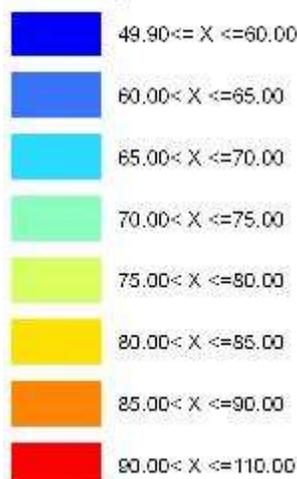


Figure 43. VISTAS Unmonitored Areas Analysis Map for Harnett and Hoke Counties

At this time, except for the deficiency in the Wilmington MSA, the NC DAQ believes the current ozone network is adequate and does not recommend the addition of any new ozone monitors or the removal of any current ozone monitors. The NC DAQ did move one existing ozone monitor because the landowner evicted us from the site. This monitor was moved from Cooleemee to Mocksville because the new Mocksville site was the closest site to the Cooleemee site that the NC-DAQ could find that sufficiently met all of the siting criteria. The NC-DAQ is currently seeking a suitable site in Brunswick County for a second ozone monitor for the Wilmington MSA. The NC-DAQ has also received approval for a new site for the Waynesville Health Department ozone monitoring site and will be relocating the Franklinton ozone monitoring site to another location on the property. The NC-DAQ will be evicted from the Waynesville Health Department ozone monitoring site at the end of the year and plans to move the site across the street to a location on the campus of the Junaluska Elementary School. The NC-DAQ received final approval from the Haywood County School Board in June. The NC-DAQ will be evicted from the Franklinton ozone monitoring site in early July, to make space for a wider road to accommodate a bus turn-around at the school. The NC-DAQ is will relocate the monitor on the school campus about 10 meters from its current location.

The locations of the current ozone-monitoring sites are provided in Table 14. All monitors listed in Table 14 are suitable for comparison to the National Ambient Air Quality Standards and meet the requirements of Appendices A, C, D, and E of Part 58. All of these monitors use the U.S. EPA equivalent method designation EQOA-0880-047. The locations of the monitors are shown in Figure 44.

Table 15 provides the monitor type, operating schedules, monitoring objectives, and scales for all of the current and proposed monitors in the North Carolina Ozone Monitoring Network. All monitors operate on an hourly schedule from April 1 through October 31 each year. Several of the monitors operate year-round. Table 16 lists the statement of purpose for each monitor in the North Carolina Ozone Monitoring Network and also provides any proposed changes to the network.

Table 12 Summary of Ozone Concentrations Measured by the North Carolina Ozone Monitoring Network (2005 through 2009)^a

Charlotte-Gastonia-Concord Metropolitan Statistical Area

| AQS Site Identification Number | Site Name | Highest 8-Hour Ozone Design Value for 2004 to 2008 | | |
|--------------------------------|----------------------|--|-------------------------------|-----------|
| | | Value (parts per million) | Percent of NAAQS ^b | Year |
| 37-119-0041 ^c | Garinger | 0.090 | 120% | 2005-2007 |
| 37-119-1005 ^c | Arrowood | 0.083 | 111% | 2005-2007 |
| 37-119-1009 ^c | County Line (U) | 0.094 | 125% | 2006-2008 |
| 37-179-0003 | Monroe Middle School | 0.081 | 108% | 2005-2007 |

Raleigh-Cary Metropolitan Statistical Area

| AQS Site Identification Number | Site Name | Highest 8-Hour Ozone Design Value for 2004 to 2008 | | |
|--------------------------------|---------------|--|-------------------------------|-----------|
| | | Value (parts per million) | Percent of NAAQS ^b | Year |
| 37-069-0001 | Franklinton | 0.081 | 108% | 2003-2005 |
| 37-101-0002 | West Johnston | 0.079 | 105% | 2003-2005 |
| 37-183-0014 | Millbrook | 0.082 | 109% | 2003-2005 |
| 37-183-0016 | Fuquay | 0.083 | 111% | 2003-2005 |

Greensboro-High Point Metropolitan Statistical Area

| AQS Site Identification Number | Site Name | Highest 8-Hour Ozone Design Value for 2004 to 2008 | | |
|--------------------------------|--------------|--|-------------------------------|-----------|
| | | Value (parts per million) | Percent of NAAQS ^b | Year |
| 37-081-0011 ^d | McLeansville | 0.077 | 103% | 2003-2005 |
| 37-081-0013 ^e | Mendenhall | 0.082 | 109% | 2006-2008 |
| 37-157-0099 | Bethany | 0.080 | 107% | 2006-2008 |

Durham-Chapel Hill Metropolitan Statistical Area

| AQS Site Identification Number | Site Name | Highest 8-Hour Ozone Design Value for 2004 to 2008 | | |
|--------------------------------|---------------|--|-------------------------------|-----------|
| | | Value (parts per million) | Percent of NAAQS ^b | Year |
| 37-037-0004 | Pittsboro | 0.074 | 99% | 2005-2007 |
| 37-063-0013 ^f | Duke Street | 0.078 | 104% | 2003-2005 |
| 37-063-0015 ^g | Durham Armory | 0.074 | 99% | 2007-2009 |
| 37-145-0003 | BushyFork | 0.079 | 105% | 2003-2005 |

Winston-Salem Metropolitan Statistical Area

| AQS Site Identification Number | Site Name | Highest 8-Hour Ozone Design Value for 2004 to 2008 | | |
|--------------------------------|-----------------|--|-------------------------------|-----------|
| | | Value (parts per million) | Percent of NAAQS ^b | Year |
| 37-059-0002 | Cooleemee | 0.083 | 111% | 2005-2007 |
| 37-067-0022 ^h | Hattie Ave. (U) | 0.081 | 108% | 2006-2008 |
| 37-067-0028 ^h | Shiloh Church | 0.074 | 99% | 2003-2005 |
| 37-067-0030 ^h | Clemmons | 0.078 | 104% | 2006-2008 |
| 37-067-1008 ^h | Union Cross | 0.081 | 108% | 2006-2008 |

Asheville Metropolitan Statistical Area

| AQS Site Identification Number | Site Name | Highest 8-Hour Ozone Design Value for 2004 to 2008 | | |
|--------------------------------|-------------|--|-------------------------------|-----------|
| | | Value (parts per million) | Percent of NAAQS ^b | Year |
| 37-021-0030 ⁱ | Bent Creek | 0.074 | 99% | 2005-2007 |
| 37-087-0004 | Waynesville | 0.073 | 97% | 2003-2005 |

Table 12 Summary of Ozone Concentrations Measured by the North Carolina Ozone Monitoring Network (2005 through 2009)^a

Hickory Metropolitan Statistical Area

| AQS Site Identification Number | Site Name | Highest 8-Hour Ozone Design Value for 2004 to 2008 | | |
|--------------------------------|--------------|--|-------------------------------|-----------|
| | | Value (parts per million) | Percent of NAAQS ^b | Year |
| 37-003-0004 ^j | Waggin Trail | 0.079 | 105% | 2005-2007 |
| 37-027-0003 | Lenoir | 0.076 | 101% | 2005-2007 |

Fayetteville Metropolitan Statistical Area

| AQS Site Identification Number | Site Name | Highest 8-Hour Ozone Design Value for 2004 to 2008 | | |
|--------------------------------|-----------|--|-------------------------------|-----------|
| | | Value (parts per million) | Percent of NAAQS ^b | Year |
| 37-051-0008 | Wade | 0.080 | 107% | 2003-2005 |
| 37-051-1003 | Golfview | 0.083 | 111% | 2003-2005 |

Wilmington Metropolitan Statistical Area

| AQS Site Identification Number | Site Name | Highest 8-Hour Ozone Design Value for 2004 to 2008 | | |
|--------------------------------|--------------|--|-------------------------------|-----------|
| | | Value (parts per million) | Percent of NAAQS ^b | Year |
| 37-129-0002 | Castle Hayne | 0.073 | 97% | 2003-2005 |

Greenville Metropolitan Statistical Area

| AQS Site Identification Number | Site Name | Highest 8-Hour Ozone Design Value for 2004 to 2008 | | |
|--------------------------------|--------------------|--|-------------------------------|-----------|
| | | Value (parts per million) | Percent of NAAQS ^b | Year |
| 37-147-0006 ^k | Pitt Co. Ag Center | 0.077 ^{lo} | 103% | 2006-2008 |
| 37-147-0099 ^m | Farmville | 0.077 | 103% | 2005-2007 |

Rocky Mount Metropolitan Statistical Area

| AQS Site Identification Number | Site Name | Highest 8-Hour Ozone Design Value for 2004 to 2008 | | |
|--------------------------------|-----------|--|-------------------------------|-----------|
| | | Value (parts per million) | Percent of NAAQS ^b | Year |
| 37-065-0099 | Leggett | 0.079 | 105% | 2003-2005 |

Not in an Metropolitan Statistical Area

| AQS Site Identification Number | Site Name | Highest 8-Hour Ozone Design Value for 2004 to 2008 | | |
|--------------------------------|--------------------------|--|-------------------------------|-----------|
| | | Value (parts per million) | Percent of NAAQS ^b | Year |
| 37-011-0002 | Linville Falls | 0.072 | 96% | 2003-2005 |
| 37-033-0001 | Cherry Grove | 0.079 | 105% | 2006-2008 |
| 37-075-0001 ⁿ | Joanna Bald | 0.079 | 105% | 2003-2005 |
| 37-077-0001 | Butner | 0.085 | 113% | 2003-2005 |
| 37-087-0035 | Fry Pan | 0.079 | 105% | 2005-2007 |
| 37-087-0036 | Purchase knob | 0.078 | 104% | 2005-2007 |
| 37-107-0004 | Lenoir community College | 0.077 | 103% | 2003-2005 |
| 37-109-0004 | Crouse | 0.083 | 111% | 2005-2007 |
| 37-117-0001 | Jamesville | 0.077 | 103% | 2003-2005 |
| 37-159-0021 | Rockwell | 0.089 | 119% | 2005-2007 |
| 37-159-0022 | Enochville | 0.090 | 120% | 2005-2007 |
| 37-173-0002 | Bryson City | 0.068 | 91% | 2003-2005 |
| 37-199-0003 ^o | Mount Mitchell | 0.076 | 101% | 2003-2005 |
| 37-199-0004 ^p | Mount Mitchell | 0.078 ^q | 104% | 2005-2007 |

^a All monitors use an Instrumental Ultra Violet method (Air Quality System (AQS) Method Code 047).

Table 12 Summary of Ozone Concentrations Measured by the North Carolina Ozone Monitoring Network (2005 through 2009)^a

^b The National Ambient Air Quality Standard for an 8-hour period is 0.075 parts per million. Attainment is based on the average of the fourth highest values for three consecutive ozone seasons. The ozone season for North Carolina is from April 1 through October 31.

^c Operated by the Mecklenburg County Air Quality (AQS Reporting Agency 0669)

^d This monitor was shut down on July 6, 2005, to move it to the Mendenhall monitoring site. This move was made because of site deficiencies identified at the McLeansville site in the annual network review and to combine the Guilford County/Greensboro ozone and particle monitoring sites into one multi-pollutant site.

^e This monitor started on April 15, 2005, to replace the McLeansville monitor.

^f This monitor was shut down on October 31, 2006, to move it across the street to a site more suitable for particle monitoring so that the Durham ozone and particle sites can be combined into one multi-pollutant site.

^g This monitor started on April 1, 2007, to replace the Duke Street monitor.

^h Operated by the Forsyth County Environmental Affairs Department (AQS Reporting Agency 0403).

ⁱ Operated by the Western North Carolina Regional Air Quality Agency (AQS Reporting Agency 0779).

^j This monitor started on August 11, 2004, to replace the Taylorsville monitor.

^k This monitor started on April 1, 2008, to replace the Farmville monitor.

^l Average of the fourth highest value for one year only (2008).

^m This monitor was shut down on October 31, 2007, and replaced by the Pitt Co. Ag Center monitor.

ⁿ This monitor started on April 3, 2003. The monitor is owned by the United States Forest Service and operated by the North Carolina Division of Air Quality (NC-DAQ).

^o This monitor was shut down on June 2, 2006, because the building was no longer suitable for monitoring due to weather damage and infestation by vermin. The building was owned by North Carolina State University (NCSU). When contacted, NCSU expressed no desire to repair the building. The NC-DAQ investigated the options for replacing the building. The road was inadequate to allow a building to be brought in and building a new building on site was too labor intensive.

^p This monitor started on June 2, 2006, at Mount Mitchell State Park to replace a monitor located at a NCSU research site on Mount Mitchell.

^q Average of the fourth highest value for two years only (2006 and 2007).

**Table 13 Design Values and Required Ozone Monitors for North Carolina
Metropolitan Statistical Areas (MSA)**

| MSA | Population (2009 estimate) ^a | 2009 Ozone 8- Hour Design Value (As percent of NAAQS) ^b | Number of Monitors operated in North Carolina | |
|---|---|--|---|----------------|
| | | | Required | Current |
| Virginia Beach-Norfolk- Newport News | 1,674,498 | 103 ^c | 2 | 0 ^d |
| Charlotte-Gastonia-Concord | 1,745,524 | 115 | 2 | 4 ^e |
| Raleigh-Cary | 1,125,827 | 101 | 2 | 4 |
| Greensboro-High Point | 714,765 | 105 | 2 | 2 |
| Durham-Chapel Hill | 501,228 | 99 | 2 | 3 |
| Winston-Salem | 484,921 | 104 | 2 | 5 |
| Asheville | 412,672 | 92 | 2 | 4 |
| Hickory | 365,364 | 97 | 2 | 2 |
| Fayetteville | 360,355 | 99 | 2 | 2 |
| Wilmington | 354,525 | 85 ^f | 1 | 1 |
| Greenville | 173,715 | 103 ^g | 1 | 1 |
| Jacksonville | 173,064 | Not Available | 0 | 0 |
| Rocky Mount | 146,596 | 97 | 1 | 1 |
| Burlington | 150,358 | Not Available | 0 | 0 |
| Goldsboro | 113,811 | Not Available | 0 | 0 |

^a Source: U.S. Census Bureau, Population Division, Table 1. Annual Estimates of the Population of Metropolitan and Micropolitan Statistical Areas: April 1, 2000 to July 1, 2009 (CBSA-EST2009-01), Released March 2010, available on the world wide web at <http://www.census.gov/popest/metro/CBSA-est2009-annual.html>

^b The National Ambient Air Quality Standard for an 8-hour period is 0.075 parts per million. Attainment is based on the average of the 4th highest value over three consecutive ozone seasons. Values of 0.075 (100 %) and below are considered to be attaining the National Ambient Air Quality Standard.

^c Design value for 2006-2008.

^d Virginia Department of Environmental Quality (VDEQ), Office of Air Quality Monitoring operates three monitors in this MSA.

^e South Carolina Department of Health and Environment operates an additional monitor in York County, South Carolina.

^f Sampling did not satisfy EPA summary criteria; design value is provisional.

^g Design value for 2005-2007.

Table 14 North Carolina Ozone Monitoring Network – Monitor Locations ^a

Charlotte-Gastonia-Concord Metropolitan Statistical Area

| AQS Site Identification Number | Site Location | | | | |
|--------------------------------|----------------------|--------------------------|-----------|---------------|--------------|
| | Site Name | Street Address | City | Longitude | Latitude |
| 37-119-0041 ^b | Garinger | 1130 Eastway Drive | Charlotte | W 080 46' 59" | N 35 14' 28" |
| 37-119-1005 ^b | Arrowood | 400 Westinghouse Blvd. | Charlotte | W 080 55' 11" | N 35 06' 47" |
| 37-119-1009 ^b | County Line | 29 N@ Mecklenburg Cab Co | Charlotte | W 080 41' 37" | N 35 20' 55" |
| 37-179-0003 | Monroe Middle School | 701 Charles Street | Monroe | W 080 32' 27" | N 34 58' 26" |

Raleigh-Cary Metropolitan Statistical Area

| AQS Site Identification Number | Site Location | | | | |
|--------------------------------|---------------|-------------------------------|-------------|---------------|--------------|
| | Site Name | Street Address | City | Longitude | Latitude |
| 37-069-0001 | Franklinton | 431 South Hillsborough Street | Franklinton | W 078 27' 44" | N 36 05' 51" |
| 37-101-0002 | West Johnston | 3411 Jack Road ^c | Clayton | W 078 26' 15" | N 35 30' 0" |
| 37-183-0014 | Millbrook | 3801 Spring Forest Road | Raleigh | W 078 34' 27" | N 35 51' 22" |
| 37-183-0016 | Fuquay | 201 North Broad Street | Raleigh | W 078 47' 41" | N 35 35' 06" |

Greensboro-High Point Metropolitan Statistical Area

| AQS Site Identification Number | Site Location | | | | |
|--------------------------------|---------------|---------------------|------------|---------------|--------------|
| | Site Name | Street Address | City | Longitude | Latitude |
| 37-081-0013 | Mendenhall | 205 Wiloughby Blvd. | Greensboro | W 079 48' 04" | N 36 06' 33" |
| 37-157-0099 | Bethany | 6371 NC 65 | Bethany | W 079 51' 31" | N 36 18' 32" |

Durham-Chapel Hill Metropolitan Statistical Area

| AQS Site Identification Number | Site Location | | | | |
|--------------------------------|---------------|----------------------|-----------|---------------|--------------|
| | Site Name | Street Address | City | Longitude | Latitude |
| 37-037-0004 | Pittsboro | 325 Russett Run Road | Pittsboro | W 079 09' 55" | N 35 45' 32" |
| 37-063-0015 | Durham Armory | 801 Stadium Drive | Durham | W 078 54' 14" | N 36 01' 58" |
| 37-145-0003 | BushyFork | Highway 49 South | BushyFork | W 079 05' 29" | N 36 18' 21" |

Winston-Salem Metropolitan Statistical Area

| AQS Site Identification Number | Site Location | | | | |
|--------------------------------|---------------|--|---------------|---------------|----------------|
| | Site Name | Street Address | City | Longitude | Latitude |
| 37-059-0003 | Mocksville | 220 Cherry Street | Mocksville | W 080 33' 26" | N 35 53' 49" |
| 37-067-0022 ^d | Hattie Ave. | Corner of 13 th & Hattie Avenue | Winston-Salem | W 080 13' 36" | N 36 6' 38" |
| 37-067-0028 ^d | Shiloh Church | 6496 Baux Mountain Road | | W 080 12' 57" | N 36 12' 11.0" |
| 37-067-0030 ^d | Clemmons | Fraternity Church Road | Clemmons | W 080 20' 31" | N 36 01' 33.6" |
| 37-067-1008 ^d | Union Cross | 3656 Piedmont Memorial Drive | | W 080 08' 38" | N 36 03' 03" |

Asheville Metropolitan Statistical Area

| AQS Site Id Number | Site Location | | | | |
|--------------------------|-------------------------------|-------------------------|-------------|---------------|--------------|
| | Site Name | Street Address | City | Longitude | Latitude |
| 37-021-0030 ^e | Bent Creek | Route 191 South | Asheville | W 082 35' 50" | N 35 30' 19" |
| 37-087-0004 ^f | Waynesville Health Department | 2177 Asheville Road Way | Waynesville | W 082 57' 53" | N35 30' 19" |
| 37-087-0008 ^g | Junaluska E.S. | 2238 Asheville Road | Waynesville | W 082 57' 48" | N35 30' 26" |

Table 14 North Carolina Ozone Monitoring Network – Monitor Locations ^a

Hickory Metropolitan Statistical Area

| AQS Site Identification Number | Site Location | | | | |
|--------------------------------|---------------|-----------------------|---------------|---------------|--------------|
| | Site Name | Street Address | City | Longitude | Latitude |
| 37-003-0004 | Waggin Trail | 116 Waggin Trail Road | Not in a City | W 081 11' 22" | N 35 55' 44" |
| 37-027-0003 | Lenoir | 110 Nuway Circle NE | Lenoir | W081 32' 00" | N35 56' 10" |

Fayetteville Metropolitan Statistical Area

| AQS Site Identification Number | Site Location | | | | |
|--------------------------------|---------------|---------------------|------------|---------------|-------------|
| | Site Name | Street Address | City | Longitude | Latitude |
| 37-051-0008 | Wade | 7112 Covington Lane | Wade | W 078 43' 53" | N 35 7' 51" |
| 37-051-1003 | Golfview | 3625 Golfview Road | Hope Mills | W 078 57' 45" | N 34 58' 8" |

Wilmington Metropolitan Statistical Area

| AQS Site Identification Number | Site Location | | | | |
|--------------------------------|---------------|-------------------------|--------------|---------------|--------------|
| | Site Name | Street Address | City | Longitude | Latitude |
| 37-129-0002 | Castle Hayne | 6028 Holly Shelter Road | Castle Hayne | W 077 50' 36" | N 34 21' 87" |
| 37-019-xxxx ^h | Brunswick | To be determined (TBD) | TBD | TBD | TBD |

Greenville Metropolitan Statistical Area

| AQS Site Identification Number | Site Location | | | | |
|--------------------------------|---------------|--------------------|------------|---------------|--------------|
| | Site Name | Street Address | City | Longitude | Latitude |
| 37-147-0006 ⁱ | Pitt County | 403 Government Cir | Greenville | W 077 21' 00" | N 35 38' 00" |

Rocky Mount Metropolitan Statistical Area

| AQS Site Identification Number | Site Location | | | | |
|--------------------------------|---------------|------------------|---------|---------------|--------------|
| | Site Name | Street Address | City | Longitude | Latitude |
| 37-065-0099 | Leggett | Route 2, Box 195 | Leggett | W 077 35' 06" | N 35 59' 30" |

Not in an Metropolitan Statistical Area

| AQS Site Identification Number | Site Location | | | | |
|--------------------------------|--------------------------|--|---------------------|---------------|----------------|
| | Site Name | Street Address | City | Longitude | Latitude |
| 37-011-0002 | Linville Falls | 112 Blue Ridge Pkwy Spur Mile Marker 316 | Linville Falls | W 081 55' 59" | N35 58' 20" |
| 37-033-0001 | Cherry Grove | 7074 Cherry Grove Road | Reidsville | W 079 28' 05" | N 36 18' 25" |
| 37-075-0001 ^j | Joanna Bald | Forest Road 423 Spur | Robbinsville | W 083 47' 44" | N 35 15' 28.5" |
| 37-077-0001 | Butner | Water Treatment Plant | Butner | W 078 46' 05" | N 36 08' 29" |
| 37-087-0035 | Fry Pan | State Rd 450, Blue Ridge Pkwy Mile 409 | Pisgah Forest | W082 46' 28" | N35 23' 37" |
| 37-087-0036 | Purchase knob | 6905 Purchase Road | Waynesville (GSMNP) | W083 04' 27" | N35 35' 13" |
| 37-107-0004 | Lenoir community College | 231 Highway 58 S | Kinston | W 077 34' 11" | N 35 13' 58" |
| 37-109-0004 | Crouse | 1487 Riverview Road | Not in a City | W 081 16' 31" | N 35 26' 18" |
| 37-117-0001 | Jamesville | 33215 US Highway 64 | Jamesville | W 076 54' 23" | N 35 48' 38.3" |
| 37-159-0021 | Rockwell | 301 West Street | Rockwell | W 080 23' 72" | N 35 33' 11" |
| 37-159-0022 | Enochville | 925 North Enochville Avenue | Not in a City | W 080 40' 3" | N 35 32' 05" |
| 37-173-0002 | Bryson City | Parks & Rec Bldg, Center Street | Bryson City | W 083 26' 38" | N35 26' 06" |
| 37-199-0004 | Mount Mitchell | State Highway 128 | Pisgah Forest | W 082 15' 54" | N 35 45' 53" |

^a All monitors use an Instrumental Ultra Violet method (Air Quality System (AQS) Method Code 047). All monitors

Table 14 North Carolina Ozone Monitoring Network – Monitor Locations ^a

listed in this table are suitable for comparison to the National Ambient Air Quality Standards. All monitors in this table meet the requirements of Appendices A, C, D, and E of Part 58. All monitors use the U.S. U.S. EPA equivalent method designation EQOA-0880-047.

^b Operated by the Mecklenburg County Air Quality (AQS Reporting Agency 0669)

^c The monitor is located 10 meters South of Jack Road, which had a 2002 average daily traffic count of 3,700. This location meets the requirements in Table E-1 for spacing between roadways and probes for neighborhood and urban scale monitors in operation before December 18, 2006, but does not meet the spacing requirements for a new monitoring site.

^d Operated by the Forsyth County Environmental Affairs Department (AQS Reporting Agency 0403).

^e Operated by the Western North Carolina Regional Air Quality Agency (AQS Reporting Agency 0779).

^f The NC-DAQ will be evicted from this site at the end of the 2010 ozone season and will shut down the site on 10/31/2010.

^g This monitor will start on April 1, 2011 to replace the ozone monitor at the Waynesville Health Department.

^h This monitor will start on April 1, 2011 as the second required monitor for the Wilmington MSA. Its exact location has not yet been identified.

ⁱ This monitor started on April 1, 2008, to replace the Farmville monitor.

^j This monitor started on April 3, 2003. The monitor is owned by the United States Forest Service and operated by the North Carolina Division of Air Quality (NC DAQ).

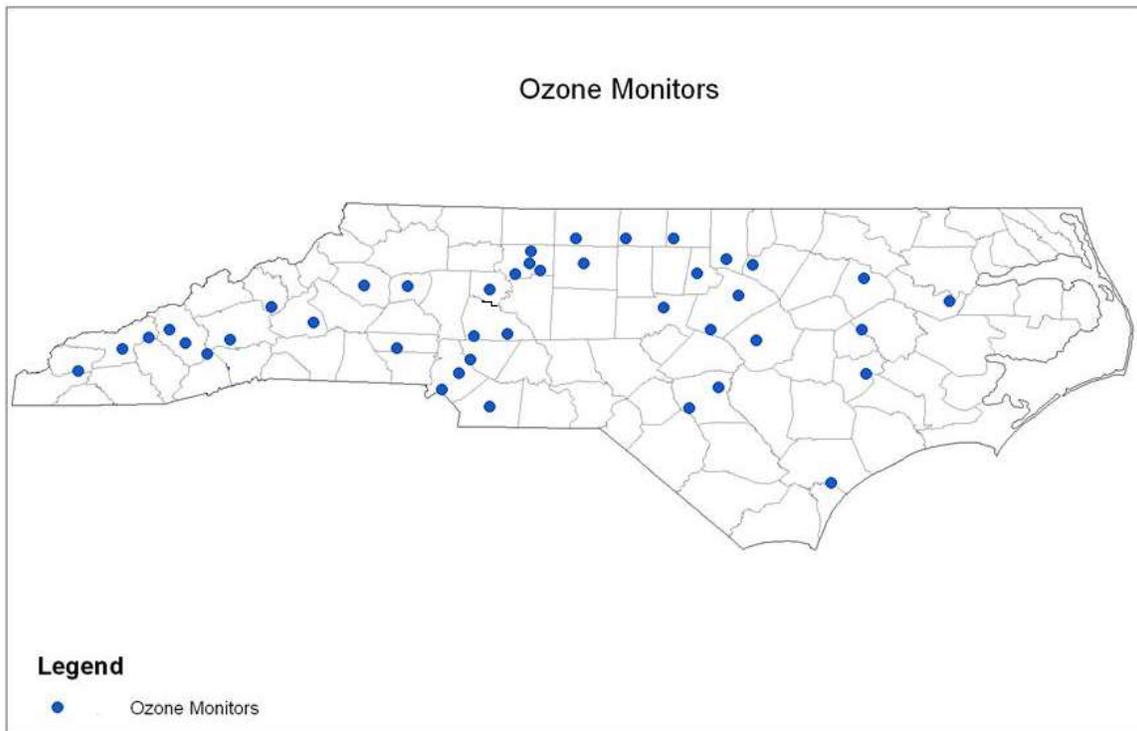


Figure 44. Location of 2010 Ozone Monitoring Stations

Table 15 Monitor Type, Operating Schedules, Monitoring Objectives, and Scales for the North Carolina Ozone Monitoring Network ^a

Charlotte-Gastonia-Concord Metropolitan Statistical Area

| AQS Site ID Number | Site Name | Monitor Type | Operating Schedule ^b | Monitoring Objective | Scale |
|--------------------------|----------------------|-----------------|---------------------------------|-----------------------|--------------|
| 37-119-0041 ^c | Garinger | NCORE | 1/1 to 12/31 | Highest Concentration | Neighborhood |
| 37-119-1005 ^c | Arrowood | SLAMS | 4/1 to 10/31 | Highest Concentration | Neighborhood |
| 37-119-1009 ^c | County Line | SLAMS | 4/1 to 10/31 | Highest Concentration | Urban |
| 37-179-0003 | Monroe Middle School | Special Purpose | 4/1 to 10/31 | Population Exposure | Neighborhood |

Raleigh-Cary Metropolitan Statistical Area

| AQS Site ID Number | Site Name | Monitor Type | Operating Schedule ^b | Monitoring Objective | Scale |
|--------------------|---------------|--------------|---------------------------------|---|--------------|
| 37-069-0001 | Franklinton | SLAMS | 4/1 to 10/31 | Population Exposure | Urban |
| 37-101-0002 | West Johnston | SLAMS | 4/1 to 10/31 | General/Background | Urban |
| 37-183-0014 | Millbrook | NCORE | 1/1 to 12/31 | Maximum Ozone Concentration/ Population Exposure | Neighborhood |
| 37-183-0016 | Fuquay | Other | 4/1 to 10/31 | Highest Concentration | Neighborhood |

Greensboro-High Point Metropolitan Statistical Area

| AQS Site ID Number | Site Name | Monitor Type | Operating Schedule ^b | Monitoring Objective | Scale |
|--------------------|------------|--------------|---------------------------------|-----------------------|-------|
| 37-081-0013 | Mendenhall | SLAMS | 4/1 to 10/31 | Population Exposure | Urban |
| 37-157-0099 | Bethany | SLAMS | 4/1 to 10/31 | Highest Concentration | Urban |

Durham-Chapel Hill Metropolitan Statistical Area

| AQS Site ID Number | Site Name | Monitor Type | Operating Schedule ^b | Monitoring Objective | Scale |
|--------------------|---------------|--------------|---------------------------------|--|--------------|
| 37-037-0004 | Pittsboro | SLAMS | 4/1 to 10/31 | Upwind Background/ General/Background | Urban |
| 37-063-0015 | Durham Armory | SLAMS | 4/1 to 10/31 | Population Exposure | Neighborhood |
| 37-145-0003 | Bushy Fork | SLAMS | 4/1 to 10/31 | Background/ Highest Concentration | Urban |

Winston-Salem Metropolitan Statistical Area

| AQS Site Identification Number | Site Name | Monitor Type | Operating Schedule ^b | Monitoring Objective | Scale |
|--------------------------------|---------------|--------------|---------------------------------|----------------------|--------------|
| 37-067-0022 ^d | Hattie Ave. | Other | 4/1 to 10/31 | Population Exposure | Neighborhood |
| 37-067-0028 ^d | Shiloh Church | SLAMS | 4/1 to 10/31 | Population Exposure | Neighborhood |
| 37-067-0030 ^d | Clemmons | SLAMS | 4/1 to 10/31 | Population Exposure | Neighborhood |
| 37-067-1008 ^d | Union Cross | SLAMS | 4/1 to 10/31 | Population Exposure | Neighborhood |
| 37-059-0003 | Mocksville | SLAMS | 4/1 to 10/31 | Population Exposure | Urban |

Asheville Metropolitan Statistical Area

| AQS Site Id Number | Site Name | Monitor Type | Operating Schedule ^b | Monitoring Objective | Scale |
|--------------------------|-------------------------------|--------------|---------------------------------|---|--------------|
| 37-021-0030 ^e | Bent Creek | SLAMS | 4/1 to 10/31 | Maximum Ozone Concentration/ Highest Concentration | Urban |
| 37-087-0004 ^f | Waynesville Health Department | Other | 4/1 to 10/31 | Population Exposure | Neighborhood |
| 39-087-0013 ^g | Junaluska E.S. | SLAMS | 4/1 to 10/31 | Population Exposure | Urban |

Table 15 Monitor Type, Operating Schedules, Monitoring Objectives, and Scales for the North Carolina Ozone Monitoring Network ^a

Hickory Metropolitan Statistical Area

| AQS Site ID Number | Site Name | Monitor Type | Operating Schedule ^b | Monitoring Objective | Scale |
|--------------------|--------------|--------------|---------------------------------|----------------------|----------|
| 37-003-0004 | Waggin Trail | Other | 4/1 to 10/31 | General/ Background | Urban |
| 37-027-0003 | Lenoir | SLAMS | 4/1 to 10/31 | General/ Background | Regional |

Fayetteville Metropolitan Statistical Area

| AQS Site ID Number | Site Name | Monitor Type | Operating Schedule ^b | Monitoring Objective | Scale |
|--------------------|-----------|--------------|---------------------------------|-----------------------|--------------|
| 37-051-0008 | Wade | SLAMS | 4/1 to 10/31 | Highest Concentration | Urban |
| 37-051-1003 | Golfview | SLAMS | 4/1 to 10/31 | Population Exposure | Neighborhood |

Wilmington Metropolitan Statistical Area

| AQS Site ID Number | Site Name | Monitor Type | Operating Schedule ^b | Monitoring Objective | Scale |
|--------------------------|--------------|--------------|---------------------------------|----------------------|--------------|
| 37-129-0002 | Castle Hayne | SLAMS | 4/1 to 10/31 | Population Exposure | Neighborhood |
| 37-019-xxxx ^h | Brunswick | SLAMS | 4/1 to 10/31 | Population Exposure | Urban |

Greenville Metropolitan Statistical Area

| AQS Site ID Number | Site Name | Monitor Type | Operating Schedule ^b | Monitoring Objective | Scale |
|------------------------|------------------------|--------------|---------------------------------|----------------------|----------|
| 371470006 ⁱ | Agricultural Extension | SLAMS | 4/1 to 10/31 | General/Background | Regional |

Rocky Mount Metropolitan Statistical Area

| AQS Site Identification Number | Site Name | Monitor Type | Operating Schedule ^b | Monitoring Objective | Scale |
|--------------------------------|-----------|--------------|---------------------------------|----------------------|----------|
| 37-065-0099 | Leggett | SLAMS | 4/1 to 10/31 | General/ Background | Regional |

Not in an Metropolitan Statistical Area

| AQS Site ID Number | Site Name | Monitor Type | Operating Schedule ^b | Monitoring Objective | Scale |
|--------------------------|--------------------------|-----------------|---------------------------------|---|--------------|
| 37-011-0002 | Linville Falls | Other | 4/1 to 10/31 | Welfare Related Impacts/ General/Background | Urban |
| 37-033-0001 | Cherry Grove | Other | 4/1 to 10/31 | General/Background | Urban |
| 37-075-0001 ^j | Joanna Bald | Other | 4/1 to 10/31 | Welfare Related Impacts/ General/Background | Regional |
| 37-077-0001 | Butner | SLAMS | 4/1 to 10/31 | Highest Concentration | Urban |
| 37-087-0035 | Fry Pan | Other | 4/1 to 10/31 | Welfare Related Impacts/ General/Background | Regional |
| 37-087-0036 | Purchase Knob | Other | 4/1 to 10/31 | Welfare Related Impacts/ General/Background | Regional |
| 37-107-0004 | Lenoir community College | Other | 4/1 to 10/31 | General/ Background | Neighborhood |
| 37-109-0004 | Crouse | SLAMS | 4/1 to 10/31 | General/Background | Urban |
| 37-117-0001 | Jamesville | SLAMS | 4/1 to 10/31 | General/Background | Regional |
| 37-159-0021 | Rockwell | Proposed NCORE | 1/1 to 12/31 | Highest Concentration | Urban |
| 37-159-0022 | Enochville | Other | 4/1 to 10/31 | Highest Concentration | Urban |
| 37-173-0002 | Bryson City | SLAMS | 4/1 to 10/31 | General/ Background | Neighborhood |
| 37-199-0004 | Mount Mitchell | Special Purpose | 4/1 to 10/31 | Welfare Related Impacts/ General/ Background/ Regional Transport | Regional |

Table 15 Monitor Type, Operating Schedules, Monitoring Objectives, and Scales for the North Carolina Ozone Monitoring Network ^a

^a All monitors use an Instrumental Ultra Violet method (Air Quality System (AQS) Method Code 047).

^b All monitors operate on an hourly schedule.

^c Operated by the Mecklenburg County Air Quality (AQS Reporting Agency 0669)

^d Operated by the Forsyth County Environmental Affairs Department (AQS Reporting Agency 0403).

^e Operated by the Western North Carolina Regional Air Quality Agency (AQS Reporting Agency 0779).

^f The NC-DAQ will be evicted from this site at the end of the 2010 ozone season and will shut down the site on 10/31/2010.

^g This monitor will start on April 1, 2011 to replace the ozone monitor at the Waynesville Health Department.

^h This monitor will start on April 1, 2011 as the second required monitor for the Wilmington MSA. Its exact location has not yet been identified.

ⁱ This monitor started on April 1, 2008, to replace the Farmville monitor.

^j This monitor started on April 3, 2003. The monitor is owned by the United States Forest Service and operated by the North Carolina Division of Air Quality (NC DAQ).

Table 16 Statement of Purpose for the North Carolina Ozone Monitoring Network and Proposed Changes to the Network ^a

Charlotte-Gastonia-Concord Metropolitan Statistical Area

| AQS Site Id Number | Site Name | Statement of Purpose | Proposal to Move or Change |
|--------------------------|----------------------|----------------------------------|--|
| 37-119-0041 ^b | Garinger | Compliance w/NAAQS. | These monitors may begin operating on the South Carolina ozone monitoring season schedule if it changes. |
| 37-119-1005 ^b | Arrowood | Compliance w/NAAQS. | |
| 37-119-1009 ^b | County Line | Compliance w/NAAQS. | |
| 37-179-0003 | Monroe Middle School | Forecasting. Compliance w/NAAQS. | |

Raleigh-Cary Metropolitan Statistical Area

| AQS Site Id Number | Site Name | Statement of Purpose | Proposal to Move or Change |
|--------------------|---------------|---|---------------------------------|
| 37-069-0001 | Franklinton | Downwind site for Raleigh-Cary MSA. Modeling. Real-time AQI reporting for the Raleigh-Cary MSA. Compliance w/NAAQS | Site will be moved in July 2010 |
| 37-101-0002 | West Johnston | Real-time AQI reporting for the Raleigh-Cary MSA. Compliance w/NAAQS. | None |
| 37-183-0014 | Millbrook | Maximum Concentration Site for Raleigh-Cary MSA. Ozone Precursor Monitoring Site. Real-time AQI reporting for the Raleigh-Cary MSA. Compliance w/NAAQS. | None |
| 37-183-0016 | Fuquay | Upwind Site for Raleigh-Cary MSA. Modeling. Real-time AQI reporting for the Raleigh-Cary MSA. Compliance w/NAAQS. | None |

Greensboro-High Point Metropolitan Statistical Area

| AQS Site Identification Number | Site Name | Statement of Purpose | Proposal to Move or Change |
|--------------------------------|------------|---|----------------------------|
| 37-081-0013 | Mendenhall | Maximum concentration site downwind of the Greensboro-High Point MSA. Real-time AQI reporting for the Greensboro-Winston-Salem-High-Point CMSA. Compliance w/NAAQS. | None |
| 37-157-0099 | Bethany | Maximum ozone concentration site downwind of the Winston-Salem MSA. Modeling. Real-time AQI reporting for the Greensboro-Winston-Salem-High-Point CMSA. Compliance w/NAAQS. | None |

Durham-Chapel Hill Metropolitan Statistical Area

| AQS Site Id Number | Site Name | Statement of Purpose | Proposal to Move or Change |
|--------------------|---------------|--|----------------------------|
| 37-037-0004 | Pittsboro | Upwind Background site for Durham-Chapel Hill MSA. Modeling. Real-time AQI reporting for the Durham-Chapel Hill MSA. Compliance with the NAAQS. | None |
| 37-063-0015 | Durham Armory | Maximum concentration site in the Durham-Chapel Hill MSA. Ozone precursor monitoring site. Real-time AQI reporting for the Durham-Chapel Hill MSA. Compliance w/NAAQS. | None |
| 37-145-0003 | BushyFork | Compliance w/NAAQS. | None |

Winston-Salem Metropolitan Statistical Area

Table 16 Statement of Purpose for the North Carolina Ozone Monitoring Network and Proposed Changes to the Network ^a

| AQS Site Identification Number | Site Name | Statement of Purpose | Proposal to Move or Change |
|---------------------------------------|------------------|--|-----------------------------------|
| 37-067-0022 ^c | Hattie Ave. | Urban Center City Site for Modeling. Real-time AQI reporting for the Greensboro-Winston-Salem-High-Point CMSA. Compliance w/NAAQS. | None |
| 37-067-0028 ^c | Shiloh Church | Compliance w/NAAQS. | None |
| 37-067-0030 ^c | Clemmons | Real-time AQI reporting for the Greensboro-Winston-Salem-High-Point CMSA. Compliance w/NAAQS. | None |
| 37-067-1008 ^c | Union Cross | Compliance w/NAAQS. | None |
| 37-059-0003 | Mocksville | Upwind site for the Greensboro-High Point MSA. Real-time AQI reporting for the Greensboro-Winston-Salem-High-Point CMSA. Compliance w/NAAQS. | None |

Asheville Metropolitan Statistical Area

| AQS Site Id Number | Site Name | Statement of Purpose | Proposal to Move or Change |
|---------------------------|-------------------------------|--|--|
| 37-021-0030 ^d | Bent Creek | Industrial expansion monitoring for PSD modeling. Real-time AQI reporting for the Asheville MSA. Compliance with the NAAQS. | None |
| 37-087-0004 | Waynesville Health Department | Low elevation (valley) site for Haywood County. Real-time AQI reporting for the Asheville MSA. Modeling. Compliance w/NAAQS. | The NC DAQ will be evicted from this site at the end of ozone season |
| 37-087-0013 | Junaluska E.S. | Low elevation (valley) site for Haywood County. Real-time AQI reporting for the Asheville MSA. Modeling. Compliance w/NAAQS. | This site will start on 4/1/2011 to replace the Health Dept site. |

Hickory Metropolitan Statistical Area

| AQS Site Identification Number | Site Name | Statement of Purpose | Proposal to Move or Change |
|---------------------------------------|------------------|--|-----------------------------------|
| 37-003-0004 | Waggin Trail | Compliance w/NAAQS. | None |
| 37-027-0003 | Lenoir | Highest Ozone Precursor Concentration Site for Hickory MSA. Real-time AQI reporting for the Hickory MSA. Compliance w/NAAQS. | None |

Fayetteville Metropolitan Statistical Area

| AQS Site Identification Number | Site Name | Statement of Purpose | Proposal to Move or Change |
|---------------------------------------|------------------|---|-----------------------------------|
| 37-051-0008 | Wade | Maximum concentration site in the Fayetteville MSA. Real-time AQI reporting for the Fayetteville MSA. Compliance w/NAAQS. | None |
| 37-051-1003 | Golfview | Upwind site in the Fayetteville MSA. Real-time AQI reporting for the Fayetteville MSA. Compliance with the NAAQS | None |

Wilmington Metropolitan Statistical Area

| AQS Site Id Number | Site Name | Statement of Purpose | Proposal to Move or Change |
|---------------------------|------------------|---|-----------------------------------|
| 37-129-0002 | Castle Hayne | Real-time AQI reporting for the Wilmington MSA. Compliance w/NAAQS. | None |
| 37-019-xxxx | Brunswick | Real-time AQI reporting for the Wilmington MSA. Compliance w/NAAQS. | Site will start 4/1/2011 |

Greenville Metropolitan Statistical Area

Table 16 Statement of Purpose for the North Carolina Ozone Monitoring Network and Proposed Changes to the Network ^a

| AQS Site Id Number | Site Name | Statement of Purpose | Proposal to Move or Change |
|---------------------------|------------------------|---|-----------------------------------|
| 37-147-0006 ^e | Agricultural Extension | Real-time AQI reporting for the Greenville MSA. Compliance w/NAAQS. | None |

Rocky Mount Metropolitan Statistical Area

| AQS Site Id Number | Site Name | Statement of Purpose | Proposal to Move or Change |
|---------------------------|------------------|-----------------------------|-----------------------------------|
| 37-065-0099 | Leggett | Compliance with the NAAQS. | None |

Not in an Metropolitan Statistical Area

| AQS Site Id Number | Site Name | Statement of Purpose | Proposal to Move or Change |
|---------------------------|--------------------------|---|--|
| 37-011-0002 | Linville Falls | Operated in cooperation with the USFS. Located in a Class I area and collocated at an IMPROVE site. Provides ozone data for PSD modeling for industrial expansion. Provides AQI data for recreational users. Modeling. Compliance w/NAAQS. | None |
| 37-033-0001 | Cherry Grove | Extreme downwind site for the Greensboro-High Point MSA. Modeling. Ozone Precursor monitoring site. Real-time AQI reporting for the Greensboro-Winston-Salem-High-Point CMSA. Compliance with the NAAQS | None |
| 37-075-0001 ^f | Joanna Bald | Operated in cooperation with the USFS. Located in a Class I area. Provides ozone data for PSD modeling for industrial expansion. Provides AQI data for recreational users. Modeling. Compliance w/NAAQS. | None |
| 37-077-0001 | Butner | Maximum concentration site downwind for the Durham-Chapel Hill MSA. Modeling. Real-time AQI reporting for the Raleigh-Durham-Chapel Hill CMSA. Compliance w/NAAQS. | None |
| 37-087-0035 | Fry Pan | Operated in cooperation with the USFS. Located in a Class I area and collocated at an IMPROVE site. Provides ozone data for PSD modeling for industrial expansion. Provides AQI data for recreational users. Real-time AQI reporting for the Asheville MSA. Modeling. Compliance w/NAAQS. | None |
| 37-087-0036 | Purchase Knob | Operated in cooperation with the USFS. Located in a Class I area. Provides ozone data for PSD modeling for industrial expansion. Provides AQI data for recreational users. Real-time AQI reporting for the Asheville MSA. Modeling. Compliance w/NAAQS. | None |
| 37-107-0004 | Lenoir Community College | Compliance w/NAAQS. | Monitor will be relocated on property to move further away from screen; monitor may be relocated to area closer to Goldsboro or Jacksonville MSA |
| 37-109-0004 | Crouse | Compliance w/NAAQS. | None |
| 37-117-0001 | Jamesville | Compliance w/NAAQS. | None |
| 37-159-0021 | Rockwell | Modeling. Ozone Precursor Monitoring. Compliance w/NAAQS. | None |

Table 16 Statement of Purpose for the North Carolina Ozone Monitoring Network and Proposed Changes to the Network ^a

| | | | |
|-------------|----------------|---|---|
| 37-159-0022 | Enochville | Compliance w/NAAQS. | Long-term plan is to shut down this monitor; possibly as early as the 2011 ozone season. The monitor has served its purpose for modeling and is now redundant. The Rockwell monitor is sufficient for providing ozone concentration data for the Salisbury micro-MSA. |
| 37-173-0002 | Bryson City | Regional Transport and General Background Site. Low elevation (valley) mountain site on the NC side of the Great Smokey Mountains National Park. Modeling. Forecasting. Compliance w/NAAQS. | None |
| 37-199-0004 | Mount Mitchell | Provides ozone data for PSD modeling for industrial expansion. Provides AQI data for recreational users. Modeling. Compliance w/NAAQS. | None |

^a All monitors use an Instrumental Ultra Violet method (Air Quality System (AQS) Method Code 047).

^b Operated by the Mecklenburg County Air Quality (AQS Reporting Agency 0669)

^c Operated by the Forsyth County Environmental Affairs Department (AQS Reporting Agency 0403).

^d Operated by the Western North Carolina Regional Air Quality Agency (AQS Reporting Agency 0779).

^e This monitor started on April 1, 2008, to replace the Farmville monitor.

^f This monitor started on April 3, 2003. The monitor is owned by the United States Forest Service and operated by the North Carolina Division of Air Quality (NC-DAQ).

^g Operated by the Eastern Band of Cherokee Indians of North Carolina (AQS Tribal Reporting Agency 001)

VI. Particle Monitoring Network for Particles with Aerodynamic Diameters of 10 Micrometers or Less (PM₁₀)

Monitoring for particles of 10 micrometers or less aerodynamic diameter (PM₁₀) is currently being conducted in North Carolina at five sites operated by the North Carolina Division of Air Quality (NC-DAQ) and at eight sites operated by local programs.

The data collected are used to determine human health effect exposures in Metropolitan Statistical Areas (MSAs) with over 500,000 people and to collect background levels for Prevention of Significant Deterioration (PSD) purposes.

Table 17 provides the highest PM₁₀ concentrations measured in North Carolina for the past five years. The monitoring regulations promulgated by the U.S. EPA in 2006 require a monitor to be attaining the NAAQS for the past five years before the monitor can be shut down. All PM₁₀ monitors operated in North Carolina in the last five years have attained the NAAQS and have reported values less than 80 % of the standard. Thus, the only monitors that the U.S. EPA requires the state to operate are the ones required to meet the minimum monitoring requirements in 40CFR58 Appendix D Table D-4 provided in Figure 45.

TABLE D-4 OF APPENDIX D TO PART 58. PM₁₀ MINIMUM MONITORING REQUIREMENTS (NUMBER OF STATIONS PER MSA)¹

| Population category | High concentra- tion ² | Medium con- centration ³ | Low concentra- tion ^{4,5} |
|---------------------|--------------------------------------|--|---------------------------------------|
| >1,000,000 | 6-10 | 4-8 | 2-4 |
| 500,000-1,000,000 | 4-8 | 2-4 | 1-2 |
| 250,000-500,000 | 3-4 | 1-2 | 0-1 |
| 100,000-250,000 | 1-2 | 0-1 | 0 |

¹ Selection of urban areas and actual numbers of stations per area within the ranges shown in this table will be jointly determined by EPA and the State Agency.

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

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

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

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

Figure 45. Table D-4 from 40CFR58 Appendix D

The latest estimated population of the Metropolitan Statistical Area (MSA) and the most recent PM₁₀ ambient concentration values for the area determines the number of required monitors for an area. Table 18 provides the 2009 population estimates for the MSAs in North Carolina, the maximum ambient daily concentration values as percentage of the NAAQS for 2009, the number of required monitors based on 40CFR58 Appendix D Table D-4 and the number of current monitors operated by the NC-DAQ and the local programs.

Currently, the NC-DAQ and the local programs are operating the minimum number of required monitors in every MSA except for the Virginia Beach-Norfolk-New Port News, the Raleigh MSA, and the Durham-Chapel Hill MSA. The NC-DAQ has a written agreement with the Virginia Department of Environmental Quality (VDEQ), Office of Air Quality Monitoring, that VDEQ will maintain the minimum required

number of monitors for the Virginia Beach-Norfolk-New Port News MSA. The NC-DAQ received a waiver from the EPA for the second required monitor in the Raleigh MSA. The EPA granted the waiver because PM₁₀ values recorded in the Raleigh MSA have been less than 50 % of the NAAQS except for when the existing monitor was impacted by an exceptional event on June 12, 2008.

The Durham-Chapel Hill MSA is required to operate 1 to 2 PM₁₀ monitors. According to footnote 1 in 40CFR58 Appendix D Table D-4 the number of monitors to operate in the Durham-Chapel Hill MSA is jointly decided upon by the EPA and the operating agency. In 2007 the NC-DAQ shut down its PM₁₀ monitoring site at the Durham Health Building. The high-volume PM₁₀ monitor was not moved to the new Durham Armory site because the Durham-Chapel Hill MSA was not yet large enough to require 1 to 2 PM₁₀ monitors and the NC-DAQ planned to convert the high volume PM₁₀ monitor at the Durham site to a low-volume PM₁₀ monitor sometime in the near future when additional low-volume monitors became available from the fine particle monitoring network. The NC-DAQ decided that it was inefficient to install the high-volume PM₁₀ monitor and then replace it in a year or two with a low-volume PM₁₀ monitor. The Durham-Chapel Hill MSA contains two of the fastest growing counties in the state (Chatham and Durham). In July 2009 the estimated population of the MSA exceeded 500,000 people. The NC-DAQ plans to have a low-volume PM₁₀ monitor available to resume PM₁₀ monitoring in the Durham-Chapel Hill MSA on January 1, 2011.

In 2007 the NC-DAQ evaluated its PM₁₀ monitors based on the information in Table 17 and Table 18 and shut down the PM₁₀ monitors in Durham, Goldsboro, Jacksonville, and Bryson City on December 31, 2007. The NC-DAQ began monitoring for PM₁₀ in the Wilmington MSA at the Castle Hayne site in February 2008 to collect data to use for PSD modeling for the coastal region. The Castle Hayne monitor was shut down on March 31, 2008, because of a wildfire surrounding the monitoring site. The monitor was relocated to Kenansville in January 2009. The NC-DAQ also started operating a PM₁₀ low volume monitor at the Millbrook site in Raleigh in January 2009. This monitor is an NCore monitor and was established to meet the NCore requirements for coarse particle monitoring. Because this monitor can also be used to meet the Appendix D requirements for PM₁₀ monitoring in the Raleigh area, the PM₁₀ continuous monitor at Millbrook was shut down on March 31, 2009.

The NC-DAQ shut down the Allen Street PM₁₀ monitor in Hendersonville on December 31, 2009. Based on current population projections the Asheville MSA is not expected to reach a population of 500,000 until sometime after 2020. Second, the EPA has been encouraging monitoring programs to shut down single pollutant sites in favor of multi-pollutant sites.

The NC-DAQ anticipates that the U.S. EPA may establish a coarse particle standard or lower the current PM₁₀ standard in 2011. Although the NC-DAQ believes that North Carolina should be in attainment with any coarse particle or lower PM₁₀ standard that is proposed, the NC-DAQ has always been in the forefront in studying air quality issues and believes it is prudent to begin collecting monitoring data on the ambient concentrations of coarse particles and the background concentration of PM₁₀ in North Carolina so that the state can be prepared to respond to any new standards. The monitoring regulations promulgated in 2006 include a method for measuring coarse

particles. The coarse particle monitoring method measures coarse particles by the difference between the measured PM₁₀ concentration and the fine particle concentration measured using the same sampling and analytical method. As fine particle FRM monitors become available in 2011 and 2012, the NC-DAQ plans to gradually convert the current manual PM₁₀ high volume samplers to PM₁₀ low volume samplers that can be used to measure both PM₁₀ and coarse particles.

In 2011 the NC-DAQ also plans to modify its PM₁₀ PSD monitoring network by establishing a network of rotating background PM₁₀ sites. Two PM₁₀ monitors will operate each year and each site will operate once every three years. The six PM₁₀ background sites are:

- Candor and Marion, operating in 2011;
- Jamesville and Grier School (Gastonia), operating in 2012; and
- Kenansville and Cherry Grove, operating in 2013.

These six sites are also fine particle monitoring sites.

The locations of the current and proposed PM₁₀-monitoring sites are provided in Table 19. All monitors listed in Table 19 are suitable for comparison to the NAAQS. All of the monitors meet the requirements of Appendices C and E of 40CFR58. One of the monitors currently does not meet Appendix A requirements. The monitor at Millbrook (37-183-0014) does not meet Appendix A requirements because it does not have an approved QA/SOP.

Table 20 provides the monitor type, operating schedules, monitoring objectives, scales, and statement of purpose for all of the current and proposed monitors in the North Carolina PM₁₀ Monitoring Network. All of the monitors operate year-round. Table 21 summarizes the status for each current and proposed monitoring site regarding whether it is suitable for comparison to the NAAQS and meets the requirements in Appendices A, C, D, and E of 40CFR58 and also provides the proposed changes to the network.

Table 17 Ambient PM₁₀ Concentrations Measured in North Carolina

Charlotte-Gastonia-Concord Metropolitan Statistical Area

| AQS Site Identification Number | Site Name | Highest 24-hr 1 st max for 2005 to 2009 | | |
|--------------------------------|------------------|---|-------------------------------|------|
| | | Value (micrograms per cubic meter, standard conditions) | Percent of NAAQS ^a | Year |
| 371190003 ^{b, c} | Fire Station #11 | 49 | 33 % | 2005 |
| 371190010 ^{b, c, d} | Fire Station #10 | 44 | 29 % | 2005 |
| 371190041 ^{b, e} | Garinger | 36 | 24 % | 2008 |
| 371190042 ^{b, e} | Montclair | 56 | 37 % | 2009 |
| 371191001 ^{b, c} | Davidson | 53 | 35 % | 2006 |
| 371191005 ^{b, c} | Arrowood | 70 | 47 % | 2007 |

Raleigh-Cary Metropolitan Statistical Area

| AQS Site Identification Number | Site Name | Highest 24-hr 1 st max for 2005 to 2009 | | |
|--------------------------------|-----------|---|-------------------------------|------|
| | | Value (micrograms per cubic meter, standard conditions) | Percent of NAAQS ^b | Year |
| 371830014 ^f | Millbrook | 105 | 71% | 2008 |

Greensboro-High Point Metropolitan Statistical Area

| AQS Site Identification Number | Site Name | Highest 24-hr 1 st max for 2005 to 2009 | | |
|--------------------------------|------------|---|-------------------------------|------|
| | | Value (micrograms per cubic meter, standard conditions) | Percent of NAAQS ^b | Year |
| 370810013 ^g | Mendenhall | 46 | 31% | 2006 |

Durham-Chapel Hill Metropolitan Statistical Area

| AQS Site Identification Number | Site Name | Highest 24-hr 1 st max for 2005 to 2009 | | |
|--------------------------------|---------------|---|-------------------------------|------|
| | | Value (micrograms per cubic meter, standard conditions) | Percent of NAAQS ^b | Year |
| 370630001 ^{g, h} | Durham Health | 50 | 33% | 2007 |

Winston-Salem Metropolitan Statistical Area

| AQS Site Identification Number | Site Name | Highest 24-hr 1 st max for 2005 to 2009 | | |
|--------------------------------|---------------|---|-------------------------------|------|
| | | Value (micrograms per cubic meter, standard conditions) | Percent of NAAQS ^b | Year |
| 370670022 ^{i, j} | Hattie Avenue | 73 ^f | 49% | 2008 |
| 370670023 ^{i, j} | Peter's Creek | 83 ^f | 55 % | 2008 |

Asheville Metropolitan Statistical Area

| AQS Site Identification Number | Site Name | Highest 24-hr 1 st max for 2005 to 2009 | | |
|--------------------------------|--------------|---|-------------------------------|------|
| | | Value (micrograms per cubic meter, standard conditions) | Percent of NAAQS ^b | Year |
| 370891006 ^g | Allen Street | 52 | 35% | 2006 |

Hickory Metropolitan Statistical Area

| AQS Site Identification Number | Site Name | Highest 24-hr 1 st max for 2005 to 2009 | | |
|--------------------------------|-----------|---|-------------------------------|------|
| | | Value (micrograms per cubic meter, standard conditions) | Percent of NAAQS ^b | Year |
| 370350004 ^g | Hickory | 56 | 38% | 2006 |

Fayetteville Metropolitan Statistical Area

| AQS Site Identification Number | Site Name | Highest 24-hr 1 st max for 2005 to 2009 | | |
|--------------------------------|--------------|---|-------------------------------|------|
| | | Value (micrograms per cubic meter, standard conditions) | Percent of NAAQS ^b | Year |
| 370510009 ^g | William Owen | 47 | 31% | 2005 |

Table 17 Ambient PM₁₀ Concentrations Measured in North Carolina

Wilmington Metropolitan Statistical Area

| AQS Site Identification Number | Site Name | Highest 24-hr 1 st max for 2005 to 2009 | | |
|--------------------------------|--------------|---|-------------------------------|------|
| | | Value (micrograms per cubic meter, standard conditions) | Percent of NAAQS ^b | Year |
| 371290002 ^g | Castle Hayne | 14.8 ^f | 10 % | 2008 |

Jacksonville Metropolitan Statistical Area

| AQS Site Identification Number | Site Name | Highest 24-hr 1 st max for 2004 to 2008 | | |
|--------------------------------|--------------|---|-------------------------------|------|
| | | Value (micrograms per cubic meter, standard conditions) | Percent of NAAQS ^b | Year |
| 371330005 ^{g, h} | Jacksonville | 48 | 32 % | 2005 |

Rocky Mount Metropolitan Statistical Area

| AQS Site Identification Number | Site Name | Highest 24-hr 1 st max for 2004 to 2008 | | |
|--------------------------------|-----------|---|-------------------------------|------|
| | | Value (micrograms per cubic meter, standard conditions) | Percent of NAAQS ^b | Year |
| 370650099 ^{g, k} | Leggett | 45 | 30 % | 2006 |

Goldsboro Metropolitan Statistical Area

| AQS Site Identification Number | Site Name | Highest 24-hr 1 st max for 2004 to 2008 | | |
|--------------------------------|-----------|---|-------------------------------|------|
| | | Value (micrograms per cubic meter, standard conditions) | Percent of NAAQS ^b | Year |
| 371910005 ^{g, i} | Goldsboro | 43 | 29 % | 2005 |

Not in an Metropolitan Statistical Area

| AQS Site Identification Number | Site Name | Highest 24-hr 1 st max for 2004 to 2008 | | |
|--------------------------------|-------------|---|-------------------------------|------|
| | | Value (micrograms per cubic meter, standard conditions) | Percent of NAAQS ^b | Year |
| 371730002 ^{g, h} | Bryson City | 53 | 35% | 2006 |

^a The National Ambient Air Quality Standard for a 24-hour period is 150 micrograms per cubic meter. The standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 micrograms per cubic meter is equal to or less than one averaged over 3 years.

^b Operated by the Mecklenburg County Air Quality (AQS Reporting Agency 0669)

^c Monitor uses a high-volume SA/GMW-1200 (AQS Method Code 063), U.S. EPA reference method designation RFPS-1087-063

^d Monitor was shut down on 5/28/2005

^e Monitor uses a low-volume Thermo R&P 2025 (AQS Method Code 127), U.S. EPA reference method designation RFPS-1298-127

^f Monitor used a Ruprecht & Patshneck TEOM Series 1400 (AQS Method Code 079), U.S. EPA equivalent method designation EQPM-1090-079 until 3/31/2009 when it was replaced with a low-volume Thermo R&P 2025 (AQS Method Code 127), U.S. EPA reference method designation RFPS-1298-127

^g Monitor uses a high-volume-Wedding-inlet (AQS Method Code 062), U.S. EPA reference method designation RFPS-1087-062

^h Monitor was shut down on 12/31/2007

ⁱ Monitor used a Ruprecht & Patshneck TEOM Series 1400 (AQS Method Code 079), U.S. EPA equivalent method designation EQPM-1090-079

^j Operated by the Forsyth County Environmental Affairs Department (AQS Reporting Agency 0403)

^k Special Purpose Monitor - was shut down on 2/28/2007

Table 18 Ambient Concentrations and Required Number of PM₁₀ Monitors for North Carolina Metropolitan Statistical Areas (MSA)

| MSA | Population (2009 estimate) ^a | 2009 PM ₁₀ 24-Hour Maximum Ambient Concentration As percent of NAAQS | Number of Monitors operated in North Carolina | |
|--------------------------------------|---|---|---|----------------|
| | | | Required ^b | Current |
| Virginia Beach-Norfolk-New Port News | 1,674,498 | < 43 | 2-4 | 0 |
| Charlotte-Gastonia-Concord | 1,745,524 | 37 | 2-4 | 5 |
| Raleigh-Cary | 1,125,827 | 19 | 2-4 | 1 ^c |
| Greensboro-High Point | 714,765 | 17 | 1-2 | 1 |
| Durham-Chapel Hill | 501,228 | 33 ^d | 1-2 | 0 |
| Winston-Salem | 484,921 | 25 | 0-1 | 2 |
| Asheville | 412,672 | 20 | 0-1 | 0 |
| Hickory | 365,364 | 24 | 0-1 | 1 |
| Fayetteville | 360,355 | 17 | 0-1 | 1 |
| Wilmington | 354,525 | 10 ^e | 0-1 | 0 |
| Greenville | 173,715 | Not Available | 0 | 0 |
| Jacksonville | 173,064 | 25 ^d | 0 | 0 |
| Rocky Mount | 146,596 | 30 ^f | 0 | 0 |
| Burlington | 150,358 | Not Available | 0 | 0 |
| Goldsboro | 113,811 | 21 ^d | 0 | 0 |

^a Source: U.S. Census Bureau, Population Division, Table 1. Annual Estimates of the Population of Metropolitan and Micropolitan Statistical Areas: April 1, 2000 to July 1, 2009 (CBSA-EST2009-01), Released March 2010, available on the world wide web at <http://www.census.gov/popest/metro/CBSA-est2009-annual.html>

^b 40 CFR 58 Appendix D Table D-4

^c The NC-DAQ received a waiver in 2008 for the second required PM₁₀ monitor

^d PM₁₀ 24-hour maximum ambient concentration is from 2007

^e Only 8 samples were collected from mid February to the end of March 2008.

^f PM₁₀ 24-hour maximum ambient concentration is from 2006

Table 19 North Carolina PM₁₀ Monitoring Network – Monitor Locations

Charlotte-Gastonia-Concord Metropolitan Statistical Area

| AQS Site Id Number | Site Location | | | | | MSA, CSA, or CBSA represented |
|---------------------------|---------------------|-------------------------------------|-----------|---------------|--------------|-------------------------------|
| | Site Name | Street Address | City | Longitude | Latitude | |
| 370710016 | Grier Middle School | 1622 East Garrison Blvd. | Gastonia | W 081 09' 20" | N 35 15' 16" | Charlotte-Gastonia-Concord |
| 371190003 ^a | #11 Fire Station | Fire Station #11, 620 Moretz Avenue | Charlotte | W 080 49' 29" | N 35 15' 06" | Charlotte-Gastonia-Concord |
| 371190041 ^a | Garinger | 1130 Eastway Drive | Charlotte | W 080 46' 59" | N 35 14' 28" | Charlotte-Gastonia-Concord |
| 371190042 ^{a, b} | Montclair | 1935 Emerywood Drive | Charlotte | W 080 52' 01" | N 35 09' 05" | Charlotte-Gastonia-Concord |
| 371191001 ^a | Davidson | 310 West Walnut Street | Davidson | W 080 51' 10" | N 35 29' 54" | Charlotte-Gastonia-Concord |
| 371191005 ^a | Arrowood | 400 Westinghouse Blvd. | Charlotte | W 080 55' 11" | N 35 06' 47" | Charlotte-Gastonia-Concord |

Raleigh-Cary Metropolitan Statistical Area

| AQS Site Id Number | Site Location | | | | | MSA, CSA, or CBSA represented |
|--------------------|---------------|-------------------------|---------|---------------|--------------|-------------------------------|
| | Site Name | Street Address | City | Longitude | Latitude | |
| 371830014 | Millbrook | 3801 Spring Forest Road | Raleigh | W 078 34' 27" | N 35 51' 22" | Raleigh-Cary |

Greensboro-High Point Metropolitan Statistical Area

| AQS Site Id Number | Site Location | | | | | MSA, CSA, or CBSA represented |
|--------------------|---------------|----------------------|------------|---------------|--------------|-------------------------------|
| | Site Name | Street Address | City | Longitude | Latitude | |
| 370810013 | Mendenhall | 205 Willoughby Blvd. | Greensboro | W 079 48' 04" | N 36 06' 33" | Greensboro-High Point |

Durham-Chapel Hill Metropolitan Statistical Area

| AQS Site Id Number | Site Location | | | | | MSA, CSA, or CBSA represented |
|------------------------|---------------|-------------------|--------|---------------|--------------|-------------------------------|
| | Site Name | Street Address | City | Longitude | Latitude | |
| 370630015 ^d | Durham Armory | 801 Stadium Drive | Durham | W 078 54' 14" | N 36 01' 58" | Durham-Chapel Hill |

Winston-Salem Metropolitan Statistical Area

| AQS Site Id Number | Site Location | | | | | MSA, CSA, or CBSA represented |
|------------------------|---------------|--|---------------|---------------|--------------|-------------------------------|
| | Site Name | Street Address | City | Longitude | Latitude | |
| 370670022 ^e | Hattie Avenue | Corner of 13 th & Hattie Avenue | Winston-Salem | W 080 13' 36" | N 36 06' 38" | Winston-Salem |
| 370670023 ^e | Peters Creek | 1401 Silas Creek Parkway | Winston-Salem | W 080 15' 35" | N 36 03' 58" | Winston-Salem |

Hickory Metropolitan Statistical Area

| AQS Site Id Number | Site Location | | | | | MSA, CSA, or CBSA represented |
|------------------------|---------------------|----------------------------|---------|---------------|--------------|-------------------------------|
| | Site Name | Street Address | City | Longitude | Latitude | |
| 370350004 ^f | Hickory Water Tower | Water Tank 15 First Avenue | Hickory | W 081 21' 58" | N 35 43' 45" | Hickory |

Fayetteville Metropolitan Statistical Area

| AQS Site Identification Number | Site Location | | | | | MSA, CSA, or CBSA represented |
|--------------------------------|---------------|-------------------|--------------|---------------|--------------|-------------------------------|
| | Site Name | Street Address | City | Longitude | Latitude | |
| 370510009 | William Owens | 4533 Raeford Road | Fayetteville | W 078 57' 19" | N 35 07' 49" | Fayetteville |

Table 19 North Carolina PM₁₀ Monitoring Network – Monitor Locations

Not in a Metropolitan Statistical Area

| AQS Site Identification Number | Site Location | | | | | MSA, CSA, or CBSA represented |
|--------------------------------|---------------|------------------------|-------------|---------------|--------------|-------------------------------|
| | Site Name | Street Address | City | Longitude | Latitude | |
| 370330001 ^c | Cherry Grove | 7074 Cherry Grove Road | Reidsville | W 079 28' 5" | N 36 18' 25" | None |
| 370610002 ^g | Kenansville | 328 Limestone Road | Kenansville | W 077 57' 65" | N 34 57' 29" | None |
| 371110004 ^c | East Marion | 700 State Street | Marion | W 081 59' 38" | N35 41' 15" | None |
| 371170001 ^c | Jamesville | 33215 US Highway 64 | Jamesville | W 076 54' 23" | N 35 48' 38" | None |
| 371230001 ^c | Candor | 112 Perry Drive | Candor | W 079 50' 11" | N 35 15' 47" | None |

^a Operated by Mecklenburg County Air Quality (AQS Reporting Agency 0669)

^b This site has a collocated low volume PM₁₀ monitor.

^c One of six background PM₁₀ monitors that operates for one year every three years.

^d Monitor will start in 2011 to meet minimum PM₁₀ monitoring requirements in the Durham-Chapel Hill MSA.

^e Operated by the Forsyth County Environmental Affairs Department (AQS Reporting Agency 0403)

^f This site has a collocated high volume PM₁₀ monitor.

^g This monitor started in January 2009 to provide data for Prevention of Significant Deterioration (PSD) modeling for the coastal area and will begin operating on a three year rotation at the end of 2010.

Table 20 Statement of Purpose for North Carolina PM₁₀ Monitoring Network

Charlotte-Gastonia-Concord Metropolitan Statistical Area

| AQS Site Id Number | Site Name | Monitor Type | Operating Schedule | Statement of Purpose | Monitoring Objective | Scale |
|---------------------------|---------------------|-----------------|--|---|---|--------------|
| 370710016 | Grier Middle School | SPECIAL PURPOSE | 24-hour, midnight to midnight, 1 in 6 day ^c | Industrial expansion monitoring for PSD modeling. | Background | Neighborhood |
| 371190003 ^a | #11 Fire Station | SLAMS | 24-hour, midnight to midnight, 1 in 6 day | Required by Appendix D. Compliance w/NAAQS. Industrial expansion monitoring for PSD modeling. | Highest Concentration/Population Exposure | Neighborhood |
| 371190041 ^a | Garinger | NCORE | 24-hour, midnight to midnight, 1 in 3 day | Required by Appendix D for NCore sites in 2011. Compliance w/NAAQS. Industrial expansion monitoring for PSD modeling. | Population Exposure | Neighborhood |
| 371190042 ^{a, b} | Montclair | SLAMS | 24-hour, midnight to midnight, 1 in 3 day | Required by Appendix D. Collocated low volume PM10 site required by Appendix A. Compliance w/NAAQS. Industrial expansion monitoring for PSD modeling. | Population Exposure | Neighborhood |
| 371191001 ^a | Davidson | OTHER | 24-hour, midnight to midnight, 1 in 6 day | Compliance w/NAAQS. Industrial expansion monitoring for PSD modeling. | Population Exposure | Neighborhood |
| 371191005 ^a | Arrowood | OTHER | 24-hour, midnight to midnight, 1 in 6 day | Compliance w/NAAQS. Industrial expansion monitoring for PSD modeling. | Source-Oriented | Neighborhood |

Raleigh-Cary Metropolitan Statistical Area

| AQS Site Id Number | Site Name | Monitor Type | Operating Schedule | Statement of Purpose | Monitoring Objective | Scale |
|--------------------|-----------|--------------|---|---|----------------------|--------------|
| 371830014 | Millbrook | NCORE | 24-hour, midnight to midnight, 1 in 3 day | Required by Appendix D. Compliance w/NAAQS. Industrial expansion monitoring for PSD modeling. | Population Exposure | Neighborhood |

Greensboro-High Point Metropolitan Statistical Area

| AQS Site Identification Number | Site Name | Monitor Type | Operating Schedule | Statement of Purpose | Monitoring Objective | Scale |
|--------------------------------|------------|--------------|---|---|--|--------------------|
| 370810013 | Mendenhall | OTHER | 24-hour, midnight to midnight, 1 in 6 day | Required by Appendix D. Compliance w/NAAQS. Industrial expansion monitoring for PSD modeling. | Population Exposure/General/Background | Neighborhood/Urban |

Table 20 Statement of Purpose for North Carolina PM₁₀ Monitoring Network

Durham-Chapel Hill Metropolitan Statistical Area

| AQS Site Identification Number | Site Name | Monitor Type | Operating Schedule | Statement of Purpose | Monitoring Objective | Scale |
|--------------------------------|---------------|--------------|---|---|----------------------|--------------|
| 370630015 ^c | Durham Armory | SLAMS | 24-hour, midnight to midnight, 1 in 3 day | Required by Appendix D. Compliance w/NAAQS. Industrial expansion monitoring for PSD modeling. | Population Exposure | Neighborhood |

Winston-Salem Metropolitan Statistical Area

| AQS Site Identification Number | Site Name | Monitor Type | Operating Schedule | Statement of Purpose | Monitoring Objective | Scale |
|--------------------------------|---------------|--------------|--------------------|---|-----------------------|--------------|
| 370670022 ^d | Hattie Avenue | SLAMS | Hourly | Compliance w/NAAQS. Industrial expansion monitoring for PSD modeling. | Population Exposure | Neighborhood |
| 370670023 ^d | Peters Creek | SLAMS | Hourly | Required by Appendix D. Compliance w/NAAQS. Industrial expansion monitoring for PSD modeling. | Highest Concentration | Microscale |

Hickory Metropolitan Statistical Area

| AQS Site Identification Number | Site Name | Monitor Type | Operating Schedule | Statement of Purpose | Monitoring Objective | Scale |
|--------------------------------|---------------------|--------------|---|---|----------------------|--------------|
| 370350004 ^e | Hickory Water Tower | SLAMS | 24-hour, midnight to midnight, 1 in 6 day | Required by Appendix D. Compliance w/NAAQS. Industrial expansion monitoring for PSD modeling. | General/ Background | Neighborhood |

Fayetteville Metropolitan Statistical Area

| AQS Site Identification Number | Site Name | Monitor Type | Operating Schedule | Statement of Purpose | Monitoring Objective | Scale |
|--------------------------------|---------------|--------------|---|---|----------------------|-------|
| 370510009 | William Owens | SLAMS | 24-hour, midnight to midnight, 1 in 6 day | Required by Appendix D. Compliance w/NAAQS. Industrial expansion monitoring for PSD modeling. | Population Exposure | Urban |

Not in a Metropolitan Statistical Area

| AQS Site Identification Number | Site Name | Monitor Type | Operating Schedule | Statement of Purpose | Monitoring Objective | Scale |
|--------------------------------|--------------|-----------------|---|--|----------------------|-------|
| 370330001 | Cherry Grove | Special Purpose | 24-hour, midnight to midnight, 1 in 6 day | Industrial expansion monitoring for PSD modeling for northern piedmont areas | General/ Background | Urban |

Table 20 Statement of Purpose for North Carolina PM₁₀ Monitoring Network

| | | | | | | |
|------------------------|-------------|-----------------|---|---|--------------------|--------------|
| 370610002 ^f | Kenansville | Special Purpose | 24-hour, midnight to midnight, 1 in 6 day | Industrial expansion monitoring for PSD modeling for coastal areas | General/Background | Neighborhood |
| 371110004 | East Marion | Special Purpose | 24-hour, midnight to midnight, 1 in 6 day | Industrial expansion monitoring for PSD modeling for foothill areas | General/Background | Neighborhood |
| 371170001 | Jamesville | Special Purpose | 24-hour, midnight to midnight, 1 in 6 day | Industrial expansion monitoring for PSD modeling for northern coastal areas | General/Background | Urban |
| 371230001 | Candor | Special Purpose | 24-hour, midnight to midnight, 1 in 6 day | Industrial expansion monitoring for PSD modeling for sand hill areas | General/Background | Regional |

^a Operated by Mecklenburg County Air Quality (AQS Reporting Agency 0669)

^b This site has a collocated low volume PM₁₀ monitor.

^c Monitor will start January 1, 2011, to replace the Durham Health monitor when a PM₁₀ monitor is needed in the Durham-Chapel Hill MSA.

^d Operated by the Forsyth County Environmental Affairs Department (AQS Reporting Agency 0403)

^e This site has a collocated high volume PM₁₀ monitor.

^f This monitor started in January 2009 to provide data for Prevention of Significant Deterioration (PSD) modeling for the coastal area.

Table 21 Status of North Carolina PM₁₀ Monitoring Network in Meeting the Requirements of Part 58 and Proposed Changes to the Network^a

Charlotte-Gastonia-Concord Metropolitan Statistical Area

| AQS Site Id Number | Site Name | Meets Requirements of Part 58 Appendices ^b | | | Proposal to Move or Change |
|------------------------|---------------------|---|--------------------|-----|---|
| | | A | C | D | |
| 370710016 | Grier Middle School | Yes | Yes: RFPS-1087-062 | No | Will start in 2012 and operate every third year |
| 371190003 ^c | #11 Fire Station | Yes | Yes: RFPS-1287-063 | Yes | None |
| 371190041 ^c | Garinger | Yes | Yes: RFPS-1298-127 | Yes | None |
| 371190042 ^c | Montclair | Yes | Yes: RFPS-1298-127 | Yes | None |
| 371191001 ^c | Davidson | Yes | Yes: RFPS-1287-063 | Yes | Will shut down 12/31/2010 |
| 371191005 ^c | Arrowood | Yes | Yes: RFPS-1287-063 | Yes | Will shut down 12/31/2010 |

Raleigh-Cary Metropolitan Statistical Area

| AQS Site Identification Number | Site Name | Meets Requirements of Part 58 Appendices ^d | | | Proposal to Move or Change |
|--------------------------------|-----------|---|--------------------|-----|----------------------------|
| | | A | C | D | |
| 371830014 | Millbrook | No | Yes: RFPS-1298-127 | Yes | None |

Greensboro-High Point Metropolitan Statistical Area

| AQS Site Id Number | Site Name | Meets Requirements of Part 58 Appendices ^e | | | Proposal to Move or Change |
|--------------------|------------|---|--------------------|-----|----------------------------|
| | | A | C | D | |
| 370810013 | Mendenhall | Yes | Yes: RFPS-1087-062 | Yes | None |

Table 21 Status of North Carolina PM₁₀ Monitoring Network in Meeting the Requirements of Part 58 and Proposed Changes to the Network^a

Durham-Chapel Hill Metropolitan Statistical Area

| AQS Site Identification Number | Site Name | Meets Requirements of Part 58 Appendices ^d | | | Proposal to Move or Change |
|--------------------------------|---------------|---|--------------------|-----|--|
| | | A | C | D | |
| 370630015 | Durham Armory | No | Yes: RFPS-1298-127 | Yes | Proposed to start 1/1/2011 as 1 st required PM ₁₀ monitor for Durham-Chapel Hill MSA & as a PM _{10-2.5} monitor |

Winston-Salem Metropolitan Statistical Area

| AQS Site Identification Number | Site Name | Meets Requirements of Part 58 Appendices ^f | | | Proposal to Move or Change |
|--------------------------------|---------------|---|--------------------|-----|----------------------------|
| | | A | C | D | |
| 370670022 ^g | Hattie Avenue | Yes | Yes: EQPM-1090-079 | Yes | None |
| 370670023 ^g | Peters Creek | Yes | Yes: EQPM-1090-079 | Yes | None |

Hickory Metropolitan Statistical Area

| AQS Site Identification Number | Site Name | Meets Requirements of Part 58 Appendices ^e | | | Proposal to Move or Change |
|--------------------------------|---------------------|---|--------------------|-----|----------------------------|
| | | A | C | D | |
| 370350004 | Hickory Water Tower | Yes | Yes: RFPS-1087-062 | Yes | None |

Fayetteville Metropolitan Statistical Area

| AQS Site Identification Number | Site Name | Meets Requirements of Part 58 Appendices ^e | | | Proposal to Move or Change |
|--------------------------------|---------------|---|--------------------|-----|----------------------------|
| | | A | C | D | |
| 370510009 | William Owens | Yes | Yes: RFPS-1087-062 | Yes | None |

Not in a Metropolitan Statistical Area

| AQS Site Identification Number | Site Name | Meets Requirements of Part 58 Appendices ^e | | | Proposal to Move or Change |
|--------------------------------|--------------|---|--------------------|--------------|---|
| | | A | C | D | |
| 370330001 | Cherry Grove | Yes | Yes: RFPS-1087-062 | Not Required | Monitor will start on 1/1/2013 and operate every third year |
| 370610002 | Kenansville | Yes | Yes: RFPS-1087-062 | Not Required | Monitor will end on 12/31/2010 and begin operating every third year |
| 371110004 | East Marion | Yes | Yes: RFPS-1087-062 | Not Required | Monitor will start on 1/1/2011 and operate every third year |
| 371170001 | Jamesville | Yes | Yes: RFPS-1087-062 | Not Required | Monitor will start on 1/1/2012 and operate every third year |
| 371230001 | Candor | Yes | Yes: RFPS-1087-062 | Not Required | Monitor will start on 1/1/2011 and operate every third year |

^a All monitors provide data that are suitable for comparing to the NAAQS except for the six rotating monitors.

^b All monitors meet the requirements of Appendix E of 40CFR58.

^c Operated by Mecklenburg County Air Quality (AQS Reporting Agency 0669)

^d The Quality Assurance Project Plan and Standard Operating Procedures are being written for the low volume PM₁₀ monitor operated by the NC-DAQ. The monitor meets the requirements of Appendix E of 40CFR58.

^e The Quality Assurance Project Plan and Standard Operating Procedures are being revised to reflect changes made to the monitoring regulations in 2006. All monitors meet the requirements of Appendix E of 40 CFR 58.

^f Operated by the Forsyth County Environmental Affairs Department (AQS Reporting Agency 0403)

VII. Fine Particle (PM_{2.5}) Monitoring Network

The North Carolina Division of Air Quality (NC-DAQ) currently operates one of the largest fine particle monitoring networks in the Southeast. This strong network has greatly benefited the state by enabling the NC-DAQ to learn how fine particles are transported to and within the state, to identify the parts of the state with the highest concentrations of fine particles, and to know where fine particle concentrations do and do not exceed the National Ambient Air Quality Standards (NAAQS).

Table 22 provides the highest fine particle design values for the monitors in North Carolina for the past five years. This information is important because the monitoring regulations promulgated by the U.S. EPA in 2006 require a monitor to be attaining the NAAQS for the past five years before the monitor can be shut down. A total of 22 of the currently operating monitors, listed in Table 23, meet this requirement. However, as indicated in Table 23, 40CFR58 Appendix D requires 10 of these 22 monitors. Another 11 of these monitors, as indicated in Table 23, do not meet the additional requirement of having less than 10 % probability of exceeding 80 % of the NAAQS during the next three years. Thus, there is one monitor meeting all of the requirements of 40CFR58 to be shut down:

- Lenoir Community College in Lenoir County (37-107-0004) – the NC-DAQ considered this monitor important for evaluating the effect of the hog industry in eastern North Carolina and operated a 1 in 6 day speciation monitor at the site until February 29, 2008. The EPA stopped funding this speciation monitor in 2006 and the NC-DAQ ran out of funds to keep it operating. Because the legislature passed a permanent moratorium on the expansion of hog lagoons in North Carolina, the NC-DAQ believes sufficient data has been collected to evaluate the impact of the hog industry and may shut down this monitor on December 31, 2010.

Other fine particle monitors that could be considered for shut down are those monitors that exceed the minimum number of monitors required in 40CFR58 Appendix D Table D-5 provided in Figure 46. The latest estimated population of the Metropolitan Statistical Area (MSA) and the most recent fine particle 24-hour and annual design value for the area determines the number of required monitors for an area. Table 24 provides the 2008 population estimates for the MSAs in North Carolina, the preliminary design values for 2006-2008, the number of required monitors based on Appendix D, and the number of current monitors operated by the NC-DAQ and the local programs. Currently, the NC-DAQ and the local programs are operating at least the minimum number of required monitors in every MSA except for the Virginia Beach-Norfolk-New Port News MSA. The NC-DAQ has a written agreement with the Virginia Department of Environmental Quality (VDEQ), Office of Air Quality Monitoring, that VDEQ will maintain the minimum required number of monitors for the Virginia Beach-Norfolk-New Port News MSA. In 2009 the annual and daily fine particle design values in North Carolina continued to decline, reducing the number of required monitors in MSAs throughout the state. However, the NC-DAQ plans to continue operating many of these monitors in anticipation of lower fine particle standards in 2011 that will result in some of these monitors within MSAs once again being required.

**TABLE D-5 OF APPENDIX D TO PART 58. PM_{2.5}
MINIMUM MONITORING REQUIREMENTS**

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

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

²Population based on latest available census figures.

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

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

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

Figure 46. 40CFR58 Appendix D Table D-5

The NC-DAQ evaluated each MSA with more than the required monitors to determine if all of the current monitors in the MSA are still needed and providing valuable information. Two monitors were considered in this evaluation (the local program monitors were not included in this analysis):

- Pittsboro in the Durham-Chapel Hill MSA (37-037-0004) – this monitor is the upwind monitor for the Durham-Chapel Hill and Raleigh-Cary MSAs and provides valuable information on the concentrations of fine particles entering the Triangle area. This fine particle monitor is collocated with an ozone monitor creating a multi-pollutant site, which also results in increased efficiency in operating the site. Thus, the NC-DAQ plans to continue operating this fine particle monitor.
- Grier Middle School/Gastonia in the Charlotte-Gastonia-Concord MSA (37-071-0016) – this monitor is located in the state’s largest MSA (excluding Virginia Beach-Norfolk-New Port News, which is mostly in Virginia). The monitor provides valuable information for fine particle forecasting in the Charlotte area. Thus, the NC-DAQ plans to continue operating this fine particle monitor.

The design values in four MSAs dropped below 85 % of the NAAQS resulting in four additional monitors not being required in the Charlotte-Gastonia-Concord, Raleigh-Cary, Fayetteville, and Burlington MSAs. The NC-DAQ is not considering shutting any of these monitors down at this time because they either do not meet the requirement of being below 80 % of the NAAQS, the measured concentration values are very close to 85 % of the NAAQS, or the measured concentrations are expected to be greater than 85 % of the NAAQS if the standard is lowered in 2011.

The locations of the current fine particle-monitoring sites are provided in Table 25. All monitors listed in Table 25 except for the Kenansville and the Candor monitors are suitable for comparison to the National Ambient Air Quality Standards (NAAQS). The Kenansville and Candor monitors are rural general/ background sites rather than

population oriented monitoring sites. All of the monitors meet the requirements of Appendices A, C, D, and E of 40CFR58. All of these monitors use the U.S. EPA reference method designation RFPS-0498-118. The locations of the currently operating monitors are shown in Figure 47.

Table 26 provides the monitor type, operating schedules, monitoring objectives, scales, and statement of purpose for all of the current and proposed monitors in the North Carolina Fine Particle Monitoring Network. All monitors operate on a 24-hour schedule from midnight to midnight on each scheduled sampling day. All of the monitors operate year-round. Table 27 summarizes the status for each current and proposed monitoring site regarding whether it is suitable for comparison to the NAAQS and meets the requirements in 40 CFR58 Appendices A, C, D, and E and also provides the proposed changes to the network.

Table 28 lists the sites in the North Carolina Fine Particle monitoring network with continuous monitors, their sampling schedules, monitoring objectives, scale of representation, statement of purpose and whether 40CFR58 Appendix D requires them.

Table 22 Fine Particle Concentrations Measured by the North Carolina Fine Particle Monitoring Network in the Last Five Years (2005 to 2009) ^a

Charlotte-Gastonia-Concord Metropolitan Statistical Area

| AQS Site Identification Number | Site Name | Highest 24-hr design value | | | Highest annual design value | | |
|--------------------------------|---------------------|----------------------------|------------|-----------|-----------------------------|------------|-----------|
| | | Value (μ/m^3) | % of NAAQS | Year | Value (μ/m^3) | % of NAAQS | Year |
| 370710016 | Grier Middle School | 31 | 89 % | 2004-2006 | 14.4 | 96 % | 2004-2006 |
| 371190010 ^{b, c} | Fire Station 10 | 33 | 94 % | 2003-2005 | 15.3 | 102 % | 2003-2005 |
| 371190041 ^b | Garinger | 33 | 95 % | 2006-2008 | 14.8 | 98 % | 2004-2006 |
| 371190042 ^b | Montclair | 31 | 89 % | 2004-2006 | 14.8 | 98 % | 2004-2006 |
| 371190043 ^b | Oakdale | 31 | 89 % | 2006-2008 | 13.5 | 90 % | 2006-2008 |

Raleigh-Cary Metropolitan Statistical Area

| AQS Site Identification Number | Site Name | Highest 24-hr design value | | | Highest annual design value | | |
|--------------------------------|---------------|----------------------------|------------|-----------|-----------------------------|------------|-----------|
| | | Value (μ/m^3) | % of NAAQS | Year | Value (μ/m^3) | % of NAAQS | Year |
| 37101000 | West Johnston | 17 | 49 % | 2007-2009 | 8.8 | 59 % | 2007-2009 |
| 371830014 | Millbrook | 33 | 94 % | 2004-2006 | 13.6 | 91 % | 2004-2004 |
| 371830015 ^d | St. Aug's | 33 | 94 % | 2003-2005 | 12.8 | 85 % | 2003-2005 |
| 371830020 | Finley Farm | 22.4 | 64 % | 2006-2008 | 11.4 | 76 % | 2006-2008 |

Greensboro-High Point Metropolitan Statistical Area

| AQS Site Identification Number | Site Name | Highest 24-hr design value for | | | Highest annual design value | | |
|--------------------------------|------------|--------------------------------|------------|-----------|-----------------------------|------------|-----------|
| | | Value (μ/m^3) | % of NAAQS | Year | Value (μ/m^3) | % of NAAQS | Year |
| 370810013 | Mendenhall | 32 | 91 % | 2004-2006 | 14.0 | 93 % | 2004-2006 |
| 370810014 | Colfax | 24.1 | 69 % | 2006-2008 | 12.3 | 83 % | 2006-2008 |

Durham-Chapel Hill Metropolitan Statistical Area

| AQS Site Identification Number | Site Name | Highest 24-hr design value | | | Highest annual design value | | |
|--------------------------------|---------------|----------------------------|------------|-----------|-----------------------------|------------|-----------|
| | | Value (μ/m^3) | % of NAAQS | Year | Value (μ/m^3) | % of NAAQS | Year |
| 370370004 | Pittsboro | 27 | 78 % | 2005-2007 | 12.2 | 81% | 2004-2006 |
| 370630001 | Durham Health | 32 | 91 % | 2003-2005 | 13.7 | 91 % | 2004-2006 |
| 370630015 | Durham Armory | 27 | 78 % | 2006-2008 | 13.3 | 89 % | 2004-2006 |
| 371350007 | HR | 30 | 86 % | 2004-2006 | 13.3 | 89 % | 2004-2006 |

Winston-Salem Metropolitan Statistical Area

| AQS Site Identification Number | Site Name | Highest 24-hr design value | | | Highest annual design value | | |
|--------------------------------|-----------------|----------------------------|------------|-----------|-----------------------------|------------|-----------|
| | | Value (μ/m^3) | % of NAAQS | Year | Value (μ/m^3) | % of NAAQS | Year |
| 370670022 ^e | Hattie Ave. | 32 | 91 % | 2005-2007 | 14.5 | 97 % | 2004-2006 |
| 370670024 ^{e, f} | North Forsyth | 29 | 83 % | 2003-2005 | 13.0 | 87 % | 2003-2005 |
| 370670030 ^e | Clemmons School | 32 | 91 % | 2005-2007 | 14.1 | 94 % | 2005-2007 |

Asheville Metropolitan Statistical Area

| AQS Site Identification Number | Site Name | Highest 24-hr design value | | | Highest annual design value | | |
|--------------------------------|--------------------------|----------------------------|------------|-----------|-----------------------------|------------|-----------|
| | | Value (μ/m^3) | % of NAAQS | Year | Value (μ/m^3) | % of NAAQS | Year |
| 370210034 ^g | Board of Ed | 30 | 86 % | 2005-2007 | 12.7 | 85 % | 2003-2005 |
| 370870010 | Waynesville Fire Station | 28 | 81 % | 2005-2007 | 13.7 | 91 % | 2005-2007 |
| 370870012 | Waynesville Recreation | 27 | 78 % | 2006-2008 | 12.8 | 85 % | 2004-2006 |

Table 22 Fine Particle Concentrations Measured by the North Carolina Fine Particle Monitoring Network in the Last Five Years (2005 to 2009) ^a

Hickory Metropolitan Statistical Area

| AQS Site Identification Number | Site Name | Highest 24-hr design value | | | Highest annual design value | | |
|--------------------------------|---------------------|----------------------------|------------|-----------|-----------------------------|------------|-----------|
| | | Value (μ/m^3) | % of NAAQS | Year | Value (μ/m^3) | % of NAAQS | Year |
| 370350004 | Hickory Water Tower | 36 | 103 % | 2003-2005 | 15.4 | 103 % | 2004-2006 |

Fayetteville Metropolitan Statistical Area

| AQS Site Identification Number | Site Name | Highest 24-hr design value | | | Highest annual design value | | |
|--------------------------------|--------------|----------------------------|------------|-----------|-----------------------------|------------|-----------|
| | | Value (μ/m^3) | % of NAAQS | Year | Value (μ/m^3) | % of NAAQS | Year |
| 370510009 | William Owen | 31 | 89 % | 2005-2007 | 13.9 | 93 % | 2004-2006 |

Wilmington Metropolitan Statistical Area

| AQS Site Identification Number | Site Name | Highest 24-hr design value | | | Highest annual design value | | |
|--------------------------------|--------------|----------------------------|------------|-----------|-----------------------------|------------|-----------|
| | | Value (μ/m^3) | % of NAAQS | Year | Value (μ/m^3) | % of NAAQS | Year |
| 371290002 | Castle Hayne | 25 | 71 % | 2004-2006 | 10.2 | 68 % | 2004-2006 |

Greenville Metropolitan Statistical Area

| AQS Site Identification Number | Site Name | Highest 24-hr design value | | | Highest annual design value | | |
|--------------------------------|-------------------|----------------------------|------------|-----------|-----------------------------|------------|-----------|
| | | Value (μ/m^3) | % of NAAQS | Year | Value (μ/m^3) | % of NAAQS | Year |
| 371470005 | Greenville South | 27 | 77 % | 2003-2005 | 11.9 | 79 % | 2003-2005 |
| 371470006 | Pitt Co Ag Center | 26 | 74 % | 2007-2009 | 11.7 | 78 % | 2006-2008 |

Jacksonville Metropolitan Statistical Area

| AQS Site Identification Number | Site Name | Highest 24-hr design value | | | Highest annual design value | | |
|--------------------------------|------------|----------------------------|------------|-----------|-----------------------------|------------|-----------|
| | | Value (μ/m^3) | % of NAAQS | Year | Value (μ/m^3) | % of NAAQS | Year |
| 371330005 | Northwoods | 25 | 71 % | 2004-2006 | 11.3 | 75 % | 2003-2005 |

Rocky Mount Metropolitan Statistical Area

| AQS Site Identification Number | Site Name | Highest 24-hr design value | | | Highest annual design value | | |
|--------------------------------|----------------|----------------------------|------------|-----------|-----------------------------|------------|-----------|
| | | Value (μ/m^3) | % of NAAQS | Year | Value (μ/m^3) | % of NAAQS | Year |
| 370650004 | Springfield Rd | 27 | 77 % | 2005-2007 | 12.4 | 83 % | 2005-2007 |

Burlington Metropolitan Statistical Area

| AQS Site Identification Number | Site Name | Highest 24-hr design value | | | Highest annual design value | | |
|--------------------------------|-----------|----------------------------|------------|-----------|-----------------------------|------------|-----------|
| | | Value (μ/m^3) | % of NAAQS | Year | Value (μ/m^3) | % of NAAQS | Year |
| 370010002 | Hopedale | 32 | 91 % | 2003-2005 | 14.1 | 94 % | 2003-2005 |

Goldsboro Metropolitan Statistical Area

| AQS Site Identification Number | Site Name | Highest 24-hr design value | | | Highest annual design value | | |
|--------------------------------|-----------|----------------------------|------------|-----------|-----------------------------|------------|-----------|
| | | Value (μ/m^3) | % of NAAQS | Year | Value (μ/m^3) | % of NAAQS | Year |
| 371910005 | Dillard | 30 | 86 % | 2004-2006 | 13.2 | 88 % | 2003-2005 |

Table 22 Fine Particle Concentrations Measured by the North Carolina Fine Particle Monitoring Network in the Last Five Years (2005 to 2009) ^a

Not in an Metropolitan Statistical Area

| AQS Site Identification Number | Site Name | Highest 24-hr design value | | | Highest annual design value | | |
|--------------------------------|--------------------------|----------------------------|------------|-----------|-----------------------------|------------|-----------|
| | | Value (μ/m^3) | % of NAAQS | Year | Value (μ/m^3) | % of NAAQS | Year |
| 370250004 ^f | Kannapolis | 32 | 91 % | 2003-2005 | 14.6 | 97 % | 2004-2006 |
| 370330001 | Cherry Grove | 30 | 85 % | 2005-2007 | 13.3 | 89 % | 2004-2006 |
| 370570002 | Lexington Water Tower | 32 | 91 % | 2003-2005 | 15.2 | 101 % | 2004-2006 |
| 370610002 | Kenansville | 30 | 86 % | 2004-2006 | 11.5 | 77 % | 2004-2006 |
| 371070004 | Lenoir Community College | 26 | 73 % | 2003-2005 | 11.3 | 75 % | 2003-2005 |
| 371110004 | East Marion | 32 | 91 % | 2004-2006 | 14.4 | 96 % | 2005-2007 |
| 371170001 | Jamesville | 26 | 74 % | 2004-2006 | 11.1 | 74 % | 2004-2006 |
| 371210001 | Spruce Pine | 32 | 91 % | 2005-2007 | 13.0 | 87 % | 2005-2007 |
| 371230001 | Candor | 29 | 83 % | 2004-2006 | 12.5 | 83 % | 2004-2006 |
| 371550005 | Linkhaw | 30 | 86 % | 2005-2007 | 12.8 | 85 % | 2005-2007 |
| 371590021 | Rockwell | 30 | 86 % | 2005-2007 | 14.6 | 97 % | 2004-2006 |
| 371730002 | Bryson City | 28 | 81 % | 2005-2007 | 12.8 | 85 % | 2005-2007 |
| 371890003 | Boone | 31 | 89 % | 2004-2006 | 12.1 | 81 % | 2003-2005 |

^a All monitors use an R & P Model 2025 PM2.5 Sequential Monitor with a WINS impactor (Air Quality System (AQS) Method Code 118). All monitors listed in this table except the Kenansville and Candor monitors are suitable for comparison to the National Ambient Air Quality Standards. All monitors in this table meet the requirements of Appendices A, C, D, and E of 40CFR58. All monitors use the U.S. EPA reference method designation RFPS-0498-118.

^b Operated by the Mecklenburg County Air Quality (AQS Reporting Agency 0669)

^c This monitor shut down on December 31, 2005.

^d This monitor was shut down in 2003.

^e Operated by the Forsyth County Environmental Affairs Department (AQS Reporting Agency 0403).

^f This monitor was shut down on December 31, 2004.

^g Operated by the Western North Carolina Regional Air Quality Agency (AQS Reporting Agency 0779).

^h Operated by the Eastern Band of Cherokee Indians of North Carolina (AQS Tribal Reporting Agency 001); monitor is not a part of the NC-DAQ network – values are included for informational purposes only.

Table 23 Fine Particle Monitors that Have Demonstrated Attainment of the National Ambient Air Quality Standards for the Past Five Years

| Site Code | Site Name | County | Required by 40CFR58 Appendix D? | Less than 10% probability of exceeding 80% of NAAQS in next 3 years? |
|------------------------|----------------------------------|---------------|--|---|
| 37-001-0002 | Hopedale/ Burlington | Alamance | No | No |
| 370210034 ^b | Board of Ed | Buncombe | No – Daily design value monitor for the Asheville MSA | No |
| 37-033-0001 | Cherry Grove | Caswell | Yes - Required regional transport monitor for the piedmont and central area of the state | No |
| 37-037-0004 | Pittsboro | Chatham | No | No |
| 37-037-0004 | William Owen/ Fayetteville | Cumberland | No | No |
| 37-061-0002 | Kenansville | Duplin | Yes - general/ background monitor for the coastal part of the state | No |
| 370630015 | Durham Armory | Durham | Yes – for the Durham-Chapel Hill MSA | No |
| 37-065-0004 | Springfield Road/ Rocky Mount | Edgecombe | No | No |
| 37-071-0016 | Grier Middle School/ Gastonia | Gaston | No | No |
| 37-081-0013 | Mendenhall/ Greensboro | Guilford | Yes - for the Greensboro MSA ^a | No |
| 370870012 | Waynesville Recreation | Haywood | No | No |
| 37-107-0004 | Lenoir Community College | Lenoir | No | Yes |
| 371110004 | East Marion | McDowell | No | No |
| 37-117-0001 | Jamesville | Martin | Yes - regional transport monitor for the coastal part of the state, providing information on the fine particle concentrations entering the state from Virginia and leaving the state toward Virginia | Yes |
| 37-121-0001 | Spruce Pine | Mitchell | No | No |
| 37-123-0001 | Candor | Montgomery | Yes - general/ background monitor for the central piedmont area of the state | No |
| 37-147-0006 | Pitt Co Ag Center | Pitt | No | Yes |
| 37-155-0005 | Linkhaw/ Lumberton | Robeson | No | No |
| 371590021 | Rockwell | Rowan | No | No |

Table 23 Fine Particle Monitors that Have Demonstrated Attainment of the National Ambient Air Quality Standards for the Past Five Years

| Site Code | Site Name | County | Required by 40CFR58 Appendix D? | Less than 10% probability of exceeding 80% of NAAQS in next 3 years? |
|-------------|--------------------|---------|---|--|
| 37-173-0002 | Bryson City | Swain | Yes- regional transport monitor for the western mountain area of the state, providing information on the fine particle concentrations entering the state from the Tennessee/ Georgia area and leaving the state toward Tennessee/ Georgia | No |
| 37-183-0014 | Millbrook/ Raleigh | Wake | Yes - 1 of 2 required monitors for the Raleigh-Cary MSA ^a | No |
| 37-189-0003 | Boone | Watauga | Yes | No |
| 37-191-0005 | Dillard/ Goldsboro | Wayne | No | No |

^aCurrent design value is greater than 85 % of the National Ambient Air Quality Standards (see [Table 3](#))

Table 24 Design Values and Required Fine Particle Monitors for North Carolina Metropolitan Statistical Areas (MSA)

| MSA | Population (2009 estimate) ^a | 2009 Fine Particle Design Value (As percent of NAAQS) | | Number of Monitors operated in North Carolina | |
|--------------------------------------|---|---|-----------------|---|----------------|
| | | 24-Hour | Annual | Required | Current |
| Virginia Beach-Norfolk-New Port News | 1,674,498 | 88 ^b | 72 | 3 | 0 ^c |
| Charlotte-Gastonia-Concord | 1,745,524 | 74 | 84 | 2 | 4 ^d |
| Raleigh-Cary | 1,125,827 | 73 | 74 | 2 | 3 |
| Greensboro-High Point | 714,765 | 70 | 75 | 1 | 2 |
| Durham-Chapel Hill | 501,228 | 63 | 72 | 1 | 2 |
| Winston-Salem | 484,921 | 73 | 79 | 0 | 2 |
| Asheville | 412,672 | 65 | 71 | 0 | 2 |
| Hickory | 365,364 | 73 | 84 | 0 | 1 |
| Fayetteville | 360,355 | 70 | 78 | 0 | 1 |
| Wilmington | 354,525 | 69 ^e | 65 ^e | 0 | 0 |
| Greenville | 173,715 | 74 | 63 | 0 | 1 |
| Jacksonville | 173,064 | 71 ^e | 70 ^e | 0 | 0 |
| Rocky Mount | 146,596 | 63 | 69 | 0 | 1 |
| Burlington | 150,358 | 73 | 77 | 0 | 1 |
| Goldsboro | 113,811 | 68 | 75 | 0 | 1 |

^a Source: U.S. Census Bureau, Population Division, Table 1. Annual Estimates of the Population of Metropolitan and Micropolitan Statistical Areas: April 1, 2000 to July 1, 2009 (CBSA-EST2009-01), Released March 2010, available on the world wide web at <http://www.census.gov/popest/metro/CBSA-est2009-annual.html>

^b Includes exceptional events that are expected to be excluded eventually. Without the exceptional events the value will be less than 85 % of the NAAQS.

^c Virginia Department of Environmental Quality (VDEQ), Office of Air Quality Monitoring operates three monitors in this MSA.

^d South Carolina Department of Health and Environment operates an additional monitor in York County, South Carolina.

^e Design values are for 2005 to 2007.

Table 25 North Carolina Fine Particle Monitoring Network – Monitor Locations ^a

Charlotte-Gastonia-Concord Metropolitan Statistical Area

| AQS Site Identification Number | Site Location | | | | | MSA, CSA, or CBSA represented |
|--------------------------------|---------------------|--------------------------|-----------|---------------|--------------|-------------------------------|
| | Site Name | Street Address | City | Longitude | Latitude | |
| 370710016 | Grier Middle School | 1622 East Garrison Blvd. | Gastonia | W 081 09' 20" | N 35 15' 16" | Charlotte-Gastonia-Concord |
| 371190041 ^b | Garinger | 1130 Eastway Drive | Charlotte | W 080 46' 59" | N 35 14' 28" | Charlotte-Gastonia-Concord |
| 371190042 ^b | Montclair | 1935 Emerywood Drive | Charlotte | W 080 52' 01" | N 35 09' 05" | Charlotte-Gastonia-Concord |
| 371190043 ^b | Oakdale | 513 Radio Road | Charlotte | W 080 53' 15" | N 35 18' 15" | Charlotte-Gastonia-Concord |

Raleigh-Cary Metropolitan Statistical Area

| AQS Site Identification Number | Site Location | | | | | MSA, CSA, or CBSA represented |
|--------------------------------|---------------|-----------------------------|---------|---------------|--------------|-------------------------------|
| | Site Name | Street Address | City | Longitude | Latitude | |
| 371010002 | West Johnston | 3411 Jack Road ^c | Clayton | W 078 26' 15" | N 35 30' 0" | Raleigh-Cary |
| 371830014 | Millbrook | 3801 Spring Forest Road | Raleigh | W 078 34' 27" | N 35 51' 22" | Raleigh-Cary |
| 371830020 ^c | Finley Farm | Lake Wheeler Road Field Lab | Raleigh | W 078 40' 47" | N 35 43' 41" | Raleigh-Cary |

Greensboro-High Point Metropolitan Statistical Area

| AQS Site Identification Number | Site Location | | | | | MSA, CSA, or CBSA represented |
|--------------------------------|---------------|-----------------------|------------|---------------|--------------|-------------------------------|
| | Site Name | Street Address | City | Longitude | Latitude | |
| 370810013 | Mendenhall | 205 Wiloughby Blvd. | Greensboro | W 079 48' 04" | N 36 06' 33" | Greensboro |
| 370810014 ^c | Colfax | 2171 Sandy Ridge Road | High Point | W 080 01' 00" | N 36 00' 00" | Greensboro |

Durham-Chapel Hill Metropolitan Statistical Area

| AQS Site Identification Number | Site Location | | | | | MSA, CSA, or CBSA represented |
|--------------------------------|---------------|----------------------|-----------|---------------|--------------|-------------------------------|
| | Site Name | Street Address | City | Longitude | Latitude | |
| 370370004 | Pittsboro | 325 Russett Run Road | Pittsboro | W 079 09' 55" | N 35 45' 32" | Durham-Chapel Hill |
| 370630015 ^d | Durham Armory | 801 Stadium Drive | Durham | W 078 54' 14" | N 36 01' 58" | Durham-Chapel Hill |

Winston-Salem Metropolitan Statistical Area

| AQS Site Identification Number | Site Location | | | | | MSA, CSA, or CBSA represented |
|--------------------------------|---------------|--|---------------|---------------|--------------|-------------------------------|
| | Site Name | Street Address | City | Longitude | Latitude | |
| 370670022 ^e | Hattie Ave. | Corner of 13 th & Hattie Avenue | Winston-Salem | W 080 13' 36" | N 36 06' 38" | Winston-Salem |
| 370670030 ^e | Clemmons | Fraternity Church Road | Clemmons | W 080 20' 31" | N 36 01' 34" | Winston-Salem |

Table 25 North Carolina Fine Particle Monitoring Network – Monitor Locations ^a

Asheville Metropolitan Statistical Area

| AQS Site Identification Number | Site Location | | | | | MSA, CSA, or CBSA represented |
|--------------------------------|-------------------------------|------------------|-------------|---------------|--------------|-------------------------------|
| | Site Name | Street Address | City | Longitude | Latitude | |
| 370210034 ^f | Board of Ed | 175 Bingham Road | Asheville | W 082 37' 7" | N 35 36' 27" | Asheville |
| 370870012 ^g | Waynesville Recreation Center | 550 Vance Street | Waynesville | W 082 58' 45" | N 35 30' 21" | Asheville |

Hickory Metropolitan Statistical Area

| AQS Site Identification Number | Site Location | | | | | MSA, CSA, or CBSA represented |
|--------------------------------|---------------------|----------------------------|---------|---------------|--------------|-------------------------------|
| | Site Name | Street Address | City | Longitude | Latitude | |
| 370350004 | Hickory Water Tower | Water Tank 15 First Avenue | Hickory | W 081 21' 58" | N 35 43' 45" | Hickory |

Fayetteville Metropolitan Statistical Area

| AQS Site Identification Number | Site Location | | | | | MSA, CSA, or CBSA represented |
|--------------------------------|---------------|-------------------|--------------|---------------|--------------|-------------------------------|
| | Site Name | Street Address | City | Longitude | Latitude | |
| 370510009 | William Owen | 4533 Raeford Road | Fayetteville | W 078 57' 19" | N 35 07' 49" | Fayetteville |

Wilmington Metropolitan Statistical Area

| AQS Site Identification Number | Site Location | | | | | MSA, CSA, or CBSA represented |
|--------------------------------|---------------|-------------------------|--------------|---------------|--------------|-------------------------------|
| | Site Name | Street Address | City | Longitude | Latitude | |
| 371290002 | Castle Hayne | 6028 Holly Shelter Road | Castle Hayne | W 077 50' 36" | N 34 21' 87" | Wilmington |

Greenville Metropolitan Statistical Area

| AQS Site Identification Number | Site Location | | | | | MSA, CSA, or CBSA represented |
|--------------------------------|---------------|--------------------|------------|---------------|--------------|-------------------------------|
| | Site Name | Street Address | City | Longitude | Latitude | |
| 371470006 ^h | Pitt County | 403 Government Cir | Greenville | W 077 21' 00" | N 35 38' 00" | Greenville |

Rocky Mount Metropolitan Statistical Area

| AQS Site Identification Number | Site Location | | | | | MSA, CSA, or CBSA represented |
|--------------------------------|----------------|----------------------|-------------|--------------|--------------|-------------------------------|
| | Site Name | Street Address | City | Longitude | Latitude | |
| 370650004 | Springfield Rd | 900 Springfield Road | Rocky Mount | W 077 45' 0" | N 35 56' 00" | Rocky Mount |

Burlington Metropolitan Statistical Area

| | | | | | | |
|-----------|----------|--------------------------------|------------|---------------|--------------|------------|
| 370010002 | Hopedale | 827 South Graham-Hopedale Road | Burlington | W 079 24' 30" | N 36 05' 20" | Burlington |
|-----------|----------|--------------------------------|------------|---------------|--------------|------------|

Goldsboro Metropolitan Statistical Area

| AQS Site Identification Number | Site Location | | | | | MSA, CSA, or CBSA represented |
|--------------------------------|---------------|----------------------------|-----------|---------------|--------------|-------------------------------|
| | Site Name | Street Address | City | Longitude | Latitude | |
| 371910005 | Dillard | 1101 South Devereau Street | Goldsboro | W 077 59' 63" | N 35 22' 16" | Goldsboro |

Table 25 North Carolina Fine Particle Monitoring Network – Monitor Locations ^a

Not in an Metropolitan Statistical Area

| AQS Site Identification Number | Site Location | | | | | MSA, CSA, or CBSA represented |
|--------------------------------|--------------------------|---------------------------------|-------------|---------------|--------------|-------------------------------|
| | Site Name | Street Address | City | Longitude | Latitude | |
| 370330001 | Cherry Grove | 7074 Cherry Grove Road | Reidsville | W 079 28' 5" | N 36 18' 25" | None |
| 370570002 | Lexington Water Tower | 938 South Salisbury Street | Lexington | W 080 15' 77" | N 35 48' 87" | None |
| 370610002 | Kenansville | 328 Limestone Road | Kenansville | W 077 57' 65" | N 34 57' 29" | None |
| 371070004 | Lenoir Community College | 231 Highway 58 S | Kinston | W 077 34' 11" | N 35 13' 58" | None |
| 371110004 | East Marion | 700 State Street | Marion | W 081 59' 38" | N35 41' 15" | None |
| 371170001 | Jamesville | 33215 US Highway 64 | Jamesville | W 076 54' 23" | N 35 48' 38" | None |
| 371210001 | Spruce Pine | 138 Highland Avenue | Spruce Pine | W 082 04' 24" | N 35 54' 55" | None |
| 371230001 | Candor | 112 Perry Drive | Candor | W 079 50' 11" | N 35 15' 47" | None |
| 371550005 | Linkhaw | 1170 Linkhaw Road | Lumberton | W 078 59' 25" | N 34 38' 33" | None |
| 371590021 | Rockwell | 301 West Street | Rockwell | W 080 23' 72" | N 35 33' 11" | None |
| 371730002 | Bryson City | Parks & Rec Bldg, Center Street | Bryson City | W083 26' 38" | N35 26' 06" | None |
| 371890003 | Boone | 361 Jefferson Road | Boone | W 081 39' 47" | N 36 13' 19" | None |

^a All monitors use an R & P Model 2025 PM2.5 Sequential Monitor with a WINS impactor (Air Quality System (AQS) Method Code 118). All monitors listed in this table except the Kenansville and Candor monitors are suitable for comparison to the National Ambient Air Quality Standards. All monitors in this table meet the requirements of Appendices A, C, D, and E of 40CFR58. All monitors use the U.S. EPA reference method designation RFPS-0498-118.

^b Operated by the Mecklenburg County Air Quality (AQS Reporting Agency 0669)

^c This monitor started on January 1, 2008, to meet minimum monitoring requirements in 40CFR58 Appendix D.

^d This monitor started on January 1, 2008, to replace the Durham Health monitor.

^e Operated by the Forsyth County Environmental Affairs Department (AQS Reporting Agency 0403).

^f Operated by the Western North Carolina Regional Air Quality Agency (AQS Reporting Agency 0779).

^g This monitor started on January 1, 2008, to replace the Waynesville Fire Station monitor.

^h This monitor started on January 1, 2008, to replace the South Greenville monitor. This site will be a collocated fine particle and ozone monitoring site.

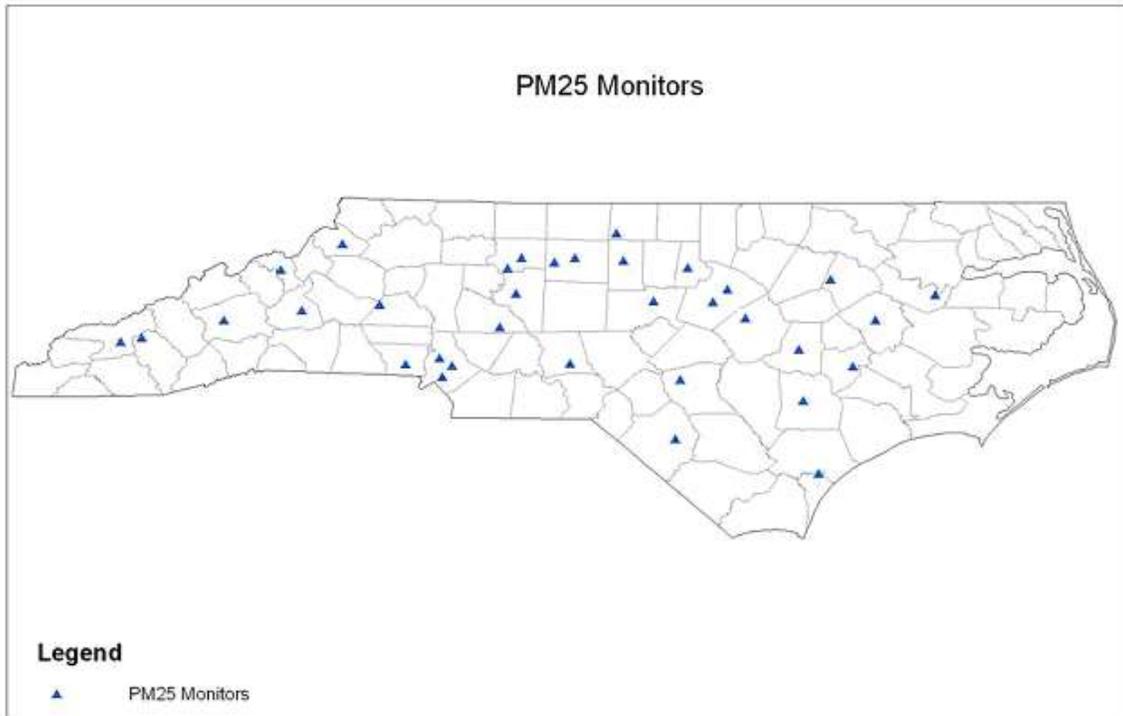


Figure 47. Locations of 2010 Fine Particle Monitoring Stations

Table 26 Statement of Purpose for North Carolina Fine Particle Monitoring Network^a

Charlotte-Gastonia-Concord Metropolitan Statistical Area

| AQS Site Id Number | Site Name | Monitor Type | Operating Schedule ^b | Statement of Purpose | Monitoring Objective | Scale |
|------------------------|---------------------|----------------|---------------------------------|--|----------------------|--------------|
| 370710016 | Grier Middle School | SLAMS | 1-in-3 day ^c | AQI Reporting. Compliance w/NAAQS. | Population Exposure | Neighborhood |
| 371190041 ^d | Garinger | PROPOSED NCORE | Every day ^e | 1 of 2 Required Monitors in Charlotte-Gastonia-Concord MSA. AQI Reporting. Compliance w/NAAQS. | Population Exposure | Neighborhood |
| 371190042 ^d | Montclair | SLAMS | 1-in-3 day ^{c,f} | AQI Reporting. Compliance w/NAAQS. | Population Exposure | Neighborhood |
| 371190043 ^d | Oakdale | SLAMS | Every day | 1 of 2 Required Monitors in Charlotte-Gastonia-Concord MSA. AQI Reporting. Compliance w/NAAQS. | Population Exposure | Neighborhood |

Raleigh-Cary Metropolitan Statistical Area

| AQS Site Id Number | Site Name | Monitor Type | Operating Schedule ^b | Statement of Purpose | Monitoring Objective | Scale |
|------------------------|----------------------------|-----------------------|---------------------------------|--|----------------------|--------------|
| 371010002 | West Johnston ^c | SLAMS | 1-in-3 day ^c | AQI Reporting. Compliance w/NAAQS. | Population Exposure | Neighborhood |
| 371830014 | Millbrook | SLAMS; PROPOSED NCORE | Every day ^g | 1 of 2 Required Monitors in Raleigh-Cary MSA. AQI Reporting. Compliance w/NAAQS. | Population Exposure | Neighborhood |
| 371830020 ^h | Finley Farm | SLAMS | 1-in-3 day | 1 of 2 required Monitors in Raleigh-Cary MSA. AQI Reporting; Compliance w/NAAQS. | Population Exposure | Neighborhood |

Greensboro-High Point Metropolitan Statistical Area

| AQS Site Id Number | Site Name | Monitor Type | Operating Schedule ^b | Statement of Purpose | Monitoring Objective | Scale |
|------------------------|------------|--------------|---------------------------------|---|--|--------------|
| 370810013 | Mendenhall | SLAMS | Every day ^f | Required Monitor in Greensboro-High Point MSA. AQI Reporting. Compliance w/NAAQS. | Population Exposure/ General/ Background | Neighborhood |
| 370810014 ^h | Colfax | SLAMS | 1-in-3 day | AQI Reporting. Compliance w/NAAQS. | Population Exposure | Neighborhood |

Durham-Chapel Hill Metropolitan Statistical Area

| AQS Site Id Number | Site Name | Monitor Type | Operating Schedule ^b | Statement of Purpose | Monitoring Objective | Scale |
|------------------------|---------------|--------------|---------------------------------|---|----------------------|--------------|
| 370370004 | Pittsboro | SLAMS | 1-in-3 day | AQI Reporting. Compliance w/NAAQS | Population Exposure | Regional |
| 370630015 ⁱ | Durham Armory | SLAMS | Every day ^c | Design Value monitor for the Durham-Chapel Hill MSA. AQI Reporting. Compliance w/NAAQS. | Population Exposure | Neighborhood |

Table 26 Statement of Purpose for North Carolina Fine Particle Monitoring Network^a

Winston-Salem Metropolitan Statistical Area

| AQS Site Id Number | Site Name | Monitor Type | Operating Schedule ^b | Statement of Purpose | Monitoring Objective | Scale |
|------------------------|-------------|--------------|---------------------------------|--|----------------------|--------------|
| 370670022 ^k | Hattie Ave. | SLAMS | Every day ^l | Design Value monitor for the Winston-Salem MSA. AQI Reporting. Compliance w/NAAQS. | Population Exposure | Neighborhood |
| 370670030 ^k | Clemmons | SLAMS | 1-in-3 day ^f | AQI Reporting. Compliance w/NAAQS. | Population Exposure | Neighborhood |

Asheville Metropolitan Statistical Area

| AQS Site Id Number | Site Name | Monitor Type | Operating Schedule ^b | Statement of Purpose | Monitoring Objective | Scale |
|------------------------|-------------------------------|--------------|---------------------------------|--|----------------------|--------------|
| 370210034 ^m | Board of Ed | SLAMS | 1-in-3 day ⁿ | 24-Hour Design Value monitor for the Asheville MSA. AQI Reporting. Compliance w/NAAQS. | Population Exposure | Neighborhood |
| 370870012 ^o | Waynesville Recreation Center | SLAMS | 1-in-3 day | Annual Design Value monitor for the Asheville MSA. AQI Reporting. Compliance with NAAQS. | Population Exposure | Neighborhood |

Hickory Metropolitan Statistical Area

| AQS Site Id Number | Site Name | Monitor Type | Operating Schedule ^b | Statement of Purpose | Monitoring Objective | Scale |
|--------------------|---------------------|--------------|---------------------------------|--|----------------------|--------------|
| 370350004 | Hickory Water Tower | SLAMS | Every day ^l | Required monitor for the Hickory MSA. AQI Reporting. Compliance w/NAAQS. | Population Exposure | Neighborhood |

Fayetteville Metropolitan Statistical Area

| AQS Site Id Number | Site Name | Monitor Type | Operating Schedule ^b | Statement of Purpose | Monitoring Objective | Scale |
|--------------------|--------------|--------------|---------------------------------|------------------------------------|----------------------|--------------|
| 370510009 | William Owen | SLAMS | 1-in-3 day ^f | AQI Reporting. Compliance w/NAAQS. | Population Exposure | Neighborhood |

Wilmington Metropolitan Statistical Area

| AQS Site Id Number | Site Name | Monitor Type | Operating Schedule ^b | Statement of Purpose | Monitoring Objective | Scale |
|--------------------|--------------|-----------------|---------------------------------|---|----------------------|--------------|
| 371290002 | Castle Hayne | SPECIAL PURPOSE | 1-in-3 day ^c | To evaluate performance of the BAM in the coastal Carolina area | Population Exposure | Neighborhood |

Greenville Metropolitan Statistical Area

| AQS Site Id Number | Site Name | Monitor Type | Operating Schedule ^b | Statement of Purpose | Monitoring Objective | Scale |
|------------------------|------------------------|--------------|---------------------------------|------------------------|----------------------|--------------|
| 371470006 ^p | Agricultural Extension | SLAMS | 1-in-3 day | Compliance with NAAQS. | Population Exposure | Neighborhood |

Rocky Mount Metropolitan Statistical Area

| AQS Site Id Number | Site Name | Monitor Type | Operating Schedule ^b | Statement of Purpose | Monitoring Objective | Scale |
|--------------------|----------------|--------------|---------------------------------|----------------------------|---|--------------|
| 370650004 | Springfield Rd | SLAMS | 1-in-3 day | Compliance with the NAAQS. | Population Exposure/General/ Background | Neighborhood |

Burlington Metropolitan Statistical Area

| AQS Site Id Number | Site Name | Monitor Type | Operating Schedule ^b | Statement of Purpose | Monitoring Objective | Scale |
|--------------------|-----------|--------------|---------------------------------|----------------------|----------------------|--------------|
| 370010002 | Hopedale | SLAMS | 1-in-3 day ^c | Compliance w/NAAQS. | Population Exposure | Neighborhood |

Table 26 Statement of Purpose for North Carolina Fine Particle Monitoring Network^a

Goldsboro Metropolitan Statistical Area

| AQS Site Id Number | Site Name | Monitor Type | Operating Schedule ^b | Statement of Purpose | Monitoring Objective | Scale |
|--------------------|-----------|--------------|---------------------------------|----------------------|----------------------|-------|
| 371910005 | Dillard | SLAMS | 1-in-3 day ^c | Compliance w/NAAQS. | Population Exposure | Urban |

Not in an Metropolitan Statistical Area

| AQS Site Id Number | Site Name | Monitor Type | Operating Schedule ^b | Statement of Purpose | Monitoring Objective | Scale |
|--------------------|--------------------------|--------------|---------------------------------|---|--|---------------|
| 370330001 | Cherry Grove | SLAMS | 1-in-3 day ^c | Required regional transport monitor for the piedmont and central area of the state. Compliance w/NAAQS. | Population Exposure/ Regional Transport/ General/ Background | Urban |
| 370570002 | Lexington | SLAMS | 1-in-3 day ^l | Required monitor for Nonattainment area. Compliance w/NAAQS | Population Exposure | Neighbor-hood |
| 370610002 | Kenansville | SLAMS | 1-in-3 day | Required General/ Background monitor for the coastal area | Welfare Related Impacts/ General/ Background | Regional |
| 371070004 | Lenoir Community College | SLAMS | 1-in-3 day | Compliance with NAAQS. | Population Exposure | Neighbor-hood |
| 371110004 | East Marion | SLAMS | 1-in-3 day ^f | Compliance with NAAQS. | Population Exposure | Neighbor-hood |
| 371170001 | Jamesville | SLAMS | 1-in-3 day ^c | Required regional transport monitor for coastal region, providing information on fine particle concentrations entering & leaving state. Compliance w/NAAQS. | Regional Transport/ General/ Background/ Population Exposure | Urban |
| 371210001 | Spruce Pine | SLAMS | 1-in-3 day | Compliance with NAAQS. | Population Exposure | Neighbor-hood |
| 371230001 | Candor | SLAMS | 1-in-3 day | Required General/ Background monitor for piedmont/central region | Welfare Related Impacts/General/ Background | Regional |
| 371550005 | Linkhaw | SLAMS | 1-in-3 day | Compliance with NAAQS. | Population Exposure | Neighbor-hood |
| 371590021 | Rockwell | SLAMS | 1-in-3 day ^l | Compliance with NAAQS. | Population Exposure | Neighbor-hood |
| 371730002 | Bryson City | SLAMS | 1-in-3 day ^c | Required Transport Monitor for Western Mountain Area. Compliance w/NAAQS. | Regional Transport/ Population Exposure | Neighbor-hood |
| 371890003 | Boone | SLAMS | 1-in-3 day | Required general/background monitor for western mountain area. Compliance w/NAAQS. | General/Background/ Population Exposure | Neighbor-hood |

^a All monitors use an R & P Model 2025 PM2.5 Sequential Monitor with a WINS impactor (Air Quality System (AQS) Method Code 118). All monitors in this table meet the requirements of Appendices A, C, and E of Part 58. All monitors use the U.S. EPA reference method designation RFPS-0498-118.

^b All monitors operate on a 24-hour schedule, collecting a sample from midnight to midnight, Eastern Standard Time.

^c Collocated with a continuous fine particle monitor.

^d Operated by the Mecklenburg County Air Quality (AQS Reporting Agency 0669)

^e Collocated with an every 3rd day speciation monitor and a continuous fine particle monitor.

^f Collocated with an every 6th day precision monitor and a continuous fine particle monitor.

^g Collocated with an every 6th day precision monitor, an every 3rd day speciation monitor, and a continuous fine particle monitor.

^h This monitor started on January 1, 2008, to meet minimum monitoring requirements in 40CFR58 Appendix D.

ⁱ This monitor started on January 1, 2008, to replace the Durham Health monitor.

Table 26 Statement of Purpose for North Carolina Fine Particle Monitoring Network^a

^j The NC-DAQ is considering shutting down this monitor on December 31, 2008. 40CFR58 Appendix D does not require it to continue operating so the NC-DAQ plans to do a study to determine if this monitor provides relevant information or is redundant to the Durham Health monitor (370630001).

^k Operated by the Forsyth County Environmental Affairs Department (AQS Reporting Agency 0403).

^l Collocated with an every 6th day speciation monitor and a continuous fine particle monitor.

^m Operated by the Western North Carolina Regional Air Quality Agency (AQS Reporting Agency 0779).

ⁿ Collocated with an every 6th day precision monitor, an every 6th day speciation monitor, and a continuous fine particle monitor.

^o This monitor started on January 1, 2008, to replace the Waynesville Fire Station monitor.

^p This monitor started on January 1, 2008, to replace the South Greenville monitor. This site is a collocated fine particle and ozone-monitoring site.

Table 27 Status of North Carolina Fine Particle Monitoring Network in Meeting the Requirements of Part 58 and Proposed Changes to the Network ^a

| Charlotte-Gastonia-Concord Metropolitan Statistical Area | | | | |
|---|---------------------|---|---|---|
| AQS Site Id Number | Site Name | Suitable for Comparison to NAAQS | Meets Requirements of Part 58 Appendices ^b D | Proposal to Move or Change |
| 370710016 | Grier Middle School | Yes | No – not a required monitor. | Manual PM _{2.5} FRM monitor may be discontinued on 1/1/2011 if the continuous PM _{2.5} monitor is approved as an ARM. |
| 371190041 ^c | Garinger | Yes | Yes- 1 of 2 Required Monitors for the Charlotte-Gastonia-Concord MSA. | None |
| 371190042 ^c | Montclair | Yes | Yes- 1 of 2 Required Monitors for the Charlotte-Gastonia-Concord MSA. | None |
| 371190043 ^c | Oakdale | Yes | Yes- 1 of 2 Required Monitors for the Charlotte-Gastonia-Concord MSA. | None |
| Raleigh-Cary Metropolitan Statistical Area | | | | |
| AQS Site Id Number | Site Name | Suitable for Comparison to NAAQS | Meets Requirements of Part 58 Appendices ^b D | Proposal to Move or Change |
| 371010002 | West Johnston | Yes | No – not a required monitor. | Will add a continuous PM 2.5 monitor to the site 1/1/2011 or later. |
| 371830014 | Millbrook | Yes | Yes - 1 of 2 Required Monitors for the Raleigh-Cary MSA. | Sampling schedule may change to 1-in-3 day when the BAM study ends |
| 371830020 ^d | Finley Farm | Yes | Yes - 1 of 2 Required Monitors for the Raleigh-Cary MSA. | None |
| Greensboro-High Point Metropolitan Statistical Area | | | | |
| AQS Site Id Number | Site Name | Suitable for Comparison to NAAQS | Meets Requirements of Part 58 Appendices ^b D | Proposal to Move or Change |
| 370810013 | Mendenhall | Yes | Yes - Required Monitor for the Greensboro-High Point MSA. | The collocated monitor will be shut down & the sampling schedule reduced to 1-in-3 day by 12/31/2010 or earlier |
| 370810014 ^d | Colfax | Yes | No – not a required monitor. | None |
| Durham-Chapel Hill Metropolitan Statistical Area | | | | |
| AQS Site Id Number | Site Name | Suitable for Comparison to NAAQS | Meets Requirements of Part 58 Appendices ^b D | Proposal to Move or Change |
| 370370004 | Pittsboro | Yes | No – not a required monitor. | None |
| 370630015 ^e | Durham Armory | Yes | No – not a required monitor. | None |
| Winston-Salem Metropolitan Statistical Area | | | | |
| AQS Site Id Number | Site Name | Suitable for Comparison to NAAQS | Meets Requirements of Part 58 Appendices ^b D | Proposal to Move or Change |
| 370670022 ^f | Hattie Ave. | Yes | Yes- Design Value monitor for the Winston-Salem MSA. | None |
| 370670030 ^f | Clemmons | Yes | No – not a required monitor. | None |

Table 27 Status of North Carolina Fine Particle Monitoring Network in Meeting the Requirements of Part 58 and Proposed Changes to the Network ^a

Asheville Metropolitan Statistical Area

| AQS Site Id Number | Site Name | Suitable for Comparison to NAAQS | Meets Requirements of Part 58 Appendices ^b D | Proposal to Move or Change |
|------------------------|-------------------------------|----------------------------------|---|----------------------------|
| 370210034 ^g | Board of Ed | Yes | No – not a required monitor. | None |
| 370870012 ^h | Waynesville Recreation Center | Yes | No – not a required monitor. | None |

Hickory Metropolitan Statistical Area

| AQS Site Id Number | Site Name | Suitable for Comparison to NAAQS | Meets Requirements of Part 58 Appendices ^b D | Proposal to Move or Change |
|--------------------|---------------------|----------------------------------|---|----------------------------|
| 370350004 | Hickory Water Tower | Yes | Yes - Required monitor for the Hickory MSA. | None |

Fayetteville Metropolitan Statistical Area

| AQS Site Id Number | Site Name | Suitable for Comparison to NAAQS | Meets Requirements of Part 58 Appendices ^b D | Proposal to Move or Change |
|--------------------|--------------|----------------------------------|---|--|
| 370510009 | William Owen | Yes | No – not a required monitor. | Manual PM 2.5 FRM monitor may be discontinued 1/1/2011 if the continuous PM 2.5 monitor is approved as an ARM. |

Wilmington Metropolitan Statistical Area

| AQS Site Id Number | Site Name | Suitable for Comparison to NAAQS | Meets Requirements of Part 58 Appendices ^b D | Proposal to Move or Change |
|--------------------|--------------|----------------------------------|---|---|
| 371290002 | Castle Hayne | Yes | No – not a required monitor. | Manual PM 2.5 FRM monitor may be discontinued by 6/30/2011 when the BAM study ends. |

Greenville Metropolitan Statistical Area

| AQS Site Id Number | Site Name | Suitable for Comparison to NAAQS | Meets Requirements of Part 58 Appendices ^b D | Proposal to Move or Change |
|------------------------|---------------------------------|----------------------------------|---|----------------------------|
| 371470006 ⁱ | Pitt County Agricultural Center | Yes | No – not a required monitor. | None |

Rocky Mount Metropolitan Statistical Area

| AQS Site Id Number | Site Name | Suitable for Comparison to NAAQS | Meets Requirements of Part 58 Appendices ^b D | Proposal to Move or Change |
|--------------------|----------------|----------------------------------|---|--|
| 370650004 | Springfield Rd | Yes | No – not a required monitor. | A continuous fine particle monitor (TEOM) will be added to this site 6/1/2010 or later |

Burlington Metropolitan Statistical Area

| AQS Site Id Number | Site Name | Suitable for Comparison to NAAQS | Meets Requirements of Part 58 Appendices ^b D | Proposal to Move or Change |
|--------------------|-----------|----------------------------------|---|--|
| 370010002 | Hopedale | Yes | No – not a required monitor. | Manual PM 2.5 FRM monitor may be discontinued 1/1/2011 if the continuous PM 2.5 monitor is approved as an ARM. |

Table 27 Status of North Carolina Fine Particle Monitoring Network in Meeting the Requirements of Part 58 and Proposed Changes to the Network ^a

Goldsboro Metropolitan Statistical Area

| AQS Site Id Number | Site Name | Suitable for Comparison to NAAQS | Meets Requirements of Part 58 Appendices ^b D | Proposal to Move or Change |
|---------------------------|------------------|---|--|---|
| 371910005 | Dillard | Yes | No – not a required monitor. | Manual PM 2.5 FRM monitor may be discontinued 1/1/2011 if the continuous PM 2.5 monitor is approved as an ARM. Will resume 1-in-3 day sampling on 7/1/2010. |

Not in an Metropolitan Statistical Area

| AQS Site Id Number | Site Name | Suitable for Comparison to NAAQS | Meets Requirements of Part 58 Appendices ^b D | Proposal to Move or Change |
|---------------------------|--------------------------|---|---|---|
| 370330001 | Cherry Grove | Yes | Yes - Required regional transport monitor for the piedmont and central area of the state. | Manual PM 2.5 FRM monitor may be discontinued 1/1/2011 if the continuous PM 2.5 monitor is approved as an ARM. Will resume 1-in-3 day sampling on 7/1/2010. |
| 370570002 | Lexington Water Tower | Yes | Yes- Required monitor for Lexington non-attainment area. | None |
| 370610002 | Kenansville | No | Yes - Required General/ Background monitor for the coastal area | None |
| 371070004 | Lenoir Community College | Yes | No – not a required monitor. | Monitor will be moved to another location on the property. Monitor may be converted to a rotating monitor that samples every 2 years out of 4. |
| 371110004 | East Marion | Yes | No – not a required monitor. | Manual PM 2.5 FRM monitor may be discontinued 1/1/2011 if the continuous PM 2.5 monitor is approved as an ARM. |
| 371170001 | Jamesville | Yes | Yes - Required regional transport monitor for the coastal part of the state | Manual PM 2.5 FRM monitor may be discontinued 1/1/2011 and replaced with either an ARM or FEM. |
| 371210001 | Spruce Pine | Yes | No – not a required monitor. | None |
| 371230001 | Candor | No | Yes - Required General/ Background monitor for the piedmont/central area of state | None |
| 371550005 | Linkhaw | Yes | No – not a required monitor. | None |
| 371590021 | Rockwell | Yes | No – not a required monitor. | None |
| 371730002 | Bryson City | Yes | Yes - Required Transport Monitor for Western Mountain Area. | None |
| 371890003 | Boone | Yes | Yes- Required general/ background monitor for the western mountain area. | A continuous fine particle monitor will be added to the site when one becomes available. |

Table 27 Status of North Carolina Fine Particle Monitoring Network in Meeting the Requirements of Part 58 and Proposed Changes to the Network ^a

^a All monitors use an R & P Model 2025 PM_{2.5} Sequential Monitor with a WINS impactor (Air Quality System (AQS) Method Code 118).

^b All monitors meet the requirements of Appendix A to 40CFR58. The Quality Assurance Project Plan and Standard Operating Procedures are being revised to reflect the changes to Appendix A of 40CFR58 promulgated in 2006. All monitors meet the requirements of Appendix C to 40CFR58. All monitors use the U.S. EPA reference method designation RFPS-0498-118. All monitors meet the requirements of Appendix E of 40CFR58.

^c Operated by the Mecklenburg County Air Quality (AQS Reporting Agency 0669)

^d This monitor started on January 1, 2008, to meet minimum monitoring requirements in 40CFR58 Appendix D.

^e This monitor started on January 1, 2008, to replace the Durham Health monitor. It is collocated with a continuous fine particle monitor.

^f Operated by the Forsyth County Environmental Affairs Department (AQS Reporting Agency 0403)

^g Operated by the Western North Carolina Regional Air Quality Agency (AQS Reporting Agency 0779).

^h This monitor started on January 1, 2008, to replace the Waynesville Fire Station monitor.

ⁱ This monitor started on April 1, 2008, to replace the South Greenville monitor. This site is a collocated fine particle and ozone-monitoring site.

Table 28 Locations and Schedules for Continuous Monitors in the North Carolina Fine Particle Monitoring Network^a

Charlotte-Gastonia-Concord Metropolitan Statistical Area

| AQS Site Id Number | Site Name | Monitor Type | Operating Schedule ^b | Statement of Purpose/Appendix D Requirements ^c | Monitoring Objective | Scale |
|------------------------|---------------------|--------------|---------------------------------|---|----------------------|--------------|
| 370710016 | Grier Middle School | SLAMS | Hourly | Fine Particle Forecasting. Not required. | Population Exposure | Neighborhood |
| 371190041 ^d | Garinger | NCORE | Hourly | Required Monitor for the Charlotte-Gastonia-Concord MSA. | Population Exposure | Neighborhood |
| 371190042 ^d | Montclair | SLAMS | Hourly | Fine Particle Forecasting. Not required. | Population Exposure | Neighborhood |

Raleigh-Cary Metropolitan Statistical Area

| AQS Site Id Number | Site Name | Monitor Type | Operating Schedule ^b | Statement of Purpose/Appendix D Requirements ^c | Monitoring Objective | Scale |
|--------------------|---------------|--------------|---------------------------------|---|----------------------|--------------|
| 371010002 | West Johnston | SLAMS | Hourly | Proposed to be added in 2011 to meet expected requirements. | Population Exposure | Neighborhood |
| 371830014 | Millbrook | NCORE | Hourly | Required Monitor for the Raleigh-Cary MSA. | Population Exposure | Neighborhood |

Greensboro-High Point Metropolitan Statistical Area

| AQS Site Id Number | Site Name | Monitor Type | Operating Schedule ^b | Statement of Purpose/Appendix D Requirements ^c | Monitoring Objective | Scale |
|--------------------|------------|--------------|---------------------------------|---|---|--------------|
| 370810013 | Mendenhall | SLAMS | Hourly | Required Monitor for the Greensboro-High Point MSA. | Population Exposure/General/ Background | Neighborhood |

Durham-Chapel Hill Metropolitan Statistical Area

| AQS Site Id Number | Site Name | Monitor Type | Operating Schedule ^b | Statement of Purpose/Appendix D Requirements ^c | Monitoring Objective | Scale |
|--------------------|---------------|--------------|---------------------------------|---|----------------------|--------------|
| 370630015 | Durham Armory | SLAMS | Hourly | Required monitor for the Durham-Chapel Hill MSA | Population Exposure | Neighborhood |

Winston-Salem Metropolitan Statistical Area

| AQS Site Id Number | Site Name | Monitor Type | Operating Schedule ^b | Statement of Purpose/Appendix D Requirements ^c | Monitoring Objective | Scale |
|------------------------|-------------|--------------|---------------------------------|---|----------------------|--------------|
| 370670022 ^e | Hattie Ave. | SLAMS | Hourly | Not required | Population Exposure | Neighborhood |
| 370670030 ^e | Clemmons | SLAMS | Hourly | Not required | Population Exposure | Neighborhood |

Asheville Metropolitan Statistical Area

| AQS Site Id Number | Site Name | Monitor Type | Operating Schedule ^b | Statement of Purpose/Appendix D Requirements ^c | Monitoring Objective | Scale |
|------------------------|-------------|--------------|---------------------------------|---|----------------------|--------------|
| 370210034 ^f | Board of Ed | SLAMS | Hourly | Not required | Population Exposure | Neighborhood |

Hickory Metropolitan Statistical Area

| AQS Site Id Number | Site Name | Monitor Type | Operating Schedule ^b | Statement of Purpose/Appendix D Requirements ^c | Monitoring Objective | Scale |
|--------------------|---------------------|--------------|---------------------------------|---|----------------------|--------------|
| 370350004 | Hickory Water Tower | SLAMS | Hourly | Required monitor for the Hickory MSA nonattainment area. | Population Exposure | Neighborhood |

Fayetteville Metropolitan Statistical Area

| AQS Site Id Number | Site Name | Monitor Type | Operating Schedule ^b | Statement of Purpose/Appendix D Requirements ^c | Monitoring Objective | Scale |
|--------------------|--------------|--------------|---------------------------------|---|----------------------|--------------|
| 370510009 | William Owen | SLAMS | Hourly | Not Required. | Population Exposure | Neighborhood |

Table 28 Locations and Schedules for Continuous Monitors in the North Carolina Fine Particle Monitoring Network^a

Wilmington Metropolitan Statistical Area

| AQS Site Id Number | Site Name | Monitor Type | Operating Schedule ^b | Statement of Purpose/Appendix D Requirements ^c | Monitoring Objective | Scale |
|--------------------|--------------|----------------|---------------------------------|---|----------------------|--------------|
| 371290002 | Castle Hayne | NONREG-ULATORY | Hourly | Not Required. | Population Exposure | Neighborhood |

Burlington Metropolitan Statistical Area

| AQS Site Id Number | Site Name | Monitor Type | Operating Schedule ^b | Statement of Purpose/Appendix D Requirements ^c | Monitoring Objective | Scale |
|------------------------|-----------|--------------|---------------------------------|---|----------------------|--------------|
| 370010002 ^d | Hopedale | SLAMS | Hourly | Not Required. | Population Exposure | Neighborhood |

Goldsboro Metropolitan Statistical Area

| AQS Site Id Number | Site Name | Monitor Type | Operating Schedule ^b | Statement of Purpose/ Appendix D Requirements ^c | Monitoring Objective | Scale |
|--------------------|-----------|--------------|---------------------------------|--|----------------------|-------|
| 371910005 | Dillard | SLAMS | Hourly | Not Required. | Population Exposure | Urban |

Not in an Metropolitan Statistical Area

| AQS Site Id Number | Site Name | Monitor Type | Operating Schedule ^b | Statement of Purpose/Appendix D Requirements ^c | Monitoring Objective | Scale |
|--------------------|-----------------------|----------------|---------------------------------|---|--|--------------|
| 370330001 | Cherry Grove | NONREG-ULATORY | Hourly | Regional transport monitor for the piedmont and central area of the state. Not required | Population Exposure/ Regional Transport/ General/ Background | Urban |
| 370570002 | Lexington Water Tower | SLAMS | Hourly | Required monitor for Nonattainment area. | Population Exposure | Neighborhood |
| 371110004 | East Marion | NONREG-ULATORY | Hourly | Not required. | Population Exposure | Neighborhood |
| 371170001 | Jamesville | NONREG-ULATORY | Hourly | Regional transport monitor for the coastal part of the state. Not required. | Regional Transport/ General/ Background/ Population Exposure | Urban |
| 371590021 | Rockwell | NONREG-ULATORY | Hourly | Not Required. | Population Exposure | Neighborhood |
| 371730002 | Bryson City | NONREG-ULATORY | Hourly | Transport Monitor for Western Mountain Area. Not Required. | Regional Transport/ Population Exposure | Neighborhood |

^a All monitors use an R & P Model 1400A PM2.5 Tapered-Element Oscillating Microbalance operated with the inlet heated to 50 degrees. All monitors in this table meet the requirements of 40CFR58 Appendices A and E.

^b All monitors operate year-round.

^c All monitors provide real-time air quality data to the public through AirNow and the state and local program websites.

^d Operated by the Mecklenburg County Air Quality (AQS Reporting Agency 0669).

^e Operated by the Forsyth County Environmental Affairs Department (AQS Reporting Agency 0403).

^f Operated by the Western North Carolina Regional Air Quality Agency (AQS Reporting Agency 0779).

Table 29 Status of North Carolina Continuous Fine Particle Monitoring Network in Meeting the Requirements of Part 58 and Proposed Changes to the Network

Charlotte-Gastonia-Concord Metropolitan Statistical Area

| AQS Site Id Number | Site Name | Suitable for Comparison to NAAQS | Meets Requirements of Part 58 Appendices ^a | | Proposal to Move or Change |
|------------------------|---------------------|----------------------------------|---|---|--|
| | | | C | D | |
| 370710016 | Grier Middle School | No | No – AQS Method Code 702 | No – not a required monitor. | Will add very sharpcut cyclone 1/1/2011 if the continuous PM 2.5 monitor is approved as an ARM |
| 371190041 ^b | Garinger | No | No – AQS Method Code 717 | Yes- 1 of 1 Required Monitors for the Charlotte-Gastonia-Concord MSA. | None |
| 371190042 ^b | Montclaire | No | No – AQS Method Code 717 | No – not a required monitor. | None |

Raleigh-Cary Metropolitan Statistical Area

| AQS Site Identification Number | Site Name | Suitable for Comparison to NAAQS | Meets Requirements of Part 58 Appendices ^a | | Proposal to Move or Change |
|--------------------------------|---------------|----------------------------------|---|---|----------------------------|
| | | | C | D | |
| 371010002 | West Johnston | No | No – AQS Method Code 702 | No – not a required monitor. | Will start in 2011 |
| 371830014 | Millbrook | No | No – AQS Method Code 717 | Yes - 1 of 1 Required Monitors for the Raleigh-Cary MSA | None |

Greensboro-High Point Metropolitan Statistical Area

| AQS Site Identification Number | Site Name | Suitable for Comparison to NAAQS | Meets Requirements of Part 58 Appendices ^a | | Proposal to Move or Change |
|--------------------------------|------------|----------------------------------|---|------------------------|----------------------------|
| | | | C | D | |
| 370810013 ^c | Mendenhall | No | No – AQS Method Code 702 | Yes - Required Monitor | None |

Durham-Chapel Hill Metropolitan Statistical Area

| AQS Site Id Number | Site Name | Suitable for Comparison to NAAQS | Meets Requirements of Part 58 Appendices ^a | | Proposal to Move or Change |
|------------------------|---------------|----------------------------------|---|------------------------|----------------------------|
| | | | C | D | |
| 370630015 ^c | Durham Armory | No | No – AQS Method Code 702 | Yes - Required Monitor | None |

Winston-Salem Metropolitan Statistical Area

| AQS Site Id Number | Site Name | Suitable for Comparison to NAAQS | Meets Requirements of Part 58 Appendices ^a | | Proposal to Move or Change |
|------------------------|-------------|----------------------------------|---|------------------------------|----------------------------|
| | | | C | D | |
| 370670022 ^d | Hattie Ave. | No | No – AQS Method Code 702 | No – not a required monitor. | None |
| 370670030 ^d | Clemmons | No | No – AQS Method Code 702 | No – not a required monitor. | None |

Asheville Metropolitan Statistical Area

| AQS Site Id Number | Site Name | Suitable for Comparison to NAAQS | Meets Requirements of Part 58 Appendices ^a | | Proposal to Move or Change |
|------------------------|-------------|----------------------------------|---|------------------------------|----------------------------|
| | | | C | D | |
| 370210034 ^e | Board of Ed | No | No – AQS Method Code 702 | No – not a required monitor. | None |

Table 29 Status of North Carolina Continuous Fine Particle Monitoring Network in Meeting the Requirements of Part 58 and Proposed Changes to the Network

Hickory Metropolitan Statistical Area

| AQS Site Id Number | Site Name | Suitable for Comparison to NAAQS | Meets Requirements of Part 58 Appendices ^a | | Proposal to Move or Change |
|------------------------|---------------------|----------------------------------|---|---|----------------------------|
| | | | C | D | |
| 370350004 ^c | Hickory Water Tower | No | No – AQS Method Code 702 | Yes - Required monitor for the Hickory MSA. | None |

Fayetteville Metropolitan Statistical Area

| AQS Site Id Number | Site Name | Suitable for Comparison to NAAQS | Meets Requirements of Part 58 Appendices ^a | | Proposal to Move or Change |
|------------------------|--------------|----------------------------------|---|-----------------------------|--|
| | | | C | D | |
| 370510009 ^c | William Owen | No | No – AQS Method Code 702. | No – not a required monitor | Will add very sharpcut cyclone 1/1/2011 if the continuous PM 2.5 monitor is approved as an ARM |

Wilmington Metropolitan Statistical Area

| AQS Site Id Number | Site Name | Suitable for Comparison to NAAQS | Meets Requirements of Part 58 Appendices ^a | | Proposal to Move or Change |
|--------------------|--------------|----------------------------------|---|------------------------------|--|
| | | | C | D | |
| 371290002 | Castle Hayne | No | No – AQS Method Code 717 | No – not a required monitor. | Monitor may be replaced with an FEM; site may be relocated in 2012 |

Rocky Mount Metropolitan Statistical Area

| AQS Site Id Number | Site Name | Suitable for Comparison to NAAQS | Meets Requirements of Part 58 Appendices ^a | | Proposal to Move or Change |
|--------------------|----------------|----------------------------------|---|------------------------------|----------------------------|
| | | | C | D | |
| 370650004 | Springfield Rd | Yes | No – AQS Method Code 702 | No – not a required monitor. | Will be added in 2011 |

Burlington Metropolitan Statistical Area

| AQS Site Id Number | Site Name | Suitable for Comparison to NAAQS | Meets Requirements of Part 58 Appendices ^a | | Proposal to Move or Change |
|--------------------|-----------|----------------------------------|---|-----------------------------|--|
| | | | C | D | |
| 370010002 | Hopedale | No | No – AQS Method Code 702 | No – not a required monitor | Will add very sharpcut cyclone 1/1/2011 if the continuous PM 2.5 monitor is approved as an ARM |

Goldsboro Metropolitan Statistical Area

| AQS Site Id Number | Site Name | Suitable for Comparison to NAAQS | Meets Requirements of Part 58 Appendices ^a | | Proposal to Move or Change |
|--------------------|-----------|----------------------------------|---|-----------------------------|--|
| | | | C | D | |
| 371910005 | Dillard | No | No – AQS Method Code 702 | No – Not a required monitor | Will add very sharpcut cyclone 1/1/2011 if the continuous PM 2.5 monitor is approved as an ARM |

Table 29 Status of North Carolina Continuous Fine Particle Monitoring Network in Meeting the Requirements of Part 58 and Proposed Changes to the Network

Not in an Metropolitan Statistical Area

| AQS Site Id Number | Site Name | Suitable for Comparison to NAAQS | Meets Requirements of Part 58 Appendices ^a | | Proposal to Move or Change |
|--------------------|-----------------------|----------------------------------|---|--|---|
| | | | C | D | |
| 370330001 | Cherry Grove | No | No – AQS Method Code 702 | No – Not a required monitor | Will add very sharpcut cyclone 1/1/2011 if the continuous PM 2.5 monitor is approved as an ARM. |
| 370570002 | Lexington Water Tower | No | No – AQS Method Code 702 | Yes- Required monitor for Lexington non-attainment area. | None |
| 371110004 | East Marion | No | No – AQS Method Code 702 | No – not a required monitor. | Will add very sharpcut cyclone 1/1/2011 if the continuous PM 2.5 monitor is approved as an ARM. |
| 371170001 | Jamesville | No | No – AQS Method Code 717 | No – not a required monitor. | None |
| 371590021 | Rockwell | No | No – AQS Method Code 702 | No – not a required monitor. | Will add very sharpcut cyclone 1/1/2011 if the continuous PM 2.5 monitor is approved as an ARM. |
| 371730002 | Bryson City | No | No – AQS Method Code 717 | No – not a required monitor. | None |

^a All monitors meet the requirements of Appendix A to 40CFR58 except as noted below. The Quality Assurance Project Plan and Standard Operating Procedures have been revised to reflect the changes to Appendix A of 40CFR58 promulgated in 2006. These monitors are not reference or equivalent methods and do not meet the requirements of Appendix C to 40CFR58. All monitors meet the requirements of Appendix E of 40CFR58.

^b Operated by the Mecklenburg County Air Quality (AQS Reporting Agency 0669)

^c These monitors do not meet the requirements in Appendix A for the inlets of collocated monitors to be within 1 meter of each other vertically.

^d Operated by the Forsyth County Environmental Affairs Department (AQS Reporting Agency 0403)

^e Operated by the Western North Carolina Regional Air Quality Agency (AQS Reporting Agency 0779).

VIII. Lead Monitoring Network

The North Carolina Division of Air Quality (NC-DAQ) currently does not operate any lead monitors. In 2008 EPA lowered the lead National Ambient Air Quality Standard (NAAQS) to 0.15 micrograms per cubic meter and expanded the lead monitoring network to support the new standard. On December 30, 2009, the United States Environmental Protection Agency (EPA) proposed changes to the lead monitoring network. These changes included lowering the threshold for fence line monitoring for lead-emitting facilities from 1 ton of lead per year to 0.5 tons of lead per year and changing the population oriented monitoring from urban areas with populations greater than 500,000 to National Core (NCore) monitoring sites. Fence line monitoring at facilities emitting more than 1 ton of lead per year or that impact the ambient concentrations surrounding the facility such that ambient levels are at one half of the NAAQS or greater were to begin on January 1, 2010. Population oriented monitoring at NCore sites is to begin on January 1, 2011, or later. Any new fence-line monitoring required to meet lower thresholds is anticipated to begin on January 1, 2012.

In 2009 the NC-DAQ requested and received waivers for fence-line lead monitoring at three facilities which were listed in the 2005 National Emission Inventory (NEI) and the 2007 Toxic Release Inventory (TRI) as emitting over 1 ton of lead per year. These facilities are:

- International Resistive Company (IRC) located in Boone, NC,
- Nucor Steel located in Cofield, NC, and
- Carolina Power and Light Company (Progress Energy) Roxboro Steam Station located in Semora, NC,

The NC-DAQ requested waivers and was granted waivers for all three facilities because none of the facilities emit 1 ton or more of lead per year.

The EPA currently lists two facilities in North Carolina as emitting over 0.5 tons of lead per year. These facilities are Nucor Steel located in Cofield, NC, and Fort Bragg in Hoke and Cumberland Counties. Nucor Steel does not emit over 0.5 tons of lead per year so the NC-DAQ plans to request a waiver for lead monitoring at Nucor Steel in the 2011 Network Plan. Fort Bragg lead emissions vary based on the amount of training activities at the base. Fort Bragg and the NC-DAQ are waiting for the EPA to clarify how EPA will handle this situation.

Under the proposed lead monitoring rule, North Carolina will be required to operate two population-oriented lead monitors as shown in Figure 48. These monitors will be located at the NCore monitoring sites—in Charlotte at Garinger High School and in Raleigh at Millbrook East Middle School. Both of these monitors will begin operation on January 1, 2011, or later. They will operate on a 1-in-6 day schedule and will measure lead concentrations by analyzing the filters from the low volume PM₁₀ monitors that are currently operating at the site. The samples will be analyzed using x-ray fluorescence, which is the Federal Reference Method for the low-volume PM₁₀ lead monitoring method. Currently, the precision site is located at the Montclair monitoring site, in Mecklenburg County.



Figure 48. Location of Required Population-Exposure Lead Monitors in North Carolina

The locations of the proposed PM_{10} lead-monitoring sites are provided in Table 30. All monitors listed in Table 30 are suitable for determining a violation of the National Ambient Air Quality Standards (NAAQS). All of the monitors will meet the requirements of Appendices A, C, D, and E of 40CFR58 after the Quality Assurance Project Plan and Standard Operating Procedures are submitted to the EPA, and the procedures are approved by the EPA. All of these monitors use the U.S. EPA reference method designations RFPS-1298-127 and RFLQ-1108-804.

Table 31 provides the monitor type, operating schedules, monitoring objectives, scales, and statement of purpose for all of the proposed monitors in the North Carolina PM_{10} Lead Monitoring Network. All monitors operate on a 24-hour schedule from midnight to midnight on each scheduled sampling day. All of the monitors operate year-round. Table 32 summarizes the status for each proposed monitoring site regarding whether it is suitable for comparison to the NAAQS and meets the requirements in 40 CFR58 Appendices A, C, D, and E and also provides the proposed changes to the network.

Table 30 North Carolina Lead Monitoring Network – Monitor Locations ^a

Charlotte-Gastonia-Concord Metropolitan Statistical Area

| AQS Site Identification Number | Site Location | | | | | MSA, CSA, or CBSA represented |
|--------------------------------|---------------|----------------------|-----------|---------------|--------------|-------------------------------|
| | Site Name | Street Address | City | Longitude | Latitude | |
| 371190041 ^b | Garinger | 1130 Eastway Drive | Charlotte | W 080 46' 59" | N 35 14' 28" | Charlotte-Gastonia-Concord |
| 371190042 ^b | Montclair | 1935 Emerywood Drive | Charlotte | W 080 52' 01" | N 35 09' 05" | Charlotte-Gastonia-Concord |

Raleigh-Cary Metropolitan Statistical Area

| AQS Site Identification Number | Site Location | | | | | MSA, CSA, or CBSA represented |
|--------------------------------|---------------|-------------------------|---------|---------------|--------------|-------------------------------|
| | Site Name | Street Address | City | Longitude | Latitude | |
| 371830014 | Millbrook | 3801 Spring Forest Road | Raleigh | W 078 34' 27" | N 35 51' 22" | Raleigh-Cary |

^a All monitors use an R & P Model 2025 PM2.5 Sequential Monitor with a PM₁₀ downtube (Air Quality System (AQS) Method Code 811). All monitors listed in this table are suitable for comparison to the National Ambient Air Quality Standards. All monitors in this table meet the requirements of Appendices A, C, D, and E of 40CFR58. All monitors use the U.S. EPA reference method designations RFPS-1298-127 and RFLQ-1108-804.

^b Operated by the Mecklenburg County Air Quality (AQS Reporting Agency 0669)

Table 31 Statement of Purpose for North Carolina Lead Monitoring Network ^a

Charlotte-Gastonia-Concord Metropolitan Statistical Area

| AQS Site Id Number | Site Name | Monitor Type | Operating Schedule ^b | Statement of Purpose | Monitoring Objective | Scale |
|------------------------|-----------|--------------|---------------------------------|--|----------------------|--------------|
| 371190041 ^c | Garinger | NCORE | 1-in-6 day ^c | 1 of 2 Required Population Exposure Monitors in North Carolina. AQI Reporting. Compliance w/NAAQS. | Population Exposure | Neighborhood |
| 371190042 ^c | Montclair | SLAMS | 1-in-6 day 1-in-12 day | Collocated monitor. AQI Reporting. Compliance w/NAAQS. | Population Exposure | Neighborhood |

Raleigh-Cary Metropolitan Statistical Area

| AQS Site Id Number | Site Name | Monitor Type | Operating Schedule ^b | Statement of Purpose | Monitoring Objective | Scale |
|--------------------|-----------|--------------|---------------------------------|--|----------------------|--------------|
| 371830014 | Millbrook | NCORE | 1-in-6 day | 1 of 2 Required Population Exposure Monitors in North Carolina. AQI Reporting. Compliance w/NAAQS. | Population Exposure | Neighborhood |

^a All monitors use an R & P Model 2025 PM2.5 Sequential Monitor with a PM₁₀ downtube (Air Quality System (AQS) Method Code 811) All monitors in this table meet the requirements of Appendices A, C, and E of Part 58. All monitors use the U.S. EPA reference method designations RFPS-1298-127 and RFLQ-1108-804.

^b All monitors operate on a 24-hour schedule, collecting a sample from midnight to midnight, Eastern Standard Time.

^c Operated by the Mecklenburg County Air Quality (AQS Reporting Agency 0669).

Table 32 Status of North Carolina Lead Monitoring Network in Meeting the Requirements of Part 58 and Proposed Changes to the Network ^a

Charlotte-Gastonia-Concord Metropolitan Statistical Area

| AQS Site Id Number | Site Name | Suitable for Comparison to NAAQS | Meets Requirements of Part 58 Appendices ^b | Proposal to Move or Change |
|------------------------|-----------|----------------------------------|---|---|
| | | | D | |
| 371190041 ^c | Garinger | Yes | Yes- 1 of 2 Required Monitors for North Carolina. | None |
| 371190042 ^c | Montclair | Yes | No – collocated monitor for PM ₁₀ lead network | The collocated monitor may be moved to one of the other sites when space becomes available and lead monitoring may be discontinued at this site at that time. |

Raleigh-Cary Metropolitan Statistical Area

| AQS Site Identification Number | Site Name | Suitable for Comparison to NAAQS | Meets Requirements of Part 58 Appendices ^b | Proposal to Move or Change |
|--------------------------------|-----------|----------------------------------|---|--|
| | | | D | |
| 371830014 | Millbrook | Yes | Yes - 1 of 2 Required Monitors for North Carolina. | The collocated PM10 lead monitor may be moved here when space becomes available. |

^a All monitors use an R & P Model 2025 PM2.5 Sequential Monitor with a PM₁₀ downtube (Air Quality System (AQS) Method Code 811).

^b All monitors meet the requirements of Appendix A to 40CFR58. The Quality Assurance Project Plan and Standard Operating Procedures are being written to reflect the new PM₁₀ lead method established by the EPA. All monitors use the U.S. EPA reference method designations RFPS-1298-127 and RFLQ-1108-804. All monitors meet the requirements of Appendix E of 40CFR58.

^c Operated by the Mecklenburg County Air Quality (AQS Reporting Agency 0669)

IX. NC-DAQ NCore Monitoring Network

This section provides information on the North Carolina Division of Air Quality National Core (NCore) monitoring network. For information on the NCore site operated by the Mecklenburg County of Air Quality, see Appendix B. 2010 Annual Monitoring Network Plan for Mecklenburg County Air Quality.

A. Overview

The NCore site operated by the NC-DAQ is located at the East Millbrook Middle School site. Specifics for this site are provided below.

| <u>Parameter</u> | <u>Description</u> |
|---------------------------------|--|
| A) AQS identification number | 37-183-0014 |
| B) Site Name | Millbrook |
| C) Address | 3801 Spring Forest Road, Raleigh, N.C. |
| D) Longitude/Latitude | W 078 34' 27"/N 35 51' 22" |
| E) Scale of Representation | Neighborhood |
| F) Monitoring Objective | Population Oriented |
| G) Proximity to Local Emissions | None within 500 meters |
| H) MSA Description | Raleigh-Cary |
| I) Land Use | Urban |

The NC-DAQ has been operating monitors at this site since September 16, 1998, and has no plans to relocate this site. The site is located at a school and the school has been very cooperative in allowing us to make necessary changes at the site so that the site will meet 40 CFR 58 Appendix E requirements. The school property is fully developed and the NC-DAQ does not anticipate that the Wake County School System will need to develop the area where the monitoring site is located or will evict us from their property anytime in the next 18 months or later.

B. Monitor Siting Considerations

This site was modified as necessary to meet the entire EPA monitor siting criteria in 40 CFR 58 Appendix E. The following issues were addressed:

- 1) Trees were removed or trimmed such that all probe inlets are > 10 meters from any tree drip line.
- 2) All particulate matter monitors (filter based and continuous) are located on a newly constructed 16'x16' wooden deck. All inlets are within 1-4 meters of each other, all inlets are within 1 meter vertically of each other, all inlets are between 2 and 15 meters above ground and all inlets are > 20 meters from any roadway.

- 3) All continuous gaseous monitors (SO₂, NO_y, CO and O₃) are housed in a temperature controlled walk-in shelter, which meets all of the EPA siting criteria.

With the changes made to the monitoring site by removing the trees and building the deck, the site will be suitable for monitoring for fine particles for the purpose of comparing the measured concentrations to the National Ambient Air Quality Standards. The platform is far enough from the road so that the site will meet the necessary neighborhood scale requirements for population oriented monitoring.

C. Monitors/Methods

This NCore site will have the following monitors in place and operating on or before January 1, 2011:

| Parameter | Monitoring Objective | Scale of Representation | Operating Schedule | AQS Method Code |
|--|-----------------------------|--------------------------------|--|------------------------|
| Trace Level Sulfur Dioxide (SO ₂) | Population Exposure | Neighborhood | Hourly data year round | 560 |
| Trace Level Carbon Monoxide (CO) | Population Exposure | Neighborhood | Hourly data year round | 554 |
| Trace level Reactive oxides of Nitrogen (NO _y) | Population Exposure | Neighborhood | Hourly data year round | 574 |
| Ozone (O ₃) | Population Exposure | Neighborhood | Hourly data year round | 047 |
| PM _{2.5} (fine PM), filter based | Population Exposure | Neighborhood | 24-hour data on a 1-in-3 day schedule year round | 118 |
| PM _{2.5} (fine PM), continuous | Population Exposure | Neighborhood | Hourly data year round | 716, 717 |
| Speciated PM _{2.5} , filter based | Population Exposure | Neighborhood | 24-hour data on a 1-in-3 day schedule year round | 810 |
| PM ₁₀ , filter based low volume sampler | Population Exposure | Neighborhood | 24-hour data on a 1-in-3 day schedule year round | 127 |
| PM _{10-2.5} (course PM), by difference, PM ₁₀ -PM _{2.5} | Population Exposure | Neighborhood | 24-hour data on a 1-in-3 day schedule year round | 118 |

| Parameter | Monitoring Objective | Scale of Representation | Operating Schedule | AQS Method Code |
|--|-----------------------------|--------------------------------|--|------------------------|
| PM ₁₀ Lead, filter-based low volume sampler | Population Exposure | Neighborhood | 24-hour data on a 1-in-6 day schedule year round | 811 |
| Meteorological measurements of: | | | | |
| Wind speed | Population Exposure | Neighborhood | Hourly data year round | 020 |
| Wind direction | Population Exposure | Neighborhood | Hourly data year round | 020 |
| Relative humidity | Population Exposure | Neighborhood | Hourly data year round | 020 |
| Ambient temperature | Population Exposure | Neighborhood | Hourly data year round | 020 |

The monitor regulations currently specify that all NCore sites monitor for Speciated PM_{10-2.5} (course PM) Filter based; however, the EPA may reconsider that requirement and modify the monitoring regulations to require Speciated PM_{10-2.5} monitoring only at selected NCore sites. The EPA has not yet specified a method or the sites that will be required to monitor for Speciated PM_{10-2.5}. If required by the EPA, the NC-DAQ will add a Speciated PM_{10-2.5} monitor to the site.

D. Readiness Preparation

In preparation for the installation of the NCore monitors, the following tasks have been or will be addressed:

| <u>Parameter</u> | <u>Status</u> |
|--|------------------------------------|
| A) Acquisition of trace level gaseous monitors | Completed |
| B) Acquisition of low concentration gas dilution calibrators | Completed |
| C) Certification of clean air generators | Completed |
| D) Method Detection Limit studies for trace level monitors | Completed |
| E) Installation of 10 meter NO _y Tower | In Progress |
| F) Installation of filter based and continuous PM monitors | Completed, except as noted earlier |
| G) Installation of trace level gaseous monitors | Completed |

| | |
|--|-----------|
| H) Preparation of trace level gaseous monitor QAP/SOPs | Completed |
| I) Meteorological tower | existing |
| J) Ozone monitor | existing |

E. Waiver Requests

Subject to the review of the administrator, NC-DAQ requested and received the following waivers from the specific minimum requirements for NCore sites.

1. Millbrook Meteorological Tower

The sampling site located at the Millbrook Middle School has been designated as an EPA NCore site. In addition to specified monitor types, the collection of meteorological data is also required and will include, at a minimum, wind speed, wind direction, relative humidity and ambient temperature. The Millbrook site has been in operation since 1989 and the meteorological tower has the required sensors in place.

The tower is located approximately due south and 15.5 meters from the shelters that house the various monitors (see Figure 49). The wind direction/speed sensors are located at a height of 10 meters above ground and the relative humidity sensor is located at 2 meters. Ambient temperature sensors (2) are located at 2 meters and 10 meters above ground. The tower is located in an open, grassy area that is free from any obstructions in a 270° arc to the prevailing winds that come from the South/West direction. The tower is positioned 15.5 meters from the shelters on a 3% up hill grade. This grade adds approximately 1 meter to the height of the tower above the shelters. This does not meet the EPA requirement for the tower being a distance of 10x the height of the shelter (3.7 meters). Additionally, a single tree, approximately 7 meters tall is located 18 meters to the South/East of the tower.



Figure 49. Millbrook NCore Site

Since the position of the meteorological tower is free from any obstructions in a 270° arc to the prevailing winds that come from the South/West direction, the State of North Carolina is confident that the measurements provided will be representative of meteorological conditions in the area of interest. The State, therefore, requested and the EPA granted a waiver, and deemed the position of the tower to be acceptable.

2. NO_y probe inlet placement

NCore probe siting guidance for NO_y is a suggested probe inlet height of 10 meters. The NO_y probe inlet is currently mounted at a height of 5.08 meters from the ground at the proposed NCore site. NC-DAQ requested and received a waiver of the 10 meter probe height requirement primarily for safety considerations and also to facilitate maintenance on the sampling inlet (cleaning of the cross fitting) and to provide access for performance of calibration test points under reduced multi-gas calibrator system pressures (near ambient conditions).

The monitoring site is located at a middle school and temporary elementary school and next to a day care. The converter box for the NO_y monitor is very heavy and requires a special tower to support the weight in winds above 40 miles per hour or a tower with guy wires. Because the tower needs to be located next to the monitoring shelter to minimize the length of tubing involved to transport sample from the converter box to the monitor, there is no space at the site for guy wires to stabilize the tower. The guy wires would block ingress and egress from the monitoring shelter and create a safety hazard for the monitoring technicians. The NC-DAQ believes placing the converter box on a 10-m tower without guy wires at this site would be too dangerous because winds often gust to over 40 miles per hours during thunderstorms, hurricanes and other severe weather events.

The NC-DAQ decided to invest resources installing a new tower at the site because the difference in cost between properly grounding the existing tower and installing a new tower rated to hold the weight of the converter box without guy wires was small compared to the cost of properly ground the tower. Thus, after the new tower is installed sometime in 2010, the NC-DAQ will increase the height of the probe inlet from 5.08 meters to closer to 10 meters.

X. EPA Approval Dates for Quality Management Plan and Quality Assurance Project Plans

The dates that the Environmental Protection Agency approved the Quality Management Plan and Quality Assurance Project Plans for the North Carolina Division of Air Quality are provided in Table 33

Table 33. Dates the EPA Approved the Quality Management Plan and Quality Assurance Project Plans

| Document | Date Approved by EPA |
|--|-----------------------------|
| Quality Management Plan | January 26, 2005 |
| Quality Assurance Project Plan for PM 2.5 Monitoring | January 16, 2002 |
| Quality Assurance Project Plan for Criteria Pollutant Monitoring | November 6, 2006 |



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 4

Science and Ecosystem Support Division
980 Orling Station Road
Athens, Georgia 30605 2720



JAN 15 2002

Mr. Hoko P. Kimball, Chief
NCDENR
Division Of Air Quality
Ambient Monitoring Section
1641 Mail Service Center
Raleigh, North Carolina 27699-1641
Project No. 02-0225

Dear Mr. Kimball:

We have received your letter dated December 11, 2001, requesting EPA approval, and transmitting the Quality Assurance Project Plan (QAPjP): the PM_{2.5} Speciation QA Plan, Section I, Electronic Calibrations Branch Responsibilities and Section II, Operator Responsibilities; as well as the signed Identification and Approval, Section 1.0 Title Page.

In accordance with your request, EPA Region 4 hereby approve these additions to the NC-DAQ PM_{2.5} QAPjP and has enclosed the signed QAPjP Identification and Approval sheet. Should you or your staff have any question(s), please give Herbert Barden a call at 706) 355-8737.

Sincerely,

Gary Bennett
Office of Quality Assurance and
Data Integration

cc: Ed Carreras
Herbert Barden



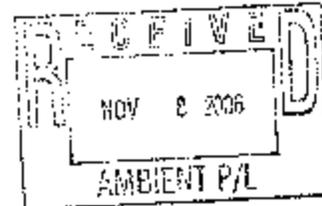
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

(Brook copied 11/13)

REGION 4

Science and Ecosystem Support Division
800 College Station Road
Athens, Georgia 30605-2720

NOV 6 2006



Mr. Luke P. Kimball
NC Department of Environment, Health,
And Natural Resources,
1641 Mail Service Center
Raleigh, NC 27699-1641

SESD Project #07 0065

Dear Mr. Kimball:

We have reviewed the Criteria Pollutants Quality Assurance Project Plan (QAPP) for the North Carolina Division of Air Quality ambient air monitoring program. This QAPP is:

- **Quality Assurance Project Plan for the North Carolina Division of Air Quality Ambient Air Quality Monitoring Program, Revision 0, dated September 30, 2006.**

EPA hereby approves this QAPP. Enclosed is the signature page of the QAPP which has been signed to indicate Region 4 approval. If you have any questions or comments, please contact Jerry W. Berger at (706) 255-8739.

Sincerely,

Marilyn Thornton, Chief
Office of Quality Assurance and
Data Integration

Enclosure

cc: Doug Nacey
Stephanie Wimpey

XI. Equipment Condition of North Carolina Monitoring Sites

Ozone monitors and Calibrators Thermo 49C and 49CPS are in good condition. Manufacturer supports this equipment until August 2015.

SO₂ monitors Thermo 43C and CO Thermo 48C are in good condition and support until August 2015.

NO_y Thermo 42s and CO Thermo 48s are in poor condition and only used at Rockwell site. These are due to be replaced with new monitors, as manufacturer does not support these.

NCORE site equipment are new and good condition.

Site buildings are in fair to good condition. They are maintained by ECB. Plans are to replace several buildings over next 3 to 5 years as needed.

TSP and PM₁₀ are in fair condition and can be maintained by ECB.

BAM equipment is new and good condition.

TEOM monitors are in good condition and supported by manufacturer.

Met One SASS 9800 units are in fair condition.

URG particulate monitors are in good condition.

Met towers, wind speed and direction sensors are in good condition.

Thermo 146C calibrators used with SO₂, CO, NO_y are in good condition and supported until August 2015.

All other equipment used at monitoring sites is also in good condition and can be maintained by Electronics and Calibration Branch (ECB).

XII. References

1. Title 40 Code of Federal Regulations Part 58, Ambient Air Quality Surveillance. Part 58 and Part 58 Amended: Federal Register/Vol. 71 No. 200/Tuesday, October 17, 2006/Rules and Regulations.
2. State of North Carolina, Department of Transportation. Traffic Count Information. http://www.ncdot.org/planning/tpb/traffic_survey/. 1500 Mail Service Center, Raleigh, NC, 27699-1500.2004.
3. List of Designated Reference and Equivalent Methods. Issue Date: March 6, 2007. <http://www.epa.gov/ttn/amtic/criteria/html>. United States Environmental Protection Agency, National Exposure Research Laboratory, Human Exposure & Atmospheric Sciences Division (MD-D205-03), Research Triangle Park, NC 27711.

Appendix A. Summary of Monitoring Sites and Types of Monitors

Table A- 1 Summary of Monitoring Sites and Types of Monitors

| Site ID Site Name | CO | | | SO ₂ | | NO _x | | NO ₂ | O ₃ | Pb | PM ₁₀ | | PM _{2.5} | | | Meteorology | | | |
|--|----|---|---|-----------------|---|-----------------|---|-----------------|----------------|----|------------------|---|-------------------|---|---|-------------|-------|-------|---|
| | R | H | T | R | T | H | T | | | | M | C | M | C | S | WS/ WD | AT/RH | RF/SR | |
| 370010002 Hopedale | | | | | | | | | | | | | | X | X | | X | | |
| 370030004 Waggin Trail | | | | | | | | | X | | | | | | | | | | |
| 370110002 Linville Falls | | | | | | | | | X | | | | | | | | | X | |
| 370130006 Aurora PCS | | | | X | | | | | | | | | | | | | | | |
| 370210030 ^a Bent Creek | | | | | | | | | X | | | | | | | | | | |
| 370210034 ^a Board of Ed | | | | | | | | | | | | | X | X | X | | | | |
| 370270003 Lenoir | | | | P | | | | P | X | | | | | | | | | | |
| 370330001 Cherry Grove | | | | | | | | | X | | P | | X | X | | | X | | |
| 370350004 Hickory Water Tower | | | | | | | | | | | X | | X | X | X | | | | |
| 370370004 Pittsboro | | | | X | | | | | X | | | | X | | | | | | |
| 370510008 Wade | | | | | | | | | X | | | | | | | | | | |
| 370510009 William Owen | | | | | | | | | | | X | | X | X | | | X | X | X |
| 370511003 Golfview | | | | X | | | | P | X | | | | | | | | | | |
| 370570002 Lexington Water Tower | | | | | | | | | | | | | X | X | X | | | | |
| 370590003 Mocksville | | | | | | | | | X | | | | | | | | | | |
| 370610002 Kenansville | | | | | | | | | | | X | | X | | | | | | |
| 370630015 Durham Armory | | | | | | | | | X | | P | | X | X | | | P | | |
| 370650004 Springfield Rd | | | | | | | | | | | | | X | P | | | | | |
| 370650099 Leggett | | | | | | | | | X | | | | | | | | | | |
| 370670022 ^b Hattie Ave. | | | | X | | | | X | X | | | X | X | X | X | | | | |
| 370670023 ^b Peters Creek | X | | | | | | | | | | | X | | | | | | | |

Table A- 1 Summary of Monitoring Sites and Types of Monitors

| Site ID Site Name | CO | | | SO ₂ | | NO _x | | NO ₂ | O ₃ | Pb | PM ₁₀ | | PM _{2.5} | | | Meteorology | | |
|--|----|---|---|-----------------|---|-----------------|---|-----------------|----------------|----|------------------|---|-------------------|---|---|-------------|-------|-------|
| | R | H | T | R | T | H | T | | | | M | C | M | C | S | WS/ WD | AT/RH | RF/SR |
| 370670028 ^b Shiloh Church | | | | | | | | | X | | | | | | | | | |
| 370670030 ^b Clemmons | | | | | | | | | X | | | | X | X | | | | |
| 370671008 ^b Union Cross | | | | | | | | | X | | | | | | | X | AT | |
| 370690001 Franklinton | | | | | | | | P | X | | | | | | | | | |
| 370710016 Grier Middle School | | | | | | | | | | | P | | X | X | | X | | |
| 370750001 ^c Joanna Bald | | | | | | | | | X | | | | | | | | X | |
| 370770001 Butner | | | | | | | | | X | | | | | | | | | |
| 370810013 Mendenhall | | | | | | | | | X | | X | | X | X | | X | X | X |
| 370810014 Colfax | | | | | | | | | | | | | X | | | P | | |
| 370870004 Waynesville Health Department | | | | | | | | | E | | | | | | | | | |
| 370870008 Junaluska E.S. | | | | | | | | | P | | | | | | | | | |
| 370870012 Waynesville Recreation Center | | | | | | | | | | | | | X | | | | | |
| 370870035 Fry Pan | | | | | | | | | X | | | | | | | | | |
| 370870036 Purchase knob | | | | | | | | | X | | | | | | | | | |
| 371010002 West Johnston | | | | | | | | | X | | | | X | P | | | | |
| 371070004 Lenoir Community College | | | | | | | | | X | | | | X | | | X | X | X |
| 371090004 Crouse | | | | | | | | | X | | | | | | | | | |
| 371110004 East Marion | | | | | | | | | | | P | | X | X | | X | | |
| 371170001 Jamesville | | | | X | | | | P | X | | | | X | X | | | | |
| 371190003 #11 Fire Station ^d | | | | | | | | | | | X | | | | | | | |
| 371190041 ^d Garinger | X | | X | | X | | X | X | X | P | X | | X | X | X | X | X | X |

Table A- 1 Summary of Monitoring Sites and Types of Monitors

| Site ID Site Name | CO | | | SO ₂ | | NO _v | | NO ₂ | O ₃ | Pb | PM ₁₀ | | PM _{2.5} | | | Meteorology | | |
|---------------------------------------|----|---|---|-----------------|---|-----------------|---|-----------------|----------------|----|------------------|---|-------------------|---|---|-------------|-------|-------|
| | R | H | T | R | T | H | T | | | | M | C | M | C | S | WS/ WD | AT/RH | RF/SR |
| 371190042 ^d Montclair | | | | | | | | | | P | X | | X | X | | | | |
| 371190043 ^d Oakdale | | | | | | | | | | | | | X | | | | | |
| 371191001 ^d Davidson | | | | | | | | | | | E | | | | | | | |
| 371191005 ^d Arrowood | | | | | | | | | X | | E | | | | | | | |
| 371191009 ^d County Line | | | | | | | | | X | | | | | | | | | |
| 371210001 Spruce Pine | | | | | | | | | | | | | X | | | | | |
| 371230001 Candor | | | | | | | | | | | P | | X | | | | | |
| 371290002 Castle Hayne | | | | | | | | P | X | | | | X | X | | P | | |
| 371290006 New Hanover | | | | X | | | | | | | | | | | | | | |
| 371450003 BushyFork | | | | | | | | | X | | | | | | | | | |
| 371470006 Pitt Co Ag Cen | | | | | | | | | X | | | | X | | | | | |
| 371550005 Linkhaw | | | | | | | | | | | | | X | | | | | |
| 371570099 Bethany | | | | P | | | | P | X | | | | | | | | | |
| 371590021 Rockwell | | X | P | | P | P | X | X | X | | | | X | X | X | X | P | |
| 371590022 Enochville | | | | | | | | | X | | | | | | | | | |
| 371730002 Bryson City | | | | E | | | | | X | | | | X | X | | X | X | X |
| 371790003 Monroe Middle School | | | | | | | | | X | | | | | | | | | |
| 371830014 Millbrook | | | X | | X | X | P | X | X | P | X | | X | X | X | X | X | X |
| 371830016 Fuquay | | | | | | | | | X | | | | | | | | | |
| 371830018 Crabtree | X | | | | | | | | | | | | | | | | | |
| 371830020 Finley Farm | | | | | | | | | | | | | X | | | | | |
| 371890003 Boone | | | | | | | | | | | | | X | P | | | | |
| 371910005 Dillard | | | | | | | | | | | | | X | X | | X | | |
| 371990004 Mount Mitchell | | | | | | | | | X | | | | | | | | | |

Table A- 1 Summary of Monitoring Sites and Types of Monitors

| Site ID Site Name | CO | | | SO ₂ | | NO _y | | NO ₂ | O ₃ | Pb | PM ₁₀ | | PM _{2.5} | | | Meteorology | | |
|----------------------|----|---|---|-----------------|---|-----------------|---|-----------------|----------------|----|------------------|---|-------------------|---|---|-------------|-------|-------|
| | R | H | T | R | T | H | T | | | | M | C | M | C | S | WS/ WD | AT/RH | RF/SR |

CO = Carbon Monoxide

SO₂ = Sulfur Dioxide

NO_y = Reactive Oxides of Nitrogen

O₃ = Ozone

Pb = Lead

PM₁₀ = Particles of 10 micrometers or less in aerodynamic diameter

PM_{2.5} = Fine Particles

X = monitor operating at site

E = monitor at site will end by 12/31/2009

P = monitoring proposed to start at site

R = 48C monitor for CO, 43C monitor for SO₂

H = 48S monitor for CO

T = 48i or Teledyne API (TAPI) 300EU monitor for CO, 43 TLE monitor for SO₂

M = Wedding or GMW 1200 for PM₁₀, 2025

Sequential for PM_{2.5}

C = TEOM

S = Met One SASS monitor

WS/WD = Wind speed & direction

AT/RH = air temperature & relative humidity

RF/SR = Rainfall & solar radiation

^a Operated by the Western North Carolina Regional Air Quality Agency

^b Operated by the Forsyth County Environmental Affairs Department

^c This monitor is owned by the United States Forest Service and operated by the North Carolina Division of Air Quality

^d Operated by the Mecklenburg County Air Quality

Appendix B. 2010 Annual Monitoring Network Plan for Mecklenburg County Air Quality

Please see the following internet web address:

<http://www.charmeck.org/Departments/LUESA/Air+Quality/Air+Quality+Data/Home.htm>

**Appendix C. 2010 Annual Monitoring Network Plan for Forsyth County
Environmental Affairs Department**

Please see the following internet web address:

http://daq.state.nc.us/monitor/monitoring_plan/Forsyth_2010_Plan.pdf

Glossary

AQS - Air Quality System
AQI - Air Quality Index
ARM - Approved Regional Method
BAM - Beta Attenuation Method
CO - Carbon Monoxide
CFR - Code of Federal Regulations
EPA - Environmental Protection Agency
FRM - Federal Reference Method
IMPROVE - Interagency Monitoring of Protected Visual Environments
MSA - Metropolitan Statistical Area
NAAQS - National Ambient Air Quality Standards
NC-DAQ - North Carolina Division of Air Quality
NCORE - National Core (Ambient Monitoring Network Station)
NO₂ - Nitrogen Dioxide
NO_y - Oxides of Nitrogen
O₃ - Ozone
Pb - Lead
PM - Particulate Matter
PM 2.5 - Fine Particulate (particles of 2.5 microns and below)
PM 10 - Particles of 10 microns and below
PSD - Prevention of Significant Deterioration
SLAMs - State and Local Monitoring Station
SO₂ - Sulfur Dioxide
SPM - Special Purpose Monitor
TECO - Thermo Environmental, Incorporated
TEOM - Tapered Element Oscillating Microbalance
TLE - Trace Level (monitor)
VDEQ - Virginia Department of Environmental Quality
WINS - Well Impactor Ninety Six (PM 2.5 separator)