

GEORGIA DEPARTMENT OF NATURAL RESOURCES

ENVIRONMENTAL PROTECTION DIVISION

Air Protection Branch

Ambient Monitoring Program

2012 Ambient Air Monitoring Plan

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Glossary

Aerosols	A gaseous suspension of fine solid or liquid particles
AM	Annual Mean
Anthropogenic	Resulting from human activity
APB	Air Protection Branch
AQCR	Air Quality Control Region
AQS	Air Quality System
ARITH MEAN	Arithmetic Mean
BAM	Beta Attenuation Monitor
CAA	Clean Air Act
CBSA	Core Based Statistical Area
CFR	Code of Federal Regulations
CO	Carbon Monoxide
CV	Coefficient of Variation
EPA	Environmental Protection Agency
EPD	Environmental Protection Division
FEM	Federal Equivalent Method
FRM	Federal Reference Method- the official measurement technique for a given pollutant
GEO MEAN	Geometric Mean
HAP	Hazardous Air Pollutant
LOD	Limit of Detection
$\mu\text{g}/\text{m}^3$	Micrograms per cubic meter
m/s	Meter per second
MSA	Metropolitan Statistical Area, as defined by the US Census Bureau
NAAQS	National Ambient Air Quality Standard
NAMS	National Ambient Monitoring Site
NATTS	National Air Toxics Trends Station
NCore	National Core Multipollutant Monitoring Network
NMHC	Non-Methane Hydrocarbons
NO_2	Nitrogen Dioxide
NO_x	Oxides of Nitrogen
NO_y	Reactive oxides of Nitrogen
NWS	National Weather Service
ODC	Ozone depleting Chemicals
O_3	Ozone
PAH	Polycyclic Aromatic Hydrocarbons
PAMS	Photochemical Assessment Monitoring Station
Pb	Lead
$\text{PM}_{2.5}$	Particles with an aerodynamic diameter of 2.5 microns or less
PM_{10}	Particles with an aerodynamic diameter of 10 microns or less
$\text{PM}_{10-2.5}$	Particles with an aerodynamic diameter between 2.5 and 10 microns
ppb	Parts per Billion
ppm	Parts per Million
Precursor	A substance from which another substance is formed
PUF	Polyurethane Foam
QTR	Calendar Quarter
Rawinsonde	A source of meteorological data for the upper atmosphere
SLAMS	State and Local Air Monitoring Site

SO ₂	Sulfur Dioxide
SPMS	Special Purpose Monitoring Site
STN	Speciation Trends Network
TBD	To Be Determined
TEOM	Tapered Element Oscillating Microbalance
TNMOC	Total Non-Methane Organic Compounds
TRS	Total Reduced Sulfur
UV	Ultraviolet
VOC	Volatile Organic Compound
W/m ²	Watts per square meter

Agency Contacts

Access to More Information about the Ambient Air Monitoring Network

While this report includes a great deal of information about the Ambient Air Monitoring Network, much more information is readily available, including summaries of the pollutant data from the monitors around the state.

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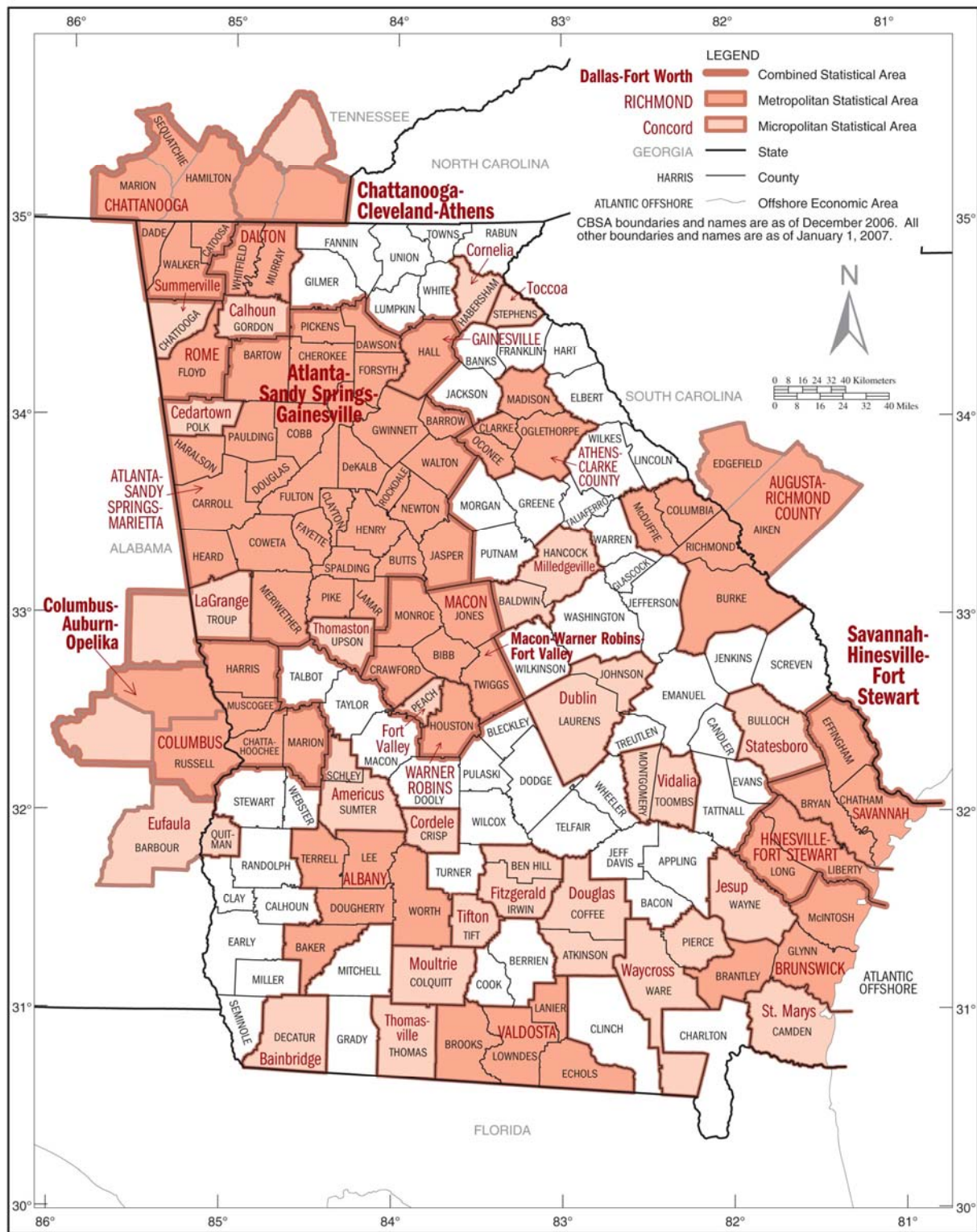
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1.0 Introduction

The Annual Monitoring Network Plan is written as part of the requirements for the Environmental Protection Agency's (EPA) amended ambient air monitoring regulations established on October 17, 2006. It will show Georgia Environmental Protection Division (GA EPD) Ambient Monitoring Program's plan to meet EPA's regulations for monitoring air quality in the state of Georgia by assessing monitoring types, monitoring objectives, site appropriateness for air quality characterization, spatial scale represented by each monitor, and appropriate new technologies. The network plan will outline the established sites across the state of Georgia, as well as the proposal to maintain and discontinue sites in the state's ambient air quality surveillance system. The purpose of the annual network plan is two-fold. First, the plan confirms that the network continues to meet the State and Local Air Monitoring Stations (SLAMS) criteria established by federal regulations, and that the information in the state and federal monitoring records properly classify each monitoring station. Second, the plan serves as a directory of existing State and Local Air Monitoring Stations (SLAMS), Photochemical Assessment Monitoring Stations (PAMS), Speciation Trends Network (STN) and Supplemental Speciation sites, National Air Toxics Trends Station (NATTS), National Core Multipollutant Monitoring Station (NCore), Special Purpose Monitoring (SPM), Georgia Air Toxics Network, Acid Rain sites, and the meteorological parameters performed at each location.

As early as 1957, the state of Georgia has monitored air pollutants. Prior to the Clean Air Act of 1970, the state health department conducted air monitoring. In the early 1970's, the Georgia Environmental Protection Division assumed responsibilities for ambient air monitoring to facilitate the identification and control of air contaminants in Georgia. The sampling network currently consists of 53 stations located throughout Georgia. The air monitoring data are used to determine whether air quality standards are being met, to assist in enforcement actions, to determine the improvement or decline of air quality, to determine the extent of allowable industrial expansion, and to provide air pollution information to the public. A list of all active monitoring sites with detailed site information, site map and photos, parameters measured at each site, and recommendations for each site is included in Appendix A. The site information also includes the statistical area represented by each site, which was derived from the following map (Figure 1).

GEORGIA - Core Based Statistical Areas and Counties**Figure 1: Map of Statistical Areas in Georgia**

Section 2.0 describes the pollutants, analysis methods, and quality assurance schedules. Section 3.0 gives a description of the networks, and updates GA EPD's plans to meet EPA's

new monitoring requirements. Section 4.0 outlines the standards applied to criteria pollutant concentrations established by the EPA and the state of Georgia to protect human health (primary standards) and plants, animals and property (secondary standards). Section 5.0 describes the monitoring objectives and spatial scales. Section 6.0 provides a list of site evaluations performed on the monitoring stations. The Appendix A includes the comprehensive list of sites with their detailed information. The Appendix B includes an inventory of the current ambient monitoring equipment. The Appendix C gives a detailed description of Georgia's NCore site. The Appendix D gives a list of monitors that have been shut down, the date the monitors were shut down, and the last Annual Plan that included those monitors. The Appendix E includes comments that were received by GA EPD during the public comment period for this document, and GA EPD's response to those comments.

1.1 Mandate

This document is produced in response to duties mandated to ambient air monitoring agencies in 40 CFR 58.10:

40 CFR PARTS 58.10: Annual Monitoring Network Plan and Periodic Network Assessment.

(A)(1) Beginning July 1, 2007, the State, or where applicable local, agency shall adopt and submit to the Regional Administrator an annual monitoring network plan which shall provide for the establishment and maintenance of an air quality surveillance system that consists of a network of SLAMS monitoring stations including FRM, FEM, and ARM monitors that are part of SLAMS, NCore stations, STN stations, State speciation stations, SPM stations, and/or, in serious, severe and extreme ozone nonattainment areas, PAMS stations, and SPM monitoring stations. The plan shall include a statement of purposes for each monitor and evidence that siting and operation of each monitor meets the requirements of appendices A, C, D, and E of this part, where applicable. The annual monitoring network plan must be made available for public inspection for at least 30 days prior to submission to EPA.

(2) Any annual monitoring network plan that proposes SLAMS network modifications including new monitoring sites is subject to the approval of the EPA Regional Administrator, who shall provide opportunity for public comment and shall approve or disapprove the plan and schedule within 120 days. If the State or local agency has already provided a public comment opportunity on its plan and has made no changes subsequent to that comment opportunity, the Regional Administrator is not required to provide a separate opportunity for comment.

(3) The plan for establishing required NCore multipollutant stations shall be submitted to the Administrator not later than July 1, 2009. The plan shall provide for all required stations to be operational by January 1, 2011.

(b) The annual monitoring network plan must contain the following information for each existing and proposed site:

- (1) The AQS site identification number.*
- (2) The location, including street address and geographical coordinates.*
- (3) The sampling and analysis method(s) for each measured parameter.*
- (4) The operating schedules for each monitor.*
- (5) Any proposals to remove or move a monitoring station within a period of 18 months following plan submittal.*
- (6) The monitoring objective and spatial scale of representativeness for each monitor as defined in appendix D to this part.*

(7) The identification of any sites that are suitable and sites that are not suitable for comparison against the annual PM_{2.5} NAAQS as described in § 58.30.

(8) The MSA, CBSA, CSA or other area represented by the monitor.

(c) The annual monitoring network plan must document how States and local agencies provide for the review of changes to a PM_{2.5} monitoring network that impact the location of a violating PM_{2.5} monitor or the creation/change to a community monitoring zone, including a description of the proposed use of spatial averaging for purposes of making comparisons to the annual PM_{2.5} NAAQS as set forth in appendix N to part 50 of this chapter. The affected State or local agency must document the process for obtaining public comment and include any comments received through the public notification process within their submitted plan.

(d) The State, or where applicable local, agency shall perform and submit to the EPA Regional Administrator an assessment of the air quality surveillance system every 5 years to determine, at a minimum, if the network meets the monitoring objectives defined in appendix D to this part, whether new sites are needed, whether existing sites are no longer needed and can be terminated, and whether new technologies are appropriate for incorporation into the ambient air monitoring network. The network assessment must consider the ability of existing and proposed sites to support air quality characterization for areas with relatively high populations of susceptible individuals (e.g., children with asthma), and, for any sites that are being proposed for discontinuance, the effect on data users other than the agency itself, such as nearby States and Tribes or health effects studies. For PM_{2.5}, the assessment also must identify needed changes to population-oriented sites. The State, or where applicable local, agency must submit a copy of this 5-year assessment, along with a revised annual network plan, to the Regional Administrator. The first assessment is due July 1, 2010.

(e) All proposed additions and discontinuations of SLAMS monitors in annual monitoring network plans and periodic network assessments are subject to approval according to § 58.14.

1.2 Procedures for Making Changes to the Monitoring Network

In some circumstances, violating monitors must be shut down or moved. While the Ambient Monitoring Program of GA EPD makes every effort to maintain continued operation of required and/or violating monitors, it operates as a guest or leaseholder at all monitoring stations. GA EPD does not hold ownership rights to the land at any of its ambient air monitoring stations. Per EPA rules, if GA EPD loses its lease or is otherwise forced to leave a given site, that site's monitoring may be discontinued without EPA pre-approval or public notice.

GA EPD has no plans to create or implement the Community Monitoring Zone program at present. Any future plan would be subject to public notice and comment before petitioning EPA for approval.

1.3 Memorandum of Agreement

As stated in the Memorandum of Agreement dated January 13, 2009, "The purpose of the Memorandum of Agreement (MOA) is to establish the Chattanooga-Hamilton County-Walker County Metropolitan Statistical Area (MSA) Criteria Pollutant Air Quality Monitoring Agreement between CHCAPCB and GAEPDAPB (collectively referred to as the "affected agencies") to

collectively meet United States Environmental Protection Agency (EPA) minimum monitoring requirements for particles of an aerodynamic diameter of 10 micrometers and less (PM₁₀), particles of an aerodynamic diameter of 2.5 micrometers and less (PM_{2.5}), and ozone; as well as other criteria pollutant air quality monitoring deemed necessary to meet the needs of the MSA as determined reasonable by all parties. This MOA will establish the terms and conditions of this collective agreement to provide adequate criteria pollutant monitoring for the Chattanooga–Hamilton County–Walker Co, GA MSA as required by 40 CFR 58 Appendix D, Section 2, (e) (October 17, 2006)."

The Memorandum of Agreement dated October 9, 2007 states, "The purpose of the Memorandum of Agreement (MOA) is to establish the Augusta-Richmond County Metropolitan Statistical Area (MSA) Criteria Pollutant Air Quality Monitoring Agreement between SCDHEC and GA EPDAPB (collectively referred to as the "affected agencies") to collectively meet United States Environmental Protection Agency (EPA) minimum monitoring requirements for particles of an aerodynamic diameter of 10 micrometers and less (PM₁₀), particles of an aerodynamic diameter of 2.5 micrometers and less (PM_{2.5}), and ozone; as well as other criteria pollutant air quality monitoring deemed necessary to meet the needs of the MSA as determined reasonable by all parties. This MOA will establish the terms and conditions of this collective agreement to provide adequate criteria pollutant monitoring for the Augusta–Richmond County MSA as required by 40 CFR 58 Appendix D, Section 2, (e) (October 17, 2006)."

1.4 Air Quality Index (AQI)

The Air Quality Index (AQI) is a method of reporting air quality that converts concentration levels of pollution to a simple number scale of 0-500. Intervals on the AQI scale are related to potential health effects of the daily measured concentrations of the major pollutants. Certain stations in the SLAMS network provide data for daily index reporting. Index reporting is required for all urban areas with a population exceeding 350,000, which in Georgia include the Atlanta-Sandy Springs-Marietta MSA, the Augusta-Richmond County, Georgia-South Carolina MSA, and the Chattanooga Tennessee-Georgia MSA. The Georgia Environmental Protection Division provides this service to the general public for seven statewide areas with the Georgia Ambient Monitoring Program website (<http://www.air.dnr.state.ga.us/amp/index.php>). The areas are as follows: Athens, Atlanta, Augusta, Columbus, Macon, North Georgia (Fort Mountain, Dawsonville, Summerville and Savannah). The Chattanooga Tennessee-Georgia MSA AQI reporting is covered by the Chattanooga-Hamilton County Air Pollution Control Bureau.

1.5 QAPP and QMP

As part of the requirements for EPA, GA EPD has submitted the appropriate Quality Assurance Project Plan (QAPP) and Quality Monitoring Plan (QMP). The QMP was last submitted July 2010. The criteria air pollutants network QAPP was submitted September 30, 2009. The QAPP for PM_{2.5} and PM_{2.5} speciation networks was approved January 2009. The National Air Toxics Trends Station (NATTS) QAPP was approved in March 2007. A new NATTS QAPP was submitted April 2011. The QAPP for Photochemical Assessment Monitoring Stations (PAMS) was approved in July 2010. The National Core (NCore) Multipollutant Monitoring Station QAPP was approved by EPA May 23, 2011.

1.6 Public Notice and Comment Procedures

This document and any certain future changes to the monitoring network are subject to a required public notice and comment process before EPA approval is sought for the changes. Any public comments submitted in response to this document's notice and comment process

will be submitted to EPA along with the final document. Persons wishing to comment on the draft Ambient Air Monitoring Plan are required to submit their comments, in writing, to GA EPD at the following address:

**Air Protection Branch
Attn: Annual Air Monitoring Plan Comments
4244 International Parkway, Suite 120
Atlanta, Georgia 30354**

In addition, public comments can be submitted in writing to Susan Zimmer-Dauphinee, Program Manager of the Ambient Monitoring Program, at Susan.Zimmer-Dauphinee@dnr.state.ga.us.

Comments must be received by the GA EPD no later than 30 days after the date on which this document is published on <http://www.georgiaair.org/airpermit/html/hottopics.htm> and <http://www.air.dnr.state.ga.us/amp/>. Should the comment period end on a weekend or holiday, comments will be accepted up until the next working day. GA EPD, in soliciting comments for the final draft before submittal to EPA as required by 40CFR58, will consider all comments received on or prior to that date.

After the comment period has expired, GA EPD will consider all comments received. GA EPD's responses to comments and any other relevant information will then be made available for public review during normal business hours at the office of the Air Protection Branch.

1.7 Changes to Previous Ambient Air Monitoring Plan

Since the publication of the 2011 Ambient Air Monitoring Plan, there have been some changes to the State's ambient air monitoring network that should be noted.

As of December 14, 2011, GA EPD finished replacing all of the PM_{2.5} FRM samplers from the Andersen RAAS 300 and 100 samplers to the Thermo 2025 model.

Due to pending demolition of the Gainesville-Fair Street Elementary School (13-139-0003) location, the site was moved approximately 300 feet from the original location. The site was moved between sample days, and samples began collection at the new location on October 27, 2011. The site is now located at the Boys and Girls Club, 1 Positive Place, Gainesville, GA 30501 with the same AQS identification number.

After the sample run on November 23, 2011, GA EPD discontinued the Savannah-Market Street site (13-051-0017) collocated PM_{2.5} sampler.

The Air Toxics (VOC, SVOC, and Metals), and acid rain samplers that were temporarily discontinued in the previous Ambient Air Monitoring Plans have been shut down. Please see Appendix E for complete list.

The continuous PM_{2.5} monitor at the Social Circle-DNR Fish Hatchery (13-297-0001) site was shut down due to pending construction at the site. The site had previously been temporarily discontinued as of 10/31/08.

Due to not meeting EPA siting criteria, the Georgia Tech (13-121-0048) SO₂, NO, NO₂, NO_x monitors that were temporarily discontinued in previous Ambient Air Monitoring Plans have been shut down.

As of December 31, 2011, GA EPD discontinued the collection of the meteorological parameters (wind speed and wind direction) at the Cartersville site (13-015-0003).

To accommodate the new SO₂ air monitoring rules to be operational by January 1, 2013, GA EPD plans to add one SO₂ monitor to the Atlanta-Sandy Springs-Marietta MSA and one SO₂ monitor to the Augusta-Richmond County, GA-SC MSA. In addition, GA EPD plans to close the SO₂ monitors at the Brunswick-Risley Middle School site (13-127-0006), and the Columbus-Airport site (13-215-0008) by January 1, 2013. Please see Section 3.2 for more details.

As of January 1, 2013, new near-road NO₂ monitoring rules should be implemented. GA EPD anticipates having a near-road NO₂ monitor in the Atlanta-Sandy Springs-Marietta MSA, near the Georgia Tech area by this date. Please see Section 3.3 for more details.

For the new CO monitoring requirements that are to be implemented by January 1, 2015, GA EPD would need one monitor collocated with a near-road NO₂ monitor in the Atlanta-Sandy Springs-Marietta MSA. GA EPD anticipates that this CO monitor will follow the schedule for the near-road NO₂ monitor in the Georgia Tech area. Please see Section 3.4 for more details.

To accommodate the changes to the lead monitoring rules, GA EPD has reopened two lead monitors in the Columbus GA-AL MSA to determine the proper location for a source-oriented monitor. These samplers had been inactive since March 31, 2004. Columbus-Fort Benning (13-215-0010) began collecting samples on December 27, 2011. Columbus-UPS (13-215-0009) began collecting samples on February 3, 2012. In addition, a collocated lead monitor will be placed at the criteria lead site with the highest concentration. Please see Section 3.5 for more details.

1.8 Proposed Changes to PM₁₀ and PM_{2.5} Networks

As part of the Ambient Air Monitoring Plan, the networks are reviewed for any possible changes that need to be made including moving, adding, or terminating monitors for a particular site in accordance with the federal monitoring regulations. For the 2012 Ambient Air Monitoring Plan, the PM₁₀ and PM_{2.5} FRM networks were extensively reviewed for this reason. Following federal monitoring regulations for PM₁₀ and PM_{2.5} (40CFR58, Appendix D), the following tables were produced showing existing monitors and number of required monitors, according to population of the metropolitan statistical area (MSA) and the three-year design value for each monitor. Table D-4 was used to determine PM₁₀ monitoring requirements, and Table D-5 was used to determine PM_{2.5} monitoring requirements.

a. PM₁₀ Network

For PM₁₀, the National Ambient Air Quality Standard is a 24-hour average of 150 µg/m³, not to be exceeded more than once over 3 years. Therefore, for this examination of the data, the highest 24-hour average for the 3-year timeframe is shown. For the comparison to the stipulations in Table D-4, the PM₁₀ data was compared to a low concentration of 80% of the standard, which is 120 µg/m³. The following table shows the PM₁₀ monitoring requirements, taken from 40CFR58, Appendix D. Below Table D-4 is the comparison of GA EPD's PM₁₀ network to these monitoring requirements.

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

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

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

²High concentration areas are those for which ambient PM₁₀ data show ambient concentrations exceeding the PM₁₀NAAQS by 20 percent or more.

³Medium concentration areas are those for which ambient PM₁₀ data show ambient concentrations exceeding 80 percent of the PM₁₀NAAQS.

⁴Low concentration areas are those for which ambient PM₁₀ data show ambient concentrations less than 80 percent of the PM₁₀NAAQS.

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

Figure 2: PM₁₀ Minimum Monitoring Requirements from Appendix D to 40CFR58

Network Requirements for PM ₁₀									
	Population (2010 Census)	PM10							
		Table D-4	Low Concentration of 80%=120						
		1st Max, 3 yrs				Required Monitors	Actual Monitors	Reason Number of Required Monitors	
		2006-2008	2007-2009	2008-2010	2009-2011				
Rome MSA	96,317	81	81	59	59	0	1	<100,000 pop and <80%	
Brunswick MSA	112,370	74	85	85	85	0	1	100,000-250,000 pop, but <80%	
Albany MSA	157,308	67	71	71	71	0	1	100,000-250,000 pop, but <80%	
Macon MSA	232,293	133	133	63	55	0	1	100,000-250,000 pop, but <80%	
Columbus GA-AL MSA	294,865	94	94	94	94	0-1	1	250,000-500,000 pop, but <80%	
Savannah MSA	347,611	115	115	115	65	0-1	1	250,000-500,000 pop, but <80%	
Augusta GA-SC MSA	556,877	76	76	76	46	1-2	1	500,000-1,000,000 pop, but <80%	
Atlanta MSA	5,268,860					2-4	4	>1,000,000 pop, but <80%	
South DeKalb					46*				
Doraville		58	58	62	62				
E Rivers		59	59	50	50				
GA Tech		108	108	51	49				
Chattanooga TN-GA MSA	528,143					1-2	1 TN	Covered by TN	
Not in an MSA									
Chattooga (Summerville)	26,015	67	50	46	46	0	1	<100,000 pop and <80%	
Sandersville (Washington)	21,187	63	63	55	55	0	1	<100,000 pop and <80%	
			Totals			3**	13		
			Total with Other States					14	
		*Note that South DeKalb monitor was added January 2011, therefore data reflects 1 year							
		**added least required number							

Figure 3: Georgia's PM₁₀ Network Compared to Federal Requirements

For GA EPD's PM₁₀ network, there are currently 13 monitors collecting data. With the monitor located in the Chattanooga TN-GA MSA run by Tennessee, there are 14 monitors collecting PM₁₀ data. According to the federal monitoring requirements considering population and design value, GA EPD is required to have only 3 monitors, with Tennessee covering the 4th monitor in the Chattanooga TN-GA MSA. As a result, for the PM₁₀ network, GA EPD proposes to shut down the following monitors:

Rome-Coosa Elementary (13-115-0003)
 Brunswick-Arco Pump Station (13-127-0004)
 Albany-Turner Elementary (13-095-0007)
 Macon-Allied (13-021-0007)
 Columbus-Cusseta Elementary (13-215-0011)
 Savannah-Shuman Middle School (13-051-0014)
 Atlanta-Georgia Tech (13-121-0048)
 Summerville-DNR Fish Hatchery (13-055-0001)
 Sandersville (13-303-0001)
 In addition, the E.Rivers monitor (13-121-0032) would be moved to the Fire Station #8 location (13-121-0039).
 The PM₁₀ monitors would continue operation at the following locations:
 Augusta-Bungalow Road (13-245-0091) (would be collocated)
 South DeKalb (13-089-0002)
 Fire Station #8 (13-121-0039)

b. PM_{2.5} Network

There are two National Ambient Air Quality Standards for PM_{2.5} data: 24-hour and annual. For the 24-hour standard, the three-year average of 98th% of daily averages should not exceed 35 µg/m³. For the annual standard, the three-year annual average should not exceed 15.0 µg/m³. Therefore, the data was examined for both of these standards. For a comparison to Table D-5, the data was compared to 85% of each standard (29.75 µg/m³ for 24-hour standard and 12.75 µg/m³ for the annual standard). The following table shows the PM_{2.5} monitoring requirements, taken from 40CFR58, Appendix D. Below Table D-5 is the comparison of GA EPD's PM_{2.5} network to these monitoring requirements in regards to both the 24-hour standard and annual standard.

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 4: PM_{2.5} Minimum Monitoring Requirements from Appendix D 40CFR58

Network Requirements for 24-Hour PM _{2.5}								
	Population (2010 Census)	PM2.5						
		Table D-5	85%=29.75					
		24-hour Design Value				Required Monitors	Actual Monitors	Reason Number of Monitors Required
		2006-2008	2007-2009	2008-2010	2009-2011			
Rome MSA	96,317	32	29	25	26	0	1	50,000-500,000 pop, but <85%
Brunswick MSA	112,370	25	25	24	25	0	1	50,000-500,000 pop, but <85%
Valdosta MSA	139,588	25	25	23	28	0	1	50,000-500,000 pop, but <85%
Warner Robins MSA	139,900	30	29	26	24	0	1	50,000-500,000 pop, but <85%
Albany MSA	157,308	34	33	31	30	1	1	50,000-500,000 pop, and >/=85%
Gainesville MSA	179,684	29	26	25	23	0	1	50,000-500,000 pop, but <85%
Athens-Clark County MSA	192,541	29	25	22	22	0	1	50,000-500,000 pop, but <85%
Macon MSA	232,293					0	2	50,000-500,000 pop, but <85%
Allied Chemical		33	31	28	28			
Macon-SE		29	28	26	24			
Columbus GA-AL MSA	294,865					0	3GA,1AL	50,000-500,000 pop, but <85%
Health Dept		30	29	27	25			
Airport		30	29	27	26			
Cusseta Elem		30	29	28	26			
Savannah MSA	347,611					1	2	50,000-500,000 pop, and >/=85%
Market St		26	24	23	29			
Mercer		24	24	23	30			
Augusta GA-SC MSA	556,877					1	2GA,1SC	500,000-1,000,000 pop, but <85%
Medical College		30	28	24	23			
Bungalow Rd		30	28	25	26			
Atlanta MSA	5,268,860					2	9	>1,000,000 pop, but <85%
Forest Park		30	27	24	25			
Kennesaw-National Guard		32	29	25	24			
Powder Springs		32	27	23	22			
South DeKalb		31	29	25	24			
Doraville		30	29	25	24			
E Rivers		32	29	25	24			
Fire Station#8*		*	*	21*	25			
Gwinnett Tech		29	26	23	23			
Yorkville		31	28	24	22			
Chattanooga TN-GA MSA	528,143	30	29	25	23	2**	1GA,3TN	500,000-1,000,000 pop, but <85%
Not in an MSA								
Sandersville (Washington)	21,187	29	29	28	27	0	1	pop below 50,000, and <85%
Gordon (Wilkinson)	9,563	30	29	27	25	0	1	pop below 50,000, and <85%
			Totals			7	28	
			Total with Other States				33	
	*Fire Station#8 in Atlanta MSA was shut down from 9/06 to 12/08, value for 2008-2010 incomplete							
	**Part of Chattanooga TN-GA MSA covered by TN							

Figure 5: Georgia's PM_{2.5} Network Compared to Federal Requirements for 24-Hour Standard

Network Requirements for Annual PM _{2.5}								
	Population (2010 Census)	PM _{2.5}						
		Table D-5	85%=12.75					
		Annual Design Value				Required Monitors	Actual Monitors	Reason Number of Required Monitors
		2006-2008	2007-2009	2008-2010	2009-2011			
Rome MSA	96,317	14.9	13.4	12.5	13.0	1	1	50,000-500,000 pop, and >/=85%
Brunswick MSA	112,370	11.0	10.4	10.1	9.7	0	1	50,000-500,000 pop, but <85%
Valdosta MSA	139,588	11.5	10.5	10.1	10.4	0	1	50,000-500,000 pop, but <85%
Warner Robins MSA	139,900	13.7	12.3	11.4	11.3	0	1	50,000-500,000 pop, but <85%
Albany MSA	157,308	13.9	12.8	12.3	12.1	0	1	50,000-500,000 pop, but <85%
Gainesville MSA	179,684	13.0	11.8	11.1	10.7	0	1	50,000-500,000 pop, but <85%
Athens-Clark County MSA	192,541	13.9	12.1	11.3	10.8	0	1	50,000-500,000 pop, but <85%
Macon MSA	232,293					1	2	50,000-500,000 pop, and >/=85%
Allied Chemical		15.1	13.5	12.8	13.4			
Macon-SE		12.9	11.8	11.4	11.0			
Columbus GA-AL MSA	294,865					0	3GA,1AL	50,000-500,000 pop, but <85%
Health Dept		14.3	13.0	13.2	12.7			
Airport		14.4	12.9	12.2	11.8			
Cusseta Elem		14.0	12.7	12.2	11.8			
Savannah MSA	347,611					0	2	50,000-500,000 pop, but <85%
Market St		12.7	11.3	10.7	10.7			
Mercer		12.6	11.4	10.8	11.0			
Augusta GA-SC MSA	556,877					1	2GA,1SC	500,000-1,000,000 pop, but <85%
Medical College		14.8	13.1	12.2	11.7			
Bungalow Rd		14.8	13.5	12.7	12.1			
Atlanta MSA	5,268,860					3	9	>1,000,000 pop, and >/=85%
Forest Park		15.2	13.5	12.9	12.6			
Kennessaw-National Guard		15.1	13.4	12.3	11.7			
Powder Springs		14.5	12.6	11.9	11.3			
South DeKalb		14.3	13.0	12.1	11.9			
Doraville		14.3	13.3	12.3	11.8			
E Rivers		14.7	13.4	12.3	11.8			
Fire Station#8*		*	*	11.4*	13.2			
Gwinnett Tech		14.5	12.7	12.1	11.6			
Yorkville		13.4	12.0	11.0	10.6			
Chattanooga TN-GA MSA	528,143	13.5	12.3	10.6	10.1	2**	1GA,3TN	500,000-1,000,000 pop, but <85%
Not in an MSA								
Sandersville (Washington)	21,187	14.2	12.5	11.5	11.3	0	1	pop below 50,000
Gordon (Wilkinson)	9,563	14.3	13.3	13.0	13.1	0	1	pop below 50,000
			Totals			8	28	
		Total with Other States					33	
	*Fire Station#8 in Atlanta MSA was shut down from 9/06 to 12/08, value for 2008-2010 incomplete							
	**Part of Chattanooga TN-GA MSA covered by TN							

Figure 6: Georgia's PM_{2.5} Network Compared to Federal Requirements for Annual Standard

For GA EPD's PM_{2.5} network, there are currently 28 monitors collecting data. With the monitors located in the adjacent states that share MSAs with Georgia, there are 33 monitors collecting PM_{2.5} data. According to the federal monitoring requirements considering population and design value, GA EPD is required to have only 7 monitors with the 24-hour standard and 8 monitors with the annual standard. As a result, for the PM_{2.5} network, GA EPD proposes to shut down the following 8 monitors:

Columbus-Health Department (13-215-0001)
Savannah-Market Street (13-051-0017)

Augusta-Medical College (13-245-0005)
Powder Springs-Macond Aquatic Center (13-067-0004)
Doraville-Police Department (13-089-2001)
Atlanta-E. Rivers School (13-121-0032)
Sandersville-Health Department (13-303-0001)
Gordon-Police Department (13-319-0001)

The PM_{2.5} monitors would continue operation at the following locations:

Rome-Coosa Elementary (13-115-0003)
Brunswick-Risley Middle (13-127-0006)
Valdosta-Mason Elementary (13-185-0003)
Warner Robins-Robins Air Base (13-153-0001)
Albany-Turner Elementary (13-095-0007) (would be collocated)
Gainesville-Boys and Girls Club (13-139-0003)
Athens-College Station Road (13-059-0002)
Macon-Allied Chemical (13-021-0007) (collocated)
Macon-Forestry (13-021-0012)
Columbus-Airport (13-215-0008)
Columbus-Cusseta Elementary (13-215-0011)
Savannah-Mercer Middle (13-051-0091)
Augusta-Bungalow Road (13-245-0091)
Forest Park-Georgia DOT (13-063-0091)
Kennesaw-National Guard (13-067-0003)
South DeKalb (13-089-0002) (collocated)
Atlanta-Fire Station #8 (13-121-0039)
Lawrenceville-Gwinnett Tech (13-135-0002)
Yorkville-King Farm (13-223-0003)
Rossville-Maple Street (13-295-0002)

1.9 Request to Close Monitors

GA EPD had temporarily closed the NO_y monitors at Macon-Lake Tobesofkee site (13-021-0013) in Bibb County on April 30, 2008, and at the Evans site (13-073-0001) in Columbia County on July 28, 2008. Also, the ozone monitor was temporarily closed at the Macon-Lake Tobesofkee site (13-021-0013) in Bibb County on October 31, 2008.

a. NO_y monitors at Macon-Lake Tobesofkee site (13-021-0013) in Bibb County and Evans site (13-073-0001) in Columbia County

In regards to the NO_y samplers at the Macon-Lake Tobesofkee site (13-021-0013) in Bibb County and the Evans site (13-073-0001) in Columbia County, there is not a rule that applies to continue sampling with these monitors. Appendix D to 40CFR58, Paragraph 4.3.6 states that NO_y measurements should be taken at NCore and PAMS sites. Neither of these sites is an NCore nor PAMS site, nor is the NO_y monitor required at either site. Therefore, GA EPD requests to close the NO_y monitors at the Macon-Lake Tobesofkee (13-021-0013) and Evans (13-073-0001) sites.

b. Ozone monitor at Macon-Lake Tobesofkee site (13-021-0013) in Bibb County

According to the 2010 census, the Macon MSA has a population of 232,293. Table D-2 of Appendix D to part 58 of 40CFR shows that if the design value is equal to or greater than 85%

of NAAQS and the population of the MSA is 50,000-350,000, one ozone monitor is required. The last 3-year timeframe to calculate a design value including the two monitors in the Macon area was 2006 to 2008. The Macon-Lake Tobesofkee site (13-021-0013) had an ozone design value of 0.080 ppm, and the Macon-Forestry site (13-021-0012) had an ozone design value of 0.078 ppm. Due to the population size and design value, the Macon MSA is required to have one monitor. The Macon-Forestry site (13-021-0012) has been collecting ozone data every ozone season since May 7, 1997.

In addition, the wind roses for the Macon-Forestry site (13-021-0012) were reviewed for the 2006-2008 timeframe. The quarterly averages of ozone wind roses show that the predominant wind direction is southeast, coming across the metropolitan area toward the Macon-Forestry site. The following second and third quarter (April through September) ozone wind roses are shown as an example to represent the majority of the ozone season from 2006 to 2008.

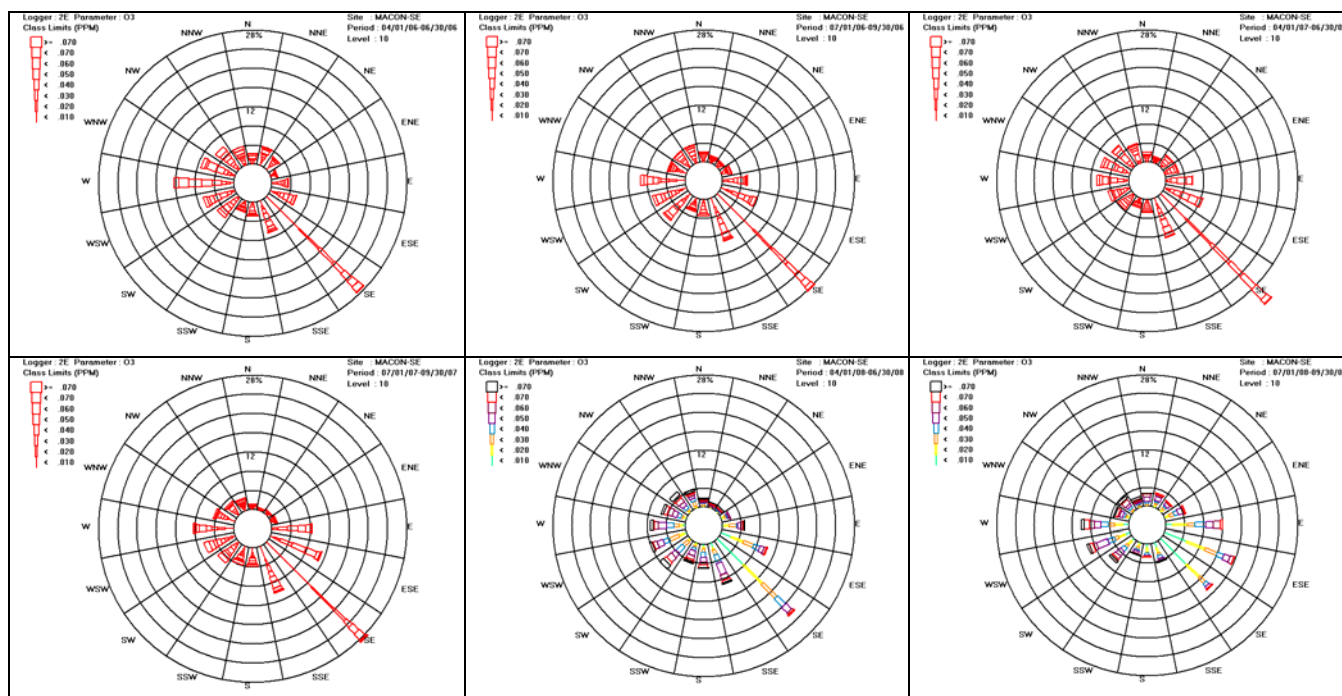


Figure 7: Example of Quarterly Ozone Wind Roses for Macon-Forestry Site, 2006-2008

Also, the wind roses were examined for days when ozone exceeded the NAAQS, and again the predominant wind direction is southeast, across the Macon metropolitan area toward the Macon-Forestry site. Therefore, with the requirement of one ozone monitor in the Macon MSA met and the predominant wind direction of southeast coming across the Macon metropolitan area toward the Macon-Forestry site (13-021-0012), GA EPD requests to close the additional ozone monitor at the Macon-Lake Tobesofkee site (13-021-0013).

1.10 Inventory of Ambient Monitoring Equipment

As part of the requirements for the Ambient Air Monitoring Plan, GA EPD has included a list and evaluation of the current ambient monitoring equipment. See attached Appendix B for the inventory listing.

1.11 List of Sites

The following table gives a complete list of the current air monitoring network and the parameters that are sampled at each site. The parameters highlighted in red are temporarily discontinued.

SITE ID	COMMON NAME	COUNTY	O ₃	CO	PM _{2.5} FRM	PM _{2.5} Cont.	PM _{2.5} Spec.	PM Coarse	NO/ NOx	NO ₂	NOy	SO ₂	TRS	Pb	PM ₁₀	PM ₁₀ Cont.	Acid Rain	PAMS VOC	VOC	SVOC	Carb- onyls	Meteo- rology	Aethal- ometer	Cr6	Metals	
Rome MSA																										
131150003	Coosa Elementary	Floyd			S	S	X					S			S											
Brunswick MSA																										
131270004	Arco Pump Station	Glynn													S											
131270006	Risley Middle	Glynn	S		S							S*	M									NR				
Valdosta MSA																										
131850003	Mason Elem.	Lowndes			S	S																				
Warner Robins MSA																										
131530001	Robins Air Base	Houston			S	S																				
Dalton MSA																										
132130003	Fort Mountain	Murray	S																			NR				
Albany MSA																										
130950007	Turner Elem.	Dougherty			S	S									S											
Gainesville MSA																										
131390003	Fair St. Elementary	Hall			S	S																				
Athens-Clark County MSA																										
130590002	College Station Rd.	Clarke	S		S	S	X																			
Macon MSA																										
130210007	Allied Chemical	Bibb			S		X								S											
130210012	Forestry	Bibb	S		S	S						S							NR	NR		NR			NR	
130210013	Lake Tobesofkee	Bibb	S								S											NR				
Columbus Georgia- Alabama MSA																										
132150001	Health Dept.	Muscogee			S																					
132150008	Airport	Muscogee	S		S	S						S*														
132150009	UPS	Muscogee												S												
132150010	Fort Benning	Muscogee												S												
132150011	Cusseta Elementary	Muscogee			S		X							S	S											
132151003	Crime Lab	Muscogee																				NR				
Savannah MSA																										
130510014	Shuman Middle School	Chatham													S											
130510017	Market St.	Chatham			S																					
130510021	E. President St.	Chatham	S									S							NR	NR	NR	NR			NR	
130510091	Mercer Middle	Chatham			S																					
130511002	W. Lathrop & Augusta Ave.	Chatham				S						S										NR				
Augusta-Richmond County, Georgia-South Carolina MSA																										
130730001	Riverside Park	Columbia	S									S										NR				
132450005	Med. College GA	Richmond			S																					
132450091	Bungalow Rd.	Richmond	S		S	S	X								S							NR				

SITE ID	COMMON NAME	COUNTY	O ₃	CO	PM _{2.5} FRM	PM _{2.5} Cont.	PM _{2.5} Spec.	PM Coarse	NO/ NO _x	NO ₂	NO _y	SO ₂	TRS	Pb	PM ₁₀	PM ₁₀ Cont.	Acid Rain	PAMS VOC	VOC	SVOC	Carb- onyls	Meteo- rology	Aethal- ometer	Cr6	Metals
Atlanta-Sandy Springs-Marietta MSA																									
130150003	Cartersville	Bartow												S											
130630091	Georgia DOT	Clayton			S																				
130670003	National Guard	Cobb	S		S																				
130670004	Macland Aquatic Center	Cobb			S																				
130770002	Univ. of West GA	Coweta	S			S																NR			
130850001	GA Forestry	Dawson	S																NR	NR	NR	NR			NR
130890002	South DeKalb	DeKalb	S/P/C	S/P/C	S/C	S/C	T/C	C	S/P	S/P	S/P/C	C			C		P	N	N	P/N	P/C	N	N	N	N
130890003	DMRC	DeKalb												S											
130892001	Police Dept.	DeKalb			S										S										
130893001	Tucker	DeKalb																				NR			
130970004	W. Strickland St.	Douglas	S																			NR			
131130001	Georgia DOT	Fayette	S																			NR			
131210032	E. Rivers School	Fulton			S										S										
131210039	Fire Station #8	Fulton			S																				
131210048	Georgia Tech	Fulton														S						NR			
131210055	Confederate Ave.	Fulton	S			S						S										NR			
131210099	Roswell Road	Fulton		S																					
131350002	Gwinnett Tech	Gwinnett	S		S	S																			
131510002	County Extension	Henry	S			S																			
132230003	Yorkville	Paulding	S/P	S/P	S	S			S/P	S/P							P	NR	NR			P			NR
132470001	Monastery	Rockdale	S/P						S/P	S/P							P					P			
Chattanooga Tennessee-Georgia MSA																									
132950002	Maple Street	Walker			S	S	X																		
Not in an MSA																									
130550001	Fish Hatchery	Chattooga	S												S										
130690002	General Coffee State Park	Coffee					X												NR	NR					NR
132611001	Union High	Sumter	S																						
133030001	Co. Health Dept.	Washington			S										S										
133190001	Police Dept.	Wilkinson			S																				

Monitoring Types: S=SLAMS; P=PAMS; C=NCORE; M=SPM; X=Supplemental Speciation; T=STN; N=NATTS; NR=Non-Regulatory; G=General Information

Samplers in red are temporarily not operational

*To be shut down as of January 1, 2013

Table 1: 2012 Georgia Air Monitoring Network

2.0 Pollutant Description, Analysis Method, and Quality Assurance Schedule

All monitors have known precision, accuracy, interferences, and operational parameters. The monitors as well as all measurement devices are carefully calibrated at predetermined frequencies, varying from daily to quarterly. Calibration standards are traceable to National Institute of Standards and Technology (NIST) master standards.

Monitoring and analysis are performed according to a set of standard operating procedures. Field personnel will typically visit manual sampling sites at least once every six days to replace sample media and check the operation and calibration of monitors. Personnel will check continuous monitors at least twice monthly for correct instrument operation.

Quality assurance activities are carried out to determine the quality of the collected ambient data, improve the quality of the data, and evaluate how well the entire monitoring system operates. The goal of quality assurance activities is to produce high quality air pollution data with defined completeness, precision, accuracy, representativeness and comparability.

Specialized data-collection and storage equipment is used at most sites to collect the data. A computerized telemetry system aids in assembly of the data for submission to the U.S. EPA. This enhances data validity, minimizes travel costs, and allows data to be available by computer at GA EPD's main office immediately. Numerous manual and automated checks are performed to ensure that only valid data are reported.

2.1 Particulate Matter

Atmospheric particulate matter is defined as any airborne material, except uncombined water (liquid, mist, steam, etc.) that exists in a finely divided form as liquid or solid at standard temperature (25°C) and pressure (760mmHg) and has an aerodynamic diameter of less than 100 micrometers. Three sizes of particulate matter are to be monitored: PM₁₀, PM_{2.5}, and PM_{coarse} (10-2.5). PM₁₀ is particulate matter with an aerodynamic diameter less than or equal to 10 micrometers (µm) as measured according to EPA regulations 40 CFR 50, Appendix J (United States Environmental Protection Agency [US EPA] 1993, P. 769-773). The U.S. EPA defines PM_{2.5} as solid particles and liquid droplets found in the air that are less than 2.5 micrometers (µm) or microns in diameter. Individually, these particles and droplets are invisible to the naked eye. Collectively, however, they can appear as clouds or a fog-like haze. Particulate matter less than or equal to 2.5 µm in diameter is referred to as "fine" particles (PM_{2.5}). PM_{10-2.5} is also called PM_{coarse}. The PM_{coarse} fraction has a diameter between 2.5 and 10 micrometers (µm) or microns. In comparison, a human hair is 70-100 µm in diameter.

Particulates are emitted by many human activities, such as fuel combustion, motor vehicle operation, industrial processes, grass mowing, agricultural tilling, and open burning. Natural sources include windblown dust, forest fires, volcanic eruptions, and pollen. Particulates emitted directly from a source may be either fine (less than 2.5 µm) or larger (2.5-60 µm), but particles formed in the atmosphere will usually be fine. Typically, fine particles originate by condensation of materials produced during combustion or atmospheric reactions in which gaseous pollutants are chemically converted to particles.

Particulate matter can cause health problems affecting the breathing system, including aggravation of existing lung and heart disease, limitation of lung clearance, changes in form and structure of organs, and development of cancer. Individuals most sensitive to the effects of particulate matter include those with chronic obstructive lung or heart disease, those suffering from the flu, asthmatics, the elderly, children, and mouth breathers.

Health effects from inhaled particles are influenced by the depth of penetration of the particles into the respiratory system, the amount of particles deposited in the respiratory system, and the chemical composition of the deposited particles. The risks of adverse health effects are greater when particles enter the tracheobronchial and alveolar portions of the respiratory system. Healthy respiratory systems can trap particles larger than 10 μm more efficiently before they move deeply into the system, and can more effectively remove the particles that are not trapped before they can lodge deeply in lung tissue.

Particulate matter also can interfere with plant photosynthesis by forming a film on leaves that reduces exposure to sunlight. Particles also can cause soiling and degradation of property, which can be costly to clean and maintain. Suspended particles can absorb and scatter light, causing reduction of visibility. This is a national concern, especially in areas such as national parks, historic sites, and scenic attractions.

a. Particulate Matter (PM_{10}) Integrated

At sites where Particulate Matter (PM_{10}) is monitored on an integrated basis, Georgia EPD uses EPA-approved reference or equivalent methods. The low-volume samplers collect particulate matter on a pre-weighed quartz microfiber filter for 24 hours. Ambient air is sampled through an impaction inlet device that only allows particles with 10 microns or less in diameter reach the filter media. The flow rate is controlled by an electronic mass-flow controller, which uses a flow sensor installed below the filter holder to monitor the mass flow rate and to control the speed of the motor accordingly. The filter is returned to the state laboratory for gravimetric analysis after the sample is collected. The change in the filter weight corresponds to the mass of PM_{10} particles collected. That mass, divided by the total volume of air sampled, corresponds to the mass concentration of the particles in the air. The sampling frequency varies by site. These monitors are used to determine attainment of the PM_{10} standard. These analyzers are subjected to quarterly checks and are audited by EPD's Quality Assurance Unit on a semi-annual basis.

b. Particulate Matter (PM_{10}) Continuous

At sites where Particulate Matter (PM_{10}) is monitored on a continuous basis, Georgia EPD uses an EPA-approved equivalent method. The monitor consists of three basic components: the central unit, the sampling pump, and the sampling inlet hardware. The sampling inlet is designed to cut out particles larger than 10 microns in size. The monitor uses beta ray attenuation to calculate collected particle mass concentrations. The beta rays are attenuated as they collide with particles collected on filter tape. The decrease in signal detected by the scintillation counter is inversely proportional to the mass loading on the filter tape. The pump turns on at the beginning of the hour and runs for 50 minutes. During the last 10 minutes of the hour, the pump is off while the tape transport operates, final mass reading is collected and self-tests are performed. These monitors are used to determine attainment of the PM_{10} standard. These analyzers are subjected to monthly flow checks and are audited by EPD's Quality Assurance Unit on a semi-annual basis.

c. Fine Particulate Matter ($\text{PM}_{2.5}$) Integrated

At sites where mass $\text{PM}_{2.5}$ samples are taken on an integrated basis, the samples are measured using very similar techniques utilized for measuring PM_{10} . The official reference method requires that samples are collected on Teflon filters with a $\text{PM}_{2.5}$ sampler for 24 hours. A specialized particle size sorting device is used to filter the air, collecting only particles 2.5 microns in size and smaller. The filters are weighed in a laboratory before and after the sampling period. The change in the filter weight corresponds to the mass weight of $\text{PM}_{2.5}$ particles collected. That mass weight, divided by the total volume of air sampled, corresponds to the mass concentration

of the particles in the air for that 24-hour period. The reference method filters are used for attainment determinations. However, due to the delay in collecting each filter, shipping it to the laboratory, and weighing, weeks may pass before the results are known. Although this method is very accurate, it is not useful for real-time determinations of $PM_{2.5}$ concentrations in ambient air. Because the data is collected using the Federal Reference Method, the data is appropriate to use for making attainment decisions relative to the $PM_{2.5}$ NAAQS. The sampling frequency for integrated $PM_{2.5}$ sampling varies by site, based on EPA rules, and is listed with each individual site's information in Appendix A and in Table 2 below. On a semi-annual basis, EPD's Quality Assurance Unit audits these $PM_{2.5}$ samplers.

d. Fine Particulate Matter ($PM_{2.5}$) Continuous

At sites where $PM_{2.5}$ is monitored on a continuous basis, Georgia EPD uses two types of instruments. One type is the beta attenuation method using the MetOne BAM-1020, adapted from PM_{10} service to $PM_{2.5}$ service by use of an inline BGI "Sharp Cut Cyclone". The inlet is designed to cut out particles that are larger than 2.5 microns in size. The beta rays are attenuated as they collide with particles collected on filter tape. The decrease in signal detected by the scintillation counter is inversely proportional to the mass loading on the filter tape. The pump turns on at the beginning of the hour and runs for 50 minutes. During the last 10 minutes of the hour, the pump is off while the tape transport operates, final mass reading is collected and self-tests are performed. The sampling method for the BAM type of continuous $PM_{2.5}$ monitor was approved as Federal Equivalent Method (FEM) in Notices of the Federal Register/Vol.73; No.49 dated March 12, 2008 when used with a "Very Sharp Cut Cyclone". When GA EPD begins operating the continuous BAM as an FEM with a "Very Sharp Cut Cyclone", these samplers will be used for making attainment decisions relative to the NAAQS. GA EPD began sampling the BAM as FEM at the South DeKalb site as of January 1, 2011.

At the other locations where Georgia EPD samples $PM_{2.5}$ on a continuous basis, GA EPD uses the Rupprecht & Patashnick tapered element oscillating microbalance (TEOM) Series 1400/1400a monitors. These monitors use an inline $PM_{2.5}$ cyclone for particle size selection and an inline Sample Equilibration System (SES), which uses a diffusion drying technique to minimize water vapor interference with the particle mass measurement. The instrument oscillates the sample filter on a microbalance continuously while particles are collected from ambient air. By measuring the change in the oscillation frequency, the change in filter mass can be determined. As configured in the Georgia ambient air monitoring network, these analyzers (TEOM) are not approved as reference or equivalent method, the data collected from these samplers cannot be used for making attainment decisions relative to the NAAQS.

Both types of samplers are used to support development of air quality models and forecasts, including the Air Quality Index (AQI), and to provide the public with information about pollutant concentrations in real time. Both types of analyzers are subject to monthly flow checks and are audited by EPD's Quality Assurance Unit on a semi-annual basis.

e. Fine Particulate Matter ($PM_{2.5}$) Speciation

Particle speciation measurements require the use of a wide variety of analytical techniques, but all generally use filter media to collect the particles to be analyzed. Laboratory techniques currently in use are gravimetric (micro weighing); X-ray fluorescence and particle-induced X-ray emission for trace elements; ion chromatography for anions and selected cations; controlled combustion for carbon; and gas chromatography/mass spectroscopy (GC/MS) for semi-volatile organic particles. Samples are collected for 24 hours and shipped to an EPA-appointed laboratory for analysis. The sampling frequency varies by site and is detailed in Table 2 below. On a quarterly basis, EPD's Quality Assurance Unit subjects these samplers to audits.

f. Coarse Particulate Matter (PM_{10-2.5})

As part of the NCore requirements (discussed in Section 3.1 and Appendix C), the South DeKalb site began PMcoarse sampling as of January 1, 2011. GA EPD uses the 'Met One Instruments BAM-1020 PM_{10-2.5} Measurement System Automated Equivalent Method: EQPM-0709-185 consisting of 2 BAM-1020 monitors, the first of which (PM_{2.5} measurement) is configured as a PM_{2.5} FEM (EQPM-0308-170). The second BAM-1020 monitor (PM₁₀ measurement) is configurable as a PM_{2.5} FEM (EQPM-0308-170), but set to monitor PM₁₀. The BAM-1020 monitors are collocated to within 1-4 meters of one another. The BAM-1020 performing the PM_{2.5} measurement is equipped with Met One Instruments, Inc. P/N BX-Coarse interface board and accessories; the units are interconnected to provide concurrent sampling and to report PM_{10-2.5} concentrations directly to the user. Both units are operated in accordance with BAM-1020 PM-Coarse Addendum Rev. 5-5 or later and the BAM-1020 Operations Manual Rev. D or later' (Federal Register: Vol.74, page 24241, 06/15/09).

The sampling frequency of the integrated (FRM), continuous (BAM and TEOM), and speciated PM_{2.5} samplers is detailed in Table 2 below, and the attached Appendix A for clarity.

Site ID	Common Name	City	County	Integrated	Continuous	Speciation
Rome MSA						
131150003	Coosa Elementary	Rome	Floyd	PM _{2.5} (Daily)	BAM PM _{2.5}	6 Day
Brunswick MSA						
131270006	Risley Middle	Brunswick	Glynn	PM _{2.5} (3 Day)		
Valdosta MSA						
131850003	Mason Elem.	Valdosta	Lowndes	PM _{2.5} (3 Day)	BAM PM _{2.5}	
Warner Robins MSA						
131530001	Robins Air Base	Warner Robins	Houston	PM _{2.5} (3 Day)	BAM PM _{2.5}	
Albany MSA						
130950007	Turner Elem.	Albany	Dougherty	PM _{2.5} (Daily)	BAM PM _{2.5}	
Gainesville MSA						
131390003	Fair St. Elementary	Gainesville	Hall	PM _{2.5} (3 Day)	BAM PM _{2.5}	
Athens-Clark County MSA						
130590002	College Station Rd.	Athens	Clarke	PM _{2.5} (3 Day)	TEOM PM _{2.5}	6 Day
Macon						
130210007	Allied Chemical	Macon	Bibb	2 PM _{2.5} (Daily, 12 Day)		6 Day
130210012	Forestry	Macon	Bibb	PM _{2.5} (3 Day)	TEOM PM _{2.5}	
Columbus Georgia- Alabama MSA						
132150001	Health Dept.	Columbus	Muscogee	PM _{2.5} (3 Day)		
132150008	Airport	Columbus	Muscogee	PM _{2.5} (6 Day)	TEOM PM _{2.5}	
132150011	Cusseta Elementary	Columbus	Muscogee	PM _{2.5} (3 Day)		6 Day
Savannah MSA						
130510017	Market St.	Savannah	Chatham	2 PM _{2.5} (3 Day, 12 Day)		
130510091	Mercer Middle	Savannah	Chatham	PM _{2.5} (3 Day)		
130511002	W. Lathrop & Augusta Ave.	Savannah	Chatham		TEOM PM _{2.5}	
Augusta Georgia-South Carolina MSA						
132450005	Med. College GA	Augusta	Richmond	2 PM _{2.5} (3 Day, 12 Day)		
132450091	Bungalow Rd.	Augusta	Richmond	PM _{2.5} (3 Day)	TEOM PM _{2.5}	6 Day
Atlanta MSA						
130630091	Georgia DOT	Forest Park	Clayton	PM _{2.5} (3 Day)		
130670003	National Guard	Kennesaw	Cobb	PM _{2.5} (Daily)		
130670004	Macland Aquatic Center	Powder Springs	Cobb	PM _{2.5} (3 Day)		
130770002	Univ. of West GA	Newnan	Coweta		TEOM PM _{2.5}	
130890002	South DeKalb	Decatur	DeKalb	2 PM _{2.5} (Daily, 12 Day)	BAM PM _{2.5}	3 Day
130892001	Police Dept.	Doraville	DeKalb	PM _{2.5} (Daily)		
131210032	E. Rivers School	Atlanta	Fulton	2 PM _{2.5} (Daily, Daily)		
131210039	Fire Station #8	Atlanta	Fulton	PM _{2.5} (3 Day)		
131210055	Confederate Ave.	Atlanta	Fulton		TEOM PM _{2.5}	
131350002	Gwinnett Tech	Lawrenceville	Gwinnett	PM _{2.5} (3 Day)	TEOM PM _{2.5}	
131510002	County Extension	McDonough	Henry		TEOM PM _{2.5}	
132230003	Yorkville	Yorkville	Paulding	PM _{2.5} (3 Day)	TEOM PM _{2.5}	
Chattanooga Tennessee-Georgia MSA						
132950002	Maple Street	Rossville	Walker	PM _{2.5} (3 Day)	BAM PM _{2.5}	6 Day
Not In An MSA						
130690002	General Coffee State Park	Douglas	Coffee			6 Day
133030001	Co. Health Dept.	Sandersville	Washington	PM _{2.5} (3 Day)		
133190001	Police Dept.	Gordon	Wilkinson	PM _{2.5} (3 Day)		

Table 2: PM_{2.5} Sampling Frequency

2.2 Carbon Monoxide (CO)

Carbon monoxide (CO) is a colorless and poisonous gas produced by incomplete burning of carbon-containing fuel. Most atmospheric CO is produced by incomplete combustion of fuels used for vehicles, space heating, industrial processes, and solid waste incineration.

Transportation accounts a large part of CO emissions. Boilers and other fuel burning heating systems are also significant sources.

Breathing carbon monoxide affects the oxygen-carrying capacity of the blood. Hemoglobin in the blood binds with CO more readily than with oxygen, starving the body of vital oxygen. Individuals with lung and heart diseases or anemia are particularly sensitive to CO health effects. Low concentrations affect mental function, vision, and alertness. High concentrations can cause fatigue, reduced work capacity and may adversely affect fetal development. Chronic exposure to CO at concentrations as low as 70 parts per million (ppm) (80 mg/m³) can cause cardiac damage. Other health effects associated with exposure to CO include central nervous system effects and pulmonary function difficulties. Ambient CO apparently does not adversely affect vegetation or materials.

Carbon monoxide (CO) is monitored using EPA-approved reference or equivalent methods. These analyzers are self-contained and capable of measuring ambient CO on a continuous, real-time basis using the non-dispersive infrared analysis and gas filter correlation techniques. CO is monitored using specialized analyzers based on the principle that CO absorbs infrared radiation. The sample is drawn through the sample bulkhead and the optical bench. Radiation from an infrared source is chopped and then passed through a gas filter alternating between CO and N₂. The radiation then passes through a narrow bandpass interference filter and enters the optical bench where absorption by the sample gas occurs. The infrared radiation then exits the optical bench and falls on an infrared detector. The N₂ side of the filter wheel produces a measure beam which can be absorbed by the CO in the cell. The chopped detector signal is modulated by the alternation between the two gas filters with amplitude related to the concentration of CO in the sample cell. Thus, the gas filter correlation system responds specifically to CO. The sampler is equipped with a microprocessor that enables digital measurement of CO, automatic compensation for changes in temperature and pressure, and internal diagnostics. These analyzers are subjected to weekly zero, precision, and span (ZPS) checks, quarterly multipoint calibrations, and are audited by EPD's Quality Assurance Unit on an annual basis.

2.3 Ozone (O₃)

Ozone (O₃) is a clear gas that forms in the troposphere (lower atmosphere) by chemical reactions involving hydrocarbons (or volatile organic compounds) and nitrogen oxides in the presence of sunlight and high temperatures. Even low concentrations of tropospheric ozone are harmful to people, animals, vegetation and materials.

Ozone is formed through independent processes in the upper atmosphere (stratosphere). Stratospheric ozone shields the earth from harmful effects of ultraviolet solar radiation. Stratospheric ozone can be damaged by the emission of chlorofluoro-hydrocarbons (CFCs) such as Freon. This report, and the operations of the Ambient Monitoring Program, is only concerned with tropospheric ozone.

Ozone is the major component of a complex mixture of compounds known as photochemical oxidants. Ozone is not usually emitted directly into the atmosphere, but is formed by a series of complex reactions involving hydrocarbons, nitrogen oxides, and strong sunlight. Ozone concentrations are higher during the daytime, when temperatures are moderate or hot, and during seasons when the sunlight is more intense.

Ozone is a pulmonary irritant, affecting the respiratory mucous membranes, as well as other lung tissues and respiratory functions. Ozone has been shown to impair normal function of the

lung causing shallow, rapid breathing and a decrease in pulmonary function. Other symptoms of exposure include chest tightness, coughing and wheezing. People with asthma, bronchitis, or emphysema probably will experience breathing difficulty when exposed to short-term concentrations above 0.076 ppm. Continued or repeated long-term exposure may result in permanent lung structure damage.

Ozone damages vegetation by injuring leaves. Ozone also accelerates material aging, cracking rubber, fading dyes and eroding paint.

Georgia's ozone analyzers continuously measure the concentration of ozone in ambient air using the ultraviolet (UV) photometric method and are EPA-approved for regulatory air monitoring programs. The degree to which the UV light is absorbed is directly related to the ozone concentration. The ambient air is drawn into the sample bulkhead and is split into two gas streams. One gas stream flows through an ozone scrubber to become the reference gas. The reference gas then flows to the reference solenoid valve. The sample gas flows directly to the sample solenoid valve. The solenoid valves alternate the reference and sample gas streams between the two cells every 10 seconds. When cell A contains reference gas, cell B contains sample gas and vice versa. The UV light intensities of each cell are measured by detectors A and B. When the solenoid valves switch the reference and sample gas streams to opposite cells, the light intensities are ignored for several seconds to allow the cells to be flushed. The sampler calculates the ozone concentration for each cell and outputs the average concentration to both the front panel display and the analog or digital output. Data gained from the continuous monitors is used to determine compliance with the NAAQS for ozone.

According to 40 CFR Part 58, the State of Georgia operates ozone monitors each year from March 1st through October 31st, with the exception of the NCore (National Core Monitoring Network) ozone monitor. The NCore ozone monitor, located at the South DeKalb site (13-089-0002), samples year round, also according to 40 CFR Part 58. During the monitoring season, analyzers are subjected to weekly ZPS checks and quarterly multipoint calibrations. On an annual basis, EPD's Quality Assurance Unit audits these samplers.

2.4 Sulfur Dioxide (SO₂)

Sulfur dioxide (SO₂) is a colorless, corrosive, harmful gas with a pungent odor. Sulfur oxides contribute to the formation of acid rain and the formation of particles that reduce visibility. The main sources of SO₂ are combustion of fossil fuels containing sulfur compounds and the manufacture of sulfuric acid. Other sources include refining of petroleum and smelting of ores that contain sulfur.

The most obvious health effect of sulfur dioxide is irritation and inflammation of body tissues brought in contact with the gas. Sulfur dioxide can increase the severity of existing respiratory diseases such as asthma, bronchitis, and emphysema. Sulfuric acid and fine particulate sulfates, which are formed from sulfur dioxide, also may cause significant health problems. Sulfur dioxide causes injury to many plants. A bleached appearance between the veins and margins on leaves indicates damage from SO₂ exposure. Commercially important plants sensitive to SO₂ include cotton, cucumber, alfalfa, sweet potatoes, tulips, apple trees, and several species of pine trees.

Sulfur dioxide is measured in the ambient air using EPA-approved equivalent method instruments as defined in 40 CFR Part 53, Appendix A. Georgia's sulfur dioxide network consists of continuous instruments using a pulsed ultraviolet (UV) fluorescence technique. This monitoring technique is based on measuring the emitted fluorescence of SO₂ produced by its

absorption of UV radiation. Pulsating UV light is focused through a narrow bandpass filter allowing only light wavelengths of 1,900 to 2,300 angstrom units (\AA) to pass into the fluorescence chamber. SO_2 absorbs light in this region without any quenching by air or most other molecules found in polluted air. The SO_2 molecules are excited by UV light and emit a characteristic decay radiation. A second filter allows only this decay radiation to reach a photomultiplier tube. Electronic signal processing transforms the light energy impinging on the photomultiplier tube into a voltage which is directly proportional to the concentration of SO_2 in the sample stream being analyzed. The sampler outputs the SO_2 concentration to the front panel display and analog or digital output. These analyzers are subjected to weekly ZPS checks, quarterly multipoint calibrations, and are audited by EPD's Quality Assurance Unit on an annual basis.

From January 2006 until October 2008, a variation of this instrument configured to monitor for total reduced sulfur (TRS), which monitors for other sulfur-bearing compounds such as hydrogen sulfide, collected samples in Brunswick.

2.5 Nitrogen Oxides (NO)

Several gaseous oxides of nitrogen are normally found in the atmosphere, including nitrous oxide (N_2O), nitric oxide (NO) and nitrogen dioxide (NO_2). Nitrous oxide is a stable gas with anesthetic characteristics and typical ambient concentrations well below the threshold concentration for a biological effect. Nitric oxide is a colorless gas with ambient concentrations generally low enough to have no significant biological effect. Nitrogen dioxide is reddish-brown but is not usually visible at typical ambient concentrations.

The most significant nitrogen oxide emissions result from the burning of fossil fuels such as coal, oil, and gasoline, due to the oxidation of atmospheric nitrogen and nitrogen compounds in the fuel. The primary combustion product is NO, which reacts in the atmosphere to form NO_2 .

At high concentrations, nitrogen dioxide has significant health effects as a pulmonary irritant, especially upon asthmatics and children. At concentrations more typical in Georgia, though, NO_2 is primarily of concern because of its role in the formation of ground-level ozone. In warm, sunny conditions, it reacts with hydrocarbons in the atmosphere to form ozone. Ironically, the same reaction can run in reverse in the absence of sunlight, though, meaning that urban areas with strong NO emissions and daytime ozone problems will often have virtually zero ozone present at night. Yet the next morning, the store of unreacted NO_2 that builds up in these areas overnight can cause rapid ozone formation once the sun rises. Therefore, urban areas often have summertime ozone concentrations with dramatic afternoon peaks contrasting against periods overnight where no ozone is present. Areas without strong local NO sources, like rural areas and national parks, tend to have ozone present around the clock, but in moderate concentrations that are steadier throughout a twenty-four hour period.

Some types of vegetation are very sensitive to NO_2 , including oats, alfalfa, tobacco, peas, and carrots. Chronic exposure causes chlorosis (yellowing) and acute exposure usually causes irregularly shaped lesions on the leaves.

Nitric oxide and nitrogen dioxide do not directly damage materials. However, NO_2 can react with moisture in the air to produce nitric acid, which corrodes metal surfaces and contributes to acid rain. High concentrations of NO_2 may reduce visibility.

Oxides of nitrogen, particularly NO_2 , are monitored using specialized analyzers that continuously measure the concentration of oxides of nitrogen in ambient air using the ozone-

phase chemiluminescent method. Nitric oxide (NO) and ozone (O₃) react to produce a characteristic luminescence with intensity linearly proportional to the NO concentration. Infrared light emission results when electronically excited NO₂ molecules decay to lower energy states. NO₂ must first be converted to NO before it can be measured using the chemiluminescent reaction. NO₂ is converted to NO by a molybdenum NO₂-to-NO converter heated to about 325°C. The ambient air sample is drawn into the sample bulkhead. The sample flows through a particulate filter, a capillary, then to the mode solenoid valve. The solenoid valve routes the sample either straight to the reaction chamber (NO mode) or through the NO₂-to-NO converter and then to the reaction chamber (NO_x mode). Dry air enters the dry air bulkhead through a flow sensor, and then through a silent discharge ozonator. The ozonator generates the necessary ozone concentration needed for the chemiluminescent reaction. The ozone reacts with the NO in the ambient air to produce electronically excited NO₂ molecules. A photomultiplier tube housed in a thermoelectric cooler detects the NO₂ luminescence. The NO and NO₂ concentrations calculated in the NO and NO_x modes are stored in memory, and the difference between the concentrations are used to calculate the NO₂ concentration. The sampler outputs NO, NO₂, and NO_x concentrations on the front panel display and the analog or digital outputs. There are two major instrument designs. While they are closely related, they do not monitor the same species. NO_x analyzers measure NO, NO₂, and NO_x. NO_y analyzers measure NO and NO_y, but cannot measure NO₂. The NO_y analyzers are also specialized for measuring trace-level concentrations; as such, they cannot measure higher concentrations. Because of these tradeoffs, it is necessary to operate a network of both instrument types to get a complete picture of local conditions.

Of the oxides of nitrogen, only NO₂ is regulated under the NAAQS. Therefore, only the NO_x type analyzers produce data directly relevant to the standard. These analyzers are subjected to weekly ZPS checks, quarterly multipoint calibrations, and are audited by EPD's Quality Assurance Unit on an annual basis.

2.6 Lead (Pb)

Lead (Pb) is a toxic heavy metal element occurring in the atmosphere as a constituent of small particles. The major source of atmospheric lead used to be the combustion of gasoline containing the additive tetraethyl lead as an antiknock agent. The use as a gasoline additive has been banned in all applications except aviation gasoline. This ban has dramatically decreased concentrations of lead in the ambient air. Significant remaining sources include coal combustion and sandblasting of highway structures and water tanks. Lead is also used in some batteries, paints, insecticides, and newspaper inks.

Lead persists and accumulates in the environment and the human body. It may be inhaled, ingested, and eventually absorbed into the bloodstream and distributed to all body tissues. Exposure to low concentrations interferes with blood production and specific enzyme systems. It is believed to cause kidney and nerve cell damage, and severe lead poisoning is known to cause brain damage in children.

Since lead is a particulate, the measurement for ambient air lead concentrations is performed using a manual method, unlike measurements for the gaseous pollutants discussed earlier (ozone, SO₂, NO₂ and CO). Samples are collected on 8" x 10" pre-weighed fiberglass filters with a high-volume total suspended (TSP) sampler for 24 hours, collecting particles with diameters of 100 microns or less. High volumes of ambient air in the flow range of 40-60 cubic feet per minute are sampled at a constant rate during the sampling period. This produces a uniform distribution of particles deposited on the sample filter downstream of the sampler inlet. Samples collected with the TSP high volume sampler can be used to determine the average ambient TSP concentration over a sampling period followed by subsequent analysis to determine the

identity and quantity of inorganic metals present in the TSP. The filter sample is shipped to a laboratory for analysis using inductively coupled plasma mass spectroscopy (commonly known as ICP-MS). Data gained from the criteria lead samplers is used to determine compliance with the National Ambient Air Quality Standards for lead. On a semi-annual basis, EPD's Quality Assurance Unit audits these samplers.

In addition to the criteria lead network sites, lead is monitored as a trace metal in the Georgia Air Toxics Monitoring Network, the National Air Toxics Trends Station (NATTS), and with the PM_{2.5} speciation samplers. With the Air Toxics Network, samples are obtained with a High-Volume sampler collecting total suspended particles in the ambient air. The NATTS lead is sampled using a PM₁₀ sampler, and particles are sampled up to 10 microns in size. With the PM_{2.5} speciation sampler, samples are collected that include particles up to 2.5 microns in size. All three of these additional sampling techniques also collect 24-hour samples on pre-weighed filters, have samples sent to a laboratory for analysis, and are analyzed with ICP-MS. On an annual basis, EPD's Quality Assurance Unit audits these lead samplers.

2.7 Acid Rain

Acid ions are produced when sulfur dioxide and nitrogen dioxide reach equilibrium with water to form sulfuric acid and nitric acid. Acid rain is produced when nitrate and sulfate ions from automobile and industrial sources are released into the atmosphere, undergo a reaction with moisture in the air, and are deposited as acid precipitation.

Many agricultural crops are sensitive to acid rain. Soil is subject to mineral loss from acid rain exposure, and vegetation may also suffer root damage. Acid fogs and mists, typical in the mountains can expose trees and plants to even higher acid concentrations and cause direct damage to foliage. Lakes, rivers, and streams that are too acidic can impede fish and plant growth. In extreme cases, acid rain has caused surface waters to become sterile, and has destroyed manmade surfaces such as painted surfaces on vehicles.

From 1985 to 2008, GA EPD collected acid rain data at four locations around the state (McDuffie County, Dawson County, Chattooga County, and Rabun County). These samples were analyzed for pH, conductivity, and gravimetric. For more information regarding the acid rain samplers refer to previous Ambient Air Monitoring Plans.

2.8 Volatile Organic Compounds (VOCs)

All Volatile Organic Compounds (VOCs) contain carbon, the basic chemical element found in living beings. Carbon-containing chemicals are called organic. Volatile chemicals escape into the air easily. Many VOCs are also hazardous air pollutants, which can cause very serious illnesses. VOCs are released from burning fuel (gasoline, oil, coal, natural gas, etc.), solvents, paints, glues, and other products used at work or at home. Cars are an important source of VOCs. VOCs include chemicals such as benzene, toluene, methylene chloride and methyl chloroform. In addition to ozone (smog) effects, many VOCs can cause serious health problems such as cancer and other effects directly. Some VOCs such as ethylene may also harm plants.

VOCs are collected and analyzed with two different methods. One method is with the Air Toxics Network in which the VOCs are collected with a canister. A SUMMA® polished canister is evacuated to a near-perfect vacuum and attached to a sampler with a pump controlled by a timer. The canister is filled to greater than 10 psig. The samples are collected for a 24-hour period, every 6 or 12 days depending on the site. The Air Toxics VOCs canister is analyzed using a gas chromatograph with mass spectroscopy detection (GC/MS), using method TO14/15, at the EPD laboratory. The second method of VOCs collection and analysis is with the

PAMS network in which VOCs are collected and analyzed on-site with a gas chromatograph/flare ionization detector (GC/FID). During June, July, and August, the PAMS VOCs samples are collected continuously on an hourly basis. Also throughout the year with the PAMS network, a 24-hour VOCs sample is collected every 6 days and analyzed with the GC/FID method at the EPD laboratory. The VOC samplers in the PAMS network are subjected to quarterly checks and audited every six months. The Air Toxics VOCs samplers are subjected to quarterly checks and are audited by EPD's Quality Assurance Unit on an annual basis.

2.9 Carbonyls

Carbonyl compounds define a large group of substances, which include acetaldehyde and formaldehyde. These compounds can act as precursors to ozone formation. They can be formed from the breakdown of certain organic pollutants in outdoor air, from forest fires and wildfires, as well as from vehicle exhaust.

The carbonyls are sampled with two types of methods. One type is an absorbent cartridge filled with dinitrophenylhydrazine (DNPH)-coated silica that is attached to a pump to allow approximately 180 liters of air to be sampled. The cartridge is then analyzed using high performance liquid chromatography (HPLC). For the PAMS network, during June, July, and August, four integrated 3-hour carbonyls samples are taken every third day. A 24-hour integrated carbonyls sample is also taken every 6 days throughout the year at the South DeKalb NATTS site. The other method used for collecting carbonyls is the canister sampler that is used for sampling volatile organic compounds. Acrolein is a carbonyl compound that is collected using this canister method, described above, and analyzed with the GC/MS method. The PAMS and NATTS carbonyls samplers are subjected to quarterly checks and audited by EPD's Quality Assurance department every six months. Also at select Air Toxics sites, carbonyls samples are collected on a DNPH cartridge for a 24-hour period, every 12 days. The Air Toxic carbonyls samplers are subjected to quarterly checks and audited by EPD's Quality Assurance Unit annually.

2.10 Semi-Volatile Organic Compounds

Polycyclic aromatic hydrocarbons (PAHs), also called semi-volatile organic compounds are chemical compounds that consist of fused, six-carbon aromatic rings. They are formed by incomplete combustion of carbon-containing fuels such as wood, coal, diesel fuels, fat or tobacco.

The PUF (polyurethane foam) sampler used for sampling for semi-volatile organic compounds is a timed sampler. The sampler is calibrated to collect 198 to 242 liters (L) of air per minute. A multi-layer cartridge is prepared which collects both the particulate fraction and the volatile fraction of this group of compounds. The plug, filter and absorbent are extracted at a remote laboratory and analyzed using gas chromatography.

2.11 Aethalometer

The aethalometer is a continuous sampler used for sampling black carbon. Black carbon is particulate aerosol formed from the incomplete combustion of fossil fuels, biomass, and biofuels. Diesel engines are a large contributor of black carbon. With the sampling for black carbon, attempts can be made to determine the anthropogenic portion of carbon sources in ambient air pollution. Operating at 60 watts/110V AC, the aethalometer uses quartz tape to perform an optical analysis to determine the concentration of carbon particles passing through an air stream. The analysis is conducted using spectrophotometry, measuring the wavelength of

the light energy absorbed and plotting the results on the site computer. These parameters are subjected to quarterly checks and audited by EPD's Quality Assurance Unit every six months.

2.12 Hexavalent Chromium (Cr⁺⁶)

Hexavalent chromium (chromium in its +6 oxidation state) in the environment is almost always related to human activity. The presence of chromium compounds is common at hazardous waste sites. From locations such as these, exposure of populations residing or working nearby can occur through exposure to air containing particulates or mists of chromium compounds. These particles can also find their way into drinking water if soluble forms of chromium leach into groundwater. Human exposure can also occur through skin contact with soil at hazardous waste sites.

The hexavalent chromium sampler used for sampling Cr⁺⁶ is a timed sampler. Samples are collected at a flow rate of 15 liters of air per minute using a 37 mm diameter substrate of bicarbonate impregnated cellulose. The filter is controlled by an auto cover remains closed until sampling and fully exposes the filter when the sampler is running. The sample is analyzed using the modified California Air Resources Board (CARB) SOP 039. The filters are extracted in deionized water via sonication, which is analyzed by ion chromatography. Cr⁺⁶ is separated through a column, forming a complex with diphenylcarbohydrazide. Dianex Peaknet chromatography software is used to determine the peak analysis. CR⁺⁶ samplers are subjected to quarterly checks and audited by EPD's Quality Assurance Unit every six months.

2.13 Meteorological Parameters

GA EPD has seventeen meteorological stations across the state. Surface meteorological measurements including wind speed and wind direction are measured at every location. In addition, as part of the Photochemical Assessment Monitoring Sites (PAMS) around the metropolitan Atlanta area, a complete suite of meteorological instrumentation is used to characterize meteorological conditions. All PAMS stations measure hourly-averaged scalar wind speed and vector-averaged wind direction at the 10-meter level, and hourly-averaged surface temperature, relative humidity and barometric pressure at the 2-meter level. Several sites include instruments to record hourly-averaged precipitation, global solar radiation, and total ultraviolet radiation. In addition, the standard deviation of the wind direction is computed at the NCore site (South DeKalb). These parameters are audited by the EPD's Quality Assurance Unit on an annual basis. For upper air measurement, GA EPD uses a SODAR PA5-LR system in conjunction with balloon rawinsonde data collected from NWS at Peachtree City. This upper air system proves especially useful for monitoring low-level winds during smoke transport events.

3.0 Description of Networks

3.1 NCore

The National Core (NCore) Multipollutant Monitoring network is a network measuring several pollutants including particles, gases, and meteorology. Site selection was due July 1, 2009 and the site was fully operational by January 1, 2011. When complete, the network will consist of approximately 75 stations across the United States. The NCore site for the State of Georgia is the South DeKalb site (site ID 13-089-0002) in DeKalb County. Refer to Appendix C, Ambient Air Monitoring Plan for National Core (NCore) Multipollutant Monitoring Station for full description.

3.2 Sulfur Dioxide

On June 2, 2010, EPA strengthened the sulfur dioxide (SO₂) standard to include a 1-hour primary standard of 75 ppb, and new SO₂ ambient monitoring requirements for the 1-hour standard (Federal Register: Vol. 75, No. 119, 06/22/10). The rule was written to use a hybrid approach combining air quality modeling and monitoring. The rule includes refined dispersion modeling to determine if areas with sources that have the potential to cause or contribute to a violation of the new SO₂ standard can comply with the standard. The final monitoring regulations require monitors to be placed in Core Based Statistical Areas (CBSAs) based on a population weighted emissions index (PWEI) for the area. The final rule requires three monitors in CBSAs with index values of 1,000,000 or more; two monitors in CBSAs with index values less than 1,000,000 but greater than 100,000; and one monitor in CBSAs with index values greater than 5,000. According to this monitoring rule, GA EPD will need six monitors to accommodate the new SO₂ rule. Three monitors should be in place in the Atlanta-Sandy Springs-Marietta CBSA, one in the Augusta-Richmond County, GA-SC CBSA, one in the Macon CBSA, and one in the Savannah CBSA (<http://www.epa.gov/airquality/sulfurdioxide/pdfs/20100602mapmonitor.pdf>). According to 40 CFR 58.10 (a) (6), the Annual Plan submitted by July 1, 2011 was to include a plan for establishing SO₂ monitoring sites to meet the new monitoring requirements of Appendix D. These sites should be operational by January 1, 2013. In addition, the SO₂ 5-minute maximum for every hour was to start being reported as of August 23, 2010.

At the time of the finalized rule (June 2, 2010), the SO₂ samplers for the State of Georgia included Rome-Coosa Elementary (13-115-0003), Brunswick-Risley Middle School (13-127-0006), Macon-Forestry (13-021-0012), Columbus-Airport (13-215-0008), Savannah-East President's Street (13-051-0021), Savannah-L&A (13-051-1002), and the Confederate Avenue (13-121-0055) sites. As of August 1, 2010, GA EPD began collecting 5-minute maximum data with these SO₂ samplers.

The South DeKalb site (13-089-0002) began sampling trace level sulfur dioxide as of October 1, 2010. This sampler also began collecting SO₂ 5-minute maximum data on October 1, 2010. This is to accommodate the NCore requirements for this site.

According to this SO₂ rule revision, the State of Georgia is required to have three SO₂ monitors in the Atlanta-Sandy Springs-Marietta MSA, one SO₂ monitor in the Augusta-Richmond County, GA-SC MSA, one in the Macon MSA, and one SO₂ monitor in the Savannah MSA. Currently, GA EPD has one monitor in the Rome MSA, one in the Brunswick MSA, one in the Macon MSA, one in the Columbus MSA, two in the Savannah MSA, and two in the Atlanta-Sandy Springs-Marietta MSA. To accommodate the rule change, GA EPD will start sampling at two additional locations. One sampler will be added to the Atlanta-Sandy Springs-Marietta MSA at the Newnan site (13-077-0002). One sampler will be added to the Augusta-Richmond County, GA-SC MSA at the Augusta-Bungalow Road site (13-245-0091). GA EPD will continue monitoring at the Confederate Avenue site (13-121-0055), the Macon-Forestry site (13-021-0012), and the South DeKalb site (13-089-0002). In addition, GA EPD will continue sampling at the Rome-Coosa Elementary site (13-115-0003) and both monitors in the Savannah MSA (Savannah-E. President's Street, 13-051-0021 and Savannah-L&A, 13-051-1002) since these three monitors have concentrations close to or above 85% of the new SO₂ standard. GA EPD will close the SO₂ samplers in the Columbus MSA (13-215-0008) and the Brunswick MSA (13-127-0006) by January 1, 2013 since these monitors are not required and the design values are well below the standard.

3.3 Nitrogen Dioxide

On January 22, 2010, EPA revised the nitrogen dioxide (NO₂) National Ambient Air Quality Standard and monitoring requirements. According to 40 CFR 58.10 (a) (5), the Annual Plan submitted by July 1, 2012 should include a plan for establishing NO₂ monitoring sites to meet the new monitoring requirements of Appendix D. These sites should be operational by January 1, 2013 (Federal Register, Vol. 75, No. 26, 02/09/10).

According to these requirements, GA EPD would need to have two near-road NO₂ monitors in the Atlanta-Sandy Springs-Marietta MSA and one near-road NO₂ monitor in the Augusta-Richmond County, GA-SC MSA. These monitors are to be set up in CBSAs with 500,000 or more population (additional monitor with CBSA population above 2,500,000), average traffic counts of 250,000 vehicles or greater, and represent a microscale (no more than 50 meters from the edge of the nearest traffic lane).

In addition, with these requirements, GA EPD would need one area-wide NO₂ monitor in the Atlanta-Sandy Springs-Marietta MSA. These monitors should be placed in CBSA population of 1,000,000 or more, and are expected to have the highest concentrations representing a neighborhood or larger spatial scale. Currently GA EPD has three NO₂ monitors in the Atlanta-Sandy Springs-Marietta MSA, which has a population above 1,000,000. These monitors are located at the three PAMS sites: South DeKalb (13-089-0002), Yorkville (13-223-0003), and Conyers (13-247-0001). Of the three NO₂ monitors currently collecting data, the South DeKalb site has historically collected the highest concentrations, is located within an urban area, represents the urban spatial scale, and operates year round. Therefore, the South DeKalb NO₂ monitor satisfies the area-wide requirement.

For the Atlanta-Sandy Springs-Marietta MSA near-road NO₂ monitoring requirement, GA EPD proposes two possible areas. One proposal is to use the Georgia Tech area through downtown Atlanta in which Interstate 75 and Interstate 85 combine. GA EPD previously collected traditionally sited NO₂ data in the Georgia Tech area along this corridor from 1982 until 2009. When the Georgia Tech traditionally sited NO₂ monitor collected data, it showed the highest concentrations compared to the other traditionally sited NO₂ monitors in Georgia. Therefore, the Georgia Tech area could show the maximum hourly concentrations of near-road NO₂ in the Atlanta-Sandy Springs-Marietta MSA. In order to determine the best locations for these monitors, GA EPD has followed the guidelines listed in EPA's Near-Road NO₂ Monitoring Technical Assistance Document (TAD). GA EPD has evaluated the annual average daily traffic counts (AADT), fleet mix data, congestion patterns by level of service (LOS) and AADT by lane, population demographics by census blocks and census tracts including sensitive populations, local emission sources, physical characteristics (roadway design, measurements from site to roadside structures, surrounding land use with nearby emission sources, terrain including topographical map, meteorology, wind patterns, precipitation and temperature averages), size of site to allow for multi-pollutant monitoring, current and future construction projects, safety, and access to site. GA EPD has had discussions with Georgia Tech as to proper placement of the site. According to the 2010 Annual Average Daily Traffic (AADT) count, this area along I-75/I-85 in Fulton County has an estimated AADT of 342,830 (traffic counter 5482). To differentiate the second near-road monitor in the Atlanta-Sandy Springs-Marietta MSA, GA EPD proposes an area along I-285 that has a different fleet mix. The other proposed near-road NO₂ monitoring site is GA EPD's DMRC (13-089-0003) site. This site is a currently established lead monitoring site and is located adjacent to I-285 in DeKalb County. This area of I-285 has a 2010 estimated AADT of 145,890 (traffic counter 3343 from <http://www.dot.ga.gov/statistics/stars/Pages/DeKalbTraffic.aspx>). With the fleet mix taken into account for this area, the estimated Fleet Equivalent AADT is 316,581. The FE AADT factors in a truck contribution of 13% for the AADT from nearby traffic counter 3341. The equation used is:

FE AADT= (AADT - HD counts) + (HD counts * 10), taken from the TAD. The HD represents heavy duty vehicles, and the factor of 10 is the heavy duty to light duty vehicle NO_x emission ratio. The FE AADT is higher than the highest AADT in the Atlanta metropolitan area. It is anticipated that the Georgia Tech near road NO₂ monitor will begin operation by January 1, 2013. The final documentation in support of the Georgia Tech near-road NO₂ monitor will be completed as the project progresses. The second near-road NO₂ site to be established in the Atlanta-Sandy Springs-Marietta MSA will be delayed until 2014, or as the finalized new rule allows.

For the Augusta-Richmond County, GA-SC MSA, there are no AADT counts reaching 250,000 vehicles. According to the 2010 AADT estimates, the highest traffic count (traffic counter 0223) is approximately 81,020 vehicles near the intersection of I-20 and I-520. However, the population for the Augusta-Richmond County, GA-SC MSA is above 500,000. Therefore, a near-road NO₂ monitor will be placed in this MSA. GA EPD has analyzed the AADT estimates and has been evaluating suitable locations to meet the near-road NO₂ monitoring requirement in the Augusta-Richmond County, GA-SC MSA. However, this near-road NO₂ monitor has been put on hold to due to lack of funding.

3.4 Carbon Monoxide

On August 12, 2011, EPA finalized changes to the monitoring requirements for the carbon monoxide (CO) monitoring network. According to these changes, EPA is requiring that a CO monitor be collocated with an NO₂ near-road monitor in urban areas with populations of one million or more. EPA specified that in areas with 2.5 million or more, the CO monitors should be operational by January 1, 2015 (Federal Register: Vol. 76, No. 169, Page 54293, 08/31/11). For the State of Georgia, this monitoring requirement would be one CO monitor located in the Atlanta-Sandy Springs-Marietta MSA, collocated with the NO₂ near-road monitor.

Currently, GA EPD has CO monitors at the South DeKalb (13-089-0002), Roswell Road (13-121-0099), and Yorkville (13-223-0003) sites. The Roswell Road CO monitor is the sole monitor at this location. GA EPD proposes to continue running the Roswell Road CO monitor until the NO₂ near-road site in the Georgia Tech area is ready to be established. At that time, the trailer and CO monitor from the Roswell Road site would be moved to the new NO₂ near-road site in the Georgia Tech area and begin operation in schedule with the NO₂ monitor.

3.5 Lead

Georgia EPD's ambient lead monitoring network currently consists of monitors located at five sites. Two of these lead monitoring sites are located in the Atlanta-Sandy Springs-Marietta Metropolitan Statistical Area. One monitor is at the DMRC site in DeKalb County (13-089-0003) and consists of two collocated monitors. The other lead monitor is located at the Cartersville site, in Bartow County (13-015-0003). Three of these lead monitoring sites are in the Columbus Georgia-Alabama Metropolitan Statistical Area in Muscogee County. There is one monitor located at the Cusseta Elementary School (13-215-0011), one at Columbus-UPS (13-215-0009), and one at Columbus-Fort Benning (13-215-0010).

On December 14, 2010, EPA revised the requirements for measuring lead in the ambient air. The emission threshold for placing lead monitors near industrial facilities was lowered from 1.0 tons per year (tpy) to 0.5 tpy. In addition, EPA is requiring that lead monitors be placed at the NCore sites. The new lead monitors were required to be operational by December 27, 2011 [40CFR58, Docket No. EPA-HQ-OAR-2006-0735, 12/14/10].

GA EPD meets the requirement of monitoring lead at an NCore site. The NCore site for the State of Georgia is the South DeKalb site (13-089-0002), and the criteria lead monitor is located at the nearby established DMRC site (13-089-0003).

For the monitors to be placed near industrial facilities that emit greater than 0.5 tpy, EPA had compiled a list of lead sources from the 2008 National Emissions Inventory and 2009 Toxic Release Inventory. GA EPD reviewed EPA's list of lead sources, and submitted updated lead emissions and modeling data to EPA. EPA concurred with the updated lead data, and granted a waiver for a second source-oriented monitoring in the Cartersville area. The waiver will need to be reviewed and submitted every 5 years. In addition, per EPA's recommendation, GA EPD has reopened two additional monitors surrounding an industrial facility in the Columbus GA-AL MSA to help determine proper siting to monitor this source. These samplers had been inactive since March 31, 2004. Columbus-Fort Benning (13-215-0010) began collecting samples on December 27, 2011. Columbus-UPS (13-215-0009) began collecting samples on February 3, 2012. For a full description of EPA's list of lead sources in Georgia and GA EPD's response, refer to Appendix D: Ambient Air Monitoring Plan for Lead Network Requirements in the 2011 Ambient Air Monitoring Plan.

In addition, once proper siting is determined for the Columbus GA-AL MSA criteria lead monitor, and if this site collects the highest ambient lead concentration for the state, GA EPD plans to collocate this lead monitor.

3.6 PM_{2.5} Speciation Trends Network (STN)

With the monitoring of ambient levels of PM_{2.5}, EPA wanted to expand the sampling to characterize the make-up of the PM_{2.5} sample. With this information, air quality modeling can be analyzed to help implement the NAAQS standards; health studies can be interpreted with the constituents of the sample, as well as understanding the make-up of regional haze. According to EPA, there are to be 54 Speciation Trends sites across the United States. One of these samplers is located in the state of Georgia, at the South DeKalb site, with site ID 13-089-0002. This sampler began monitoring on October 1, 2000, and samples every three days. There are seven more PM_{2.5} speciation monitors in the state of Georgia, located in Rome (started 3/1/02), Athens (started 3/1/02), Macon (started 3/1/02), Columbus (started 5/1/02), Augusta (started 3/2/02), Rossville (started 3/23/05), and Douglas (started 3/1/02). These are in place to provide supplemental speciation data in the overall chemical speciation network, and take samples every 6 days. All of the PM_{2.5} speciation samplers monitor for 53 species. The speciation samplers are audited quarterly by the Quality Assurance Unit.

3.7 Photochemical Assessment Monitoring Stations (PAMS)

Ozone is the most prevalent photochemical oxidant and an important contributor to smog. The understanding of the chemical processes in ozone formation and the specific understanding of the atmospheric mixture in various nonattainment areas nationwide was considered essential by EPA for solving the ozone nonattainment problems and developing a suitable strategy for solving those problems. As such, the 1990 Amendments to the Clean Air Act included additional requirements for monitoring of ozone precursors in areas declared in serious, severe, or extreme nonattainment of the ambient ozone standard. In February 1993, due in part to the Clean Air Act Amendments of 1990, the Photochemical Assessment Monitoring Stations (PAMS) network was created as a method for obtaining more comprehensive ozone data. Along with ozone, the PAMS network monitors for oxides of nitrogen (NO_x), reactive oxides of nitrogen (NO_y), carbon monoxide (CO), volatile organic compounds (VOCs), selected carbonyl compounds, and meteorological parameters. Stated in Title 40, Part 58 of the Code of Federal Regulations (40 CFR Part 58), the increased monitoring of ozone and its precursor

concentrations allows for the characterization of precursor emissions within the area, transport of ozone and its precursors, and the photochemical processes leading to nonattainment. By expanding on the study of ozone formation, PAMS monitoring sites better serve as a means to study trends and spatial and diurnal variability.

On November 6, 1991, the Atlanta metropolitan area was classified as serious nonattainment with the 1-hour ozone standard (56FR56694). By 2003, the Atlanta metropolitan area was labeled in severe nonattainment of the 1-hour ozone standard (68FR55469) effective January 1, 2004, but by June 15, 2005, was listed as maintenance/attainment (70FR34660). With the 8-hour ozone standard, the Atlanta metropolitan area was classified as marginal nonattainment effective June 15, 2004 (69FR23857) and then moderate nonattainment effective April 7, 2008 (73FR12013).

The GA PAMS network consists of three sites; Yorkville (13-223-0003), South DeKalb (13-089-0002), and Conyers (13-247-0001). Yorkville is a Type 1 site. This site characterizes the upwind background, transported ozone, and precursor concentrations entering the Atlanta Metropolitan area. The site is located in the predominant morning upwind direction approximately 40 miles from the Atlanta urban fringe area in Paulding County, and should not be influenced by local VOC and NO emissions. The site provides urban scale measurements. Data from the Yorkville site is used for the future development and evaluation of control strategies, identification of incoming pollutants, corroboration of NO_x and VOC emission inventories, establishment of boundary conditions for future photochemical grid modeling and mid-course control strategy changes, development of incoming pollutant trends, and determination of attainment with NAAQS for O₃, PM_{2.5}, CO, and NO₂. South DeKalb is a Type 2 site. This site monitors the magnitude and type of precursor emissions and is located immediately downwind of the area of maximum precursor emissions receiving the predominant morning downwind wind. This site is located in DeKalb County in order to provide neighborhood scale measurements in the area that the precursors have the greatest impact. The data measurements generated at South DeKalb are used principally for development and evaluation of imminent and future control strategies, corroboration of NO_x and VOC emission inventories, augmentation of RFP tracking, verification of photochemical grid model performance, characterization of ozone and toxics air pollutant exposures, development of pollutant trends particularly toxic air pollutants and annual ambient speciated VOC trends to compare with trends in annual VOC emission estimates, and determination of attainment with NAAQS for O₃, PM_{2.5}, CO, and NO₂. Conyers acts as the Type 3 site. This site monitors the maximum ozone concentrations occurring downwind from the area of maximum precursor emissions, in Rockdale County. The site is an urban scale location based on the afternoon winds occurring between 1:00 PM and 4:00 PM, when titration of the precursors has occurred and the ozone is at its highest concentration. The data measurements are used in determination of attainment with the NAAQS for O₃ and NO₂, evaluation of future photochemical grid modeling applications, future development and evaluation of control strategies, development of pollutant trends, and characterization of ozone pollutant exposures.

The PAMS VOCs are collected and analyzed with a Gas Chromatograph/Flame Ionization Detector (GC/FID). During June, July, and August, an hourly VOCs sample is collected. Throughout the year, a 24-hour VOCs sample is collected every 6 days. The PAMS carbonyls samples are analyzed by drawing approximately 180 liters of air through an absorbent cartridge filled with dinitrophenylhydrazine (DNPH)-coated silica. The cartridge is then analyzed using High Performance Liquid Chromatography (HPLC). During June, July, and August, four integrated 3-hour carbonyls samples are taken every third day. A 24-hour integrated carbonyls sample is also taken every 6 days throughout the year. The VOCs sampler and carbonyls samplers in the PAMS network are audited every six months by the Quality Assurance Unit. The Quality Assurance Unit audits the PAMS meteorological equipment on an annual basis.

3.8 Air Toxics

In addition to its required monitoring duties, Georgia EPD measures more compounds in ambient air than are required by the Federal Clean Air Act. In 1993 the EPD began to monitor a number of compounds that, while thought to carry some health risk, have no established ambient air standard. A reassessment of the toxic monitoring program occurred, and in 1996 the EPD embarked on an ambitious project of establishing a statewide hazardous air pollutant-monitoring network. The network was not designed to monitor any one particular industry, but to provide information concerning trend, seasonal variation, and rural versus urban ambient concentration of air toxics. To evaluate the rural air quality, two background sites were proposed: one in North Georgia and one in South Georgia. The majority of the other sites were located in areas with documented emissions to the atmosphere of Hazardous Air Pollutants (HAPs) exceeding one million (1,000,000) pounds per year as indicated by the 1991 Toxic Release Inventory. By 2003 the Air Toxics Network consisted of fifteen sites statewide (including the NATTS site discussed below). Due to budget constraints and lack of available personnel, at the end of 2008, the Air Toxics Network was reduced to six sites (including the NATTS site discussed below).

Toxic air pollutants, also known as Hazardous Air Pollutants, are those pollutants that are known or suspected to cause cancer or other serious health effects, such as reproductive effects or birth defects, or adverse environmental effects. Air toxic compounds are released from many different sources, including mobile sources (such as vehicles), stationary industrial sources, small area sources, indoor sources (such as cleaning materials), and other environmental sources (such as wildfires). The lifetime, transportation, and make-up of these pollutants are affected by weather (rain and wind) and landscape (mountains and valleys). They can be transported far away from the original source, or be caught in rain and brought down to waterways or land.

Examples of toxic air pollutants include benzene, which is found in gasoline; perchlorethylene, which is emitted from some dry cleaning facilities; and methylene chloride, which is used as a solvent and paint stripper by a number of industries. Examples of other listed air toxics include dioxin, asbestos, toluene, and metals such as cadmium, mercury, chromium, and lead compounds.

People exposed to toxic air pollutants at sufficient concentrations and durations may have an increased chance of getting cancer or experiencing other serious health effects. These health effects can include damage to the immune system, as well as neurological, reproductive (e.g., reduced fertility), developmental, respiratory, and other health problems. These effects can vary depending on how often one is exposed, how long one is exposed, the person's health that is exposed, and the toxicity of the compound. Some of the substances tend to have only one critical effect, while others may have several. These air pollutants also affect the environment. Wildlife experiences symptoms similar to those in humans. Many air pollutants can also be absorbed into waterways and have toxic effects on aquatic wildlife. In addition to exposure from breathing air toxics, some toxic air pollutants such as mercury can deposit onto soils or surface waters, where plants take them up, are ingested by animals, and are eventually magnified up through the food chain. Through this process, known as bioaccumulation, larger animals build up concentrations of these pollutants in their tissues that may be thousands of times higher than that found in the most polluted water or soil. Like humans, animals may experience health problems if exposed to sufficient quantities of air toxics over time. Humans who eat animals that have accumulated large concentrations of these pollutants are at the very top of this bioaccumulative food chain and as such are at particular risk for experiencing health effects.

The Air Toxics equipment samples for metals, semi-volatile organic compounds, volatile organic compounds, and three sites have carbonyls samplers. The samplers run once every twelve days following a pre-established schedule that corresponds to a nationwide sampling schedule. On the twelfth day the sampler runs midnight to midnight and takes a 24-hour composite sample.

The High-Volume sampler used for sampling metals is a timed sampler. The sampler is calibrated to collect 1000 to 2000 liters of air per minute. Particulate material is trapped on an 8.5" x 11" quartz fiber filter. The particulates include dust, pollen, diesel fuel by-products, particulate metal, etc. The filters are pre-weighed at a remote laboratory prior to use and weighed again after sampling. The filters are subjected to a chemical digestion process and are analyzed on an inductively coupled plasma mass spectrometer (ICP/MS).

The PUF (polyurethane foam) sampler used for sampling for semi-volatile organic compounds is a timed sampler. The sampler is calibrated to collect 198 to 242 liters (L) of air per minute. A multi-layer cartridge is prepared which collects both the particulate fraction and the volatile fraction of this group of compounds. The plug, filter and absorbent are extracted at a remote state laboratory and analyzed using gas chromatography.

The canister sampler used for sampling Volatile Organic Compounds (VOCs) is a timed sampler. A polished canister is evacuated to a near-perfect vacuum and attached to a sampler with a pump controlled by a timer. The canister is filled to greater than 10 psig. The canister is analyzed using a gas chromatograph with mass spectroscopy detection (GC/MS).

The carbonyl samplers at the Air Toxics Network (ATN) sites sample approximately 180 liters of air through an absorbent cartridge filled with dinitrophenylhydrazine (DNPH)-coated silica. The cartridge is then analyzed using high performance liquid chromatography (HPLC). All of these air toxic parameters are subjected to quarterly checks and are audited by EPD's Quality Assurance Unit on an annual basis.

3.9 National Air Toxics Trends Station (NATTS)

The National Air Toxics Trends Stations (NATTS) program is a nationwide monitoring project for the assessment of national trends and variations of several selected air toxics. The location of the station in Georgia is the South DeKalb site (13-089-0002). With the exception of the aethalometer, samples are collected from midnight to midnight for a 24-hour sample, every 6 days. The aethalometer is a continuous sampler used for sampling black and organic carbon. Operating at 60 watts/110V AC, the aethalometer uses quartz tape to perform an optical analysis to determine the concentration of carbon particles passing through an air stream. The analysis is conducted using spectrophotometry, measuring the wavelength of the light energy absorbed and plotting the results on the site computer.

The PM₁₀ sampler used for sampling toxic metal particles less than or equal to 10 microns in diameter is a timed sampler. Collecting 1020 to 1240 liters of air per minute, the sampler uses an 8.5" x 11" quartz glass fiber filter to trap particulate matter. The sample is analyzed using inductively coupled plasma mass spectrometry (ICP/MS). With ICP/MS, an argon gas is used to atomize and ionize the elements in a sample. The resulting ions are used to identify the isotopes of the elements and a mass spectrum is used to identify the element proportional to a specific peak formed from an isotope.

The hexavalent chromium sampler used for sampling Cr⁺⁶ is a timed sampler. Samples are collected at a flow rate of 15 liters of air per minute using a 37 mm diameter substrate of bicarbonate impregnated cellulose. The filter is controlled by an auto cover remains closed until

sampling and fully exposes the filter when the sampler is running. The sample is analyzed using the modified California Air Resources Board (CARB) SOP 039. The filters are extracted in deionized water via sonication, which is analyzed by ion chromatography. Cr^{+6} are separated through a column, forming a complex with diphenylcarbohydrazide. Dianex Peaknet chromatography software is used to determine the peak analysis.

The volatile organic compound (VOCs) samples are collected with a canister method. A polished canister is evacuated to a near-perfect vacuum and attached to a sampler with a pump controlled by a timer. The canister is filled to greater than 10 psig. The canister is analyzed using a gas chromatograph with mass spectroscopy detection (GC/MS).

The PUF (polyurethane foam) sampler used for sampling for semi-volatile organic compounds is a timed sampler. The sampler is calibrated to collect 198 to 242 liters (L) of air per minute. A multi-layer cartridge is prepared which collects both the particulate fraction and the volatile fraction of this group of compounds. The plug, filter and absorbent are extracted at a remote laboratory and analyzed using a gas chromatograph with an electron capture detector (ECD). The Semi-VOCs are shipped to an EPA contracted laboratory and detected using gas chromatography.

The carbonyls are sampled with two types of methods. One type is an absorbent cartridge filled with dinitrophenylhydrazine (DNPH)-coated silica that is attached to a pump to allow approximately 180 liters of air to be sampled. The cartridge is then analyzed using high performance liquid chromatography (HPLC). A 24-hour integrated carbonyls sample is taken every 6 days throughout the year. The other method used for collecting carbonyls is the canister sampler that is used for sampling volatile organic compounds. Acrolein is a carbonyl compound that is collected using this canister method, described above, and analyzed with the GC/MS method. These parameters are subjected to quarterly checks and audited by EPD's Quality Assurance Unit every six months.

4.0 Standards

Measuring pollutant concentrations in ambient air and comparing the measured concentrations to corresponding standards determine ambient air quality status for the six criteria pollutants. The six criteria pollutants are sulfur dioxide, particulate matter ($\text{PM}_{2.5}$ and PM_{10}), carbon monoxide, ozone, nitrogen dioxide, and lead. The U.S. EPA (Environmental Protection Agency) defines the ambient air as that portion of the atmosphere, external to buildings, to which the general public has access.

The National Ambient Air Quality Standards (NAAQS) are divided into primary and secondary standards. For a list of the most current standards, please refer to EPA's website <http://www.epa.gov/air/criteria.html>. Primary standards are those established to protect public health. Secondary standards are those established to protect the public welfare from adverse pollution effects on soils, water, crops, vegetation, manmade materials, animals, wildlife, weather, visibility, climate, property, transportation, economy, personal comfort and well-being. The scientific criteria upon which the standards are based are reviewed periodically by the EPA, which may reestablish or change the standards according to its findings. Note that there are hundreds of compounds that are generally considered pollutants when found in ambient air but whose health and welfare effects are not well enough understood for ambient standards to be defined.

A pollutant measurement that is greater than the ambient air quality standard for a specific averaging time is called an exceedance. This is not a synonym for a violation, however. For each pollutant, there are specific rules for a given time period before a pattern of exceedances

is considered a violation of the NAAQS that may result in regulatory actions to further clean up the area's air. This distinction is made to allow for certain limited exceedances of the standard that may occur, for example, during an unusual weather pattern, reserving regulatory action for cases where the exceedances are too large or too frequent.

5.0 Monitoring Objectives and Spatial Scale

Federal regulations indicate that a minimum of four monitoring objectives should be met in establishing an ambient air monitoring network. The network is to have stations that monitor: (1) the highest pollutant concentrations; (2) the representative concentrations in areas of high population density; (3) the impact of major pollution emissions sources; and (4) the general background concentration levels. The physical siting of the air monitoring station must achieve a spatial scale of representativeness that is consistent with the monitoring objective. The spatial scale results from the physical location of the site with respect to the pollutant sources and categories. It estimates the size of the area surrounding the monitoring site that experiences uniform pollutant concentrations.

The categories of spatial scale are:

Micro Scale: An area of uniform pollutant concentrations ranging from several meters up to 100 meters.

Middle Scale: Uniform pollutant concentrations in an area of about 100 meters to 0.5 kilometer.

Neighborhood Scale: An area with dimensions in the 0.5 to 4.0 kilometer range.

Urban Scale: Citywide pollutant conditions with dimensions ranging from 4 to 50 kilometers.

Regional Scale: An entire rural area of the same general geography (this area ranges from tens to hundreds of kilometers).

Monitoring objectives and associated spatial scales are taken from Appendix D of 40 CFR Part 58, Table D-1, and summarized in Table 3 below.

Monitoring Objective	Appropriate Spatial Scale
Highest concentration or source impact	Micro, Middle, Neighborhood, or (less frequently) Urban
Population oriented	Neighborhood or Urban
General/background, regional transport, welfare related impacts	Urban or Regional

Table 3: Monitoring Objective and Spatial Scale

6.0 Site Evaluations

Georgia EPD plans to perform site evaluations continuously throughout the year on an annual basis for each site. The following table details when the site evaluations were performed and a summary of the comments that the evaluator made about the sites.

SITE ID	COMMON NAME	COUNTY	SITE EVALUATION DATE	COMMENTS
Rome MSA				
131150003	Coosa Elementary	Floyd	1/19/2012	Sampler meets siting criteria. An 18 m tall tree NW of samplers, slightly closer than 2X height difference to all samplers. Predominant wind direction is from W/SW.
Brunswick MSA				
131270004	Arco Pump Station	Glynn	6/9/2011	Sampler meets siting criteria. No deficiencies.
131270006	Risley Middle	Glynn	12/6/2011	Sampler meets siting criteria. No deficiencies. Meteorological tower base bracket and tower ropes should be replaced.
Valdosta MSA				
131850003	Mason Elem.	Lowndes	2/8/2012	Debris from tape collects on flow train down tube of BAM, causing leakage, compromising sample flow.
Warner Robins MSA				
131530001	Robins Air Base	Houston	7/7/2011	Sampler does not meet siting criteria. The vegetation around the samplers has grown tall enough to violate siting guidelines.
Dalton MSA				
132130003	Fort Mountain	Murray	12/5/2011	Few trees to the south are inside 10X height differential with the Met tower. Ground slopes off severely to the north and east.
Albany MSA				
130950007	Turner Elem.	Dougherty	2/10/2012	There is a high volume building ventilation outlet 2.3 m from the BAM inlet. Sampler does meet siting criteria.
Gainesville MSA				
131390003	Boys and Girls Club	Hall	1/10/2012	Sampler meets siting criteria. No deficiencies.
Athens-Clark County MSA				
130590002	College Station Rd.	Clarke	2/22/2012	Tree and shrubs should be trimmed. TEOM inlet should be more firmly secured to roof. There are no extra outlets available on the roof. A waiver was granted for site not meeting siting criteria.
Macon MSA				
130210007	Allied Chemical	Bibb	9/7/2011	Sampler does not meet siting criteria. Site is overgrown with vines and trees. Vegetation higher than the inlets. Vegetation growing into fan cover of collocated PM10.
130210012	Forestry	Bibb	3/14/2012	Samplers meet siting criteria.
130210013	Lake Tobesofkee	Bibb	N/A	Samplers temporarily discontinued.
Columbus MSA				
132150001	Health Dept.	Muscogee	9/12/2011	Sampler meets siting criteria. No deficiencies.
132150008	Airport	Muscogee	9/12/2011	Sampler meets siting criteria. No deficiencies.
132150009	UPS-Allied	Muscogee	2/17/2012	Sampler meets siting criteria. No deficiencies. Site activated to monitor lead
132150010	Fort Benning	Muscogee	2/17/2012	Sampler meets siting criteria. No deficiencies. Site activated to monitor lead
132150011	Cusseta Elementary	Muscogee	3/17/2011	Sampler meets siting criteria. No deficiencies.
132151003	Crime Lab	Muscogee	9/12/2011	Sampler meets siting criteria.

SITE ID	COMMON NAME	COUNTY	SITE EVALUATION DATE	COMMENTS
Savannah MSA				
130510014	Shuman Middle School	Chatham	12/09/2011	Samplers meet siting criteria. Gate is currently locked.
130510017	Market St.	Chatham	6/2/2011	Samplers meet siting criteria
130510021	E. President St.	Chatham	6/15/2011	Sampler does not meet siting criteria. The trees and bushes should be trimmed back or removed. Operator cannot move trees.
130510091	Mercer Middle	Chatham	6/2/2011	Sampler meets siting criteria. No deficiencies.
130511002	W. Lathrop & Augusta Ave.	Chatham	6/21/2011	Samplers did not meet siting criteria. Spacing from drip line is 2 meters. Tower ropes have rotted and fallen away.
Augusta MSA				
130730001	Riverside Park	Columbia	7/11/2011	Sampler meets siting criteria. No deficiencies.
132450005	Med. College GA	Richmond	7/19/2011	Sampler meets siting criteria. No deficiencies.
132450091	Bungalow Rd.	Richmond	9/1/2011	Sampler meets siting criteria. Fence and gravel around shelter are overgrown with vines and grass. Vines have grown up the meteorology tower and rain gauge. TEOM inlet not secure. Tethers that hold the tripod to the roof are rotten.
Atlanta-Sandy Springs-Marietta MSA				
130150003	Cartersville	Bartow	10/19/2011	Sampler meets siting criteria. No deficiencies.
130630091	Georgia DOT	Clayton	12/13/2011	Sampler meets siting criteria. No deficiencies.
130670003	National Guard	Cobb	1/9/2012	Sampler meets siting criteria. No deficiencies.
130670004	Macland Aquatic Center	Cobb	1/9/2012	Sampler meets siting criteria. No deficiencies.
130770002	Univ. of West GA	Coweta	1/31/2012	Sampler meets siting criteria. No deficiencies.
130850001	GA Forestry	Dawson	10/6/2011	Sampler does not meet siting criteria. Trees to the south are slightly inside of the required height distance differential between obstacles and all inlets. Met tower is inside 10x height differential with a few trees to the north. PUF and Hi-Vol platforms are in disrepair.
130890002	South DeKalb	DeKalb	4/14/2011	Samplers do not meet siting criteria. Trees to north continue to get taller and encroach on site.
130890003	DMRC	DeKalb	11/29/2011	Samplers meet siting criteria. Platform boards and steps need renovation.
130892001	Police Dept.	DeKalb	4/14/2011	Samplers meet siting criteria.
130893001	Tucker	DeKalb	10/20/2011	Met only at site. Samplers meet meteorological siting criteria.
130970004	W. Strickland St.	Douglas	4/5/2011	Samplers meet siting criteria.
131130001	Georgia DOT	Fayette	N/A	Samplers temporarily discontinued.
131210032	E. Rivers School	Fulton	12/6/2011	Samplers meet siting criteria. One tree to the northwest is slightly inside the 2x height distance differential requirement for the two Partisol PM10 samplers.
131210039	Fire Station #8	Fulton	5/3/2011	Sampler meets siting criteria. No deficiencies. White Pine tree northeast of sampler is closer than twice height differential but is not in the path of prevailing winds.
131210048	Georgia Tech	Fulton	4/19/2011	Sampler meets siting criteria. No deficiencies.
131210055	Confederate Ave.	Fulton	7/20/2011	Sampler meets siting criteria. No deficiencies.

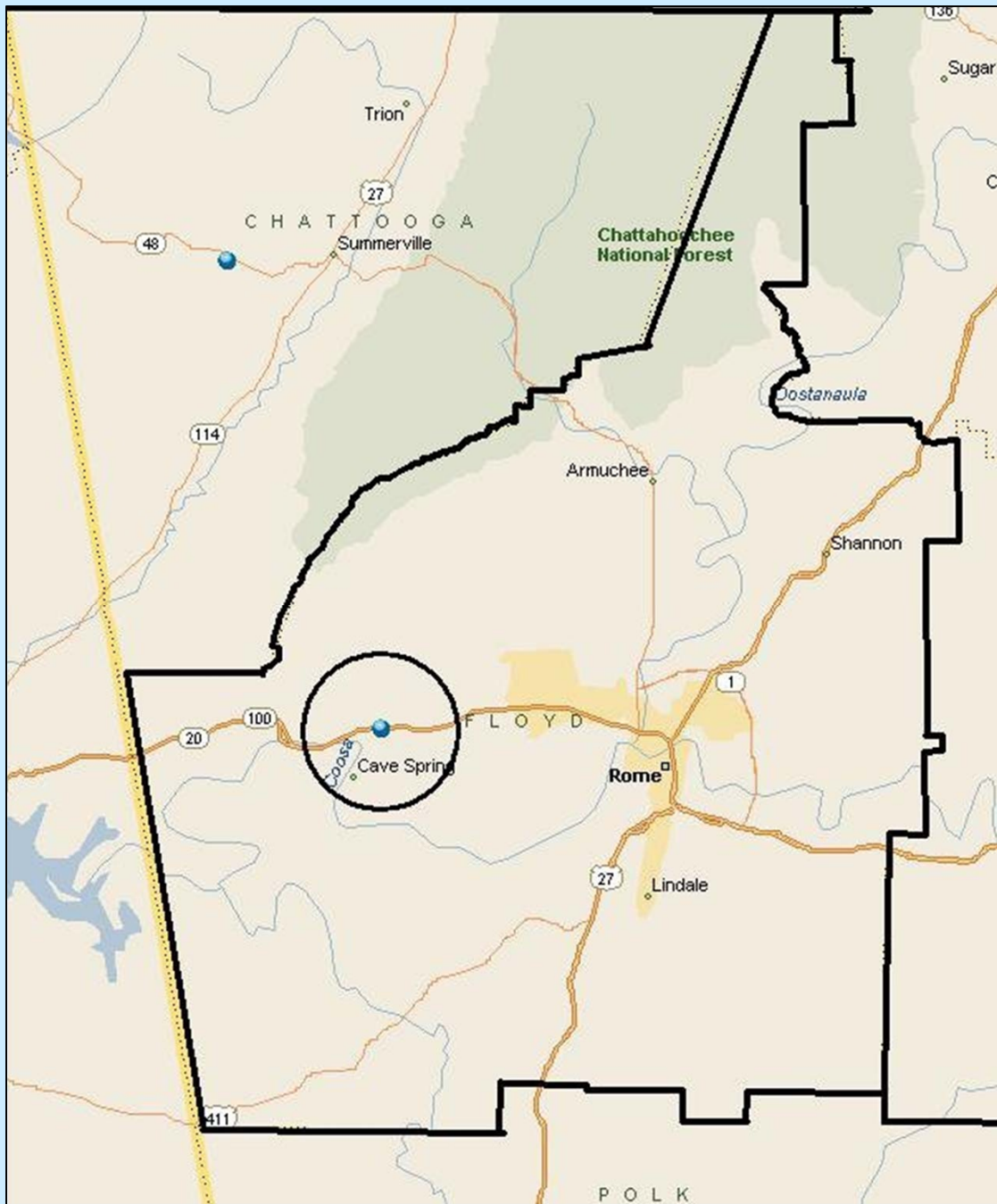
SITE ID	COMMON NAME	COUNTY	SITE EVALUATION DATE	COMMENTS
Atlanta-Sandy Springs-Marietta MSA continued				
131210099	Roswell Road	Fulton	7/20/2011	Sampler meets siting criteria. No deficiencies.
131350002	Gwinnett Tech	Gwinnett	1/17/2012	Samplers meet siting criteria. No deficiencies.
131510002	County Extension	Henry	8/11/2011	Samplers meet siting criteria.
132230003	Yorkville	Paulding	2/7/2011	The wooden structure that houses the gas cylinders next to the GC trailer needs refurbishing. The desiccant in the UV sensor and solar radiation sensor needs replenishing. The glass through which desiccant is viewed is broken or cracked on the solar sensor.
132470001	Monastery	Rockdale	8/10/2011	Samplers meet siting criteria.
Chattanooga Tennessee-Georgia MSA				
132950002	Co. Health Dept.	Walker	10/13/2011	Samplers meet siting criteria.
Not in an MSA				
130550001	Fish Hatchery	Chattooga	1/25/2012	Samplers meet siting criteria.
130690002	General Coffee State Park	Coffee	10/13/2011	Trees around the samplers have grown tall enough to violate siting criteria. Trees higher than inlets are less than 10 m away. Drip lines are too close. Sampling does not meet siting criteria.
132611001	Union High	Sumter	3/16/2012	Samplers do not meet siting criteria. Dripline is 2.5 m East of inlet. Trees should be removed.
133030001	Co. Health Dept.	Washington	5/4/2011	Samplers meet siting criteria. PM10 stand needs to be replaced.
133190001	Police Dept.	Wilkinson	5/4/2011	Samplers meet siting criteria. No extra outlets for calibration.

Table 4: Site Evaluations

**Appendix A:
Individual Site Information
Grouped by MSA
(Smallest to Largest)**

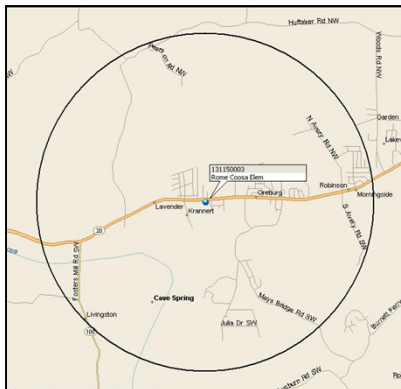
**Georgia Department of Natural Resources
Environmental Protection Division**

Rome MSA



See Figure 1 on page 2 for complete map of Georgia

Rome- Coosa Elementary



AQS ID: 131150003

Address: Coosa Elementary School, Highway 20, Rome, Floyd County, Georgia

Site Established: 1/1/74

Latitude/Longitude: N34.26054/W-85.32333

Elevation: 186 meters

Area Represented: Rome MSA

Site History: Established as SO₂ site

North

South

East

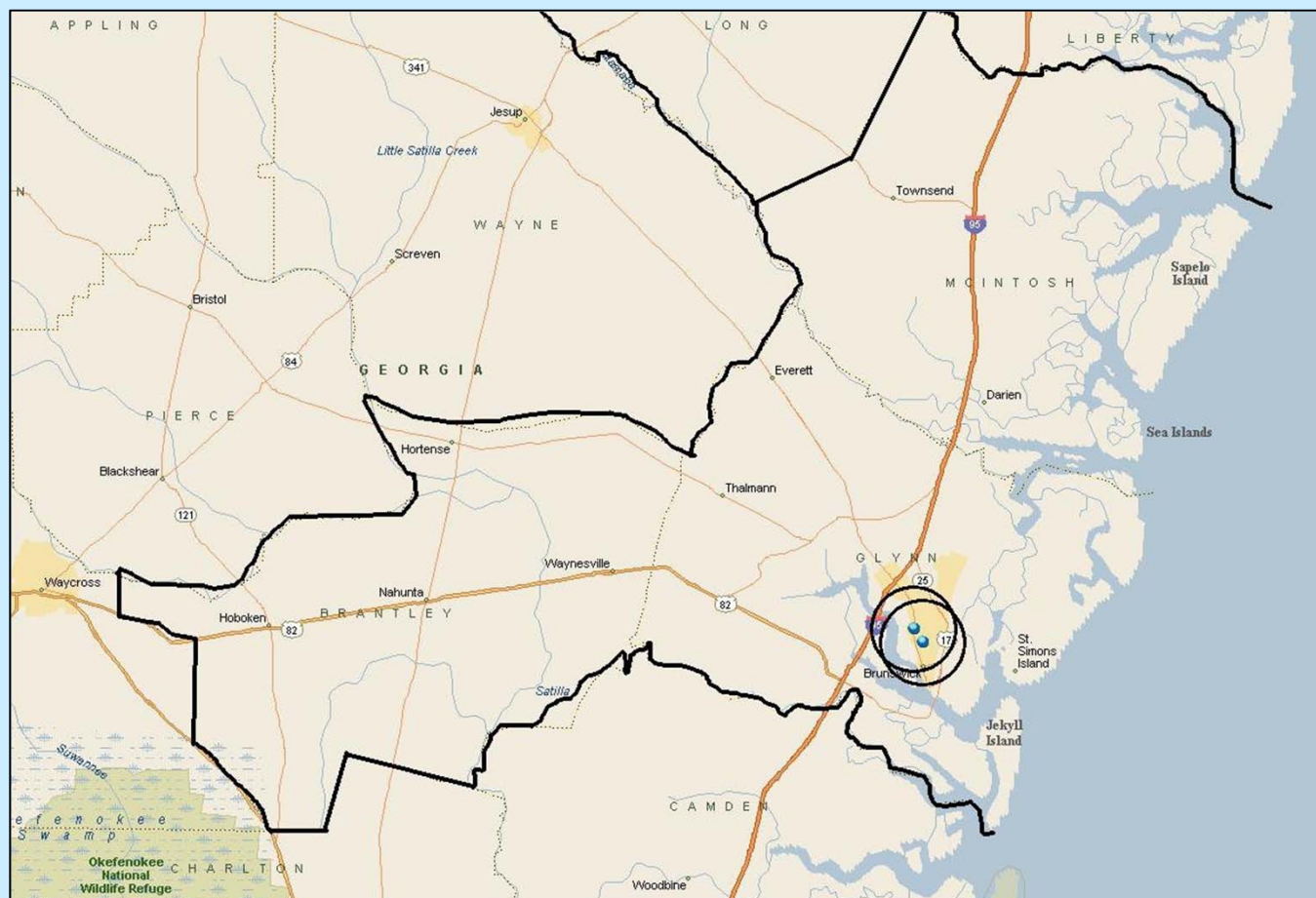
West



Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
PM ₁₀ *	Population Exposure	Every 6 days	2 m	Neighborhood	10/24/96
PM _{2.5}	Population Exposure	Daily	2 m	Neighborhood	1/18/99
PM _{2.5}	Population Exposure	Continuous	3 m	Neighborhood	1/1/08
PM _{2.5} Speciation	Population Exposure	Every 6 days	2 m	Neighborhood	3/1/02
SO ₂	Population Exposure	Continuous	4 m	Neighborhood	1/1/75
SO ₂ 5-Minute Maximum	Population Exposure	Continuous	4 m	Neighborhood	8/1/10

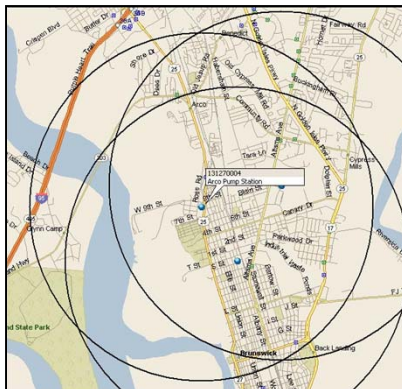
Recommendations: Continue monitoring; *Propose to shut down PM₁₀ sampler (see Section 1.8 of Introduction for details)

Brunswick MSA



See Figure 1 on page 2 for complete map of Georgia

Brunswick- Arco Pump Station



AQS ID: 131270004

Address: Arco Pump Station, Newcastle Road, Brunswick, Glynn County, Georgia

Site Established: 1/1/78

Latitude/Longitude: N31.180688/W-81.504787

Elevation: 3 meters

Area Represented: Brunswick MSA

Site History: Established as SO₂ and TSP site

North

South

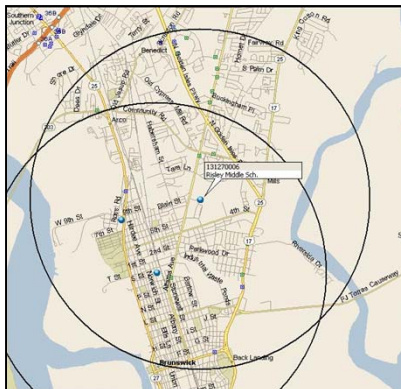
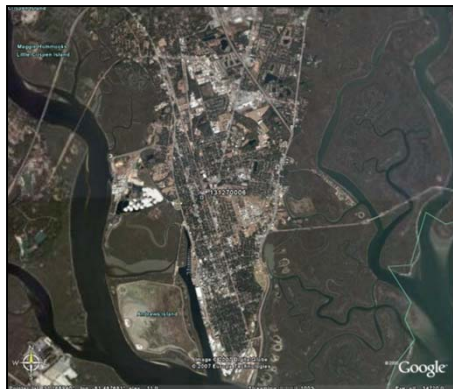
Southeast



Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
PM ₁₀ *	Population Exposure	Every 3 days	4 m	Neighborhood	7/2/96

Recommendations: *Propose to shut down PM₁₀ sampler (see Section 1.8 of Introduction for details)

Brunswick- Risley Middle School



AQS ID: 131270006

Address: Risley Middle School, 2900 Albany Street, Brunswick, Glynn County, Georgia

Site Established: 1/1/87

Latitude/Longitude: N31.169530/W-81.496046

Elevation: 2 meters

Area Represented: Brunswick MSA

Site History: Established as SO₂ site

North

South

West

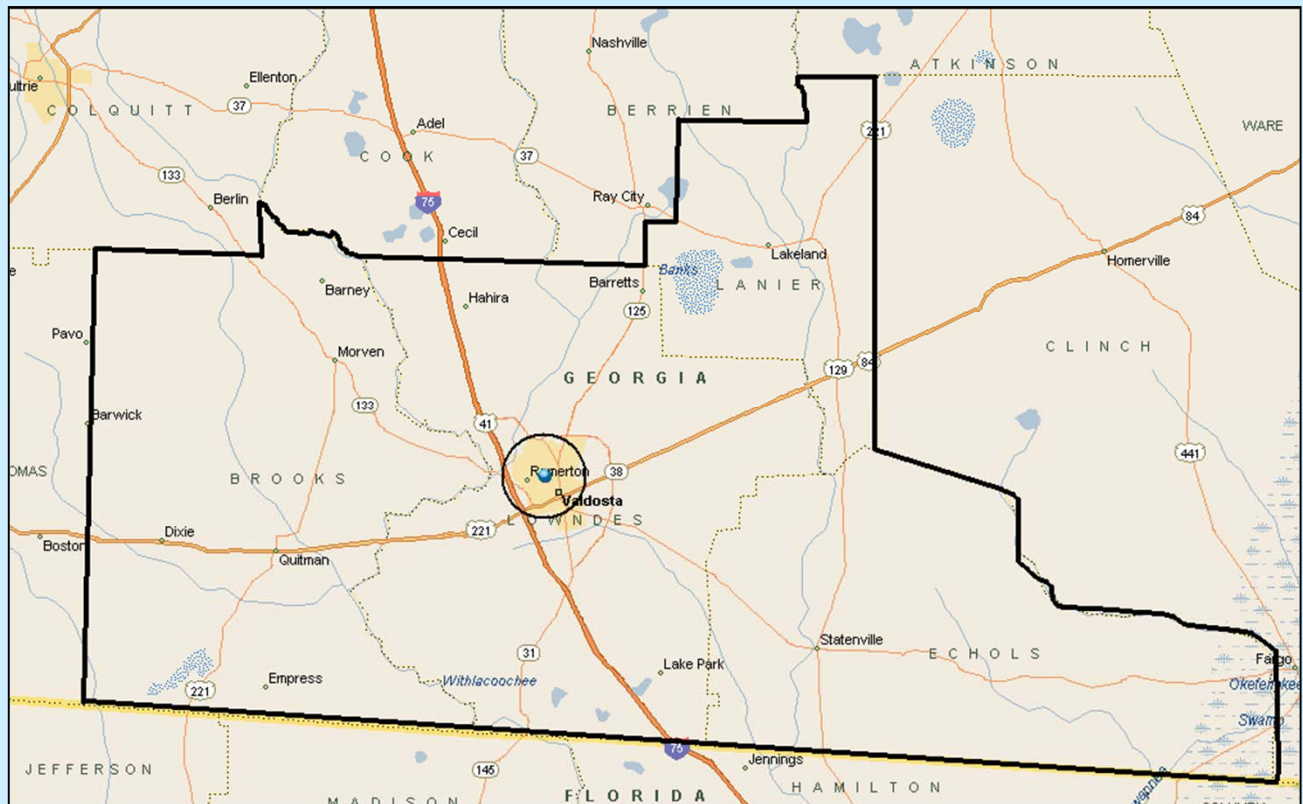


Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
PM _{2.5}	Population Exposure	Every 6 days	5 m	Neighborhood	8/31/95
O ₃	Population Exposure	Continuous [†] (Mar-Oct)	8 m	Neighborhood	3/1/95
SO ₂	Population Exposure	Continuous*	8 m	Neighborhood	1/1/87
SO ₂ 5-Minute Maximum	Population Exposure	Continuous*	4 m	Neighborhood	8/1/10
Total Reduced Sulfur	Population Exposure	Continuous	8 m	Neighborhood	1/12/06
Wind Speed	General/ Background	Continuous	10 m	Neighborhood	1/1/04
Wind Direction	General/ Background	Continuous	10 m	Neighborhood	1/1/04

Recommendations: Continue monitoring; Parameter in red has temporarily suspended operation as of 10/31/08; *Plan to shut down SO₂ monitor by January 1, 2013 (see Section 3.2 of Introduction for details);

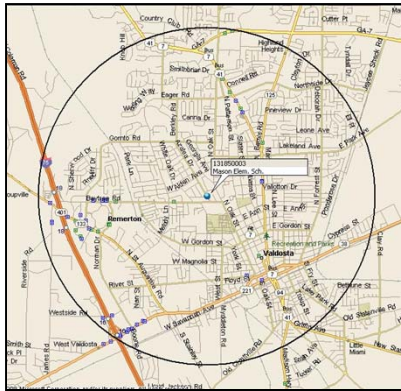
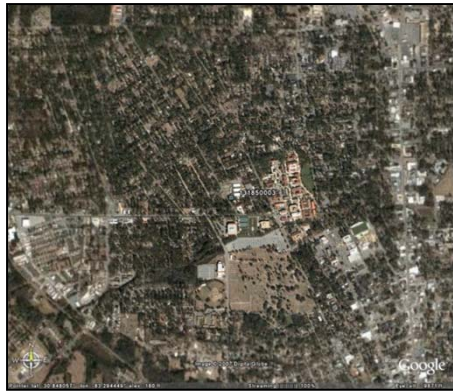
[†]Depending on finalization of proposed ozone rule [Federal Register: Vol. 75, page 2938, 1/19/10], monitoring season may change to February through October

Valdosta MSA



See Figure 1 on page 2 for complete map of Georgia

Valdosta- Mason Elementary



AQS ID: 131850003

Address: S.L. Mason Elementary School, Valdosta, Lowndes County, Georgia

Site Established: 12/17/99

Latitude/Longitude: N30.848056/W-83.294444

Elevation: 58 meters

Area Represented: Valdosta MSA

Site History: Established as PM_{2.5} site

North

South

East

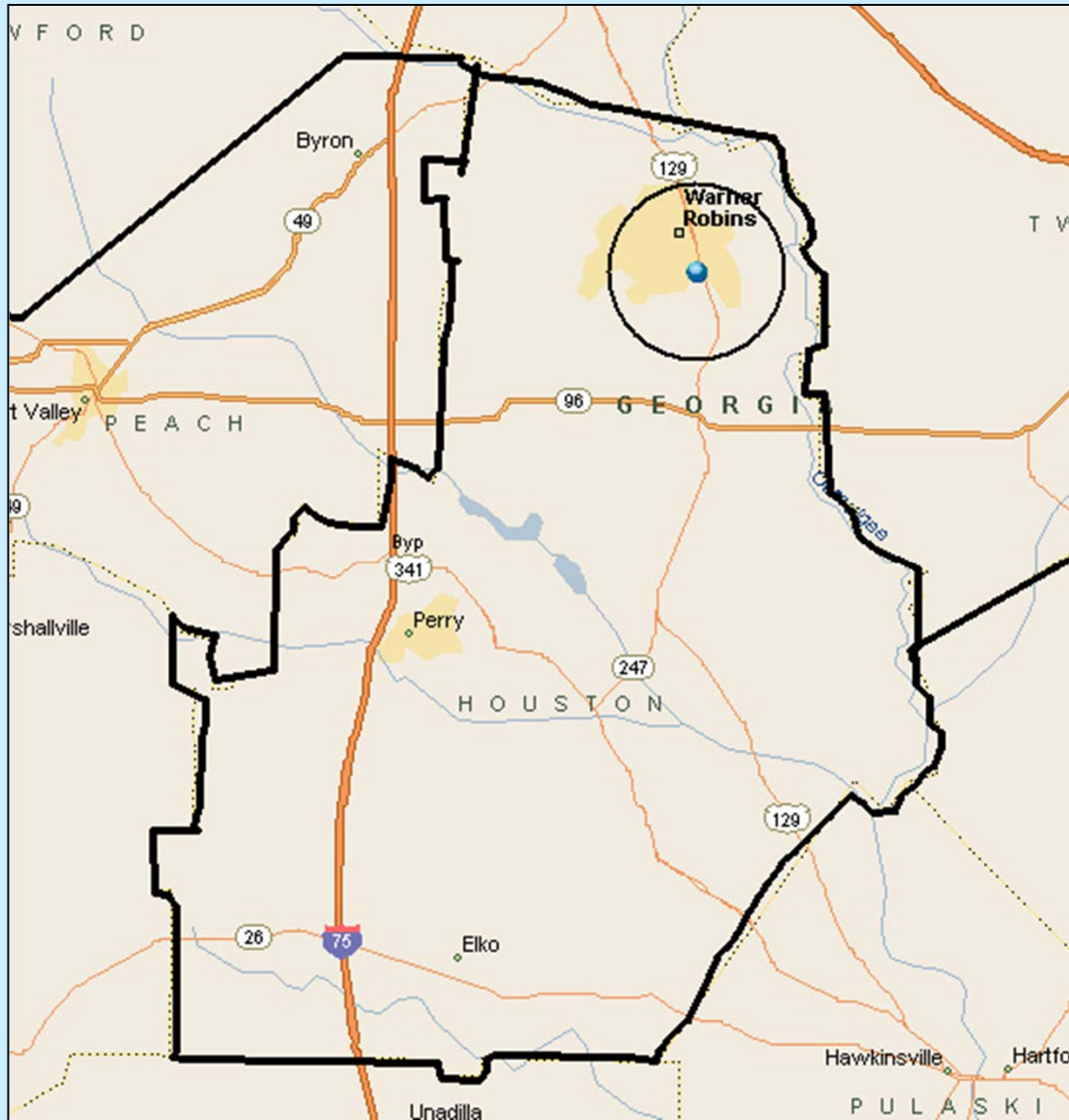
West



Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
PM _{2.5}	Population Exposure	Every 3 days	8 m	Neighborhood	1/1/00
PM _{2.5}	Population Exposure	Continuous	8 m	Neighborhood	1/1/08

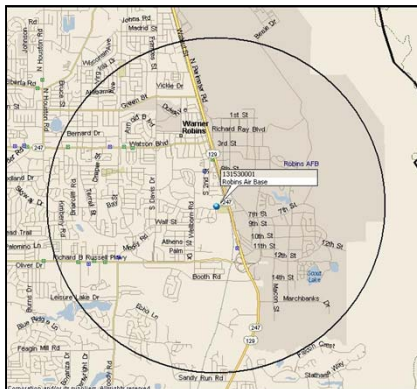
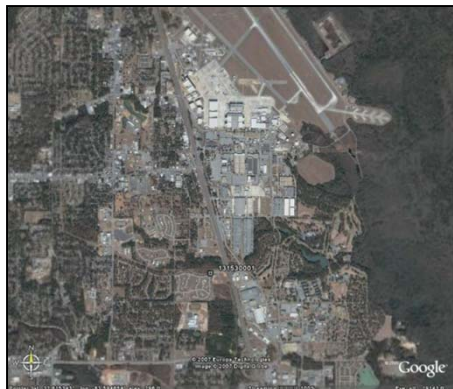
Recommendations: Continue monitoring

Warner Robins MSA



See Figure 1 on page 2 for complete map of Georgia

Warner Robins- Air Force Base



AQS ID: 131530001

Address: Warner Robins Air Force Base, Warner Robins, Houston County, Georgia

Site Established: 6/15/00

Latitude/Longitude: N32.605600/W-83.597907

Elevation: 113 meters

Area Represented: Warner Robins MSA

Site History: Established as PM_{2.5} site

North

South

East

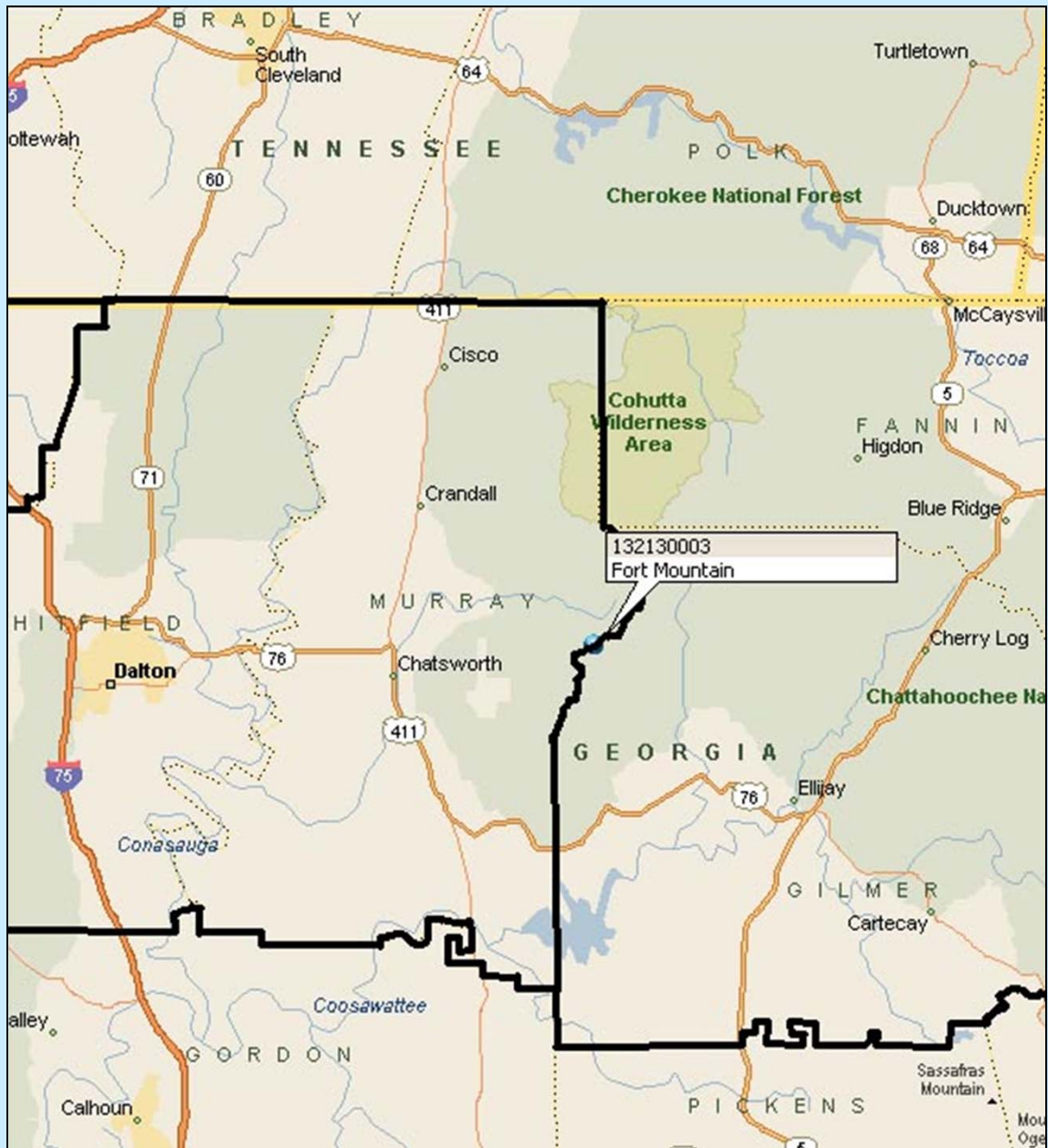
West



Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
PM _{2.5}	Population Exposure	Every 3 days	2 m	Neighborhood	7/5/00
PM _{2.5}	Population	Continuous	2 m	Neighborhood	1/1/08

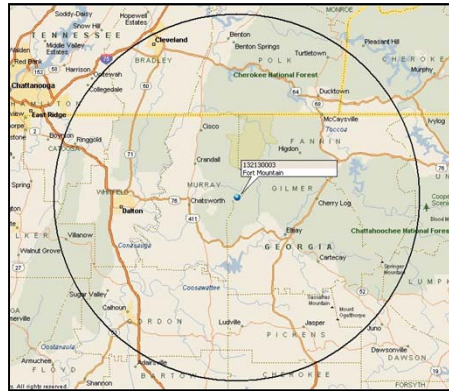
Recommendations: Continue monitoring

Dalton MSA



See Figure 1 on page 2 for complete map of Georgia

Chatsworth- Fort Mountain



AQS ID: 132130003

Address: Fort Mountain, Cohutta Overlook, Chatsworth, Murray County, Georgia

Site Established: 3/23/99

Latitude/Longitude: N34.785078/W-84.626499

Elevation: 980 meters

Area Represented: Dalton MSA

Site History: Established as O₃ site

North

South

East

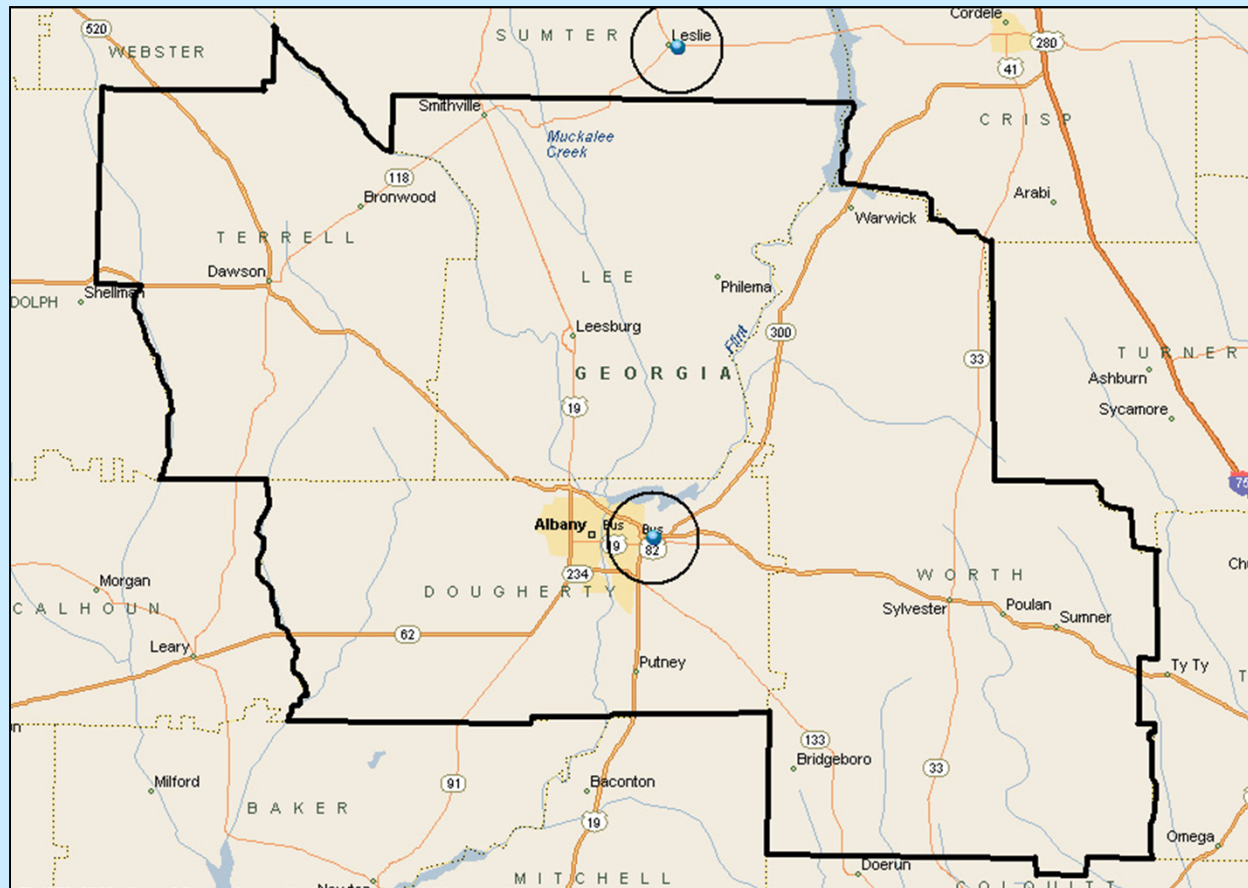
West



Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
O ₃	Population Exposure	Continuous [†] (Mar-Oct)	4 m	Regional	3/1/00
Wind Speed	General/ Background	Continuous	10 m	Neighborhood	2/7/02
Wind Direction	General/ Background	Continuous	10 m	Neighborhood	2/7/02
Temperature	General/ Background	Continuous	2 m	Neighborhood	2/7/02
Relative Humidity	General/ Background	Continuous	2 m	Neighborhood	2/7/02

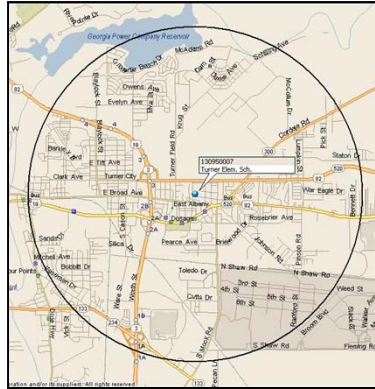
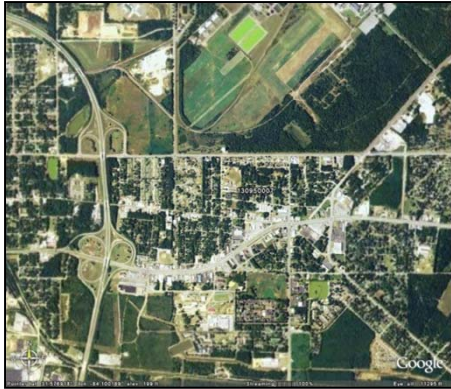
Recommendations: Continue monitoring; [†]Depending on finalization of proposed ozone rule [Federal Register: Vol. 75, page 2938, 1/19/10], monitoring season may change to February through October

Albany MSA



See Figure 1 on page 2 for complete map of Georgia

Albany- Turner Elementary



AQS ID: 130950007

Address: Turner Elementary School, Albany, Dougherty County, Georgia

Site Established: 7/31/91

Latitude/Longitude: N31.576917/W-84.100194

Elevation: 61 meters

Area Represented: Albany MSA

Site History: Established as TSP site

North

South

East

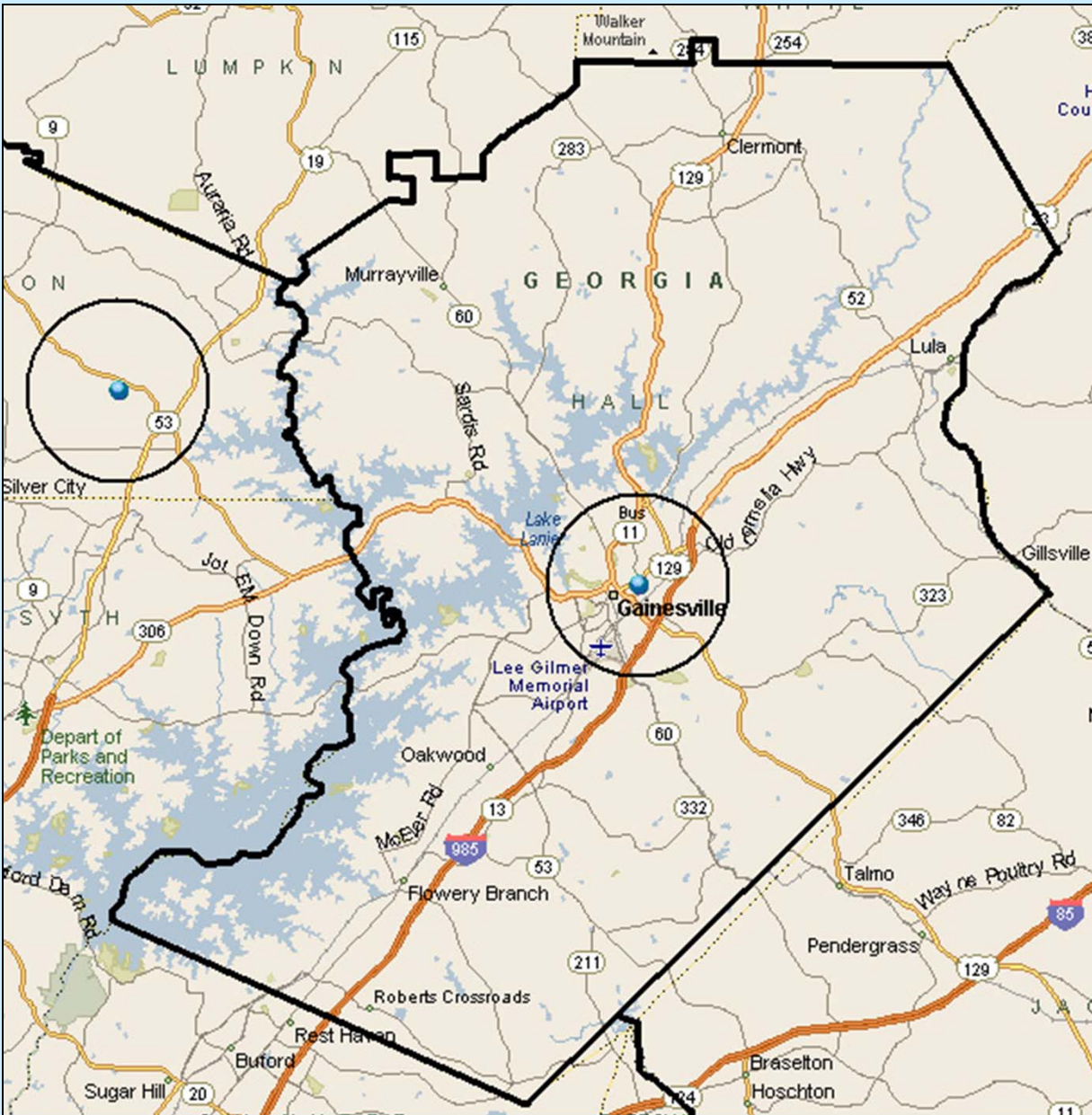
West



Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
PM _{2.5}	Population Exposure	Daily	6 m	Neighborhood	2/2/99
PM _{2.5}	Population Exposure	Continuous	6 m	Neighborhood	5/11/08
PM ₁₀ *	Population Exposure	Every 6 days	6 m	Neighborhood	9/24/96

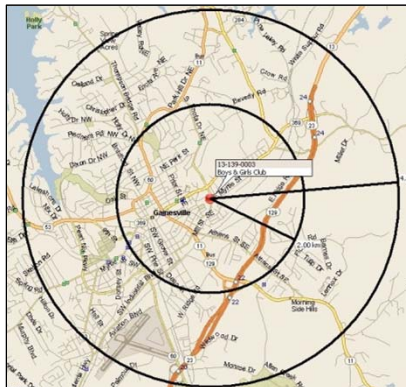
Recommendations: Continue monitoring; *Propose to shut down PM₁₀ sampler (see Section 1.8 of Introduction for details); If changes to PM_{2.5} network are approved, plan to collocate PM_{2.5} sampler with FRM (see Section 1.8 of Introduction for details)

Gainesville MSA



See Figure 1 on page 2 for complete map of Georgia

Gainesville- Boys and Girls Club



AQS ID: 131390003

Address: Boys and Girls Club, 1 Positive Place, Gainesville, Hall County, Georgia 30501

Site Established: 1/1/97

Latitude/Longitude: N34.30008/W-83.81217

Elevation: 353 meters

Area Represented: Gainesville MSA

Site History: Established as PM_{2.5} site

North

South

East

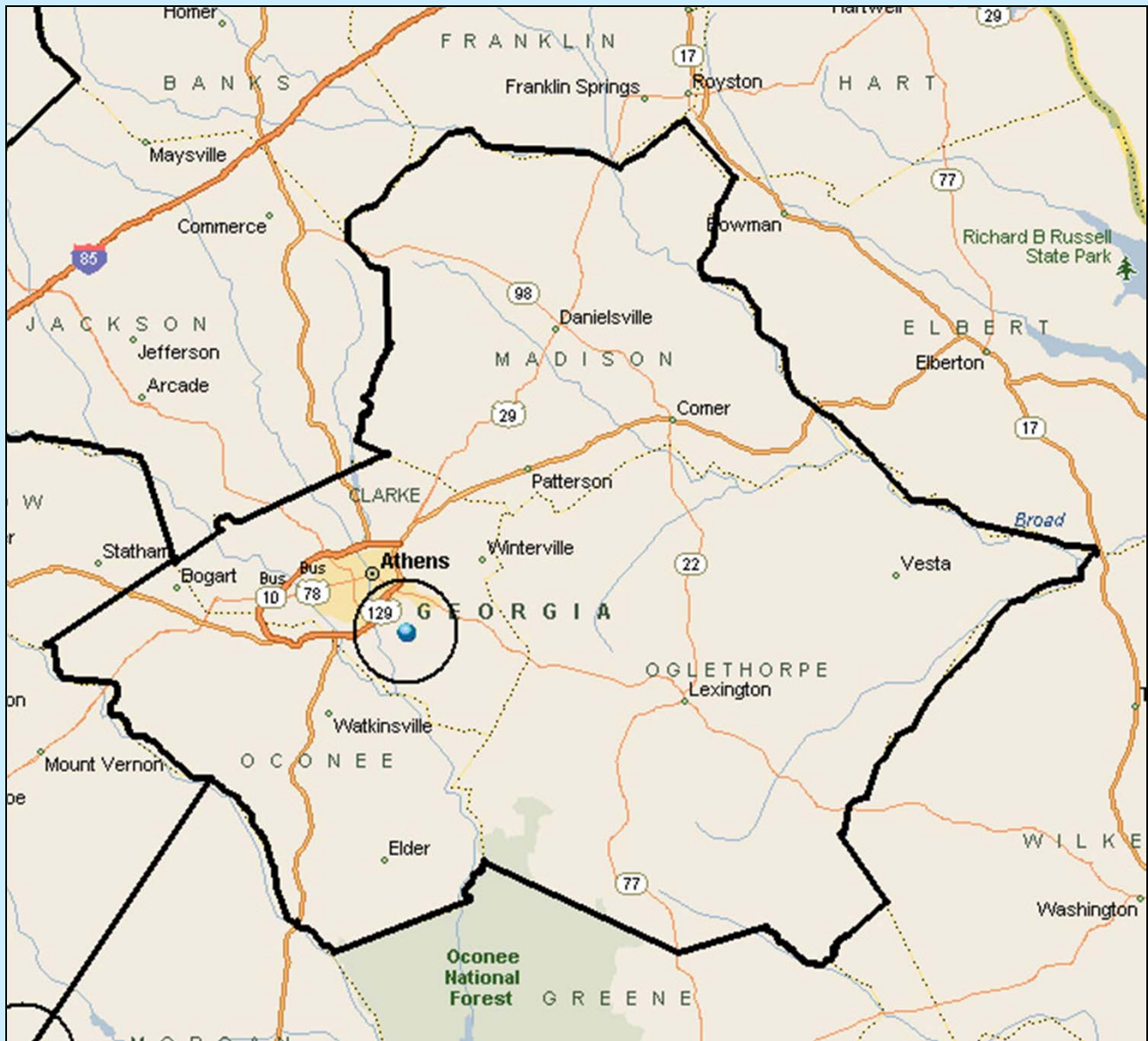
West



Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
PM _{2.5}	Population Exposure	Every 3 days	5 m	Neighborhood	2/14/99
PM _{2.5}	Population Exposure	Continuous	5 m	Neighborhood	1/1/08

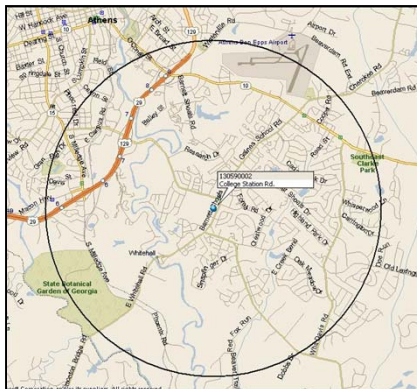
Recommendations: Continue monitoring

Athens-Clark County MSA



See Figure 1 on page 2 for complete map of Georgia

Athens- College Station Road



AQS ID: 130590002

Address: Fire Station #7, 2350 Barnett Shoals Road, Athens, Clarke County, Georgia 30603

Site Established: 3/1/02

Latitude/Longitude: N33.91793/-W83.34461

Elevation: 233 meters

Area Represented: Athens-Clarke County MSA

Site History: Established as O₃ and PM site

North

South

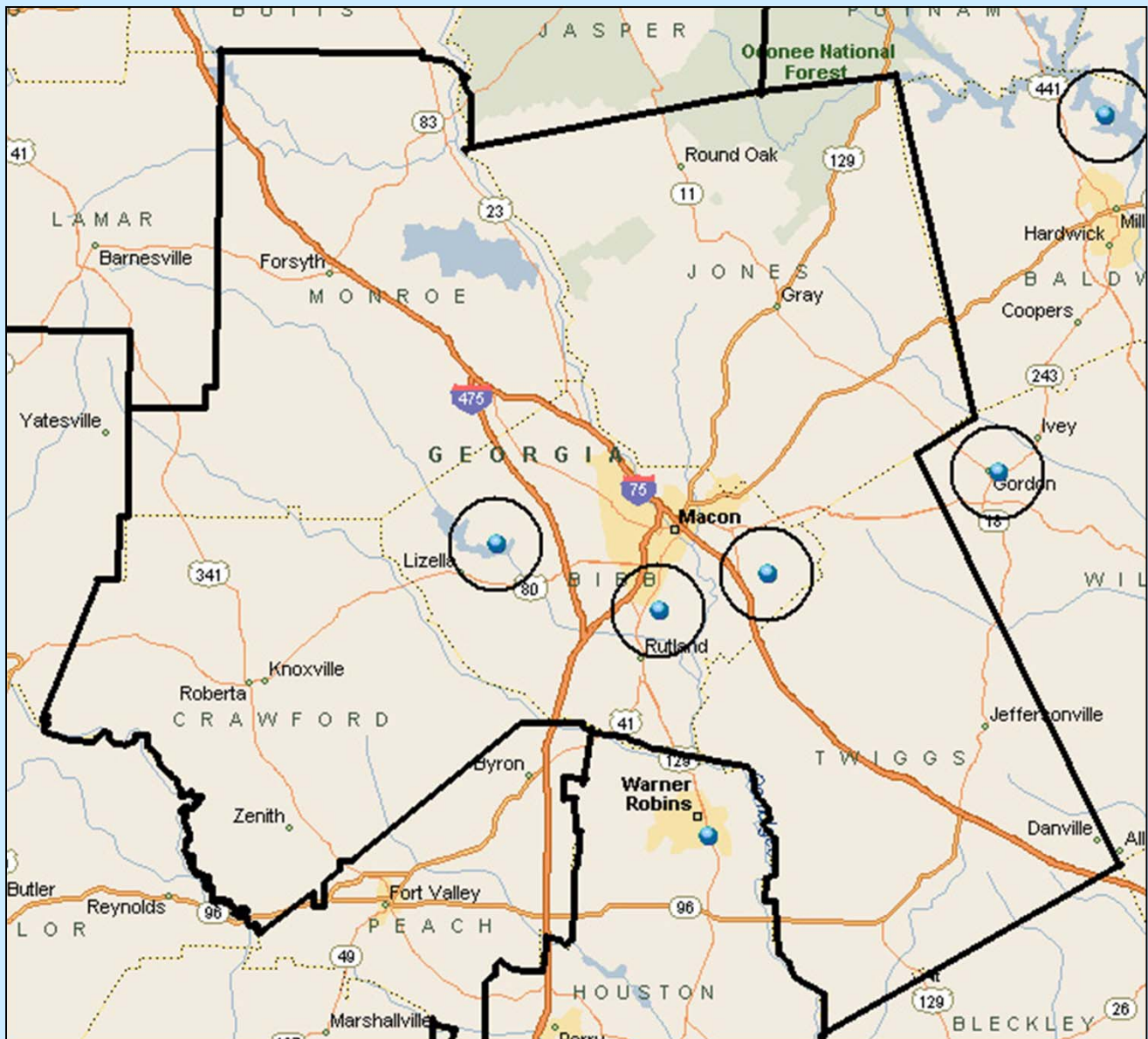
West



Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
O ₃	Population Exposure	Continuous [†] (Mar-Oct)	6.80 m	Urban	5/1/02
PM _{2.5}	Population Exposure	Every 3 days	4 m	Neighborhood	2/12/05
PM _{2.5}	Population Exposure	Continuous	4 m	Neighborhood	8/1/04
PM _{2.5} Speciation	Population Exposure	Every 6 days	4 m	Neighborhood	3/1/02

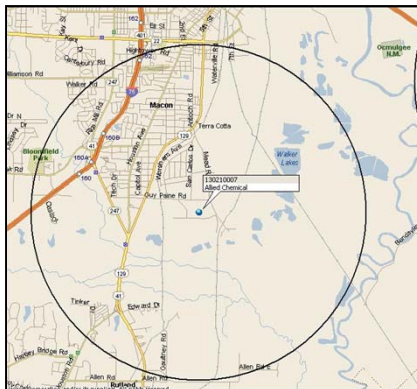
Recommendations: Continue monitoring; [†]Depending on finalization of proposed ozone rule [Federal Register: Vol. 75, page 2938, 1/19/10], monitoring season may change to February through October

Macon MSA



See Figure 1 on page 2 for complete map of Georgia

Macon- Allied Chemical



AQS ID: 130210007

Address: Allied Chemical, 600 Guy Paine Road, Macon, Bibb County, Georgia

Site Established: 1/1/74

Latitude/Longitude: N32.77729/W-83.64120

Elevation: 106 meters

Area Represented: Macon MSA

Site History: Established as TSP site

North

South

East

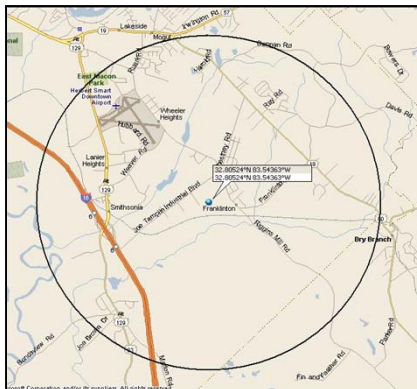
West



Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
PM ₁₀ *	Population Exposure	Every 6 days	4 m	Neighborhood	9/6/96
PM ₁₀ *	Quality Assurance	Every 6 days	4 m	Neighborhood	7/1/05
PM _{2.5} Speciation	Population Exposure	Every 6 days	4 m	Neighborhood	3/1/02
PM _{2.5}	Population Exposure	Daily	4 m	Neighborhood	2/2/99
PM _{2.5}	Quality Assurance	Every 12 days	4 m	Neighborhood	2/2/99

Recommendations: Continue monitoring; *Propose to shut down PM₁₀ samplers (see Section 1.8 of Introduction for details)

Macon- GA Forestry Commission



AQS ID: 130210012

Address: Georgia Forestry Commission, 5645 Riggins Mill Road, Dry Branch, Bibb County, Georgia

Site Established: 5/7/97

Latitude/Longitude: N32.805244/W-83.543628

Elevation: 103 meters

Area Represented: Macon MSA

Site History: Established as O₃ and SO₂ site

North

South

East

West

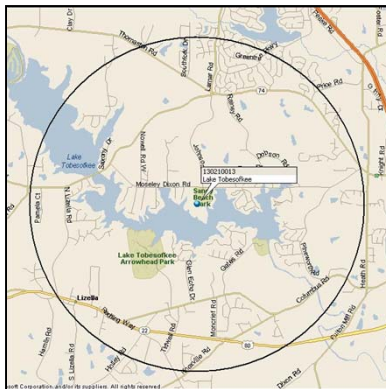


Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
PM _{2.5}	Population Exposure	Every 3 days	4 m	Neighborhood	2/1/99
PM _{2.5}	Population Exposure	Continuous	4 m	Neighborhood	5/5/03
Wind Direction	General/ Background	Continuous	10 m	Neighborhood	1/1/04
Wind Speed	General/ Background	Continuous	10 m	Neighborhood	1/1/04
O ₃	Population Exposure	Continuous [†] (Mar-Oct)	4 m	Neighborhood	5/7/97
SO ₂	Population Exposure	Continuous	4 m	Urban	5/7/97
SO ₂ 5-Minute Maximum	Population Exposure	Continuous	4 m	Neighborhood	8/1/10
Toxics	Population Exposure	Every 12 days	2 m	Neighborhood	1/1/99

Macon- GA Forestry Commission (continued)

Recommendations: Continue monitoring; †Depending on finalization of proposed ozone rule [Federal Register: Vol. 75, page 2938, 1/19/10], monitoring season may change to February through October

Macon- West



AQS ID: 130210013

Address: 6890 Moseley Dixon Road, Macon, Bibb County, Georgia 31220-8517

Site Established: 5/1/05

Latitude/Longitude: N32.827803/W-83.788849

Elevation: 106 meters

Area Represented: Macon MSA

Site History: Established as O₃ and NO_y site

North

South

East

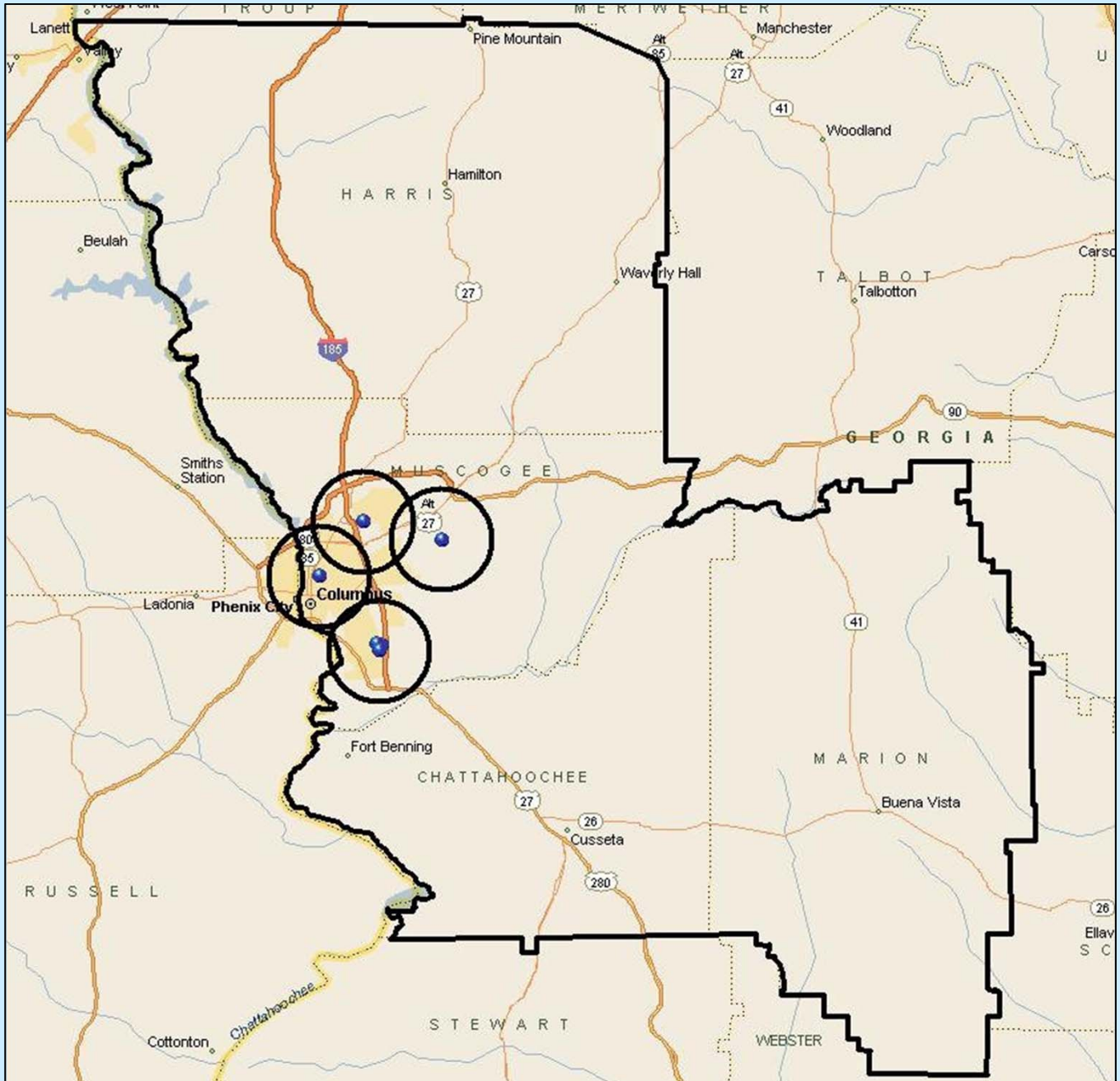
West



Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
O ₃	Population Exposure	Continuous [†] (Mar-Oct)	4 m	Neighborhood	5/1/05
NO _y	Population Exposure	Continuous	4 m	Neighborhood	5/26/05
Wind Speed	General/ Background	Continuous	10 m	Neighborhood	7/6/05
Wind Direction	General/ Background	Continuous	10 m	Neighborhood	7/6/05
Temperature	General/ Background	Continuous	2 m	Neighborhood	7/6/05
Relative Humidity	General/ Background	Continuous	2 m	Neighborhood	7/6/05

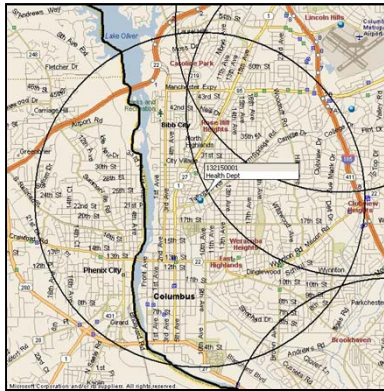
Recommendations: Parameters in red have temporarily suspended operation: O₃ as of 10/31/08, NO_y as of 4/30/08, Meteorological parameters as of 10/20/08; A request to close these monitors is discussed in Section 1.9 of Introduction; [†]Depending on finalization of proposed ozone rule [Federal Register: Vol. 75, page 2938, 1/19/10], monitoring season may change to February through October

Columbus Georgia-Alabama MSA



See Figure 1 on page 2 for complete map of Georgia

Columbus- Health Department



AQS ID: 132150001

Address: Muscogee City Health Department, 1958 8th Avenue, Columbus, Muscogee County, Georgia

Site Established: 1/1/57

Latitude/Longitude: N32.483543/W-84.980977

Elevation: 101 meters

Area Represented: Columbus Georgia-Alabama MSA

Site History: Established as TSP site

North

South

East

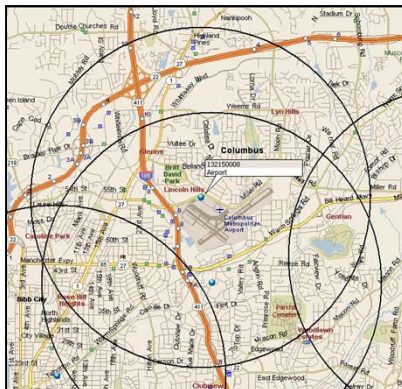
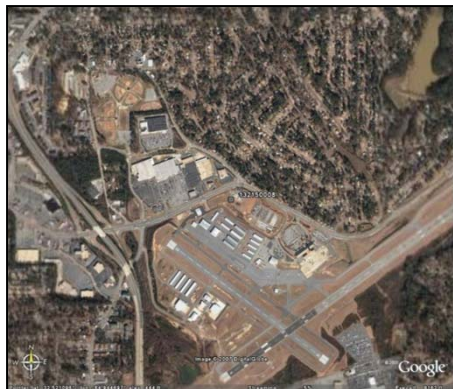
West



Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
PM _{2.5} *	Population Exposure	Every 3 days	7 m	Neighborhood	3/4/99

Recommendations: *Propose to shut down PM_{2.5} sampler (see Section 1.8 of Introduction for details)

Columbus- Airport



AQS ID: 132150008

Address: Columbus Airport, 3100 Thruway Drive, Columbus, Muscogee County, Georgia 31909

Site Established: 7/1/82

Latitude/Longitude: N32.52113/W-84.94486

Elevation: 135 meters

Area Represented: Columbus Georgia-Alabama MSA

Site History: Established as O₃ site

North

South

East

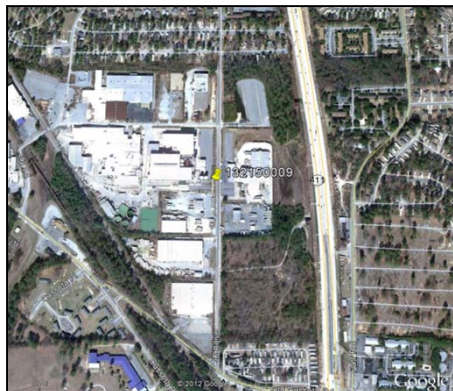
West



Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
O ₃	Population Exposure	Continuous [†] (Mar-Oct)	4 m	Neighborhood	7/1/82
SO ₂	Population Exposure	Continuous*	4 m	Neighborhood	1/1/84
SO ₂ 5-Minute Maximum	Population Exposure	Continuous*	4 m	Neighborhood	8/1/10
PM _{2.5}	Population Exposure	Every 6 days	4 m	Neighborhood	6/2/03
PM _{2.5}	Population Exposure	Continuous	4 m	Neighborhood	6/1/03

Recommendations: Continue monitoring; *Plan to shut down SO₂ monitor by January 1, 2013 (see Section 3.2 of Introduction for details); [†]Depending on finalization of proposed ozone rule [Federal Register: Vol. 75, page 2938, 1/19/10], monitoring season may change to February through October

Columbus- UPS



AQS ID: 132150009

Address: Allied Drive, Columbus, Muscogee County, Georgia

Site Established: 9/1/90

Latitude/Longitude: N32.434809/W-84.929326

Elevation: 83 meters

Area Represented: Columbus Georgia-Alabama MSA

Site History: Established as lead site

North

South

East

West



Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
Lead	Source Oriented	Every 6 days	2 m	Micro	9/1/90*

* Sampler inactive from 3/31/04 until reopened on 2/3/12

Recommendations: Lead monitoring being conducted along with Columbus-Fort Benning and Columbus-Cusseta Road sites to determine which sampler is best located to perform source monitoring

Columbus- Fort Benning



AQS ID: 132150010

Address: Ft. Benning Junction, Joy Road, Columbus, Muscogee County, Georgia

Site Established: 3/1/91

Latitude/Longitude: 32.43628/-84.934155

Elevation: 83 meters

Area Represented: Columbus Georgia-Alabama MSA

Site History: Established as lead site

North

South

East

West

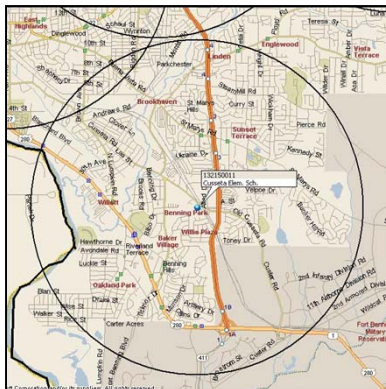


Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
Lead	Source Oriented	Every 6 days	2 m	Micro	3/1/91*

* Sampler inactive from 3/31/04 until reopened on 12/27/11

Recommendations: Lead monitoring being conducted along with Columbus-UPS and Columbus-Cusseta Road sites to determine which sampler is best located to perform source monitoring

Columbus- Cusseta Road Elementary



AQS ID: 132150011

Address: Cusseta Road Elementary School, Columbus, Muscogee County, Georgia

Site Established: 9/4/91

Latitude/Longitude: N32.42905/W-84.93160

Elevation: 88 meters

Area Represented: Columbus Georgia-Alabama MSA

Site History: Established as lead site

North

South

East

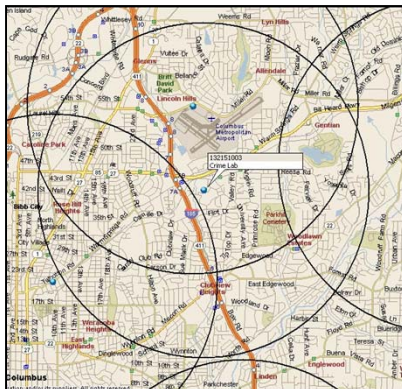
West



Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
Lead	Population Exposure	Every 6 days	5 m	Middle	9/4/91
PM ₁₀ *	Population Exposure	Every 6 days	5 m	Neighborhood	8/7/95
PM _{2.5}	Population Exposure	Every 3 days	5 m	Neighborhood	1/21/99
PM _{2.5} Speciation	Population Exposure	Every 6 days	5 m	Neighborhood	5/1/02

Recommendations: Continue monitoring; Lead monitoring being conducted along with Columbus-Fort Benning and Columbus-UPS sites to determine which sampler is best located to perform source monitoring; *Propose to shut down PM₁₀ sampler (see Section 1.8 of Introduction for details)

Columbus- Crime Lab



AQS ID: 132151003

Address: Columbus Crime Lab, 8695 Beaver Run Road, Columbus, Muscogee County, Georgia

Site Established: 6/30/80

Latitude/Longitude: N32.50854/W-84.88037

Elevation: 122 meters

Area Represented: Columbus Georgia-Alabama MSA

Site History: Established as O₃ site

North

South

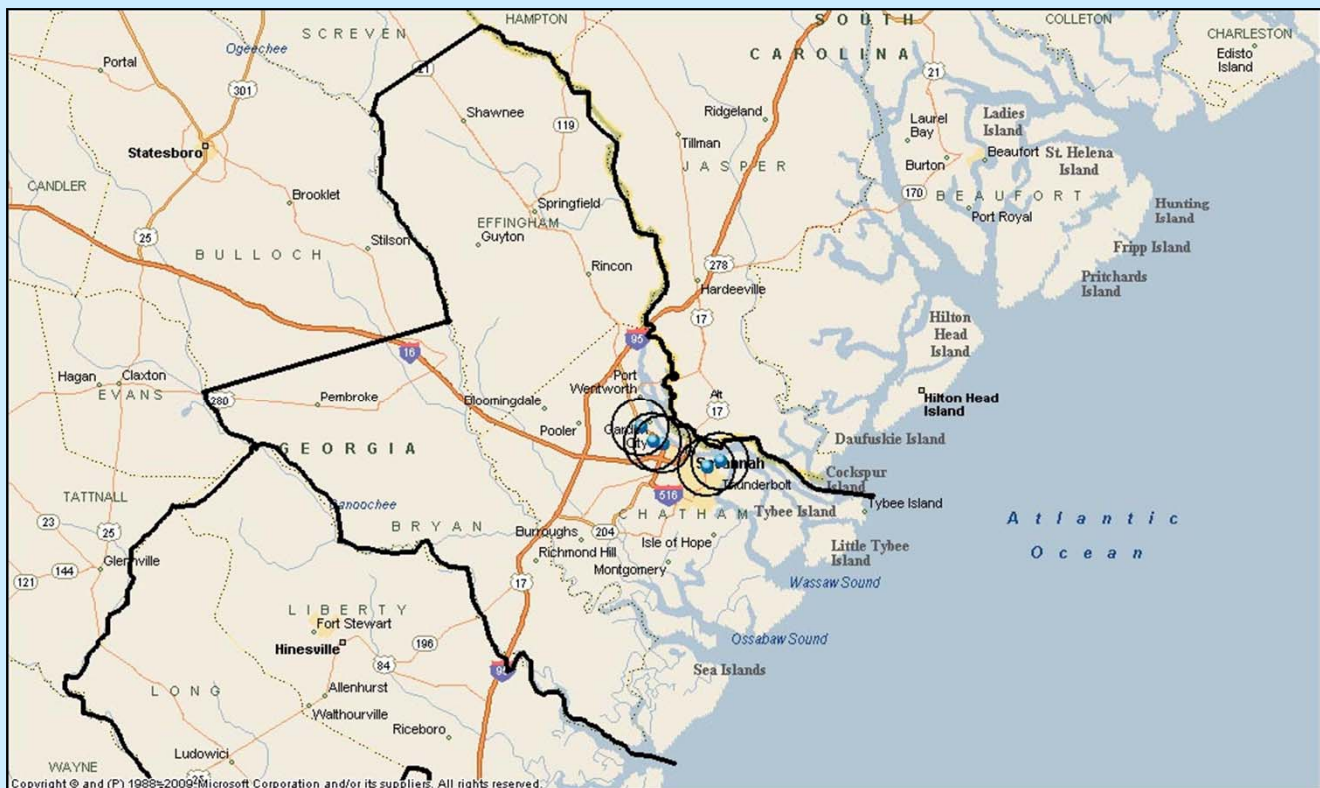
West



Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
Wind Speed	General/ Background	Continuous	10 m	Neighborhood	1/5/06
Wind Direction	General/ Background	Continuous	10 m	Neighborhood	1/5/06
Temperature	General/ Background	Continuous	2 m	Neighborhood	1/5/06
Relative Humidity	General/ Background	Continuous	2 m	Neighborhood	1/5/06
Precipitation	General/ Background	Continuous	3 m	Neighborhood	1/5/06
Barometric Pressure	General/ Background	Continuous	2 m	Neighborhood	1/5/06

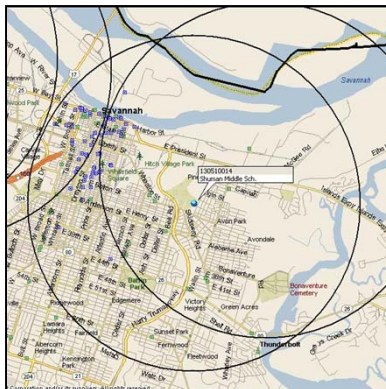
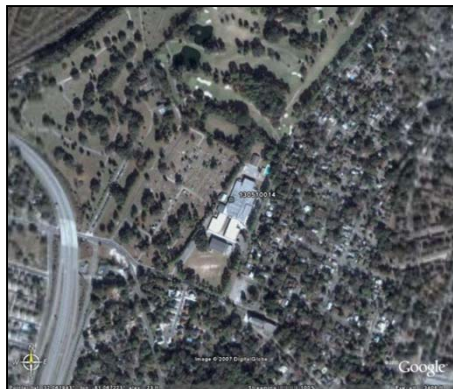
Recommendations: Continue monitoring

Savannah MSA



See Figure 1 on page 2 for complete map of Georgia

Savannah- Shuman Middle School



AQS ID: 130510014

Address: Shuman Middle School, 415 Garrard Street, Savannah, Chatham County, Georgia

Site Established: 1/1/79

Latitude/Longitude: N32.061944/W-81.067222

Elevation: 6 meters

Area Represented: Savannah MSA

Site History: Established as TSP site

North

South

East

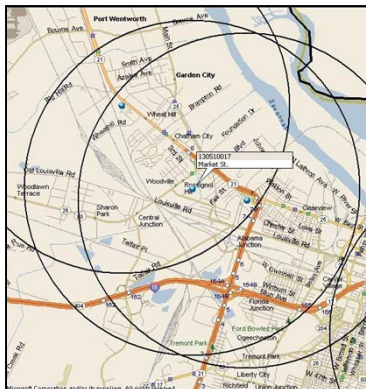
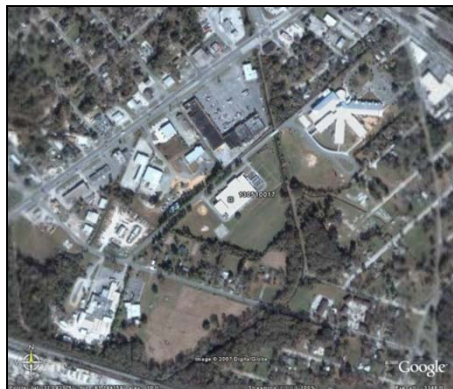
West



Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
PM ₁₀ *	Population Exposure	Every 6 days	5 m	Neighborhood	12/4/96

Recommendations: *Propose to shut down PM₁₀ sampler (see Section 1.8 of Introduction for details)

Savannah- Market Street



AQS ID: 130510017

Address: 402 Market Street, Savannah, Chatham County, Georgia

Site Established: 1/1/81

Latitude/Longitude: N32.092778/W-81.144167

Elevation: 2 meters

Area Represented: Savannah MSA

Site History: Established as TSP site

North

South

East

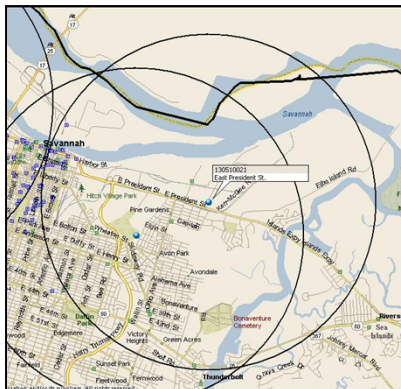
West



Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
PM _{2.5} *	Population Exposure	Every 3 days	5 m	Neighborhood	1/1/99

Recommendations: *Propose to shut down PM_{2.5} sampler (see Section 1.8 of Introduction for details)

Savannah- E. President Street



AQS ID: 130510021

Address: American Red Cross, 2500 E. President Street, Bd-A, Savannah, Chatham County, Georgia

Site Established: 2/1/95

Latitude/Longitude: N32.069050/W-81.048949

Elevation: 2 meters

Area Represented: Savannah MSA

Site History: Established as SO₂ and H₂S site

North

South

East

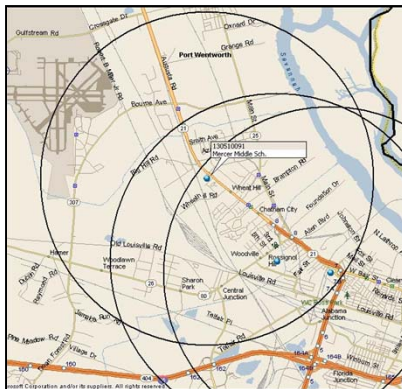
West



Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
O ₃	Population Exposure	Continuous [†] (Mar-Oct)	4 m	Neighborhood	4/19/95
SO ₂	Source Oriented	Continuous	4 m	Neighborhood	3/29/95
SO ₂ 5-Minute Maximum	Population Exposure	Continuous	4 m	Neighborhood	8/1/10
Wind Direction	General/ Background	Continuous	10 m	Neighborhood	1/1/04
Wind Speed	General/ Background	Continuous	10 m	Neighborhood	1/1/04
Toxics	Population Exposure	Every 12 days	2 m	Neighborhood	9/18/96
Carbonyls	Population Exposure	Every 12 days	4 m	Neighborhood	1/1/99

Recommendations: Consider relocating to new location that meets siting guidelines-present location may be too close to trees; [†]Depending on finalization of proposed ozone rule [Federal Register: Vol. 75, page 2938, 1/19/10], monitoring season may change to February through October

Savannah- Mercer School



AQS ID: 130510091

Address: Mercer Junior High School, Garden City, Chatham County, Georgia

Site Established: 7/7/76

Latitude/Longitude: N32.110580/W-81.162024

Elevation: 4 meters

Area Represented: Savannah MSA

Site History: Established as TSP site

North

South

East

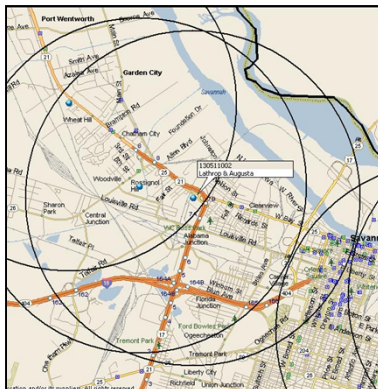
West



Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
PM _{2.5}	Population Exposure	Every 3 days	5 m	Neighborhood	1/1/99

Recommendations: Continue monitoring

Savannah- Lathrop and Augusta



AQS ID: 130511002

Address: Pumping Station at Intersection of West Lathrop and Augusta Avenue, Savannah, Chatham County, Georgia

Site Established: 1/1/72

Latitude/Longitude: N32.090278/W-81.130556

Elevation: 4 meters

Area Represented: Savannah MSA

Site History: Established as TSP site

Northeast

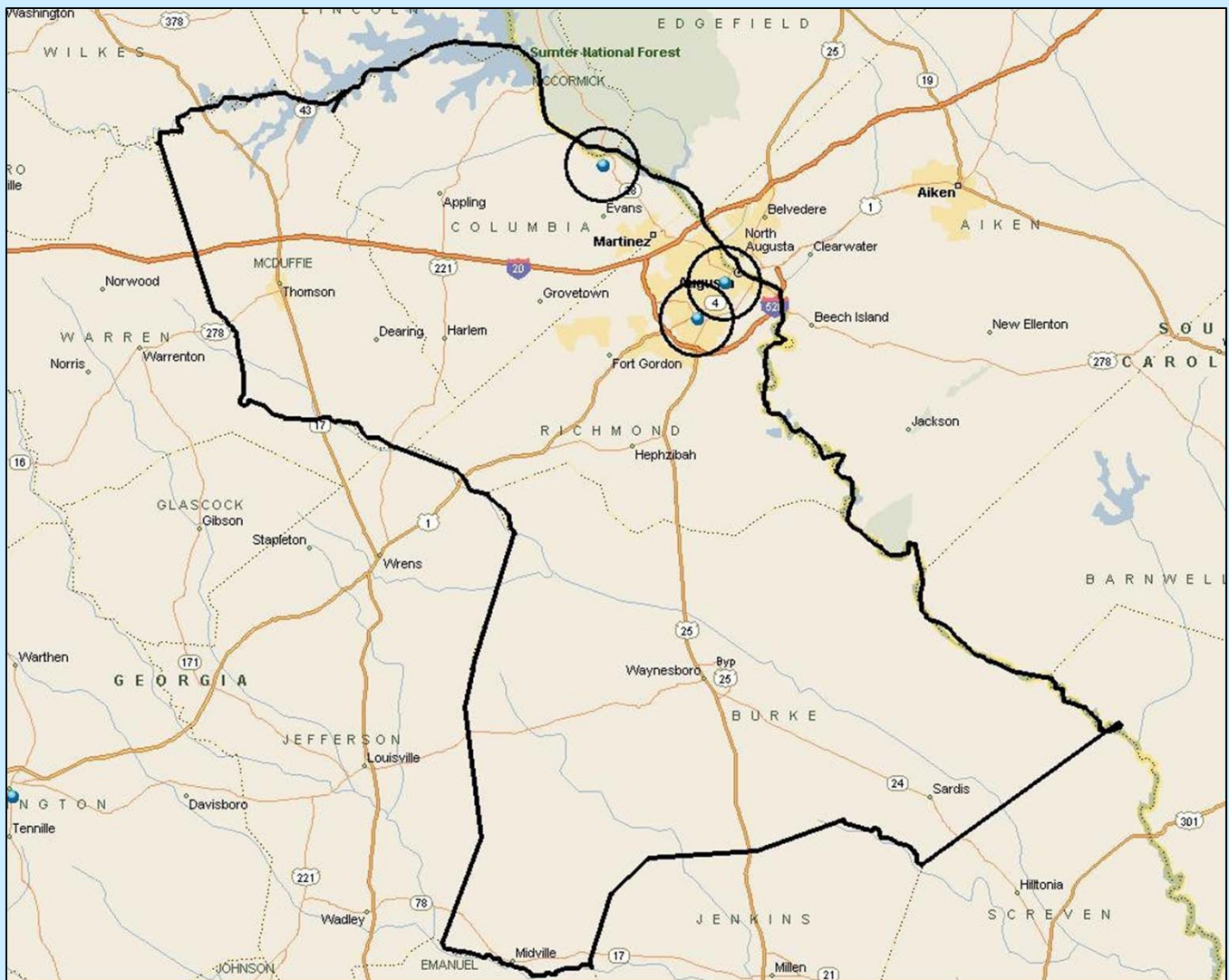
Southwest



Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
SO ₂	Population Exposure	Continuous	4 m	Neighborhood	1/1/98
SO ₂ 5-Minute Maximum	Population Exposure	Continuous	4 m	Neighborhood	8/1/10
Wind Direction	General/ Background	Continuous	10 m	Neighborhood	1/1/79
Wind Speed	General/ Background	Continuous	10 m	Neighborhood	1/1/79
PM _{2.5}	Population Exposure	Continuous	5 m	Neighborhood	10/1/03

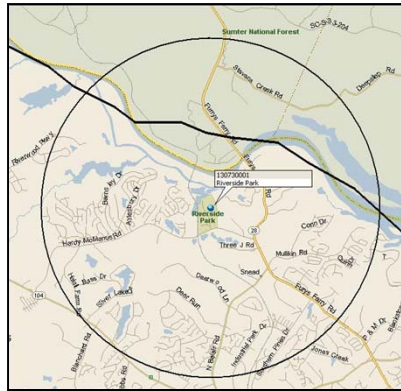
Recommendations: Continue monitoring

Augusta-Richmond County, Georgia-South Carolina MSA



See Figure 1 on page 2 for complete map of Georgia

Evans- Riverside Park



AQS ID: 130730001

Address: Riverside Park, 4431 Hardy McManus Road, Evans, Columbia County, Georgia 30809

Site Established: 2/17/05

Latitude/Longitude: N33.582000/W-82.131340

Elevation: 74 meters

Area Represented: Augusta-Richmond County, Georgia-South Carolina MSA

Site History: Established as O₃ and NO_y site

North

Southeast

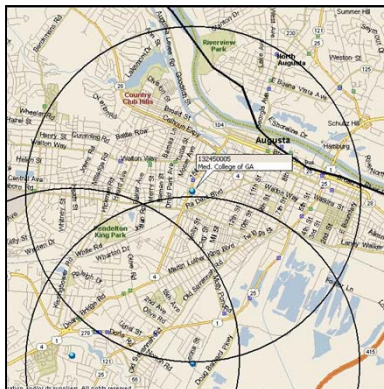
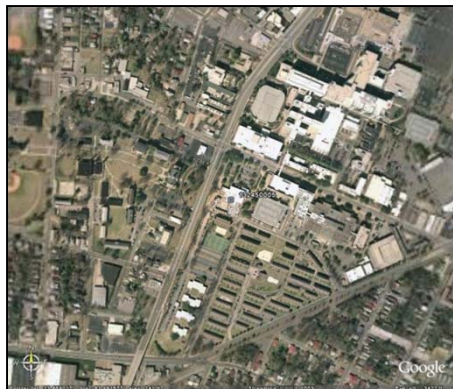
East



Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
O ₃	Population Exposure	Continuous [†] (Mar-Oct)	5 m	Neighborhood	3/1/05
NO _y	Population Exposure	Continuous	5 m	Neighborhood	3/1/05
Wind Speed	General/ Background	Continuous	10 m	Neighborhood	2/17/05
Wind Direction	General/ Background	Continuous	10 m	Neighborhood	2/17/05
Temperature	General/ Background	Continuous	2 m	Neighborhood	2/17/05
Relative Humidity	General/ Background	Continuous	2 m	Neighborhood	2/17/05

Recommendations: Continue monitoring; Parameter in red was temporarily suspended as of 7/28/08, and a request to close this monitor is discussed in Section 1.9 of Introduction; [†]Depending on finalization of proposed ozone rule [Federal Register: Vol. 75, page 2938, 1/19/10], monitoring season may change to February through October

Augusta- Medical College of Georgia



AQS ID: 132450005

Address: Medical College of Georgia, Augusta, Richmond County, Georgia

Site Established: 1/1/79

Latitude/Longitude: N33.469018/W-81.991581

Elevation: 42 meters

Area Represented: Augusta-Richmond County, Georgia-South Carolina MSA

Site History: Established as TSP site

North

South

East

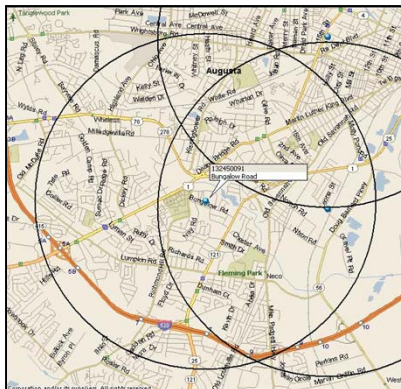
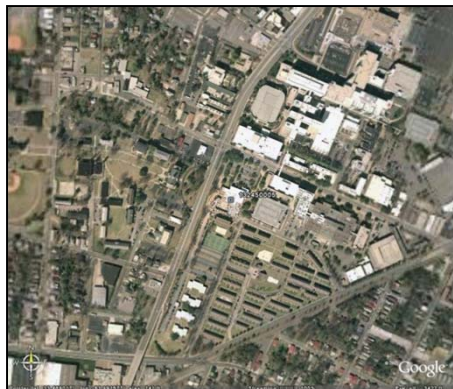
West



Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
PM _{2.5} *	Population Exposure	Every 3 days	14 m	Neighborhood	1/21/99
PM _{2.5} *	Quality Assurance	Every 12 days	14 m	Neighborhood	1/21/99

Recommendations: *Propose to shut down PM_{2.5} samplers (see Section 1.8 of Introduction for details)

Augusta- Bungalow Road Elementary



AQS ID: 132450091

Address: Bungalow Road Elementary School, 2216 Bungalow Rd, Augusta, Richmond County, Georgia

Site Established: 1/1/76

Latitude/Longitude: N33.433349/W-82.022217

Elevation: 46 meters

Area Represented: Augusta-Richmond County, Georgia-South Carolina MSA

Site History: Established as TSP site

North

South

East

West



Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
O ₃	Population Exposure	Continuous [†] (Mar-Oct)	5 m	Neighborhood	4/27/89
PM ₁₀	Population Exposure	Every 6 days	6 m	Neighborhood	4/9/96
PM _{2.5} Speciation	Population Exposure	Every 6 days	6 m	Neighborhood	3/2/02
PM _{2.5}	Population Exposure	Every 3 days	6 m	Neighborhood	2/8/99
PM _{2.5}	Population Exposure	Continuous	6 m	Neighborhood	10/1/03
Wind Speed	General/ Background	Continuous	10 m	Neighborhood	10/2/03
Wind Direction	General/ Background	Continuous	10 m	Neighborhood	10/2/03
Temperature	General/ Background	Continuous	2 m	Neighborhood	10/2/03

Augusta- Bungalow Road Elementary (continued)

Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
Relative Humidity	General/ Background	Continuous	2 m	Neighborhood	10/2/03
Precipitation	General/ Background	Continuous	4 m	Neighborhood	10/2/03
Barometric Pressure	General/ Background	Continuous	2 m	Neighborhood	10/2/03

Recommendations: Continue monitoring; †Depending on finalization of proposed ozone rule [Federal Register: Vol. 75, page 2938, 1/19/10], monitoring season may change to February through October; Plan to add SO₂ monitor by January 1, 2013 (see Section 3.2 of Introduction for details); If changes to PM₁₀ network are approved, plan to collocate PM₁₀ monitor (see Section 1.8 of Introduction for details)

Augusta- Near-Road Monitoring Site

AQS ID: To be determined

Address: Augusta, Richmond County, Georgia (Specifics to be determined)

Site Established: To be determined

Latitude/Longitude: To be determined

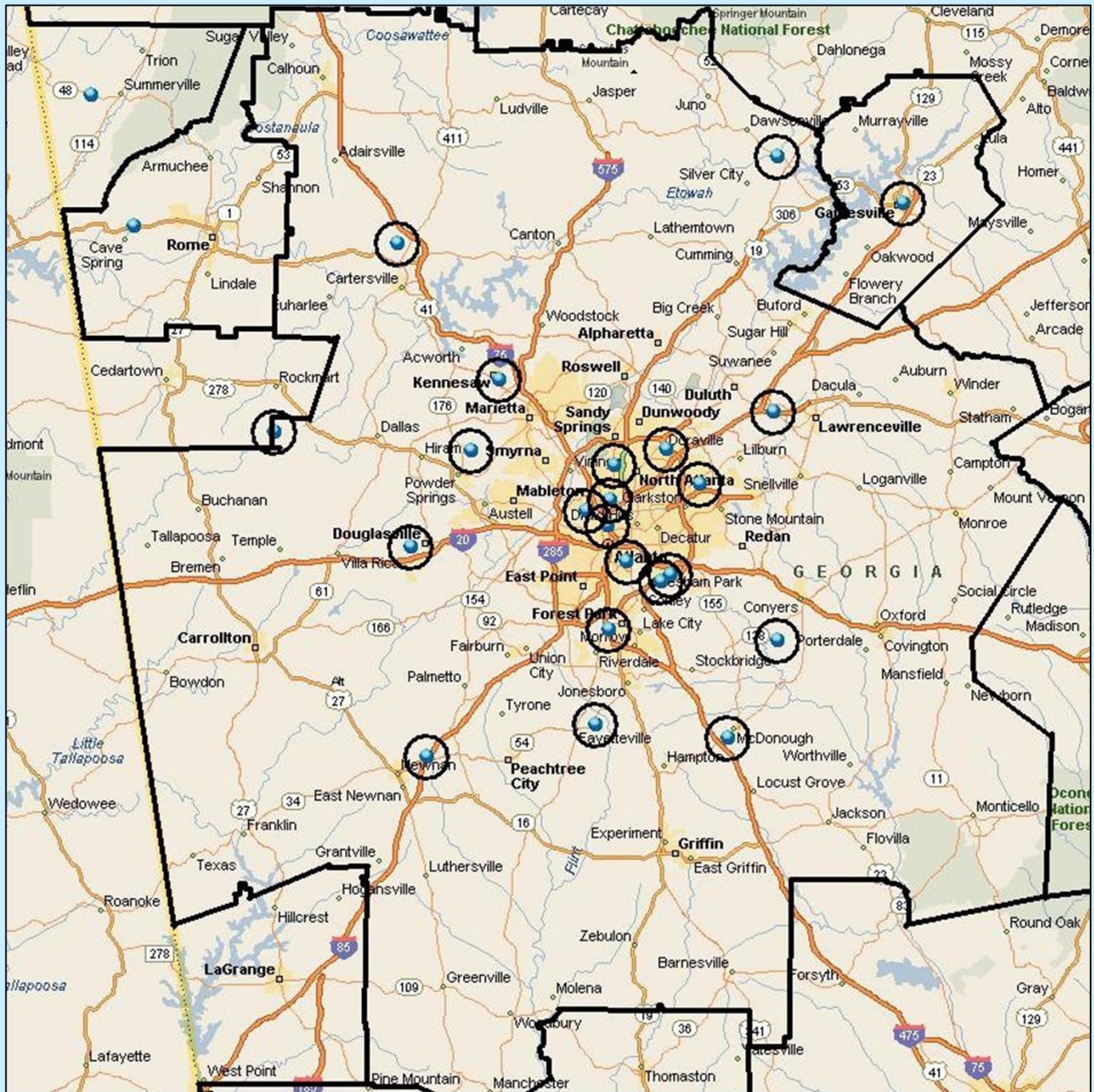
Elevation: To be determined

Area Represented: Augusta-Richmond County, Georgia-South Carolina MSA

Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
NO ₂	Highest Concentration	Continuous	TBD	Micro	TBD

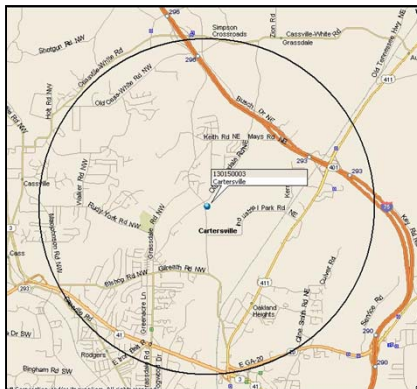
Due to lack of funding, site establishment has been put on hold (see Section 3.3 of Introduction for details)

Atlanta-Sandy Springs-Marietta MSA



See Figure 1 on page 2 for complete map of Georgia

Cartersville - Lead



AQS ID: 130150003

Address: Cartersville Lead, 420 Peebles Valley Road NE, Cartersville, Bartow County, Georgia 30121

Site Established: 12/09/09

Latitude/Longitude: N34.236667/W-84.805

Elevation: 800 meters

Area Represented: Atlanta-Sandy Springs-Marietta MSA

Site History: Established as lead site

North

South

East

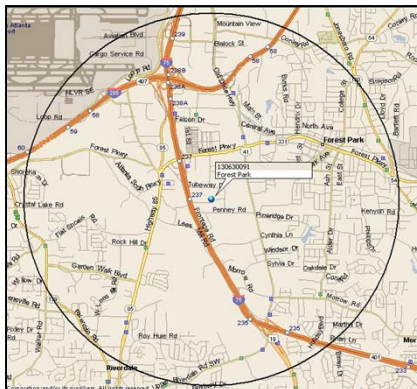
West



Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
Lead	Source Oriented	Every 6 days	4 m	Neighborhood	12/09/09

Recommendations: Continue monitoring

Forest Park- Georgia DOT



AQS ID: 130630091

Address: 25 Kennedy Drive, Forest Park, Clayton County, Georgia

Site Established: 1/1/78

Latitude/Longitude: N33.609722/W-84.391111

Elevation: 288 meters

Area Represented: Atlanta-Sandy Springs-Marietta MSA

Site History: Established as TSP site

North

South

East

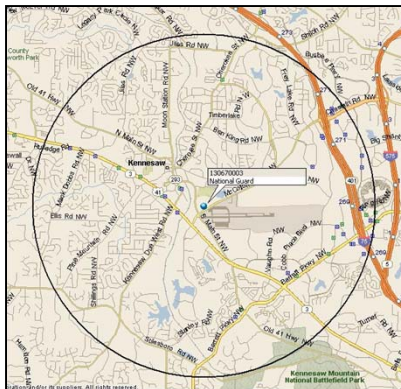
West



Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
PM _{2.5}	Population Exposure	Every 3 days	5 m	Neighborhood	1/9/99

Recommendations: Continue monitoring

Kennesaw- National Guard



AQS ID: 130670003

Address: Georgia National Guard, 1901 McCollum Parkway, Kennesaw, Cobb County, Georgia, 30144

Site Established: 2/7/99

Latitude/Longitude: N34.015346/W-84.607484

Elevation: 317 meters

Area Represented: Atlanta-Sandy Springs-Marietta MSA

Site History: Established as PM_{2.5} site

North

South

East

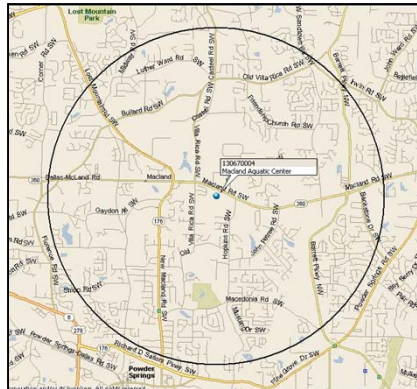
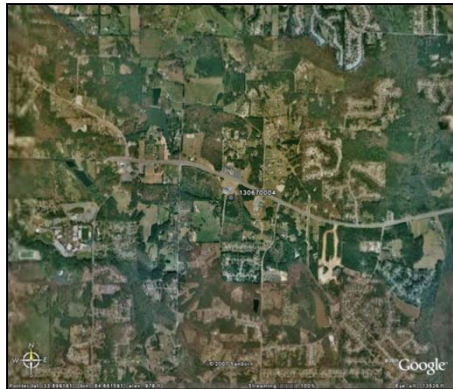
West



Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
O ₃	Population Exposure	Continuous [†] (Mar-Oct)	4 m	Neighborhood	9/1/99
PM _{2.5}	Population Exposure	Daily	4 m	Neighborhood	2/7/99

Recommendations: Continue monitoring; [†]Depending on finalization of proposed ozone rule [Federal Register: Vol. 75, page 2938, 1/19/10], monitoring season may change to February through October

Powder Springs- Macland Aquatic Center



AQS ID: 130670004

Address: Macland Aquatic Center, Powder Springs, Cobb County, Georgia

Site Established: 2/5/03

Latitude/Longitude: N33.899182/W-84.661589

Elevation: 312 meters

Area Represented: Atlanta-Sandy Springs-Marietta MSA

Site History: Established as PM_{2.5} site

North

South

East

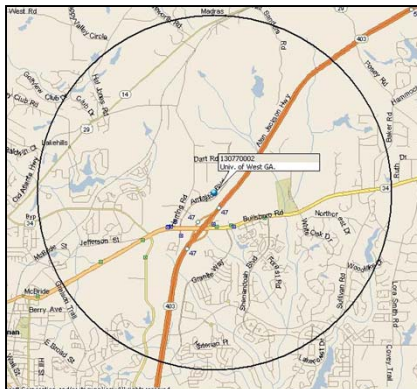
West



Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
PM _{2.5} *	Population Exposure	Every 3 days	2 m	Neighborhood	2/5/03

Recommendations: *Propose to shut down PM_{2.5} sampler (see Section 1.8 of Introduction for details)

Newnan- University of West Georgia



AQS ID: 130770002

Address: Univ. of West GA, Newnan Campus, 7 Solar Circle, Newnan, Coweta County, Georgia 30265

Site Established: 5/5/99

Latitude/Longitude: N33.40389/W-84.74606

Elevation: 271 meters

Area Represented: Atlanta-Sandy Springs-Marietta MSA

Site History: Established as O₃ site

North

South

East

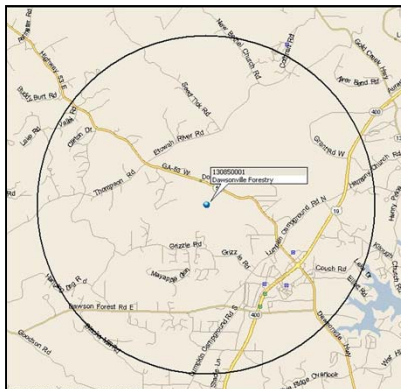
West



Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
O ₃	Population Exposure	Continuous [†] (Mar-Oct)	4 m	Neighborhood	5/5/99
PM _{2.5}	Population Exposure	Continuous	4 m	Neighborhood	9/1/03
Wind Direction	General/ Background	Continuous	10 m	Neighborhood	1/1/04
Wind Speed	General/ Background	Continuous	10 m	Neighborhood	1/1/04

Recommendations: Continue monitoring; [†]Depending on finalization of proposed ozone rule [Federal Register: Vol. 75, page 2938, 1/19/10], monitoring season may change to February through October; Plan to add SO₂ monitor by January 1, 2013

Dawsonville- GA Forestry Commission



AQS ID: 130850001

Address: Georgia Forestry Commission, 4500 Georgia Highway 53 East, Dawsonville, Dawson County, Georgia 30534

Site Established: 1/1/85

Latitude/Longitude: N34.37619/W-84.05986

Elevation: 372 meters

Area Represented: Atlanta-Sandy Springs-Marietta MSA

Site History: Established as O₃ site

North

South

East

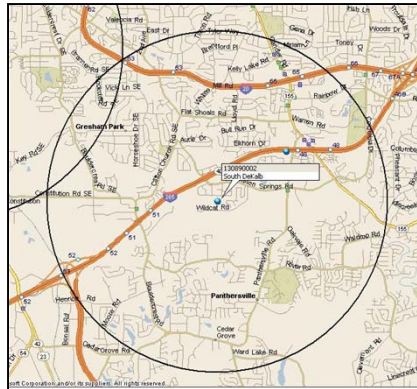
West



Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
O ₃	Population Exposure	Continuous [†] (Mar-Oct)	4 m	Neighborhood	1/1/85
Toxics	General/ Background	Every 12 days	2 m	Neighborhood	12/11/96
Carbonyls	General/ Background	Every 12 days	4 m	Neighborhood	1/1/99
Wind Speed	General/ Background	Continuous	10 m	Neighborhood	1/1/05
Wind Direction	General/ Background	Continuous	10 m	Neighborhood	1/1/05

Recommendations: Continue monitoring. [†]Depending on finalization of proposed ozone rule [Federal Register: Vol. 75, page 2938, 1/19/10], monitoring season may change to February through October

Decatur- South DeKalb



AQS ID: 130890002

Address: 2390-B Wildcat Road, Decatur, DeKalb County, Georgia 30034

Site Established: 1/1/74

Latitude/Longitude: N33.68797/-84.29048

Elevation: 308 meters

Area Represented: Atlanta-Sandy Springs-Marietta MSA

Site History: Established as O₃ site

North

South

East

West



Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
PM _{2.5}	Population Exposure	Daily	2.7 m	Neighborhood	1/22/99
PM _{2.5}	Quality Assurance	Every 12 days	2.7 m	Neighborhood	12/20/08
PM _{2.5}	Population Exposure	Continuous	4 m	Neighborhood	5/1/03
PM _{2.5} Speciation	Population Exposure	Every 3 days	2.6 m	Neighborhood	10/1/00
SO ₂	Population Exposure	Continuous	4 m	Neighborhood	10/1/10
SO ₂ 5-Minute Maximum	Population Exposure	Continuous	4 m	Neighborhood	10/1/10
O ₃	Highest Concentration	Continuous	4 m	Neighborhood/ Urban	1/1/74

Decatur- South DeKalb (continued)

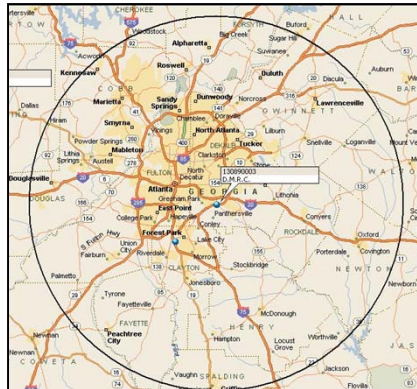
Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
CO	Population Exposure	Continuous	4 m	Neighborhood	5/19/03
NO _y	Population Exposure	Continuous	10 m	Neighborhood/ Urban	1/1/98
NO	Population Exposure	Continuous	4 m	Neighborhood/ Urban	4/1/94
NO _x	Population Exposure	Continuous	4 m	Neighborhood/ Urban	4/1/94
NO ₂	Population Exposure	Continuous	5 m	Neighborhood/ Urban	7/21/78
Hexavalent Chromium	Population Exposure	Every 6 days	2.3 m	Neighborhood	2/27/05
Hexavalent Chromium	Quality Assurance	Every 2 months	2.5 m	Neighborhood	2/27/05
Carbonyls (PAMS)	Max Precursor Emissions	3-hour Samples in Summer	4 m	Neighborhood	6/1/93
Carbonyls (PAMS/Toxics)	Max Precursor Emissions/ Population Exposure	Every 6 days	4 m	Neighborhood	6/1/93
Carbonyls	Quality Assurance	Every 12 days	4 m	Neighborhood	1/1/06
PM ₁₀ Select Metals (Toxics)	Population Exposure	Every 6 days	2 m	Neighborhood	1/1/00
PM ₁₀ Select Metals (Toxics)	Quality Assurance	Every 12 days	2.3 m	Neighborhood	1/1/05
PM ₁₀ Continuous	Population Exposure	Continuous	4 m	Neighborhood	1/1/11
PM _{coarse} Continuous	Population Exposure	Continuous	4 m	Neighborhood	1/1/11
VOCs (PAMS)	Max Precursor Emissions	Continuous in Summer	4 m	Neighborhood	6/1/93
VOCs (PAMS/Toxics)	Max Precursor Emissions/ Population Exposure	Every 6 days	4 m	Neighborhood	6/1/93
VOCs (Toxics)	Quality Assurance	Every 12 days	4 m	Neighborhood	1/1/05
Elemental Carbon (Aethalometer)	Population Exposure	Continuous	4 m	Neighborhood	6/12/03

Decatur- South DeKalb (continued)

Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
Semi-VOCs	Population Exposure	Every 6 days	1.6 m	Neighborhood	4/30/07
Semi-VOCs	Quality Assurance	Every 2 months	2 m	Neighborhood	4/30/07
Outdoor Temperature	General/ Background	Continuous	2 m	Neighborhood	6/1/93
Rain/Melt Precipitation	General/ Background	Continuous	3 m	Neighborhood	1/1/97
Barometric Pressure	General/ Background	Continuous	2 m	Neighborhood	6/1/93
Wind Direction	General/ Background	Continuous	10 m	Neighborhood	6/1/93
Wind Speed	General/ Background	Continuous	10 m	Neighborhood	6/1/93
Sigma Theta	General/ Background	Continuous	10 m	Neighborhood	1/1/02
Relative Humidity	General/ Background	Continuous	2 m	Neighborhood	6/1/93

Recommendations: Continue monitoring; NCore site (see Appendix C for full description)

Decatur- DMRC



AQS ID: 130890003

Address: D.M.R.C., 3073 Panthersville Road, Decatur, DeKalb County, Georgia

Site Established: 7/1/86

Latitude/Longitude: N33.698468/W-84.272694

Elevation: 238 meters

Area Represented: Atlanta-Sandy Springs-Marietta MSA

Site History: Established as lead site

North



South



East



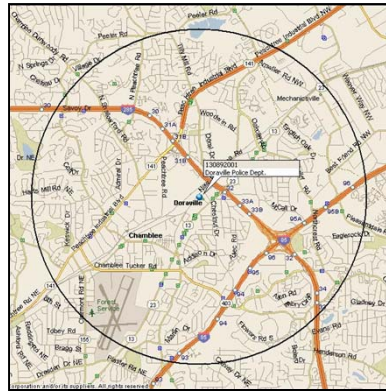
West



Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
Lead	Regional Transport	Every 6 days	2 m	Regional	7/1/86
Lead	Quality Assurance	Every 6 days	2 m	Regional	8/5/09

Recommendations: Continue monitoring; Lead monitor for NCore Station at South DeKalb site (see Appendix C for full description); Propose to add NO₂ monitor for near-road monitoring when funding is available (see Section 3.3 of Introduction for details)

Doraville- Police Department



AQS ID: 130892001

Address: Doraville Health Center, 3760 Park Street, Doraville, DeKalb County, Georgia

Site Established: 7/1/70

Latitude/Longitude: N33.90133/W-84.28007

Elevation: 314 meters

Area Represented: Atlanta-Sandy Springs-Marietta MSA

Site History: Established as TSP site

North

South

East

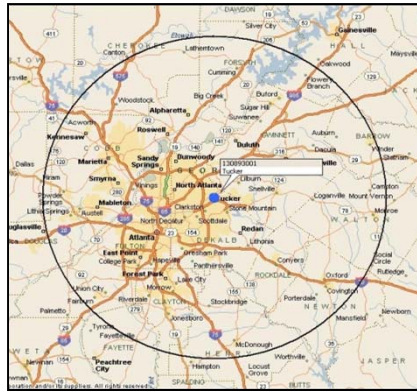
West



Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
PM _{2.5} *	Population Exposure	Daily	6 m	Neighborhood	1/1/99
PM ₁₀ *	Population Exposure	Every 6 days	6 m	Neighborhood	12/1/87

Recommendations: *Propose to shut down PM_{2.5} and PM₁₀ samplers (see Section 1.8 of Introduction for details)

Tucker- Idlewood Road



AQS ID: 130893001

Address: Idlewood Road, Tucker, DeKalb County, Georgia

Site Established: 7/19/90

Latitude/Longitude: N33.845602/W-84.213486

Elevation: 324 meters

Area Represented: Atlanta-Sandy Springs-Marietta MSA

Site History: Established as O₃, CO, NO/NO_x/NO₂ site

North

South

East

West



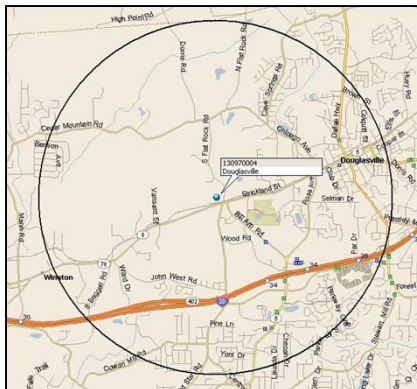
Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
Wind Speed	General/ Background	Continuous	10 m	Urban	4/1/95
Wind Direction	General/ Background	Continuous	10 m	Urban	4/1/95
Outdoor Temperature	General/ Background	Continuous	2 m	Urban	4/1/95
Relative Humidity	General/ Background	Continuous	2 m	Urban	4/1/95
Solar Radiation	General/ Background	Continuous	3 m	Urban	4/1/95
Ultraviolet Radiation	General/ Background	Continuous	3 m	Urban	1/1/97

Tucker- Idlewood Road (continued)

Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
Barometric Pressure	General/ Background	Continuous	2 m	Urban	4/1/95
Rain/Melt Precipitation	General/ Background	Continuous	3 m	Urban	1/1/97

Recommendations: Continue monitoring

Douglasville- W. Strickland Street



AQS ID: 130970004

Address: Douglas County Water Authority, 7725 W. Strickland St., Douglasville, Douglas County, Georgia

Site Established: 8/15/97

Latitude/Longitude: N33.743514/W-84.779263

Elevation: 368 meters

Area Represented: Atlanta-Sandy Springs-Marietta MSA

Site History: Established as O₃ site

North

South

East

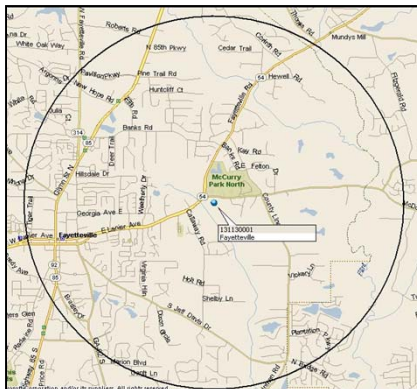
West



Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
O ₃	Population Exposure	Continuous [†] (Mar-Oct)	4 m	Neighborhood	8/15/97
Wind Direction	General/ Background	Continuous	10 m	Neighborhood	8/15/97
Wind Speed	General/ Background	Continuous	10 m	Neighborhood	8/15/97

Recommendations: Continue monitoring; [†]Depending on finalization of proposed ozone rule [Federal Register: Vol. 75, page 2938, 1/19/10], monitoring season may change to February through October

Fayetteville- GA DOT



AQS ID: 131130001

Address: Georgia DOT, 145 McDonough Road, Fayetteville, Fayette County, Georgia

Site Established: 4/1/98

Latitude/Longitude: N33.45559/W-84.41908

Elevation: 258 meters

Area Represented: Atlanta-Sandy Springs-Marietta MSA

Site History: Established as O₃ site

North

South

East

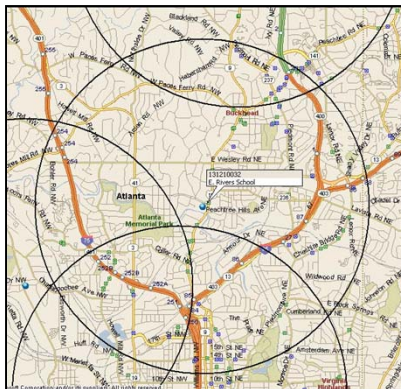
West



Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
O ₃	Population Exposure	Continuous [†] (Mar-Oct)	4 m	Neighborhood	4/1/98
Wind Speed	General/ Background	Continuous	10 m	Neighborhood	1/1/05
Wind Direction	General/ Background	Continuous	10 m	Neighborhood	1/1/05

Recommendations: Parameters in red have temporarily suspended operation: O₃ as of 10/31/08, Meteorological parameters as of 10/29/08; [†]Depending on finalization of proposed ozone rule [Federal Register: Vol. 75, page 2938, 1/19/10], monitoring season may change to February through October

Atlanta- E. Rivers School



AQS ID: 131210032

Address: E. Rivers School, 8 Peachtree Battle Avenue NW, Atlanta, Fulton County, Georgia

Site Established: 9/1/71

Latitude/Longitude: N33.81923/W-84.39001

Elevation: 305 meters

Area Represented: Atlanta-Sandy Springs-Marietta MSA

Site History: Established as TSP site

North

South

East

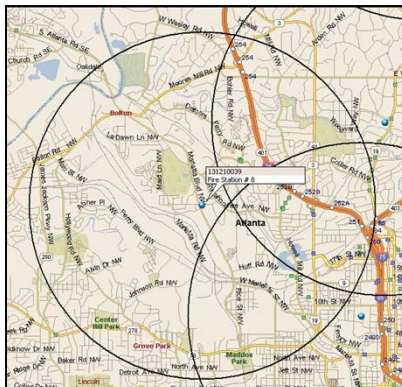
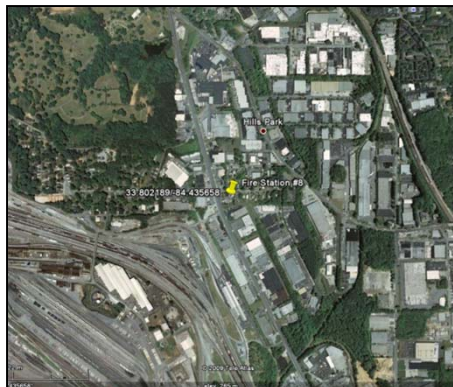
West



Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
PM ₁₀ *	Population Exposure	Every 6 days	4 m	Neighborhood	8/1/96
PM ₁₀ *	Quality Assurance	Every 6 days	4 m	Neighborhood	8/1/96
PM _{2.5} *	Population Exposure	Daily*	4 m	Neighborhood	1/1/99
PM _{2.5} *	Quality Assurance	Daily*	4 m	Neighborhood	1/1/99

Recommendations: *Propose to shut down PM_{2.5} and PM₁₀ samplers (see Section 1.8 of Introduction for details)

Atlanta- Fire Station #8



AQS ID: 131210039

Address: Fire Station #8, 1711 Marietta Blvd., Atlanta, Fulton County, Georgia

Site Established: 1/1/73

Latitude/Longitude: N33.802189/W-84.435658

Elevation: 265 meters

Area Represented: Atlanta-Sandy Springs-Marietta MSA

Site History: Established as TSP site

North

South

East

West

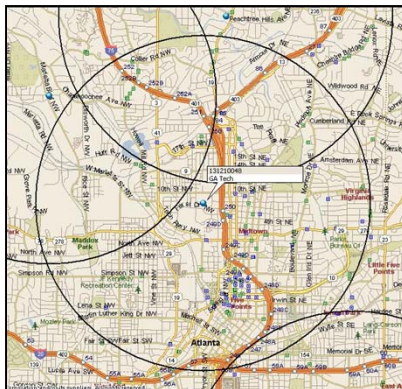
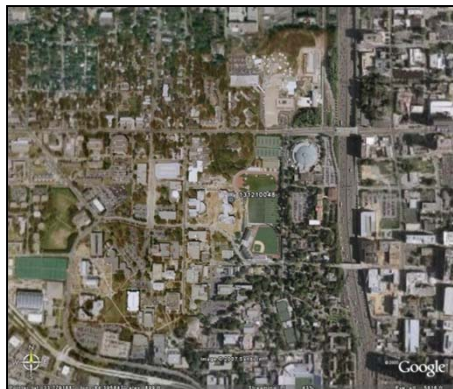


Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
PM _{2.5}	Population Exposure	Every 3 days	4 m	Neighborhood	1/21/99*

* Sampler inactive from 9/30/06 to 12/1/08

Recommendations: Continue monitoring; Propose to add PM₁₀ sampler (see Section 1.8 of Introduction for details)

Atlanta- Georgia Tech



AQS ID: 131210048

Address: Georgia Tech Environmental Science Building, 311 Ferst Drive, Atlanta, Fulton County, Georgia

Site Established: 2/1/82

Latitude/Longitude: N33.779189/W-84.395843

Elevation: 290 meters

Area Represented: Atlanta-Sandy Springs-Marietta MSA

Site History: Established as NO₂ and SO₂ site

North

South

East

West



Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
PM ₁₀ *	Population Exposure	Continuous	24.90 m	Neighborhood	7/1/98
Wind Direction	General/ Background	Continuous	32 m	Neighborhood	1/4/07
Wind Speed	General/ Background	Continuous	32 m	Neighborhood	1/4/07

Recommendations: *Propose to shut down PM₁₀ sampler and close site (see Section 1.8 of Introduction for details)

Atlanta- Georgia Tech Area Near-Road Monitoring Site

AQS ID: To be determined

Address: Georgia Tech, Atlanta, Fulton County, Georgia (Specifics to be determined)

Site Established: Proposed 1/1/2013

Latitude/Longitude: To be determined

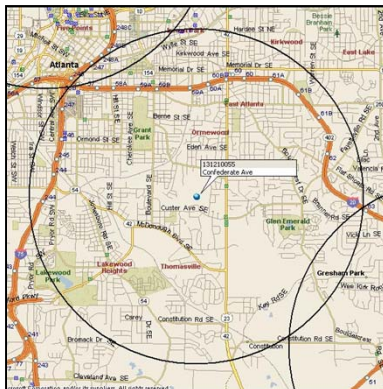
Elevation: To be determined

Area Represented: Atlanta-Sandy Springs-Marietta MSA

Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
NO ₂	Highest Concentration	Continuous	TBD	Micro	Proposed 1/1/13
CO	Highest Concentration	Continuous	TBD	Micro	Proposed 1/1/13

Anticipate site establishment by January 1, 2013 (see Section 3.3 of Introduction for details)

Atlanta- Confederate Avenue



AQS ID: 131210055

Address: 945 Confederate Avenue, Atlanta, Fulton County, Georgia 30334

Site Established: 10/1/91

Latitude/Longitude: N33.72005/W-84.35714

Elevation: 292 meters

Area Represented: Atlanta-Sandy Springs-Marietta MSA

Site History: Established as O₃ and SO₂ site

North

South

East

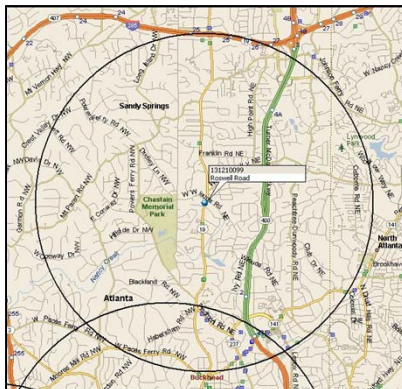
West



Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
SO ₂	Population Exposure	Continuous	4 m	Neighborhood	10/1/91
SO ₂ 5-Minute Maximum	Population Exposure	Continuous	4 m	Neighborhood	8/1/10
O ₃	Population Exposure	Continuous [†] (Mar-Oct)	4 m	Neighborhood	10/1/91
PM _{2.5}	Population Exposure	Continuous	4.80 m	Neighborhood	7/1/05
Wind Direction	General/ Background	Continuous	10 m	Neighborhood	1/1/04
Wind Speed	General/ Background	Continuous	10 m	Neighborhood	1/1/04

Recommendations: Continue monitoring; [†]Depending on finalization of proposed ozone rule [Federal Register: Vol. 75, page 2938, 1/19/10], monitoring season may change to February through October

Atlanta- Roswell Road



AQS ID: 131210099

Address: Georgia Power Sub-station, 4434 Roswell Road, Atlanta, Fulton County, Georgia

Site Established: 8/4/94

Latitude/Longitude: N33.87633/W-84.38041

Elevation: 270 meters

Area Represented: Atlanta-Sandy Springs-Marietta MSA

Site History: Established as CO site

North

South

East

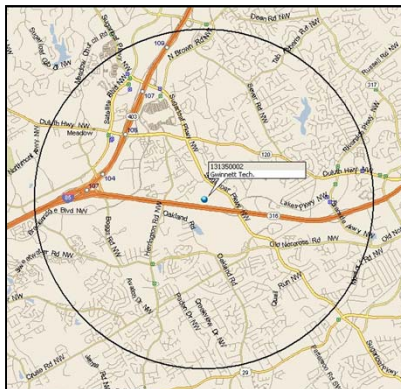
West



Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
CO	Highest Concentration	Continuous	3 m	Micro	8/4/94

Recommendations: Continue monitoring; Plan to move monitor and trailer following NO₂ near-road monitoring schedule (see Section 3.4 of Introduction for details)

Lawrenceville- Gwinnett Tech



AQS ID: 131350002

Address: Gwinnett Tech, 1250 Atkinson Road, Lawrenceville, Gwinnett County, Georgia 30246

Site Established: 3/17/95

Latitude/Longitude: N33.96127/W-84.06901

Elevation: 290 meters

Area Represented: Atlanta-Sandy Springs-Marietta MSA

Site History: Established as O₃ site

North

South

East

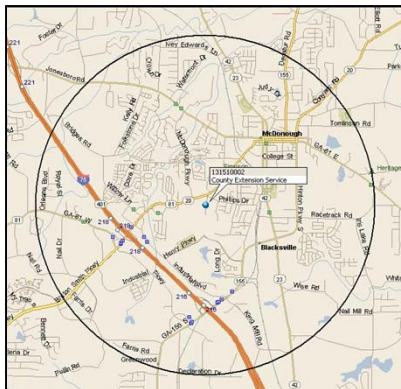
West



Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
O ₃	Highest Concentration	Continuous [†] (Mar-Oct)	5 m	Neighborhood	5/17/95
PM _{2.5}	Population Exposure	Every 3 days	5 m	Neighborhood	1/1/00
PM _{2.5}	Population Exposure	Continuous	5 m	Neighborhood	9/1/03

Recommendations: Continue monitoring; [†]Depending on finalization of proposed ozone rule [Federal Register: Vol. 75, page 2938, 1/19/10], monitoring season may change to February through October

McDonough- County Extension Office



AQS ID: 131510002

Address: Henry County Extension Office, 86 Work Camp Rd, McDonough, Henry County, Georgia 30253

Site Established: 6/7/99

Latitude/Longitude: N33.433426/W-84.161797

Elevation: 249 meters

Area Represented: Atlanta-Sandy Springs-Marietta MSA

Site History: Established as O₃ site

North



South



East



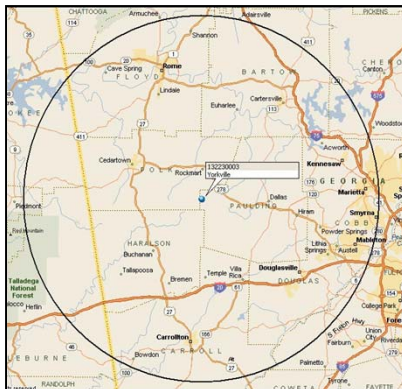
West



Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
O ₃	Population Exposure	Continuous [†] (Mar-Oct)	4 m	Neighborhood	6/7/99
PM _{2.5}	Population Exposure	Continuous	4 m	Neighborhood	9/1/03

Recommendations: Continue monitoring; [†]Depending on finalization of proposed ozone rule [Federal Register: Vol. 75, page 2938, 1/19/10], monitoring season may change to February through October

Yorkville- King Farm



AQS ID: 132230003

Address: King Farm, 160 Ralph King Path, Yorkville, Paulding County, Georgia, 30153

Site Established: 1/1/96

Latitude/Longitude: N33.92850/W-85.04534

Elevation: 379 meters

Area Represented: Atlanta-Sandy Springs-Marietta MSA

Site History: Established as PAMS site

North

South

East



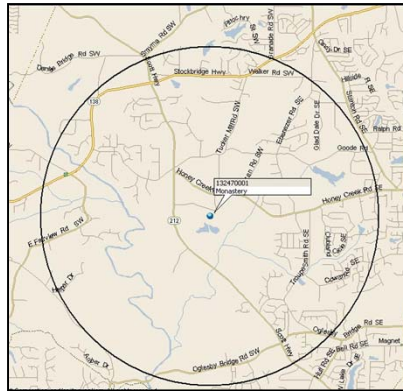
Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
O ₃	Population Exposure/ Upwind Background	Continuous [†] (Mar-Oct)	4 m	Regional	1/1/96
CO	Population Exposure/ Upwind Background	Continuous	4 m	Regional	7/16/02
NO	Population Exposure/ Upwind Background	Continuous	4 m	Regional	1/1/96
NO ₂	Population Exposure/ Upwind Background	Continuous	4 m	Regional	1/1/96

Yorkville- King Farm (continued)

Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
NO _x	Population Exposure/ Upwind Background	Continuous	4 m	Regional	1/1/96
Toxics	Regional Transport	Every 12 days	2 m	Neighborhood	1/1/00
VOCs (PAMS)	Upwind Background	Continuous in Summer	4 m	Regional	1/1/96
VOCs (PAMS)	Upwind Background	Every 6 days	4 m	Regional	1/1/96
VOCs (Toxics)	Regional Transport	Every 12 days	4 m	Neighborhood	1/1/96
PM _{2.5}	Upwind Background	Continuous	4 m	Regional	3/1/03
PM _{2.5}	Upwind Background/ Regional Transport	Every 3 days	5 m	Regional	1/24/99
Solar Radiation	General/ Background	Continuous	1.50 m	Regional	1/1/96
Ultraviolet Radiation	General/ Background	Continuous	1.50 m	Regional	1/1/97
Barometric Pressure	General/ Background	Continuous	2 m	Regional	1/1/96
Rain/Melt Precipitation	General/ Background	Continuous	3 m	Regional	1/1/97
Wind Direction	General/ Background	Continuous	10 m	Regional	1/1/96
Wind Speed	General/ Background	Continuous	10 m	Regional	1/1/96
Outdoor Temperature	Regional Transport	Continuous	2 m	Regional	1/1/96
Relative Humidity	General/ Background	Continuous	2 m	Regional	1/1/96

Recommendations: Continue monitoring; [†]Depending on finalization of proposed ozone rule [Federal Register: Vol. 75, page 2938, 1/19/10], monitoring season may change to February through October

Conyers- Monastery



AQS ID: 132470001

Address: Monastery of the Holy Spirit, 3720 Georgia Highway 212, Conyers, Rockdale County, Georgia

Site Established: 7/26/78

Latitude/Longitude: N33.590932/W-84.065386

Elevation: 219 meters

Area Represented: Atlanta-Sandy Springs-Marietta MSA

Site History: Established as O₃ site

North

South

East

West



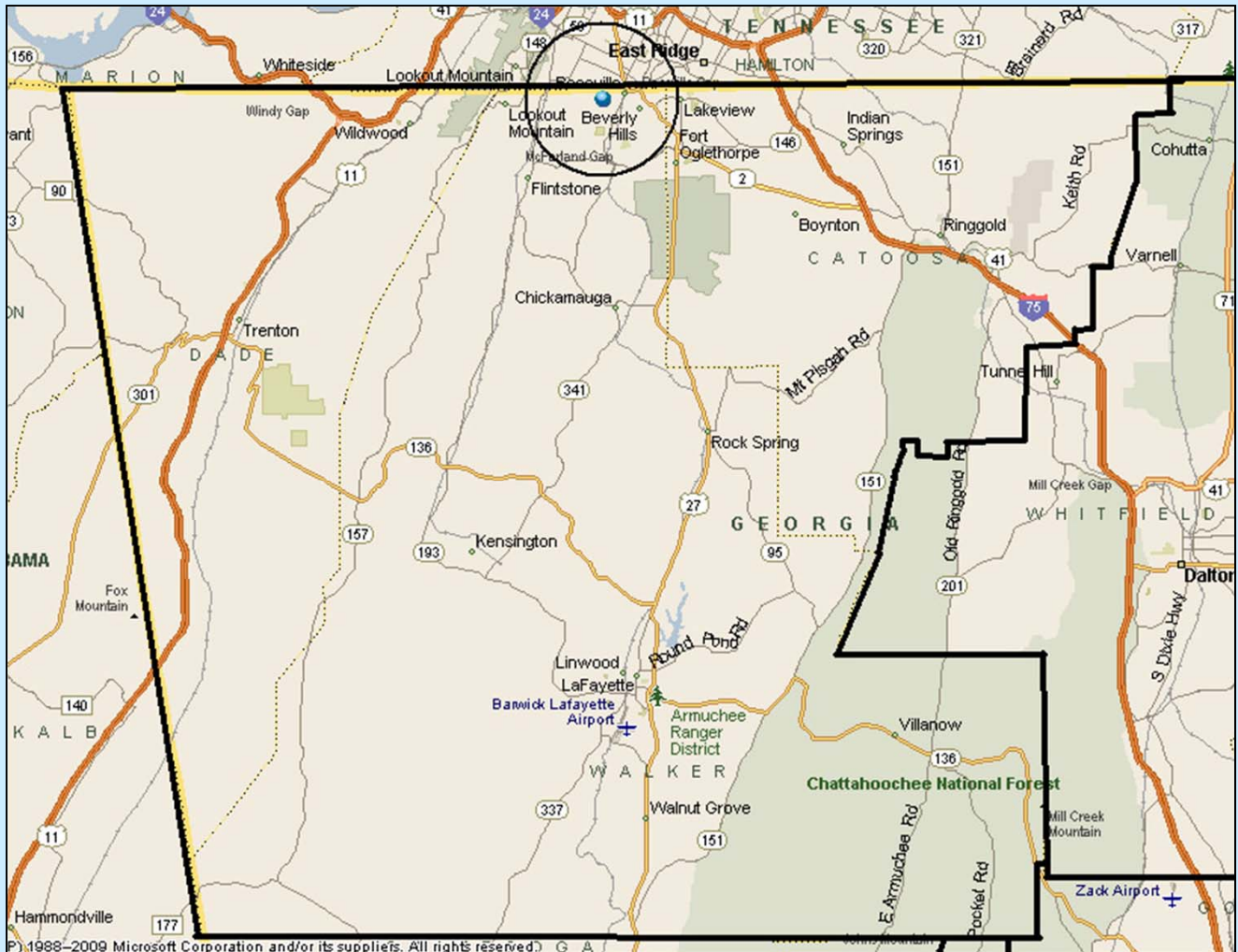
Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
O ₃	Maximum Concentration	Continuous [†] (Mar-Oct)	5 m	Neighborhood	7/26/78
NO _x	Max Precursor Emissions Impact	Continuous	5 m	Neighborhood	4/1/94
NO ₂	Max Precursor Emissions Impact	Continuous	5 m	Neighborhood	4/1/94
NO	Max Precursor Emissions Impact	Continuous	5 m	Neighborhood	4/1/94
VOCs (PAMS)	Max Precursor Emissions Impact	Continuous in Summer	5 m	Neighborhood	1/1/94

Conyers- Monastery (continued)

Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
VOCs (PAMS)	Max Precursor Emissions Impact	Every 6 days	5 m	Neighborhood	1/1/94
Relative Humidity	General/ Background	Continuous	2 m	Neighborhood	6/1/94
Barometric Pressure	General/ Background	Continuous	2 m	Neighborhood	6/1/94
Ultraviolet Radiation	General/ Background	Continuous	1.50 m	Neighborhood	1/1/97
Outdoor Temperature	General/ Background	Continuous	2 m	Neighborhood	6/1/94
Solar Radiation	General/ Background	Continuous	1.50 m	Neighborhood	6/1/94
Wind Direction	General/ Background	Continuous	10 m	Neighborhood	6/1/94
Wind Speed	General/ Background	Continuous	10 m	Neighborhood	6/1/94
Rain/Melt Precipitation	General/ Background	Continuous	3 m	Neighborhood	7/1/03

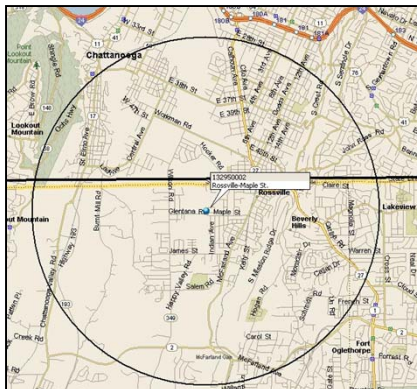
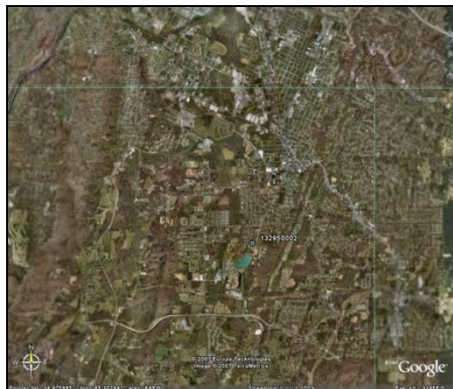
Recommendations: Continue monitoring; [†]Depending on finalization of proposed ozone rule [Federal Register: Vol. 75, page 2938, 1/19/10], monitoring season may change to February through October

Chattanooga Tennessee-Georgia MSA



See Figure 1 on page 2 for complete map of Georgia

Rossville- Maple Street



AQS ID: 132950002

Address: 601 Maple Street, Lot #6, Rossville, Walker County, Georgia, 30741

Site Established: 1/1/67

Latitude/Longitude: N34.97889/W-85.30098

Elevation: 200 meters

Area Represented: Chattanooga Tennessee-Georgia MSA

Site History: Established as TSP and SO₂/NO₂ site

North

South

East

West



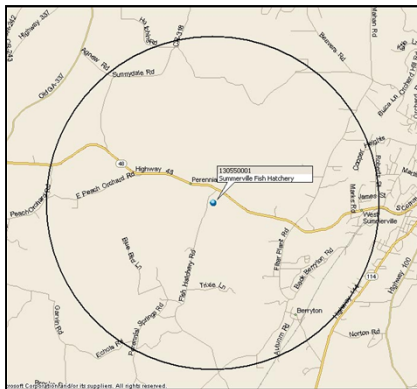
Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
PM _{2.5}	Population Exposure/ Regional Transport	Continuous	6 m	Neighborhood	1/24/07
PM _{2.5}	Population Exposure	Every 3 days	6 m	Neighborhood	1/1/00
PM _{2.5} Speciation	Population Exposure	Every 6 days	6 m	Neighborhood	3/23/05

Recommendations: Continue monitoring

Sites Not in an MSA

(Listed in AQS ID Order)

Summerville- DNR Fish Hatchery



AQS ID: 130550001

Address: Summerville Fish Hatchery, 231 Fish Hatchery Road, Summerville,
Chattooga County, Georgia 30747

Site Established: 1985

Latitude/Longitude: N34.474167/W-85.408056

Elevation: 276 meters

Area Represented: Not in an MSA, Summerville Micropolitan Statistical Area

Site History: Established as Acid Rain site

North

South

East

West

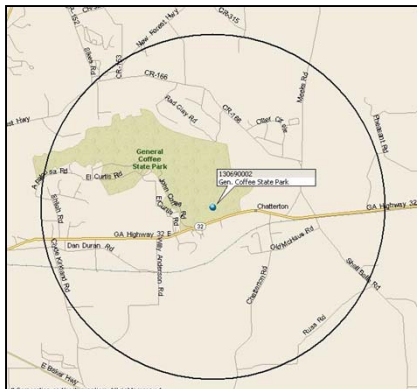


Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
O ₃	Regional Transport	Continuous [†] (Mar-Oct)	5 m	Urban	3/1/04
PM ₁₀ *	General Background	Every 6 days	2 m	Neighborhood	8/27/90

Recommendations: Continue monitoring; [†]Depending on finalization of proposed ozone rule [Federal Register: Vol. 75, page 2938, 1/19/10], monitoring season may change to February through October;;

*Propose to shut down PM₁₀ sampler (see Section 1.8 of Introduction for details)

Douglas- General Coffee State Park



AQS ID: 130690002

Address: General Coffee State Park, Douglas, Coffee County, Georgia

Site Established: 1/1/99

Latitude/Longitude: N31.51309/W-82.75027

Elevation: 49 meters

Area Represented: Not in an MSA, Douglas Micropolitan Statistical Area

Site History: Established as Air Toxics site

Northwest

Southeast

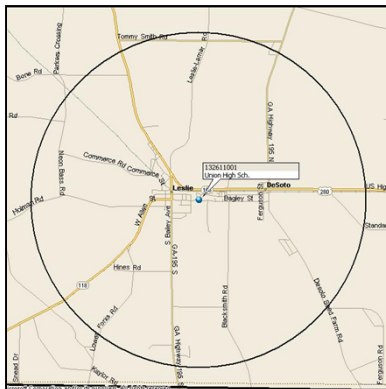
Southeast



Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
PM _{2.5} Speciation	General Background	Every 6 days	3 m	Regional	3/1/02
Toxics	General Background	Every 12 days	2 m	Regional	1/1/99

Recommendations: Continue monitoring

Leslie- Union High School



AQS ID: 132611001

Address: Union High School, Leslie, Sumter County, Georgia

Site Established: 1/1/81

Latitude/Longitude: N31.953056/W-84.079444

Elevation: 100 meters

Area Represented: Not in an MSA, Americus Micropolitan Statistical Area

Site History: Established as O₃ site

North

South

East

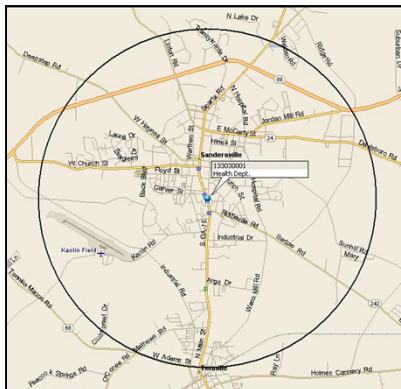
West



Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
O ₃	General/ Background	Continuous [†] (Mar-Oct)	1 m	Neighborhood	1/1/81

Recommendations: Continue monitoring; [†]Depending on finalization of proposed ozone rule [Federal Register: Vol. 75, page 2938, 1/19/10], monitoring season may change to February through October

Sandersville- Health Department



AQS ID: 133030001

Address: Sandersville Health Dept, 201 Morningside Drive, Sandersville, Washington County, Georgia

Site Established: 1/1/74

Latitude/Longitude: N32.974722/W-82.808889

Elevation: 135 meters

Area Represented: Not in an MSA, Washington County

Site History: Established as TSP site

North

South

East

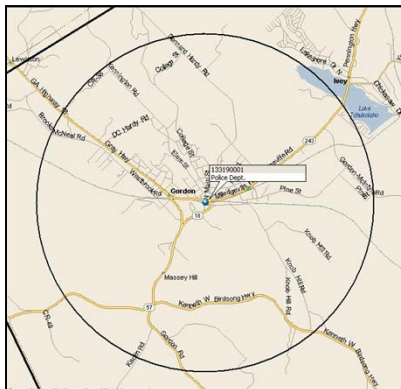
West



Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
PM ₁₀ *	Highest Concentration	Every 6 days	3 m	Neighborhood	6/6/91
PM _{2.5} *	Population Exposure	Every 3 days	3 m	Neighborhood	1/30/99

Recommendations: *Propose to shut down PM_{2.5} and PM₁₀ samplers (see Section 1.8 of Introduction for details)

Gordon- Police Department



AQS ID: 133190001

Address: Police Department, 105 Railroad Street, Gordon, Wilkinson County, Georgia

Site Established: 1/1/99

Latitude/Longitude: N32.881667/W-83.333889

Elevation: 103 meters

Area Represented: Not in an MSA, Wilkinson County

Site History: Established as PM_{2.5} site

North

South

East

West



Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
PM _{2.5} *	Population Exposure	Every 3 days	5 m	Neighborhood	1/1/99

Recommendations: *Propose to shut down PM_{2.5} sampler (see Section 1.8 of Introduction for details)

Appendix B:
Inventory of Ambient Monitoring Equipment

**Georgia Department of Natural Resources
Environmental Protection Division**

SITE NAME	EQUIPMENT NAME	EQUIPMENT DESCRIPTION	COND./ AGE
Albany Turner Elem.	Thermo 2025	PM2.5 Sampler	good/new
	Met-One BAM Monitor	Continuous PM2.5 Sampler	good/ >2
	Partisol PM10 Sampler	2000	good/ >6
Athens College Station Rd.	Thermo O3 Analyzer	49C	good/ >5
	Thermo O3 Calibrator	49C-PS	good/ >5
	Thermo 2025	PM2.5 Sampler	good/new
	Speciated PM2.5 Sampler	MetOne	good/ <3
	Speciated PM2.5 Sampler	URG	good/new
Atlanta Clayton Georgia DOT	R&P PM2.5 Sampler	1400 A series TEOM	good/ >6
	Thermo 2025	PM2.5 Sampler	good/ <2
	ESC DAS	Datalogger 8816	good/ >5
	Thermo O3 Analyzer	49	good/ >10
	Thermo O3 Calibrator	49C-PS	good/ >5
Atlanta Fayette Georgia DOT (temporarily discontinued)	PermaPure Zero Air System	ZA-750-12	good/ >5
	ESC DAS	Datalogger 8832	good/ >3
	Thermo O3 Analyzer	49I	good/ <1
	Thermo O3 Calibrator	49I-PS	good/ <1
	Thermo SO2 Analyzer	43C	good/ >3
Atlanta Confederate Ave.	Thermo SO2 Calibrator	146I	good/ <1
	R&P PM2.5 Sampler	TEOM 1400 A Series Continuous	good/ >3
	ESC DAS	Datalogger 8832	good/ >3
	Thermo O3 Analyzer	49C	good/ >5
	Thermo O3 Calibrator	49C-PS	good/ >5
Atlanta County Extension	PermaPure Zero Air System	ZA-750-12	good/ >5
	R&P PM2.5 Sampler	TEOM 1400 A Series Continuous	good/ >5
	ESC DAS	Datalogger 8816	good/ >3
	Thermo O3 Analyzer	49C	good/ >5
	Thermo O3 Calibrator	49C-PS	good/ >5
Atlanta Dawson GA Forestry	PermaPure Zero Air Supply	ZA-750-12	good/ >5
	Andersen PUF Sampler		good/ >5
	Graseby HIVOL Sampler (metals)	2000H	good/ >5
	ATEC VOC Sampler	2200	good/ >5
	ATEC Carbonyl Sampler	100	good/ >5
Atlanta DMRC	Graseby HIVOL Sampler (metals)	2000H	fair/ >8
	Graseby HIVOL Sampler (metals)	2000H Co-locate	fair/ >8
Atlanta E. Rivers School	Thermo 2025	PM2.5 Sampler	good/ <2
	Thermo 2025	PM2.5 Sampler Co-locate	good/ <2
	Partisol PM10 Sampler	Model 2000-H	good/ <2
	Partisol PM10 Sampler	Model 2000-H Co-locate	good/ <2
Atlanta Fish Hatchery (discontinued)	ESC DAS	Datalogger 8816	good/ >5
	R&P PM2.5 Sampler	TEOM 1400 A Series Continuous	good/ >5
Atlanta Fire Station #8	Thermo 2025	PM2.5 Sampler	good/ <2
Atlanta Georgia Tech. (discontinued all except PM10)	ESC DAS	Datalogger 8832	good/ >3
	Thermo SO2 Analyzer	43C	good/ >5
	Thermo SO2/NOx Calibrator	146I	good/ <1
	Thermo NOx Analyzer	42C	good/ >5
	Thermo Zero Air Supply	111 Ozone	good/ >5
Atlanta Gwinnett Tech.	Met-One BAM 1020 Monitor	Continuous PM10 Sampler	good/ <3
	ESC DAS	Datalogger 8816	good/ >5
	Thermo O3 Analyzer	49C	good/ >5
	Thermo O3 Calibrator	49C-PS	good/ >5

SITE NAME	EQUIPMENT NAME	EQUIPMENT DESCRIPTION	COND./ AGE
Atlanta Gwinnett Tech.(continued)	Gast Zero Air System	4Z024 pump and cannisters	good/ >8
	Thermo 2025	PM2.5 Sampler	good/ <2
	R&P PM2.5 Sampler	TEOM 1400 A Series Continuous	good/ >5
Atlanta Macland Aquatic Center	Thermo 2025	PM2.5 Sampler	good/ <2
Atlanta Monastery	ESC DAS	Datalogger 8832	good/ >3
	Thermo O3 Analyzer	49C	good/ >5
	Thermo O3 Calibrator	49C-PS	good/ >5
	Thermo NOx Analyzer	42C	good/ >5
	Thermo NOx Calibrator	146C	good/ >5
	Thermo Zero Air Supply	111 Ozone	good/ >5
	Perkin Elmer Autosystem XL GC	Gas Chromatograph	good/ >8
	Perkin Elmer Turbomatrix TD	Thermal Desorber	good/ >4
	Perkin Elmer Nelson Interface	NCI 900 Interface	good/ >5
	Parker Balston TOC	Zero Air Gas Generator	good/ >10
Atlanta National Guard	ESC DAS	Datalogger 8816	good/ >5
	Thermo O3 Analyzer	49C	good/ >5
	Thermo O3 Calibrator	49C-PS	good/ >5
	PermaPure Zero Air System	ZA-750-12	good/ >5
	Thermo 2025	PM2.5 Sampler	good/ <2
Atlanta Police Dept.(Doraville)	Thermo 2025	PM2.5 Sampler	good/ <2
	R&P Partisol	PM10 Sampler	good/ >5
Atlanta Roswell Road	Thermo CO Analyzer	48C	good/ >5
Atlanta South DeKalb	ESC DAS	Datalogger 8832	good/ >3
	Thermo O3 Analyzer	49I	good/ <3
	Thermo O3 Calibrator	49I-PS	good/ <1
	Thermo Dynamic Gas Calibrator	146C Gas Dilution Calibrator	good/ >5
	Thermo Gas Calibrator	146I Gas Dilution Calibrator	good/ <1
	Thermo NOy Analyzer	42C	good/ >5
	Thermo NOx Analyzer	42C	good/ >5
	Thermo CO Analyzer	48C Trace Level Analyzer	good/ >5
	Thermo SO2 Analyzer	43i-TLE	good/new
	Thermo 2025	PM2.5 Sampler	good/ <2
	Thermo 2025	PM2.5 Sampler Co-locate	good/ <2
	Met-One	BAM 1020 PM10	good/new
	Met-One	BAM 1020 PM2.5	good/new
	Met-One SASS	Speciated PM2.5 Sampler	good/ <3
	URG 3000N	Speciated PM2.5 Sampler	good/ <2
	Thermo Zero Air Supply	111 Ozone	good/ >5
	Perkin Elmer Autosystem XL GC	Gas Chromatograph	good/ >8
	Perkin Elmer Turbomatrix TD	Thermal Desorber	good/ <3
	Perkin Elmer Nelson Interface	NCI 900 Interface	good/ >8
	Parker Balston TOC	Zero Air Gas Generator	good/ >8
	Parker Balston TOC	Zero Air Gas Generator	good/ >8
	Perkin Elmer Clarus 500	Gas Chromatograph	good/ <3
	Perkin Elmer Turbomatrix TD 300	Thermal Desorber	good/ <2
	Magee Scientific	Aethalometer	good/ <5
	ATEC Carbonyl Sampler	Model 8000	good/new
	ATEC Carbonyl Sampler	Model 8000	good/new
	ATEC Chromium +6 Sampler	Model 3400	good/ 2
	ATEC Chromium +6 Sampler	Model 3400 Co-locate	good/ 2
	Shawnee Instruments	PM10 Sampler	good/ >5

SITE NAME	EQUIPMENT NAME	EQUIPMENT DESCRIPTION	COND./ AGE
Atlanta South DeKalb (cont'd)	Shawnee Instruments	PM10 Sampler Co-locate	good/ >5
	PUF	Semi-VOCs Sampler	good/ >3
	PUF	Semi-VOCs Sampler Co-locate	good/ >3
	ATEC 2200	VOCs Sampler	good/ >5
	ATEC 2200	VOCs Sampler Co-locate	good/ >5
Atlanta Univ. of West GA	ESC DAS	Datalogger 8832	good/ >3
	Thermo O3 Analyzer	49C	good/ >5
	Thermo O3 Calibrator	49C-PS	good/ >5
	PermaPure Zero Air System	ZA-750-12	good/ >5
	R&P PM10 Sampler	TEOM 1400 A Series Continuous	good/ >5
Atlanta Utoy Creek (discontinued)	Andersen VOC Sampler	97-323	good/ >8
	Graseby PUF Sampler	BMPS1-11	good/ >15
	Graseby PUF Sampler	BMPS1-11 Co-locate	good/ >15
	Andersen HIVOL Sampler	GBM2000HBL Metals Sampler	good/ >8
	General Metal Hi-Volume	HIVOL Sampler 2000H Co-locate	good/ >8
Atlanta W. Strickland St.	Thermo O3 Analyzer	49C	good/ >5
	Thermo O3 Calibrator	49C-PS	good/ >5
Atlanta Yorkville	Thermo O3 Analyzer	49C	good/ >5
	Thermo O3 Calibrator	49C-PS	good/ >5
	Thermo NOx Analyzer	42C	good/ >5
	Thermo CO Analyzer	48C	good/ >5
	Thermo Dynamic Gas Calibrator	146C Gas Dilution Calibrator	good/ >5
	Thermo 2025	PM2.5 Sampler	good/ <3
	R&P PM2.5 Sampler	TEOM 1400 A Series Continuous	good/ >5
	Graseby PUF Sampler	BMPS1-11	good/ >15
	General Metal Hi-Volume	HIVOL Sampler 2000H	good/ >15
	ATEC VOCs Sampler	2200	good/ >5
	Tekran Vapor Analyzer	2537A Mercury Vapor Analyzer	poor/ >15
	Perkin Elmer Autosystem XL GC	Gas Chromatograph	good/ >15
	Perkin Elmer Turbomatrix TD	Thermal Desorber	good/ >15
	Perkin Elmer Nelson Interface	NCI 900 Interface	good/ >8
	Parker Balston TOC	Zero Air Gas Generator	good/ >8
Augusta Bungalow Road	Tylan RO-32	Flow Regulator	good/ >15
	Thermo O3 Analyzer	49C	good/ >5
	Thermo O3 Calibrator	49C-PS	good/ >5
	R&P PM2.5 Sampler	TEOM 1400 A Series Continuous	good/ >5
	Thermo 2025	PM2.5 Sampler	good/ new
	Partisol PM10 Sampler	Model 2000-H	good/ >5
	Met-One SASS	Speciated PM2.5 Sampler	good/ <3
Augusta Clara Jenkins School (discontinued)	URG 3000N	Speciated PM2.5 Sampler	good/ <2
	ATEC	VOCs Sampler	good/ >3
	HIVOL	Metals Sampler	good/ >5
	PUF	Semi-VOCs Sampler	good/ >5
Augusta Med. College GA	Thermo 2025	PM2.5 Sampler	good/new
	Thermo 2025	PM2.5 Sampler Co-locate	good/new
Augusta Riverside Park (NOy temporarily discontinued)	Thermo O3 Analyzer	Thermo 49C	good/ >3
	Thermo O3 Calibrator	Thermo 49C-PS	good/ >3
	Thermo NOy Analyzer	42C	good/ >3
	Thermo NOy Calibrator	146C	good/ >3
Baldwin Co. Airport (discontinued)	ESC DAS	Datalogger 8816	good/ >5
	Andersen VOC Sampler	97-323	good/ >5

SITE NAME	EQUIPMENT NAME	EQUIPMENT DESCRIPTION	COND./ AGE
Baldwin Co. Airport (cont'd)	Tisch Environmental	HIVOL	good/ >5
	Graseby PUF Sampler	PUF	good/ >5
Brunswick Arco Pump Station	R&P PM10 Partisol Sampler	2000H	good/ >5
Brunswick College	Graseby PUF Sampler	BMPS1-11	good/ >15
(discontinued)	Graseby HIVOL Sampler (metals)	2000H	good/ >15
	Andersen VOC Sampler	97-323	good/ >5
	ATEC Carbonyl Sampler	100	good/ >3
Brunswick Risley Middle	ESC DAS	Datalogger 8816	good/ >3
	Thermo O3 Analyzer	49C	good/ >5
	Thermo O3 Calibrator	49C-PS	good/ >5
	Thermo SO2 Analyzer	43C	good/ >5
	Thermo SO2 Calibrator	146C	good/ >5
	Thermo 2025	PM2.5 Sampler	good/ >5
	Thermal Oxidizer	CDN-101	good/ >5
Cartersville	Tisch Environmental	HIVOL Lead sampler	good/ <2
Chattooga Fish Hatchery	ESC DAS	Datalogger 8816	good/ >5
	Thermo O3 Analyzer	49C	good/ >5
	Thermo O3 Calibrator	49C-PS	good/ >5
	R&P PM10 Sampler	2000B Partisol PM10	good/ >3
Columbus Airport	ESC DAS	Datalogger S112-0000	good/ >5
	Thermo O3 Analyzer	49C	good/ >8
	Thermo O3 Calibrator	49C-PS	good/ >3
	Thermo SO2 Analyzer	43C	good/ >3
	Thermo SO2 Calibrator	146I	good/ <2
	Thermo 2025	PM2.5 Sampler	good/new
	R&P PM2.5 Sampler	TEOM 1400 A	good/ >5
	R&P	Sample Equil System	good/ >8
Columbus Cusseta Elementary	Thermo 2025	PM2.5 Sampler	good/new
	Met-One SASS	Speciation Control Box	good/ >3
	Partisol PM10 Sampler	2000	good/new
	URG Sequential Sampler	Speciation Particulate 3000N MOI	good/ <2
	General Metal Hi-Volume	HIVOL Sampler (lead) 2000H	good/ >8
Columbus Fort Benning	General Metal Hi-Volume	HIVOL Sampler (lead) 2000H	good/ >8
Columbus Health Dept.	Thermo 2025	PM2.5 Sampler	good/new
Columbus State	Graseby PUF Sampler	BMPS1-11	good/ >8
(discontinued)	General Metal Hi-Volume	HIVOL Sampler 2000HBL	good/ >8
	Graseby VOC Sampler	97-323	good/ >8
	ATEC VOC Sampler	ATEC 2200	good/ <2
Columbus UPS	General Metal Hi-Volume	HIVOL Sampler (lead) 2000H	good/ >8
Dalton Fort Mountain	ESC DAS	Datalogger 8816	good/ >3
	Thermo O3 Analyzer	49C	good/ >5
	Thermo O3 Calibrator	49C-PS	good/ >5
Gainesville Boys and Girls Club	Thermo 2025	PM2.5 Sampler	good/ <2
(discontinued Toxics)	Met-One BAM Monitor	1020 Continuous PM2.5 Sampler	fair/ >3
	Andersen PUF Sampler		good/ >5
	Graseby HIVOL Sampler (metals)	2000H	good/ >8
	ATEC VOC Sampler	2200	good/ >3
General Coffee State Park	Met-One SASS	Speciated PM2.5 Sampler	good/ <2
	URG 3000N	Speciated PM2.5 Sampler	good/ <2
	Andersen PUF Sampler		good/ >5
	Graseby HIVOL Sampler (metals)	2000H	good/ >8

SITE NAME	EQUIPMENT NAME	EQUIPMENT DESCRIPTION	COND./ AGE
General Coffee State Park (cont'd)	ATEC VOC Sampler	2200	good/ >3
Macon Allied Chemical	Thermo 2025	PM2.5 Sampler	good/ <2
	Thermo 2025	PM2.5 Sampler Co-locate	good/ <2
	Met-One SASS	Speciated PM2.5 Sampler	good/ >8
	R&P PM10 Sampler	2000H	good/ <3
	R&P PM10 Sampler	2000H Co-locate	good/ <3
	URG Sequential Sampler	Speciation Particulate 3000N MOI	good/ >8
Macon Forestry	ESC DAS	Datalogger 8832	good/ >3
	Thermo O3 Analyzer	49-103	good/ >8
	Thermo O3 Calibrator	49C-PS	good/ >8
	Thermo SO2 Analyzer	43i	good/ >5
	Thermo SO2 Calibrator	146T	good/ >8
	PermaPure Zero Air Supply	ZA-750-12	good/ >8
	Thermo 2025	PM2.5 Sampler	good/new
	Graseby PUF Sampler	GPS1-11	good/ >8
	Graseby HIVOL Sampler (metals)	2000H	good/ >8
	Andersen VOC Sampler	97-323	good/ >8
Macon Lake Tobesofkee (temporarily discontinued)	R&P PM2.5 Sampler	TEOM 1400 A Series Continuous	good/ >3
	ESC DAS	Datalogger 8816	good/ >5
	Thermo O3 Analyzer	49C	good/ >5
	Thermo O3 Calibrator	49C-PS	good/ >5
	Thermo NOy Analyzer	42C	good/ >5
	Thermo NOy Calibrator	146C	good/ >5
	Thermo Zero Air System	111 Ozone	good/ >5
Rome Coosa Elementary	ESC DAS	Datalogger 8816	good/ >5
	Thermo SO2 Analyzer	43C	good/ >5
	Thermo SO2 Calibrator	146C	good/ >2
	Gast Zero Air System	M1006X	good/ >5
	Thermo 2025	PM2.5 Sampler	good/new
	Met-One SASS	Speciated PM2.5 Sampler	good/ >2
	Met-One BAM Monitor	1020 Continuous PM2.5 Sampler	good/ >2
	R&P Partisol	2000 PM10 Partisol Sampler	good/ >10
Rome Co. Health Dept. (discontinued)	Andersen PUF Sampler		good/ >5
	Andersen HIVOL Sampler	GBM2000HBL Metals Sampler	good/ >5
	ATEC VOC Sampler	ATEC 2200	good/ >5
Rossville	ESC DAS	Datalogger 8816	good/ >2
	Thermo 2025	PM2.5 Sampler	good/new
	Met-One SASS	Speciated PM2.5 Sampler	good/ <2
	URG 3000N	Speciated PM2.5 Sampler	good/ <2
	Met-One BAM Monitor	1020 Continuous PM2.5 Sampler	good/ <2
Savannah E. President St.	ESC DAS	Datalogger 8816	good/ >5
	Thermo O3 Analyzer	49	good/ >5
	Thermo O3 Calibrator	49C-PS	good/ >5
	Thermo SO2 Analyzer	43C	good/ >5
	Thermo SO2 Calibrator	146C	good/ >5
	Dayton Zero Air System	2Z866 Ozone	good/ >5
	Brey Zero Air System	50376 TRS and SO2	good/ >5
	GRASEBY/GMW PUF Sampler	GSP1	good/ >5
	Andersen HIVOL Sampler	GBM2000HBL Metals Sampler	good/ >5
	ATEC Carbonyl Sampler	100	good/ >5
	PermaPure Zero Air Supply	ZA-750-12	good/ >5

SITE NAME	EQUIPMENT NAME	EQUIPMENT DESCRIPTION	COND./ AGE
Savannah Market St.	Thermo 2025	PM2.5 Sampler	good/new
Savannah Mercer Middle	Thermo 2025	PM2.5 Sampler	good/new
Savannah Shuman Middle School	R&P Partisol	2000 PM10 Partisol Sampler	good/ >5
Savannah W. Lathrop & Augusta	ESC DAS	Datalogger 8832	good/ >3
	Thermo SO2 Analyzer	43C	good/ >5
	Thermo SO2 Calibrator	146C	good/ >5
	Thermo 2025	PM2.5 Sampler	good/new
	R&P PM2.5 Sampler	TEOM 1400 A Series Continuous	good/ >5
Sumter Union High	ESC DAS	Datalogger S112-0000	good/ >8
	Thermo O3 Analyzer	49C	good/ >8
	Thermo O3 Calibrator	49C-PS	good/ >8
	PermaPure Zero Air Supply	ZA-750-12	good/ >8
Valdosta S.L. Mason School	Thermo 2025	PM2.5 Sampler	good/new
(discontinued Toxics)	Met-One BAM Monitor	1020 Continuous PM2.5 Sampler	good/ <2
	Graseby PUF Sampler	GPS1-11	good/ >8
	Andersen HIVOL Sampler	GBM2000HBL Metals Sampler	good/ >5
	ATEC VOC Sampler	ATEC 2200	good/ >5
Warner Robins Air Base	Thermo 2025	PM2.5 Sampler	good/new
(discontinued Toxics)	Met-One BAM Monitor	1020 Continuous PM2.5 Sampler	good/ <2
	Graseby PUF Sampler	GPS1-11	good/ >8
	Andersen HIVOL Sampler	GBM2000HBL Metals Sampler	good/ >5
	ATEC VOC Sampler	ATEC 2200	good/ >5
Washington Co. Health Dept.	Thermo 2025	PM2.5 Sampler	good/ >5
	R&P Partisol	2000 PM10 Partisol Sampler	good/ >5
Wilkinson Co. Police Dept.	Thermo 2025	PM2.5 Sampler	good/new
	Andersen PM10 Sampler	RAAS PM10	good/ >5
	Andersen PM10 Sampler	RAAS PM10 Co-locate	good/ >5
	ESC DAS	Datalogger 8816	good/ >5
	Thermo SO2 Analyzer	43C	good/ >5
	Thermo SO2 Calibrator	146	good/ >5
	Gast Zero Air System	M1006X	good/ >8
GA EPD Air Branch/QA Unit	TriCal	Flow Standard	good/ >3
	General Metal Works	Hi-Volume Orifice	good/ >3
	Graseby GMW	PUF Orifice	good/ >3
	DC-Lite DCL-H	Flow Standard	good/ >3
	DC-Lite DCL-L	Flow Standard	good/ >3
	DC-2	DryCal Flow Standard Base	good/ >3
	DC-HC-1	DryCal High Flow Cell	good/ >3
	DC--LC-1	DryCal Low Flow Cell	good/ >3
	DC-MC-1	DryCal Medium Flow Cell	good/ >3
	49PS	Ozone Standard	good/ >3
	DeltaCal	Flow Standard	good/ >3
	Gilibrator Flow Cell	Flow Standard	good/ >3
	Gilibrator Flow Cell	Flow Standard	good/ >3
	Gilibrator Flow Cell	Flow Standard	good/ >3
	VRC	Variable HiVol orifice	good/ >3
	Thermo 146I	Multi-gas Calibrator	good/ >3
	Thermo 146I	Multi-gas Calibrator	good/ >3
	Thermo 146T	Multi-gas Calibrator	good/ >3
	Thermo 49PS	Ozone Standard	good/ >3
	DeltaCal	Flow Standard	good/ >3

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SITE NAME	EQUIPMENT NAME	EQUIPMENT DESCRIPTION	COND./ AGE
Augusta Riverside Park	Wind Instrument	05305vm (AQ)	good/ >8
Atlanta South DeKalb	Wind Instrument	05305vm (AQ)	good/ >8
Atlanta Monastery	Wind Instrument	05305vm (AQ)	good/ <2
Cartersville	Wind Instrument	05305vm (AQ)	good/ >8
Atlanta Univ. of West GA	Sonic Anemometer	85000	good/ >3
Augusta Bungalow Road	Sonic Anemometer	85000	good/ >3
Columbus Crime Lab	Sonic Anemometer	85000	good/ >3
Savannah E. President St.	Sonic Anemometer	85000	good/ <2
Atlanta Tucker	PSP	Solar Radiation Instrument	good/ >8
Atlanta Monastery	PSP	Solar Radiation Instrument	good/ >8
Atlanta Yorkville	PSP	Solar Radiation Instrument	good/ >5
Atlanta Monastery	TUVR	Ultraviolet Radiation Instrument	good/ >8
Atlanta Tucker	TUVR	Ultraviolet Radiation Instrument	good/ >8
Atlanta Yorkville	TUVR	Ultraviolet Radiation Instrument	good/ >8
Augusta Riverside Park	Tower	Fold Over	good/ >3

**Appendix C:
Ambient Air Monitoring Plan
For
National Core (NCore) Multipollutant Monitoring
Station**

**Georgia Department of Natural Resources
Environmental Protection Division**

1.0 Introduction

In October 2006 the United States Environmental Protection Agency (EPA) issued final amendments to the ambient air monitoring regulations for criteria pollutants. These amendments are codified in 40 CFR parts 53 and 58. The purpose of the amendments was to enhance ambient air quality monitoring to better serve current and future air quality needs. One of the most significant changes in the regulations was the requirement to establish National Core (NCore) Multipollutant Monitoring Stations. These stations will provide data on several pollutants at lower detection limits and replace the National Air Monitoring Station (NAMS) networks that have existed for many years. The final network plan was to be submitted to EPA by July 1, 2009, and the stations were to be operational by January 1, 2011.

The NCore Network addresses the following monitoring objectives:

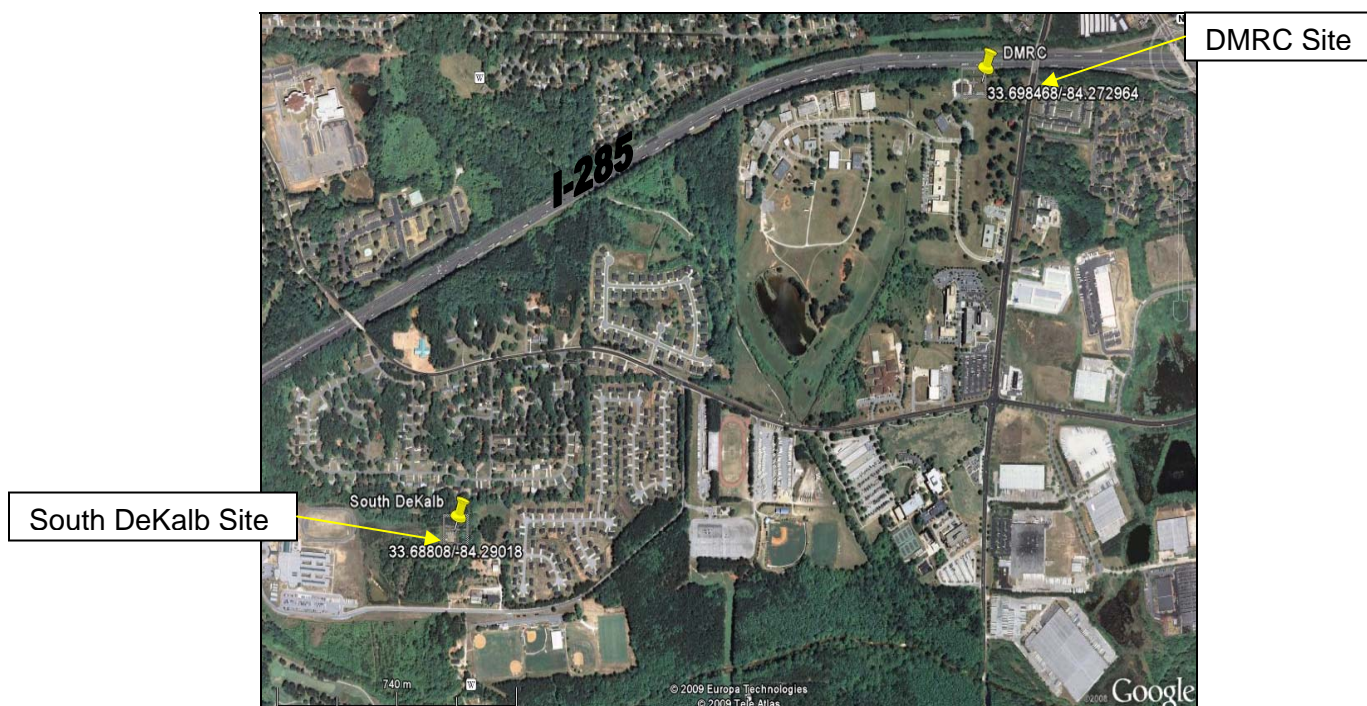
- timely reporting of data to the public through AIRNow, air quality forecasting, and other public reporting mechanisms
- support development of emission strategies through air quality model evaluation and other observational methods
- accountability of emission strategy progress through tracking long-term trends of criteria and non-criteria pollutants and their precursors
- support long-term health assessments that contribute to ongoing reviews of the National Ambient Air Quality Standards (NAAQS)
- compliance through establishing nonattainment/attainment areas by comparison with the NAAQS
- support multiple disciplines of scientific research, including; public health, atmospheric and ecological

The South DeKalb site is currently a Photochemical Assessment Monitoring Station (PAMS), part of the Speciation Trends Network (STN), part of the National Air Toxics Trends Stations (NATTS) network, and part of the IMPROVE network. After evaluating the existing network, historical data, census data, meteorology, and topography GA EPD recommended the following changes to the South DeKalb site.

2.0 Recommended Changes to South DeKalb Site to Accommodate NCore Sampling

- 2.1** Accommodate NCore multi-pollutant monitoring station requirements at the South DeKalb site located in DeKalb County at 2390-B Wildcat Lane, Decatur. The location meets the objective for an NCore site and meets neighborhood and urban scale criteria for O₃ and NO, NO₂, NO_x and NO_y. It meets neighborhood scale criteria for PM_{2.5}, PM₁₀, and CO.
- 2.2** The PM_{10-2.5} mass sampler was installed according to regulations by January 1, 2011.
- 2.3** The SO₂ high sensitivity sampler was installed according to regulations before January 1, 2011. This sampler began collecting data on October 1, 2010.
- 2.4** PM_{10-2.5} speciation sampler will be installed as necessary, according to regulations. The date for the installation of this sampler is to be determined.
- 2.5** The meteorological equipment in place will remain. The solar radiation and total ultra violet radiation sampler would not meet siting criteria, due to height and location of trees. Therefore, these meteorological parameters will not be on site.

- 2.6** The ozone sampler began year-round continuous sampling. Previously, the ozone season for this monitor had been March 1 through October 31. As of November 1, 2009, this monitor is sampling ozone all year.
- 2.7** GA EPD moved the sampler platform to meet siting criteria due to height and location of trees. The platform is in the same general location, but was adjusted to meet siting requirements.
- 2.8** The DMRC site is located approximately 2 kilometers (km) away from the South DeKalb site. The DMRC site houses the criteria lead sampler. The lead sampler has been at this location since July 1, 1986. The DMRC site is the location for the NCore lead sampling. Refer to following map for location.



3.0 Site Description



South DeKalb Site Description:

AQS ID: 130890002

Address: 2390-B Wildcat Road, Decatur, DeKalb County, Georgia 30034

Site Established: 1/1/74

Latitude/Longitude: N33.68808/W-84.29018

Elevation: 308 meters

Area Represented: Atlanta-Sandy Springs-Marietta MSA

Site Approval Status: Approved October 30, 2009



DMRC Site Description:

AQS ID: 130890003

Address: D.M.R.C., 3073 Panthersville Road, Decatur, DeKalb County, Georgia

Site Established: 7/1/86

Latitude/Longitude: N33.698468/W-84.272694

Elevation: 238 meters

Area Represented: Atlanta-Sandy Springs-Marietta MSA

Site Approval Status: Approved October 30, 2009

4.0 Monitor Information

The monitoring objectives for the South DeKalb site include determining compliance with NAAQS, observing pollution trends for national data analysis, providing pollution levels for daily index reporting, evaluating the regional air quality models used in developing emission strategies, tracking trends in air pollution abatement control measures, and providing data for scientific studies. The PM_{2.5} mass measurements are applicable to be compared to the NAAQS for both the annual standard and the twenty-four hour standard.

The following table gives details about each parameter measured, including monitoring objective, analysis method, and spatial scale. Probe inlet height is shown in meters (m).

Parameter	Monitoring Objective	Sampling Schedule	Analysis Method	Probe Inlet Height	Spatial Scale	Begin Date
PM _{2.5}	Population Exposure	Daily	Manual Reference Method utilizing gravimetric analysis	2.7 m	Neighborhood	1/22/99
PM _{2.5}	Population Exposure	Every 12 days	Manual Reference Method utilizing gravimetric analysis	2.7 m	Neighborhood	12/20/08
PM _{2.5}	Population Exposure	Continuous	Beta Attenuation Monitor analysis	4 m	Neighborhood	5/1/03 (changed methods 1/1/11)
PM ₁₀	Population Exposure	Continuous	Beta Attenuation Monitor analysis	4 m	Neighborhood	1/1/11
PMcoarse	Population Exposure	Continuous	Beta Attenuation Monitor analysis	4 m	Neighborhood	1/1/11
PM _{2.5} Speciation	Population Exposure	Every 3 days	Multi-species manual collection method utilizing thermal optical, ion chromatography, gravimetric, and X-ray fluorescence analyses	2.6 m	Neighborhood	10/1/00
SO ₂	Population Exposure	Continuous	Automated Reference Method utilizing trace level pulsed fluorescence	4 m	Neighborhood	10/1/10
CO	Population Exposure	Continuous	Automated Reference Method utilizing trace level non-dispersive infrared	4 m	Neighborhood	5/19/03
NO _y	Population Exposure	Continuous	Automated trace level chemiluminescence	10 m	Neighborhood/ Urban	1/1/98
NO	Population Exposure	Continuous	Automated Reference Method utilizing chemiluminescence	4 m	Neighborhood/ Urban	4/1/94
NO _x	Population Exposure	Continuous	Automated Reference Method utilizing chemiluminescence	4 m	Neighborhood/ Urban	4/1/94
NO ₂	Population Exposure	Continuous	Automated Reference Method utilizing chemiluminescence	4 m	Neighborhood/ Urban	7/21/78
O ₃	Highest Concentration	Continuous	Ultraviolet photometric	4 m	Neighborhood/ Urban	1/1/74
Hexavalent Chromium	Population Exposure	Every 6 days	Ion Chromatography	2.3 m	Neighborhood	2/27/05
Hexavalent Chromium	Quality Assurance	Every 2 months	Ion Chromatography	2.5 m	Neighborhood	2/27/05
Elemental Carbon (Aethalometer)	Population Exposure	Continuous	Spectrophotometry	4 m	Neighborhood	6/12/03
Carbonyls (PAMS)	Max Precursor Emissions	3-hour Samples in Summer	High performance liquid chromatography ultraviolet absorption	4 m	Neighborhood	6/1/93

Carbonyls (PAMS/Toxics)	Max Precursor Emissions/ Population Exposure	Every 6 days	High performance liquid chromatography ultraviolet absorption	4 m	Neighborhood	6/1/93
Carbonyls	Quality Assurance	Every 12 days	High performance liquid chromatography ultraviolet absorption	4 m	Neighborhood	1/1/06
PM ₁₀ select metals(Toxics)	Population Exposure	Every 6 days	Inductively coupled plasma mass spectroscopy	2 m	Neighborhood	1/1/00
PM ₁₀ select metals(Toxics)	Quality Assurance	Every 12 days	Inductively coupled plasma mass spectroscopy	2.3 m	Neighborhood	1/1/05
VOCs (PAMS)	Max Precursor Emissions	Continuous in Summer	Gas chromatograph flame ionization detection	4 m	Neighborhood	6/1/93
VOCs (PAMS/Toxics)	Max Precursor Emissions/ Population Exposure	Every 6 days	Gas chromatograph mass spectroscopy	4 m	Neighborhood	6/1/93
VOCs (Toxics)	Quality Assurance	Every 12 days	Gas chromatograph mass spectroscopy	4 m	Neighborhood	1/1/05
Semi-VOCs	Population Exposure	Every 6 days	Gas chromatograph electron capture detector	1.6 m	Neighborhood	4/30/07
Semi-VOCs	Quality Assurance	Every 2 months	Gas chromatograph electron capture detector	2 m	Neighborhood	4/30/07
Outdoor Temperature	General/ Background	Continuous	Aspirated Shield	2 m	Neighborhood	6/1/93
Rain/Melt Precipitation	General/ Background	Continuous	Bucket sensor	3 m	Neighborhood	1/1/97
Barometric Pressure	General/ Background	Continuous	Barometric sensor	2 m	Neighborhood	6/1/93
Wind Direction	General/ Background	Continuous	Ultra sonic wind sensor	10 m	Neighborhood	6/1/93
Wind Speed	General/ Background	Continuous	Ultra sonic wind sensor	10 m	Neighborhood	6/1/93
Sigma Theta	General/ Background	Continuous	Ultra sonic wind sensor	10 m	Neighborhood	1/1/02
Relative Humidity	General/ Background	Continuous	Hygroscopic plastic film	2 m	Neighborhood	6/1/93
Lead (DMRC site)	Regional Transport	Every 6 days	Inductively coupled plasma mass spectroscopy	2 m	Regional	7/1/86

Table 1: Detailed Monitor Information

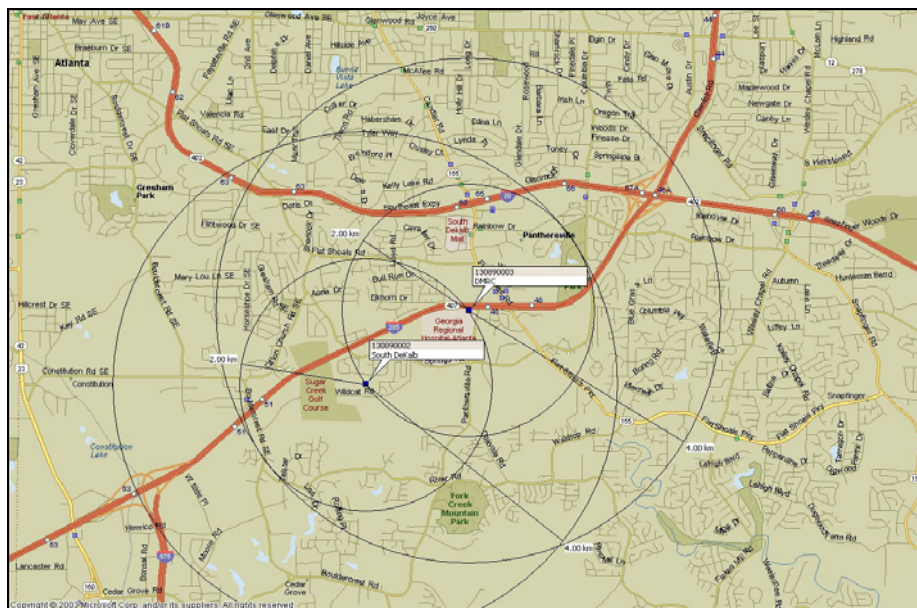
5.0 Quality Assurance Status

All Quality Assurance procedures shall be implemented in accordance with 40 CFR 58, Appendix A. GA EPD has submitted the appropriate Quality Assurance Project Plan (QAPP) and Quality Monitoring Plan (QMP). The QMP was last submitted July 2010. The criteria network QAPP was submitted September 30, 2009. The PM_{2.5} and PM_{2.5} speciation networks QAPP was approved January 2009. The National Air Toxics Trends Station (NATTS) QAPP was approved March 2007. A new NATTS QAPP was submitted April 2011. The VOC QAPP for Photochemical Assessment Monitoring Stations (PAMS) was approved July 2010. For the NCore station, the Quality Assurance Project Plan was approved by EPA May 23, 2011. The Standard Operating Procedures (SOPs) for the trace level instruments was finished being developed before January 1, 2011.

6.0 Area of Representativeness

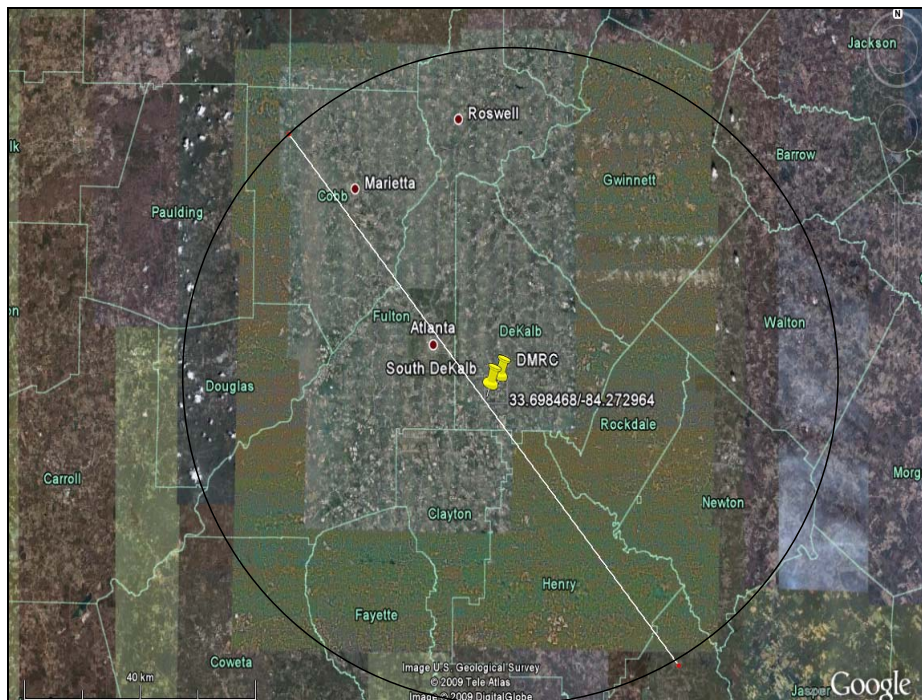
40 CFR Part 58 Appendix D provides design criteria for ambient air monitoring. The monitoring objective for the NCore site is to produce data that represents a fairly large area and therefore the spatial scale of the site is important. The spatial scale defines the physical dimensions of the air parcel nearest to a monitoring site throughout which actual pollutant concentrations are reasonably similar. It is determined by the characteristics of the area surrounding the air monitoring site and the site's distance from nearby air pollution sources such as roadways, factories, etc. In the case of urban NCore sites, the spatial scales to be used are neighborhood and urban. Table 1, above, shows the area of representativeness or spatial scale, for each pollutant for the South DeKalb site.

For neighborhood scale the area covered is up to a 4 km radius around the air monitoring site. This area is a mix of commercial, industry, residential (including schools, shopping area, golf course). It is representative of most areas in the Atlanta-Sandy Springs-Marietta MSA. The following map shows a 4 km radius around the South DeKalb site.

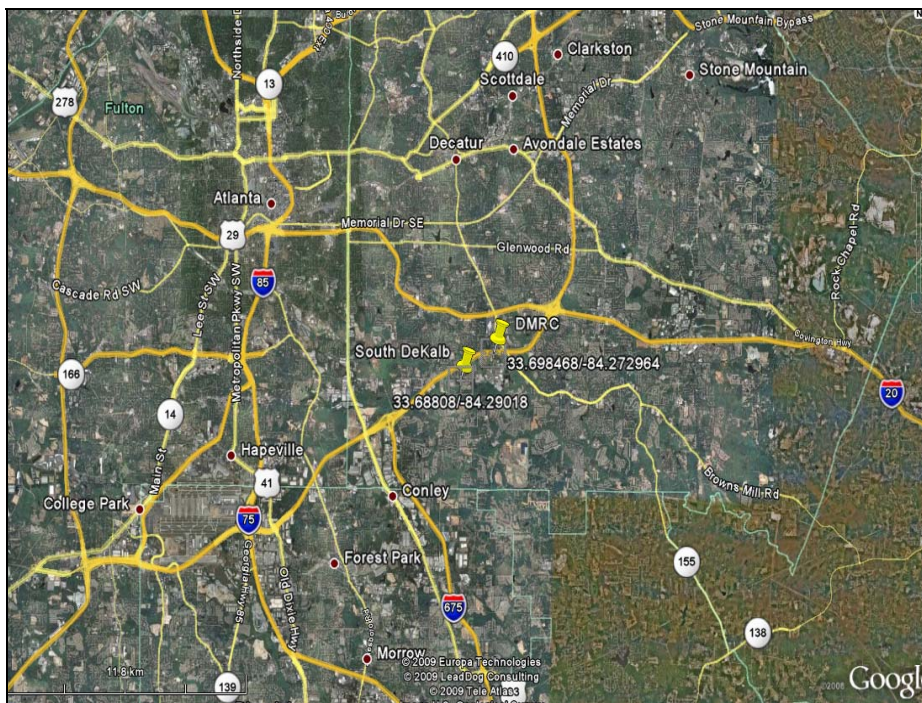


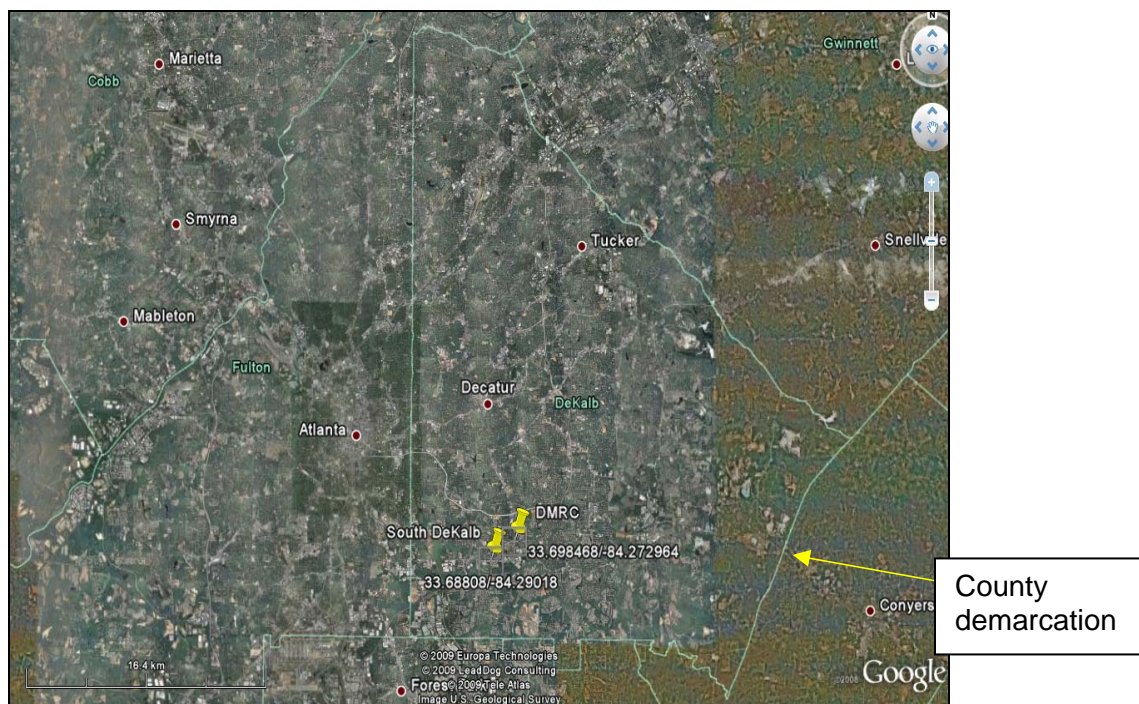
Urban scale is 4 km up to 50 km radius around the air monitoring site. 50 km covers most of the Atlanta-Sandy Springs-Marietta MSA. Approximately 70% of the total Atlanta-Sandy Springs-

Marietta MSA population lives within 50 km of the site. The following map shows a 50 km radius around the South DeKalb site.

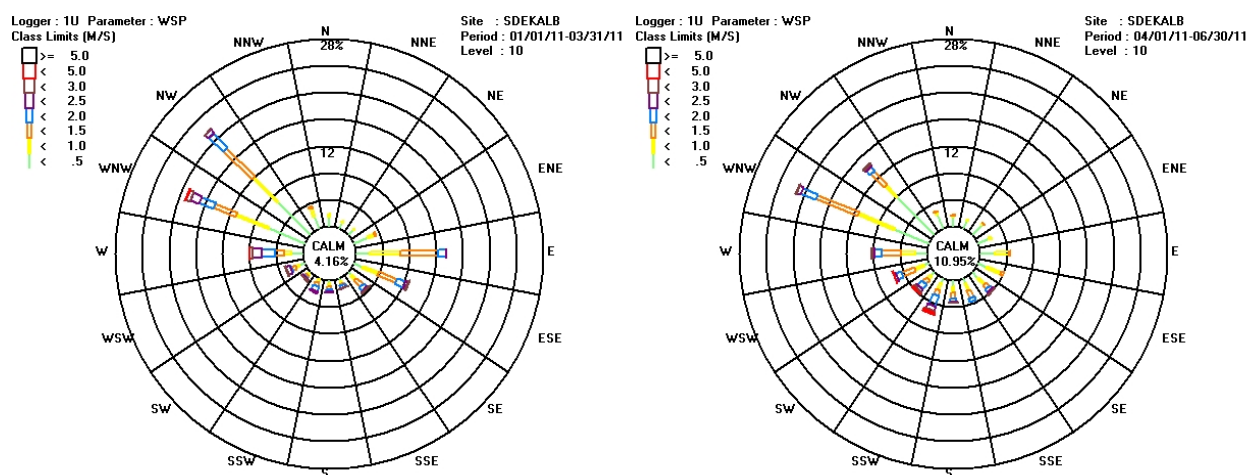


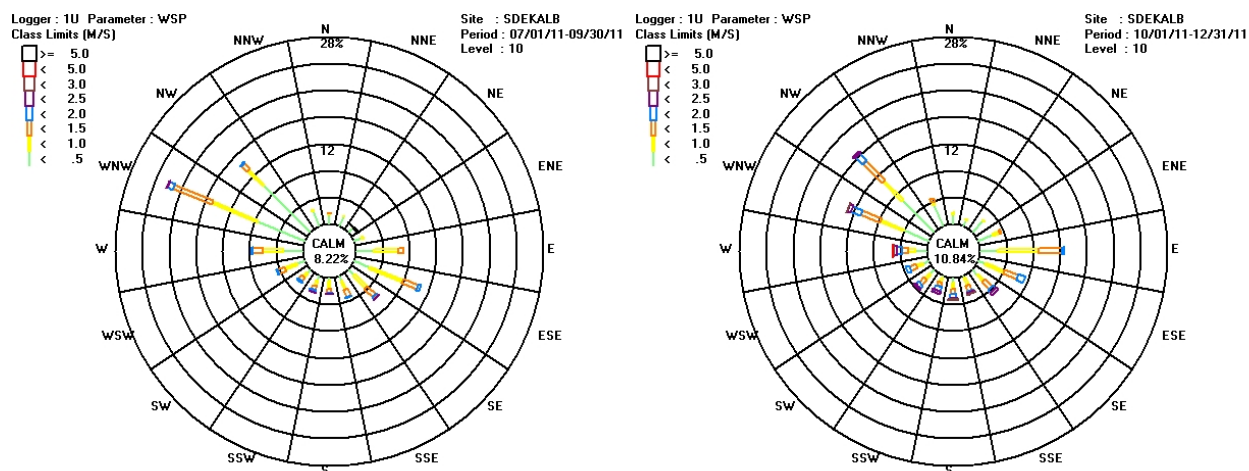
The following map shows the South DeKalb site in relation to downtown Atlanta, to the larger metropolitan area, and to the four major highways; I-75, I-85, I-20, I-285 and I-675.





As can be seen from the countywide view above, the NCore site is located Southeast of the urban core. The placement of the NCore site southeast of the urban core provides the best location for measuring transport and secondary pollutant formation from that area. The placement of the NCore site downwind of the more industrialized areas compliments the existing network, which is primarily designed to measure maximum concentration on a neighborhood scale. The following wind rose diagrams show the predominant winds coming from the NW/WNW, which is the general direction of downtown Atlanta. Each wind rose represents a quarterly average for 2011. There are seasonal differences and shorter time periods capture more subtleties for meso-synoptic processes, however this gives a general idea of primary and secondary wind directions.





7.0 NCore and SLAMS Siting Criteria

Appendix E to 40 CFR Part 58-*Probe and Monitoring Path Siting Criteria for Ambient Air Quality Monitoring* contains specific location criteria applicable to NCore and SLAMS siting. The following measurements and data were obtained for evaluation of compliance with the criteria.

7.1 Horizontal Placement of Sampling Probes

The gaseous instruments are housed in a 2.4 m wide x 6.1 m long x 2.7 m high air monitoring trailer located approximately 15.5 m south of the tree line with the sample probe inlets being approximately 4 m above the ground. A 10 m “nested” meteorological tower is located next to the air monitoring shelter to allow for extension of the sampling inlet for the NOy monitor to reach approximately 10 m.

The manual samplers are located on a wooden platform approximately 5.6 m away from the sampling trailer. The particulate sampler’s inlet heights are 2m above the ground. The inlets for the continuous particulate samplers are located on the roof of the air monitoring shelter with the sample inlets being 2 m above the roof (4 m above ground). The control units are located inside the temperature controlled shelter.

7.2 Spacing from Obstructions

Tree distance north of platform is 27.8 m. Trees are approximately 14-23 m tall.

Tree distance south of platform is 26.5 m. Trees are approximately 14 m tall.

Tree distance east of platform is 17 m. Trees are approximately 15 m tall.

Tree distance west of platform is 27.5 m. Trees are approximately 12 m tall.

Tree distance north of continuous monitor sampling trailer is 15.5 m. Trees are approximately 14-23 m tall.

Tree distance south of continuous monitor sampling trailer is 26 m. Trees are approximately 14 m tall.

Tree distance east of continuous monitor sampling trailer is 25.9 m. Trees are approximately 15 m tall.

Tree distance west of continuous monitor sampling trailer is 30.6 m. Trees are approximately 12 m tall.

Gravel road is 3 meters south of sampling platform.

Continuous monitor sampling trailer is 5.8 m north of platform.

7.3 Spacing from Roadways

Tables E-1, E-2, and Figure E-1 of 40 CFR Part 58 Appendix E list the minimum distances from roadways a monitoring probe needs to be based on the annual average daily traffic (AADT) counts. Table 2 summarizes the findings and includes the minimum separation distance from roadways for each pollutant. AADT counts were obtained from a traffic count map and table generated from the Georgia Department of Transportation website (<http://www.dot.ga.gov/statistics/stars/Pages/DeKalbTraffic.aspx>) and estimated distances were derived from Google Earth. An estimated average traffic count was used for Wildcat Road since the information could not be found on the website. 'TC#' indicates traffic counter number used to obtain AADT data.

Roadway	AADT for 2010	TC #	Estimated Distance from Site (meters)	Minimum Distance Required (meters)			
				Ozone Table E-1	NO/NO _x Table E-1	CO Table E-2	PM Figure E-1
Wildcat Road	Estimated <= 1,000	N/A	205	10	10	10	20
Clifton Springs Road (from Wildcat Rd to Clifton Church Rd)	8,910	3957	690	10	10	10	20
Panthersville Road (from Flat Shoals Rd to Clifton Springs Rd)	19,230	3416	1,751	30	30	45	20
Bouldercrest Road (from I-285 to River Road)	17,680	3407	1,878	30	30	45	20
River Road (from Bouldercrest Rd to River Lake Shore)	7,210	0417	1,402	10	10	10	20
Panthersville Road (from Oakvale Road to Bouldercrest Rd)	6,780	0412	2,329	10	10	10	20
I-285	145,890	3343	751	250	250	150	100

Table 2: Spacing from Roadways Analysis

7.4 Spacing from Potential Sources and Surrounding Area

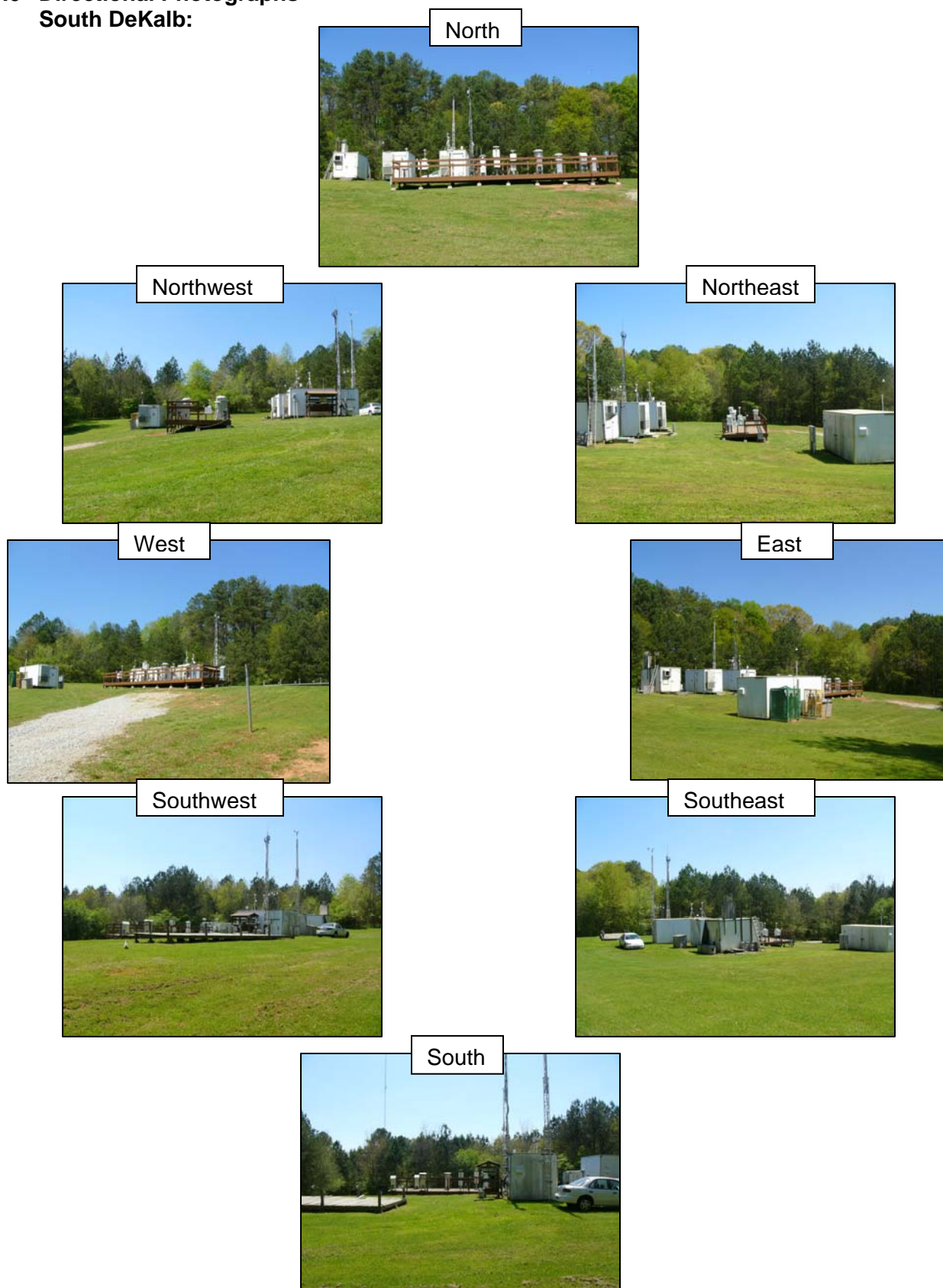
The following table gives a description of potential sources, the direction from the South DeKalb site, and approximate distance from the South DeKalb site. The information was derived from Google Earth.

Direction	Description	Distance from Site
North	Neighborhood Rd (Clifton Springs Manor)	0.139km
Southeast	Horse barn	0.150km
Southeast	Georgia Extension Center	0.180km
South	Wildcat Road	0.205km
East	Neighborhood Rd (Wild Springs Court)	0.220km
Southeast	Softball field	0.359km
West	Cedar Grove Middle School	0.377km
West	Sugar Creek Golf Course	0.730km
East	Bus barn	0.945km
South	Cedar Grove High School	1.300km
East	DeKalb High School Technological School	1.360km
South	Cedar Elementary School	1.375km
East	Bakery	1.722km
West	Industry (Atlanta Roto Molding Inc)	2.45km
West	Industry on Constitution Rd/Bouldercrest Rd	2.5km
Northeast	Shopping Area	2.53km
Northeast	South DeKalb Mall	2.618km
Southeast	DeKalb County Landfill	3.56km
West	Industry on Constitution	3.9km
Northwest	Entrenchment Wastewater Reclamation Facility on Bouldercrest Rd and Key Rd	4.3km
Southwest	Industry on Old Moore Rd/Cedar Grove Rd	4.33km
Southwest	Industry on Henrico Rd/Bonsai Rd	4.37km
Southwest	Industry on Moreland Ave/Cedar Grove Rd/Thurman Rd (Old Dominion Freight Line)	4.4km
Southwest	Moreland Avenue Disposal Inc. (landfill)	4.84km
Southwest	Live Oak Landfill and Recycling Center	4.97km
Southwest	Hickory Ridge Landfill	5.12km
West	Industry on Moreland Ave/S River Industrial	5.4km
Southwest	Industry on Grant Rd/Tanners Church Rd	5.53km
Northwest	Donzi Lane Landfill	5.68km
Northwest	Industry on Moreland Ave/Moreland Industrial Blvd	5.76km
Southwest	Industry on Marbros Industrial Pkwy/Tanners Church Rd	5.82km
South	Industry on Moreland Ave/Rock Cut	5.9 km
West	South River Wastewater Reclamation Center on South River Industrial Blvd	6.5km
South	Industry on Moreland Ave/Anvil Block Rd	6.8km
West	Industry (Conglobal Industries Inc) on Constitution Rd/Jonesboro Rd	7.2km
South	Industry on Moreland Ave/Hood Ave	7.2 km
South	Industry on Moreland Ave/Campbell Blvd	7.47km
South	Industry on Ellenwood Rd/Ellenwood Trade Ct	8.1km
West	Industry (Lanport, Inc.) Sawtell Ave/McDonough Blvd	8.25 km
South	Industry on Ellenwood Rd/Grant Rd	8.77km
Southwest	Hartsfield Atlanta Airport	11.6km
Northwest	Downtown Atlanta	11.8km

Table 3: Spacing from Potential Sources and Surrounding Area

8.0 Directional Photographs

South DeKalb:



DMRC:

North



South



East



West

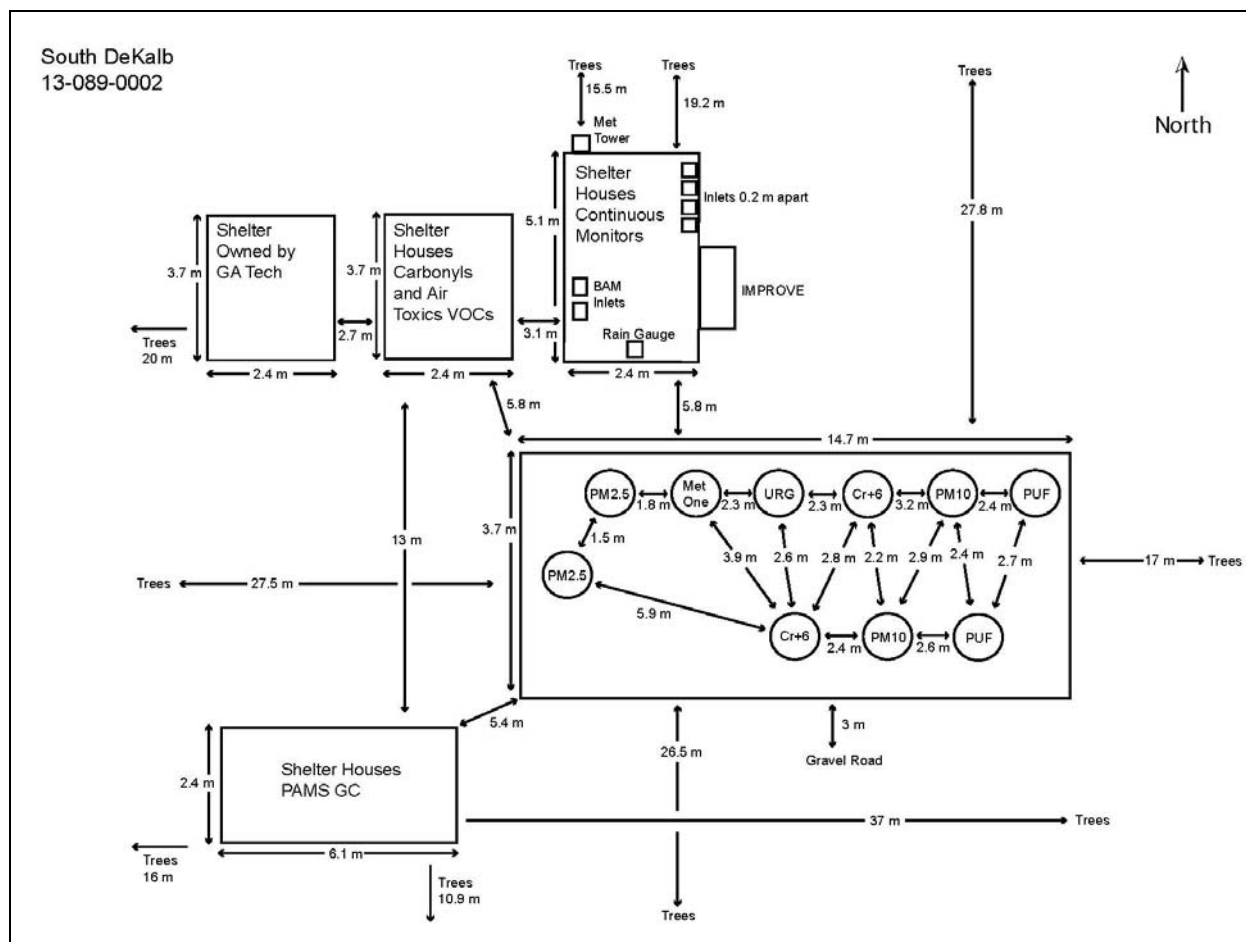


9.0 Site Details

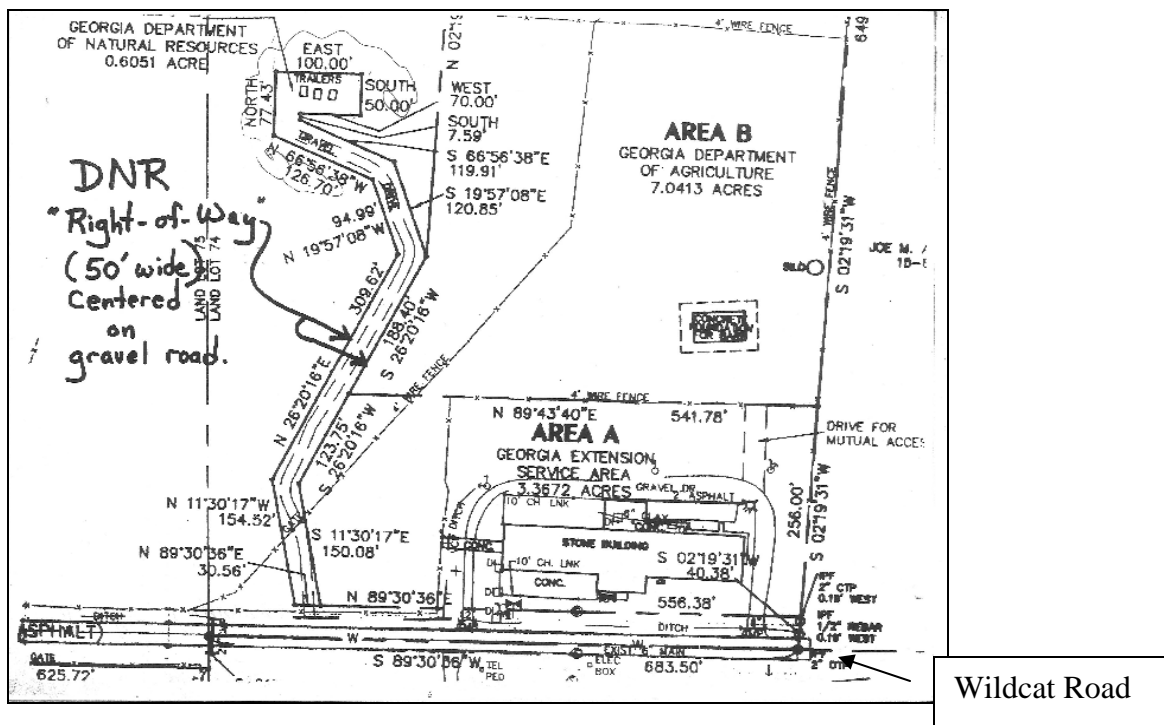
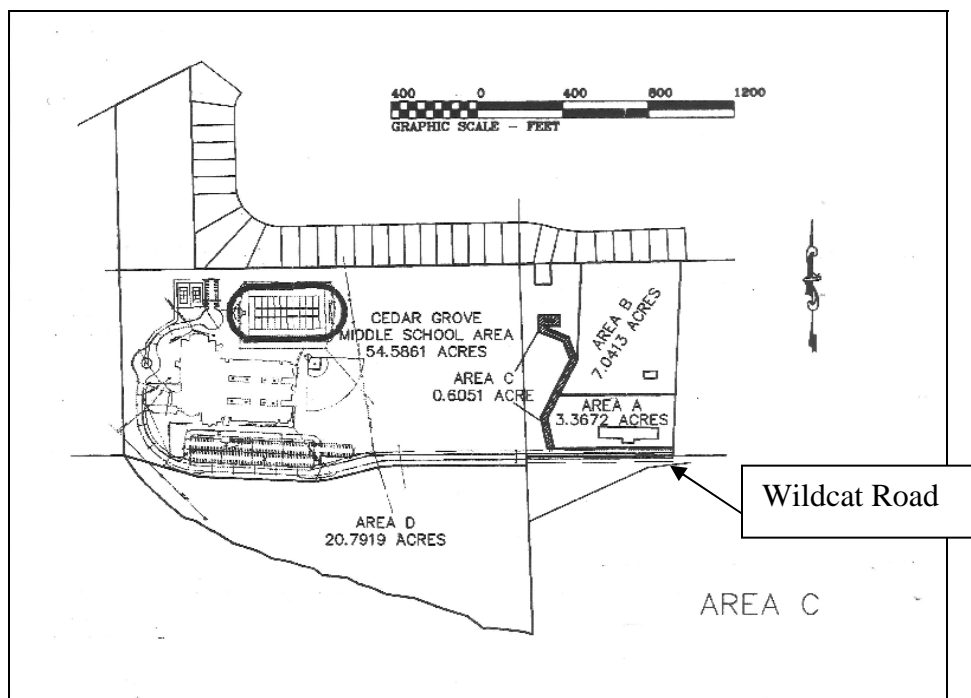
The pictures above were taken looking each of the eight cardinal directions for the South DeKalb site. The sampling platform is 3.7 m x 10 m. The sample inlets are 2 m above the ground. The platform supports the PM_{2.5} FRM, PM₁₀ (Metals), PM_{2.5} Speciation, URG Carbon, Semi-VOCs, and Hexavalent Chromium sampler. It also has room for the PEP audit equipment. Outlets are strategically placed on the platform to provide power to the instruments. GA EPD will build another platform as required for additional samplers.

The air monitoring shelters are approximately 5.6 m from the sampling platform. The shelter directly beside the platform is 2.4 m wide x 6.1 m long x 2.7 m high. It houses the continuous PM_{2.5} (BAM), continuous PM₁₀ (BAM), O₃, NO_x, NO₂, NO_y, CO, and Aethalometer. The roof of the shelter is flat to support the sample inlets for the continuous gaseous and particulate samplers and has additional room for other samplers if the need arises. Sample inlets are at 4 m. The 10 m meteorological tower is next to the shelter and is the “nested” type, allowing for the extension of the NO_y inlet. The wind speed and wind direction sensors are on top of the tower. The temperature, barometric pressure, and relative humidity sensors are located on an arm that projects out from the tower. The rain gauge bucket is located on top of the shelter. The second shelter from the platform houses the Air Toxics VOCs and Carbonyls samplers. It is 2.4 m wide x 3.7 m long x 2.7 m high. The third shelter is owned by Georgia Tech and is 2.4 m wide x 3.7 m long x 2.7 m high. The fourth shelter houses the PAMS GC sampler and is 2.4 m wide x 6.1 m long x 2.7 m high. The power service at the site has been upgraded with more lines, more breakers and bigger service. The site meets minimum power requirements (200A). UPS's protect the computer, data logger and most analyzers. To maintain temperatures between 20-30°C, the shelter has an 18300 BTU heat pump with a digital thermostat.

The following drawing details the site measurements for the South DeKalb site. Measurements are given in meters.



The following two drawings are from the original plans for the current location of the South DeKalb site, showing measurements and identifying what is in the direct vicinity of the site.



10.0 NCore Readiness Self-Assessment Sheet

Attachment A on the following pages is the NCore Readiness Self-Assessment Sheet. EPA provided this sheet in order for each state/local/tribal agency to address all the specificities about the site.

Attachment A: NCore Readiness Self-Assessment for State/local/Tribal Agencies
Agency Name Georgia Dept of Natural Resources/ Environmental Protection Division **Date** May 2012
Prepared By Susan Zimmer-Dauphinee

A. NETWORK DESIGN

- a. Proposed NCore Station #1 NEW SITE X EXISTING SITE AQS # 13-089-0002
b. Proposed NCore Station #2 NEW SITE EXISTING SITE AQS #
c. Proposed NCore Station #3 NEW SITE EXISTING SITE AQS #

	Item	Criteria	Status	Next Steps
1	Urban or Rural	Largest MSA(s) covered by urban station.	The Georgia Site is located at the urban South DeKalb and meets the criteria of the largest MSA	Approved October 30, 2009 (see Attachment B)
2	Scale of Representation	Neighborhood ___ Urban <u>X</u> Regional ___ Other ___	The Site has been established for a number of years as an urban site	Neighborhood scale or larger highly recommended.
3	Population Oriented	Yes <u>X</u> No ___		Population oriented monitoring highly recommended.
4	Proximity to local emissions sources	No biasing local sources within 500 meters for urban stations. No biasing sources or large urban population centers within 50 km for rural stations.	Please see page 138. There are a number of sources both mobile and stationary, but nothing different from what would normally be expected in neighborhood/urban monitoring site.	Approved October 30, 2009 (see Attachment B)
5	Suitability for meteorological measurements	Distance from obstructions is 10x height of obstruction above station. See Volume IV: Meteorological Measurements Version 1.0 (Draft)	The site is borderline for met parameters due to nearby trees and other monitoring shelters. The predominant wind direction is good and site currently meets all siting requirements except for	Monitor tree growth.

	Item	Criteria	Status	Next Steps
			solar radiation and TUV. EPD currently runs the solar and TUV at our Conyers site.	
6	Information (including site photographs) provided for AMTIC NCore web site	Photographs in 8 cardinal directions needed.	See page 139	
7	Station Coordinates	Determined by GPS	N33.68808/W-84.29018	
8	Site visited by EPA in past 3 years	Meets applicable Appendix D and E criteria.	Yes	Approved October 30, 2009 (see Attachment B)
9	Network leveraging	Collocation with other networks encouraged: STN <input checked="" type="checkbox"/> Supplemental CSN__ NATTS <input checked="" type="checkbox"/> CASTNET __ IMPROVE <input checked="" type="checkbox"/> * NADP __ PAMS <input checked="" type="checkbox"/> Other __	* GA EPD currently runs a carbon sampler as part of the IMPROVE network.	
10	Applicable site fields updated in AQS including coordinates	Consider setting additional monitor type to "Proposed NCore" (station should also be categorized as SLAMS).	Lat/Lon and traffic counts updated in AQS; where available updated monitor type to "Proposed NCore"	
LOGISTICAL CONSIDERATIONS				
11	Site access	Access for at least five years is suggested.	Yes	
12	Power requirements and availability	200A service suggested. 240vac service typically needed for a/c. Key power outlets protected by UPS units.	Upgraded power service with more lines, more breakers and bigger service. Meets minimum power requirements. UPS's protect the computer, data logger and most analyzers.	No plans to alter current power supply
13	Telecommunications	Minimum dial-up service. Broadband service suggested for polling of 1-minute data.	Yes	Will change as determined at a later date.
14	A/C cooling capacity	Minimum 18,000BTU a/c capacity.	Yes	

	Item	Criteria	Status	Next Steps
15	Interior space	Sufficient for minimum of two 19" inner dimension, 6' tall instrument racks and related equipment and accessories, or equivalent shelf space.	Yes	
16	Exterior space (roof and accompanying platforms)	Allow for: a) 1m spacing of low-volume PM sampler inlets – up to seven* required plus PEP audit sampler. b) 1m spacing between low-volume PM sampler inlets and gas manifold cane or Teflon tubing. Facilitate usage of TTP audit vehicle or trailer.	a) Currently have inlets for four PM samplers including PM2.5 FRM, PM2.5 continuous, PM2.5 speciation, URG carbon and PEP audit sampler. b) Meets criteria	PM coarse speciation will be required at limited sites.
17	10m tower compatibility	Required for meteorological equipment, NOy converter. Room to drop tower for calibrations and audits.	A 10m tower is established at the site, meets all criteria.	

*Notes

1. PM2.5 FRM sampler
2. PM10c FRM sampler for PM10-2.5 mass (dichotomous sampler could substitute for #1 and #2 if future FRM/FEMs available) or PM10-2.5 continuous
3. PM2.5 continuous sampler (does not have to be FEM/ARM)
4. PM2.5 speciation sampler (CSN or IMPROVE)
5. URG sampler for carbon channel (PM2.5 speciation) if using CSN samplers
6. Sampler for PM10-2.5 speciation (unless dichotomous sampler or PM2.5 speciation sampler (spare channels) is used)
7. URG sampler for PM10 carbon speciation (speculative need for PM10-2.5 carbon speciation by difference)

B. REQUIRED PARAMETER/METHODOLOGICAL EVALUATION

- d. Proposed NCore Station #1 ___NEW SITE ___**X** EXISTING SITE AQS # 13-089-0002
- e. Proposed NCore Station #2 ___NEW SITE ___EXISTING SITE AQS # _____
- f. Proposed NCore Station #3 ___NEW SITE ___EXISTING SITE AQS # _____

	Parameter	Existing Measurements		Future Measurements		Notes
		Sampling Began	Method	Date Expected	New or Relocated	
1	Ozone	1/1/74	Ultraviolet photometric			Year-round operation (not seasonal)
2	Sulfur dioxide	10/1/11	Trace level pulsed fluorescence			High sensitivity
3	Carbon monoxide	6/1/09	Trace level non-dispersive infrared			High sensitivity
4	Nitrogen oxides (NO _y)*	4/1/94	Automated Chemiluminescence			High sensitivity External converter mounted at 10m
5	PM _{2.5} mass	1/22/99	Manual reference method using gravimetric analysis			1-in-3 day FRM/FEM integrated
6	PM _{2.5} continuous	5/1/03, changed method on 1/1/11	BAM-Beta Attenuation Monitor			FEM or ARM preferred but not required
7	PM _{2.5} speciation	10/1/00	Multi-species manual collection method utilizing thermal optical, ion chromatography, gravimetric, and x-ray fluorescence analyses			1-in-3 day (Met One & URG 3000N samplers) or IMPROVE
8	PM _{10-2.5} mass	1/1/11	BAM-Beta Attenuation Monitor			Met One BAM Continuous monitor

	Parameter	Existing Measurements		Future Measurements		Notes
		Sampling Began	Method	Date Expected	New or Relocated	
9	PM10-2.5 speciation			To be determined	To be determined	Details to be provided later (2008) on sampling requirements.
10	Wind speed and direction**	6/1/93	Ultra sonic wind sensor			At 10 m
11	Ambient temperature**	6/1/93	Aspirated shield			At 2 m
12	Relative humidity**	6/1/93	Hygroscopic plastic film			At 2 m
13	Optional – Vertical wind speed, solar radiation, precipitation, barometric pressure, delta-T for 2-10m.	6/1/93 a) Vertical wind speed b) Solar radiation (SOLAR & TUVB) c) Precipitation d) Barometric pressure e) Sigma theta	a) SODAR system at another site b) Measured at another site (Conyers) c) Tipping bucket d) Barometric sensor e) Ultra sonic wind sensor			
14	Optional – Ammonia and nitric acid	N/A	N/A			Pilot project using denuders scheduled for 2008-2009.

Notes

* Although the measurement of NOy is required in support of a number of monitoring objectives, available commercial instruments may indicate little difference in their measurement of NOy compared to the conventional measurement of NOx, particularly in areas with relatively fresh sources of nitrogen emissions. Therefore, in areas with negligible expected difference between NOy and NOx measured concentrations, the Administrator may allow for waivers that permit high-sensitivity NOx monitoring to be substituted for the required NOy monitoring at applicable NCore sites.

** EPA recognizes that, in some cases, the physical location of the NCore site may not be suitable for representative meteorological measurements due to the site's physical surroundings. It is also possible that nearby meteorological measurements may be able to fulfill this data need. In these cases, the requirement for meteorological monitoring can be waived by the Administrator

C. SUPPORTING EQUIPMENT EVALUATION

- a. Proposed NCore Station #1 NEW SITE EXISTING SITE AQS # 13-089-0002
- b. Proposed NCore Station #2 NEW SITE EXISTING SITE AQS #
- c. Proposed NCore Station #3 NEW SITE EXISTING SITE AQS #

	Item	Criteria	Status	Next Steps
1	Calibrator (field)	Suitable for trace-level dilutions, see Appendix A audit concentrations. Capable of automated QC checks. Internal O3 generator – photometer preferred.	Ready	
2	Calibrator (lab or field)	Suitable for generation of MDL-level concentrations	Ready	
3	Zero Air Source	Compliant with TAD recommendations. Ultra-pure air cylinder recommended for occasional comparison to zero air source. Capacity for 20+ LPM of dilution air.	Ready	
4	Data acquisition system	Digital-capable system	Ready	
5	Gas cylinder standards	Suitable for trace-level dilutions, see Appendix A audit concentrations, EPA Protocol certifications. Special low-level standards needed for MDL concentrations (CO, SO2, NOy)	Ready	
6	Meteorological calibration devices	Provide NIST traceability of required meteorological parameters.	Ready	
7	Sampling manifold	Per Appendix E. Residence time <20 seconds, only glass or Teflon materials, probe and monitor inlets acceptable heights.	Meets Appendix E requirements.	

8	Auditing equipment	Independent calibrator, zero air source and gas standards compatible with trace level specifications. Independent meteorological and flow standards, it not already available.	Ready	
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D. ORGANIZATIONAL FACTORS

	Item	Criteria	Status	Next Steps
1	Training considerations	Key monitoring personnel have attended OAQPS provided monitoring workshops or equivalent training.	Several team members have been through the training	
2	Monitoring station documentation	NCore station(s) described in Annual Monitoring Network Plan.	Included in 2009 plan	Must be included in plan due on or before July 1, 2009. Discuss siting with health researchers and other data stakeholders.
3	Section 103 funds received and obligated for equipment purchases		Yes	Work with EPA Regional contacts.

11.0 NCore Site Letter of Approval

Attachment B on the following pages is the approval letter from EPA regarding the NCore site. The letter was dated October 30, 2009 stating that the South DeKalb site (13-089-0002) is approved as Georgia's NCore site.

Attachment B:

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
RESEARCH TRIANGLE PARK, NC 27711

OCT 30 2009

OFFICE OF
AIR QUALITY PLANNING
AND STANDARDS

Mr. F. Allen Barnes, Chief
Air Management Division
Environmental Protection Division
Georgia Department of Natural Resources
4244 International Parkway, Suite 120
Atlanta, GA 30354

NOV 16 2009

Dear Mr. Barnes:

This letter transmits our approval of Georgia's proposed NCore station at the South Dekalb site, AQS# 13-089-0002, as required by the Ambient Air Monitoring Regulations. According to these rules (see 40 CFR 58.11(c)), NCore network design and changes must be approved by the Environmental Protection Agency's (EPA) Administrator. This authority has been delegated to the Director of the Air Quality Assessment Division in EPA's Office of Air Quality Planning and Standards.

In considering your proposed NCore monitoring station, we worked with your Regional Office on a review of your annual monitoring network plan and an assessment of the proposed location and characteristics of the area to be monitored. After careful consideration of your proposal, we are pleased to approve this station as part of the NCore network.

In your agency's plan for NCore, a request was made to waive measuring NOy, which is a required measurement. After assessing available NOy observations and modeling outputs and to assure consistency across all NCore stations, we are affirming the requirement to measure NOy at all NCore stations.

By EPA's rules (see 40 CFR 58.13), an approved NCore station is expected to be operating with all required measurements by January 1, 2011. Enclosure A provides an update on required measurements and Enclosure B provides EPA's Air Quality System instructions on coding for NCore monitors and data. Please share this information with your staff responsible for the NCore station measurements and data submission.

Internet Address (URL) • <http://www.epa.gov>

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Thank you for your program's efforts in developing the NCore station plan and establishing the site. For questions, you may contact Tim Hanley at hanley.tim@epa.gov and 919-541-4417, or David Shelow at shelow.david@epa.gov and 919-541-3776.

Sincerely,

A handwritten signature in black ink, reading "Richard A. Wayland". The signature is fluid and cursive, with the first name "Richard" being the most prominent.

Richard A. Wayland
Director
Air Quality Assessment Division

2 Enclosures

cc: Doug Neeley – EPA Region 4

Appendix D:
List of Closed Ambient Monitors

Georgia Department of Natural Resources
Environmental Protection Division

Site ID	Site Name	Sampler	Date Shut Down	Last Published in Annual Plan
131210039	Fire Station#8	PM ₁₀	9/26/06	N/A
130893001	Tucker	Ozone	10/31/06	N/A
130090001	Milledgeville-Airport	SO ₂	12/31/06	2009
130893001	Tucker	PAMS VOCs, NO/NO _x /NO _y /NO ₂	1/7/07	N/A
131110091	McCaysville	SO ₂	10/2/07	2007
131210001	Fulton Co Health Dept	PM ₁₀	9/1/08	2008
130970003	Douglasville-Beulah Pump Station	PM ₁₀	9/1/08	2008
132550002	Griffin-Spalding County	PM ₁₀	9/1/08	2008
132151003	Columbus-Crime Lab	Ozone	10/31/08	2008
130090001	Milledgeville-Airport	Air Toxics	10/31/08	2011
131150004	Rome-Co. Health Dept	Air Toxics	10/31/08	2011
131210020	Utoy Creek	Air Toxics	10/31/08	2011
131273001	Brunswick-Brunswick Coll	Air Toxics/Carbonyls	10/31/08	2011
131390003	Gainesville-Fair St Elem	Air Toxics	10/31/08	2011
131530001	Warner Robins-AFB	Air Toxics	10/31/08	2011
131850003	Valdosta-Mason Elem	Air Toxics	10/31/08	2011
132155000	Columbus-Columbus State	Air Toxics	10/31/08	2011
132450092	Augusta-Clara Jenkins	Air Toxics	10/31/08	2011
130550001	Summerville-Fish Hatchery	Acid Rain	10/31/08	2011
130850001	Dawsonville-GA Forestry	Acid Rain	10/31/08	2011
131890001	McDuffie-Fish Hatchery	Acid Rain	10/31/08	2011
132410002	Hiawassee-Lake Burton	Acid Rain	10/31/08	2011
132970001	Social Circle-Fish Hatchery	Continuous PM _{2.5}	10/31/08	2011
131210048	Georgia Tech	PM _{2.5}	12/1/08	2008
131150005	Rome-Coosa High School	PM _{2.5} , PM ₁₀ , PM _{2.5} speciation	Consolidated with 131150003 3/09	2008
131210048	Georgia Tech	SO ₂ , NO, NO ₂ , NO _x	4/30/09	2011

Appendix E: Comments

**Georgia Department of Natural Resources
Environmental Protection Division**

After posting the 2012 Ambient Air Monitoring Plan, one point was found that needed to be addressed. The required change is as follows:

In paragraph 1.8 (a) of the Introduction, the PM₁₀ monitor for Savannah listed on page 9 should be Savannah-Shuman Middle School (13-051-0014) instead of Savannah-Market Street (13-051-0017). The change was made, and the appropriate site is listed.