GEORGIA
DEPARTMENT OF NATURAL RESOURCES

ENVIRONMENTAL PROTECTION DIVISION

2017 Ambient Air Monitoring Plan

Air Protection Branch
Ambient Monitoring Program

Table of Contents

Acronyms and Glossary

AADT	Annual Average Daily Traffic
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
ARM	Approved Regional Method
BAM	Beta Attenuation Monitor
CAA	Clean Air Act
CBSA	Core Based Statistical Area
CFR	Code of Federal Regulations
CO	Carbon Monoxide
CSA	Combined Statistical Area
CV	Coefficient of Variation
DNPH	Dinitrophenylhydrazine
EPA	United States Environmental Protection Agency
FEM	Federal Equivalent Method
FRM	Federal Reference Method- the official measurement technique for a given pollutant
GA EPD	Georgia Environmental Protection Division
GEO MEAN	Geometric Mean
HAP	Hazardous Air Pollutant
HPLC	High Performance Liquid Chromatography
LOD	Limit of Detection
$\mu g/m^3$	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
NATTS	National Air Toxics Trends Station
NCore	National Core Multipollutant Monitoring Network
NDV	Normalized Design Value
NMHC	Non-Methane Hydrocarbons
NO_2	Nitrogen Dioxide
NO_x	Oxides of Nitrogen
NO_y	Reactive oxides of Nitrogen
NWS	National Weather Service
O_3	Ozone
PAH	Polycyclic Aromatic Hydrocarbons
PAMS	Photochemical Assessment Monitoring Station
Pb	Lead
$PM_{2.5}$	Particles with an aerodynamic diameter of 2.5 microns or less
PM_{10}	Particles with an aerodynamic diameter of 10 microns or less
$PM_{10-2.5}$	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 Stations
SO_2	Sulfur Dioxide
SPMS	Special Purpose Monitoring Stations
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
ZPS	Zero/Precision/Span

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.

Agency Contacts for Georgia Environmental Protection Division

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1.0 Executive Summary

The Georgia Environmental Protection Division (GA EPD) is submitting this "2017 Ambient Air Monitoring Plan" to the United States Environmental Protection Agency (EPA) Region 4 office as required by federal regulations under 40CFR58.10 (a)(1). The plan provides documentation of the establishment and maintenance of an air quality surveillance system in Georgia that meets all federal requirements found in Appendix A through E of 40CFR58, where applicable. In developing this plan, GA EPD assessed monitoring types and objectives, site appropriateness for air quality characterization, representative spatial scale to match objectives at each monitor, and appropriate new technologies. The plan describes the established sites across the State of Georgia, as well as the proposal to maintain or discontinue sites in the state's ambient air quality surveillance system. 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 classifies each monitoring station. The plan also serves as a directory of existing SLAMS, Photochemical Assessment Monitoring Stations (PAMS), Speciation Trends Network (STN) and Supplemental Speciation sites, National Air Toxics Trends Stations (NATTS), National Core Multipollutant Monitoring Station (NCore), Near-road, Georgia Air Toxics Network, and the meteorological parameters performed at each location.

Prior to the Clean Air Act of 1970, the state health department conducted air monitoring in Georgia. In the early 1970's, GA EPD took over the responsibility of ambient air monitoring to better identify and control air pollutants in Georgia. GA EPD currently relies on a sampling network of 41 stations to:

- determine whether air quality standards are being met
- track air quality improvements
- measure the impact of industrial expansion
- provide air pollution information to the public
- assist in enforcement actions

Since the publication of the "2016 Ambient Air Monitoring Plan", there have been some changes to the state's ambient air monitoring network that should be noted.

New monitors/sites:

- The Rome-Kraftsman site (13-115-0006) in the Rome MSA began monitoring SO_2 on January 1, 2017 as part of the SO_2 data requirements rule. See Section 4.2 for details. This SO_2 monitor was relocated from the Rome-Coosa site (13-115-0003) within the same MSA.

Discontinued monitors/sites:

- The Yorkville site (13-223-0003) in the Atlanta-Sandy Springs-Marietta MSA was closed as of January 31, 2017.
- The Gordon site (13-319-0001) in Wilkinson County was closed as of December 31, 2016.

- The black carbon sampler at the South DeKalb site (13-089-0002) in the Atlanta-Sandy Springs-Marietta MSA was shut down as of December 31, 2016.

Relocated monitors/sites:

- The background $PM_{2.5}$ monitor at the Yorkville site (13-223-0003) was relocated to the General Coffee State Park site (13-069-0002) as of February 1, 2017. This monitor will now serve as the background $PM_{2.5}$ monitor at this location.
- The collocated PM_{10} monitor at the Augusta site (13-245-0091) will be relocated to be collocated with the PM_{10} monitor at the Fire Station #8 (13-121-0039) site as of June 1, 2017.

1.1 Mandate

This document is produced in response to duties mandated to ambient air monitoring agencies in 40CFR58.10:

> ***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 submit to the Regional Administrator an annual monitoring network plan which shall provide for the documentation of the establishment and maintenance of an air quality surveillance system that consists of a network of SLAMS monitoring stations that can include FRM, FEM, and ARM monitors that are part of SLAMS, NCore, CSN, PAMS, and SPM stations. The plan shall include a statement of whether the operation of each monitor meets the requirements of appendices A, B, C, D, and E of this part, where applicable. The Regional Administrator may require additional information in support of this statement. The annual monitoring network plan must be made available for public inspection and comment for at least 30 days prior to submission to the EPA and the submitted plan shall include and address, as appropriate, any received comments.*
> *(2) Any annual monitoring network plan that proposes network modifications (including new or discontinued monitoring sites, new determinations that data are not of sufficient quality to be compared to the NAAQS, and changes in identification of monitors as suitable or not suitable for comparison against the annual $PM_{2.5}$ NAAQS) to SLAMS networks is subject to the approval of the EPA Regional Administrator, who shall approve or disapprove the plan within 120 days of submission of a complete plan to the EPA.*
> *(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.*
> *(4) A plan for establishing source-oriented Pb monitoring sites in accordance with the requirements of appendix D to this part for Pb sources emitting 1.0 tpy or greater shall be submitted to the EPA Regional Administrator no later than July 1, 2009, as part of the annual network plan required in paragraph (a)(1) of this section. The plan shall provide for the required source-oriented Pb monitoring sites for Pb sources emitting 1.0 tpy or greater to be operational by January 1, 2010. A plan for establishing source-oriented Pb monitoring sites in accordance with the requirements of appendix D to this part for Pb sources emitting equal to or greater than 0.50 tpy but less than 1.0 tpy shall be submitted*

to the EPA Regional Administrator no later than July 1, 2011. The plan shall provide for the required source-oriented Pb monitoring sites for Pb sources emitting equal to or greater than 0.50 tpy but less than 1.0 tpy to be operational by December 27, 2011.

(5)(i) A plan for establishing or identifying an area-wide NO_2 monitor, in accordance with the requirements of Appendix D, section 4.3.3 to this part, shall be submitted as part of the Annual Monitoring Network Plan to the EPA Regional Administrator by July 1, 2012. The plan shall provide for these required monitors to be operational by January 1, 2013.

(ii) A plan for establishing or identifying any NO_2 monitor intended to characterize vulnerable and susceptible populations, as required in Appendix D, section 4.3.4 to this part, shall be submitted as part of the Annual Monitoring Network Plan to the EPA Regional Administrator by July 1, 2012. The plan shall provide for these required monitors to be operational by January 1, 2013.

(iii) A plan for establishing a single near-road NO_2 monitor in CBSAs having 1,000,000 or more persons, in accordance with the requirements of Appendix D, section 4.3.2 to this part, shall be submitted as part of the Annual Monitoring Network Plan to the EPA Regional Administrator by July 1, 2013. The plan shall provide for these required monitors to be operational by January 1, 2014.

(iv) A plan for establishing a second near-road NO_2 monitor in any CBSA with a population of 2,500,000 persons or more, or a second monitor in any CBSA with a population of 1,000,000 or more persons that has one or more roadway segments with 250,000 or greater AADT counts, in accordance with the requirements of appendix D, section 4.3.2 to this part, shall be submitted as part of the Annual Monitoring Network Plan to the EPA Regional Administrator by July 1, 2014. The plan shall provide for these required monitors to be operational by January 1, 2015.

(6) A plan for establishing SO_2 monitoring sites in accordance with the requirements of appendix D to this part shall be submitted to the EPA Regional Administrator by July 1, 2011 as part of the annual network plan required in paragraph (a) (1). The plan shall provide for all required SO_2 monitoring sites to be operational by January 1, 2013.

(7) A plan for establishing CO monitoring sites in accordance with the requirements of appendix D to this part shall be submitted to the EPA Regional Administrator. Plans for required CO monitors shall be submitted at least six months prior to the date such monitors must be established as required by section 58.13.

(8)(i) A plan for establishing near-road $PM_{2.5}$ monitoring sites in CBSAs having 2.5 million or more persons, in accordance with the requirements of appendix D to this part, shall be submitted as part of the annual monitoring network plan to the EPA Regional Administrator by July 1, 2014. The plan shall provide for these required monitoring stations to be operational by January 1, 2015.

(ii) A plan for establishing near-road $PM_{2.5}$ monitoring sites in CBSAs having 1 million or more persons, but less than 2.5 million persons, in accordance with the requirements of appendix D to this part, shall be submitted as part of the annual monitoring network plan to the EPA Regional Administrator by July 1, 2016. The plan shall provide for these required monitoring stations to be operational by January 1, 2017.

(9) The annual monitoring network plan shall provide for the required O_3 sites to be operating on the first day of the applicable required O_3 monitoring season in effect on January 1, 2017 as listed in Table D-3 of appendix D of this part.

(10) A plan for making Photochemical Assessment Monitoring Stations (PAMS) measurements, if applicable, in accordance with the requirements of appendix D paragraph 5(a) of this part shall be submitted to the EPA Regional Administrator no later than July 1, 2018. The plan shall provide for the required PAMS measurements to begin by June 1, 2019.

(11) An Enhanced Monitoring Plan for O_3, if applicable, in accordance with the requirements of appendix D paragraph 5(h) of this part shall be submitted to the EPA Regional Administrator no later than October 1, 2019 or two years following the effective date of a designation to a classification of Moderate or above O_3 nonattainment, whichever is later.

(12) A detailed description of the PAMS network being operated in accordance with the requirements of appendix D to this part shall be submitted as part of the annual monitoring network plan for review by the EPA Administrator. The PAMS Network Description described in section 5 of appendix D may be used to meet this requirement.

(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.

(9) The designation of any Pb monitors as either source-oriented or non-source-oriented according to Appendix D to 40 CFR part 58.

(10) Any source-oriented monitors for which a waiver has been requested or granted by the EPA Regional Administrator as allowed for under paragraph 4.5(a)(ii) of Appendix D to 40 CFR part 58.

(11) Any source-oriented or non-source-oriented site for which a waiver has been requested or granted by the EPA Regional Administrator for the use of Pb-PM_{10} monitoring in lieu of Pb-TSP monitoring as allowed for under paragraph 2.10 of Appendix C to 40 CFR part 58.

(12) The identification of required NO_2 monitors as near-road, area-wide, or vulnerable and susceptible population monitors in accordance with Appendix D, section 4.3 of this part.

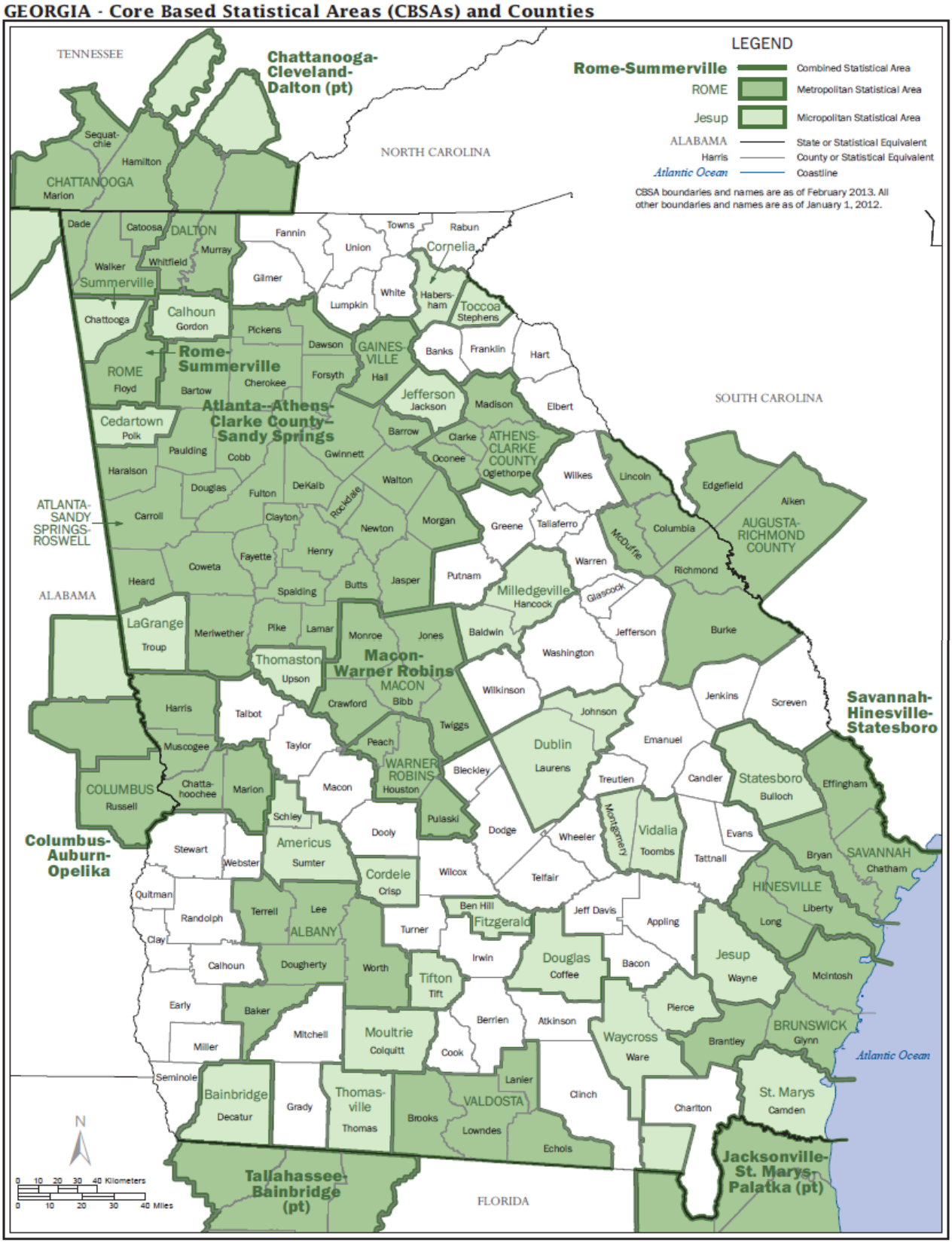
(13) The identification of any $PM_{2.5}$ FEMs and/or ARMs used in the monitoring agency's network where the data are not of sufficient quality such that data are not to be compared to the NAAQS. For required SLAMS where the agency identifies that the $PM_{2.5}$ Class III FEM or ARM does not produce data of sufficient quality for comparison to the NAAQS, the monitoring agency must ensure that an operating FRM or filter-based FEM meeting the sample frequency requirements described in §58.12 or other Class III $PM_{2.5}$ FEM or ARM with data of sufficient quality is operating and reporting data to meet the network design criteria described in appendix D to this part.

(c) The annual monitoring network plan must document how state 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. 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. 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 assessments are due every five years beginning 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.

Within this document, GA EPD has included the metropolitan statistical area (MSA) represented by each site, which was derived from the following map (Figure 1), as requested above in paragraph 40CFR58.10(a)(3)(b)(8). The U.S. Census Bureau defines an MSA as a geographic entity containing a core urban area of 50,000 or more population and consists of one or more counties containing the core urban area, as well as adjacent counties that have a high degree of social and economic integration with the urban core (http://www.census.gov/population/metro/).



U.S. DEPARTMENT OF COMMERCE Economics and Statistics Administration U.S. Census Bureau

Figure 1: Map of Statistical Areas in Georgia

1.2 Procedures for Making Changes to the Monitoring Network

In some circumstances, monitors must be shut down or moved. While the Ambient Monitoring Program of GA EPD makes every effort to maintain continued operation of all required monitors, it operates as a guest or leaseholder at all monitoring sites. GA EPD does not hold ownership rights to the land at any of its ambient air monitoring sites. If GA EPD loses its lease or is otherwise forced to leave a given site, the monitors at that site may be moved to a nearby location [40CFR58.14(c)(6)].

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 [Chattanooga-Hamilton County Air Pollution Control Bureau] and GAEPDAPB [Georgia Environmental Protection Division Air Protection Branch] (collectively referred to as the "affected agencies") to collectively meet United States Environmental Protection Agency (EPA) minimum monitoring requirements for particles of an aerodynamic diameter of 10 micrometers and less (PM10), particles of an aerodynamic diameter of 2.5 micrometers and less (PM2.5), and ozone; as well as 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 40CFR58 Appendix D, Section 2, (e) (October 17, 2006)." For full MOA documentation, see Appendix E of this document.

The Memorandum of Agreement dated January 2017 states, "The purpose of the Memorandum of Agreement (MOA) is to renew the Augusta-Richmond County Metropolitan Statistical Area (MSA) Criteria Pollutant Air Quality Monitoring Agreement between SCDHEC [South Carolina Department of Health and Environmental Control] and GA EPD (collectively referred to as the "affected agencies") to collectively meet United States Environmental Protection Agency (EPA) minimum monitoring requirements for particles of an aerodynamic diameter of 10 micrometers and less (PM10), particles of an aerodynamic diameter of 2.5 micrometers and less (PM2.5), and ozone; as well as 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 40CFR58 Appendix D, Section 2, (e)." For full MOA documentation, see Appendix E of this document.

For the Columbus, GA-AL MSA, both the Alabama Department of Environmental Management and the GA EPD have agreed to fully cover EPA's regulations for monitoring their respective state.

1.4 Request for Waiver

GA EPD is requesting a waiver to continue monitoring the solar radiation and total ultraviolet radiation at the Conyers site (13-247-0001) for the South DeKalb (13-089-0002) PAMS site. The

South DeKalb monitoring site does not fit the necessary guidelines for measurement of solar radiation, due to the topography of the site location. Solar radiation measurements from the total global solar radiation sensor must be made from a location that is free from any obstruction which may cause a shadowing effect. In addition, the pyranometer must be located away from highly reflective surfaces, which may cause enhanced optical scattering and overestimate the incoming total solar radiation. The required total ultraviolet radiation and solar radiation measurements are collected at the Conyers monitoring site, which meets necessary criteria.

1.5 Air Quality Index (AQI)

The Air Quality Index (AQI) is a method of reporting daily air quality that converts concentration levels of pollution to a simple color-coded number scale of 0-500. Colored categories on the AQI scale are related to potential health effects from exposure to measured concentrations of a major pollutant. Certain monitoring stations in GA EPD's SLAMS network provide data used in daily AQI reporting.

Figure 2 shows how the monitored concentrations correspond to the AQI values, descriptors and health advisories. AQI 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, GA-SC MSA; the Savannah MSA; and the Chattanooga TN-GA MSA. The GA EPD provides daily AQI reporting to the general public in Georgia through the Ambient Monitoring Program website (http://amp.georgiaair.org). The Chattanooga, Tennessee-Georgia MSA AQI reporting is covered by GA EPD and the Chattanooga-Hamilton County Air Pollution Control Bureau per the MOA, as discussed above. The Augusta-Richmond County, GA-SC MSA AQI is covered by GA EPD and the South Carolina Department of Health and Environmental Control per the MOA. On October 1, 2015, EPA tightened the ozone standard to 70 ppb. At the same time, EPA adjusted the AQI index levels or "breakpoints" to reflect the new standard.

Maximum Pollutant Concentration							AQI Value	Descriptor	EPA Health Advisory
$PM_{2.5}$ (24hr) $\mu g/m^3$	PM_{10} (24hr) $\mu g/m^3$	SO_2 (1hr)* ppb	O_3 (8hr)^ ppm	O_3 (1hr) ppm	CO (8hr) ppm	NO_2 (1hr) ppb			
0.0–12.0	0– 54	0– 35	0.000–0.054	None	0.0–4.4	0– 53	0 to 50	**Good (green)**	Air quality is considered satisfactory, and air pollution poses little or no risk.
12.1–35.4	55–154	36–75	0.055–0.070	None	4.5–9.4	54-100	51 to 100	**Moderate (yellow)**	Air quality is acceptable; however, for some pollutants there may be a moderate health concern for a very small number of people. For example, people who are unusually sensitive to the condition of the air may experience respiratory symptoms.
35.5–55.4	155 – 254	76 – 185	0.071 – 0.085	0.125 – 0.164	9.5–12.4	101-360	101 to 150	**Unhealthy for Sensitive Groups**	Members of sensitive groups (people with lung or heart disease) are at greater risk from exposure to particle pollution. Those with lung disease are at risk from exposure to ozone. The general public is not likely to be affected in this range.
55.5–150.4	255–354	186–304*	0.086–0.105	0.165–0.204	12.5–15.4	361-649	151 to 200	**Unhealthy (red)**	Everyone may begin to experience health effects in this range. Members of sensitive groups may experience more serious health effects.
150.5–250.4	355–424	305–604*	0.106–0.200	0.205–0.404	15.5–30.4	650-1249	201 to 300	**Very Unhealthy (purple)**	AQI values in this range trigger a health alert. Everyone may experience more serious health effects. When the AQI is in this range because of ozone, most people should restrict their outdoor exertion to morning or late evening hours to avoid high ozone exposures.
250.5–350.4	425–504	605–804*	0.201-(^)	0.405 – 0.504	30.5–40.4	1250-1649	301 to 400	**Hazardous (maroon)**	AQI values over 300 trigger health warnings of emergency conditions. The entire population is more likely to be affected.
350.5–500.4	505–604	805–1004*	None^	0.505–0.604	40.5–50.4	1650-2049	401 to 500		

*Values of 200 or greater are calculated with 24-hr SO_2 concentrations; ^Values of 301 or greater are calculated with 1-hr O_3 concentrations

Figure 2: Detailed AQI Values by Pollutant

1.6 QAPP and QMP

As part of the requirements for EPA (40CFR58 Appendix A), GA EPD has submitted the appropriate Quality Assurance Project Plans (QAPP) and Quality Monitoring Plans (QMP). The following table shows the current status of submittals and approvals of these documents.

QAPP ID	QAPP Title	Submittal	Approval
GA-AAQMP-QAPP-NR-03-2017	Quality Assurance Project Plan of the Georgia Ambient Air Quality Monitoring Project for the Near Road Monitoring Network (March 2016 Version)	3-20-2017	To be approved by EPA; initial version submitted 3-21-2014
GA-AAQMP-QAPP-CAP&NCORE-12-2016	Quality Assurance Project Plan of the Georgia Ambient Air Quality Monitoring Project for the Criteria Air Pollutants (Including Data Requirement Rule) and National Core Multi-Pollutant Station (November 2016 Version)	10-14-2016	12-21-2016 (Partially approved by EPA)
GA-AAQMP-QAPP-PM25-12-2016	Quality Assurance Project Plan of the Georgia Ambient Air Quality Monitoring Project for $PM_{2.5}$ (Including Chemical Speciation) (December 2016 Version)	12-29-2016	To be approved by EPA; previous version approved 8-20-2014
GA-AAQMP-QAPP-NATTS-03-2011	Quality Assurance Project Plan for the Georgia National Air Toxics Trends Project (March 2011 Version)	4-26-2011	4-22-2014
GA-AAQMP-QAPP-PAMS-12-2016	Quality Assurance Project Plan of the Georgia Ambient Air Quality Monitoring Project for the Photochemical Assessment Monitoring Stations State of Georgia (December 2016 Version)	12-30-2016	To be approved by EPA; previous version approved 7-21-2010

Table 1: List of Georgia EPD's QAPPs

1.7 Public Notice and Comment Procedures

This document and any 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 DeAnna Oser, Program Manager of the Ambient Monitoring Program, at DeAnna.Oser@dnr.ga.gov.

The deadline for submitting comments to GA EPD is no later than 30 days after the date on which this document is published on http://amp.georgiaair.org/. 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 40CFR58.10(a)(1), will address, as appropriate, any comments received before the deadline.

GA EPD's responses to comments and any other relevant information will be made available for public review during normal business hours at the office of the Air Protection Branch, as well as in the final document published on http://amp.georgiaair.org/.

1.8 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 of this document for the inventory listing.

1.9 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.

SITE ID	SITE 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	Pb	PM_{10}	PM_{10} Cont.	PAMS VOC	VOC	SVOC	Carb-onyls	Meteo-rology	Black Carbon	Metals
Rome MSA																						
131150003	Coosa Elementary	Floyd				S	X															
131150006	Kraftsman	Floyd										S								NR		
Brunswick MSA																						
131270006	Risley Middle	Glynn	S		S															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																
Gainesville MSA																						
131390003	Fair Street School	Hall			S	S																
Athens-Clarke County MSA																						
130590002	College Station Rd.	Clarke	S		S	S																
Macon MSA																						
130210007	Allied Chemical	Bibb			S		X															
130210012	Forestry	Bibb	S		S	S						S					NR	NR		NR		NR
Columbus Georgia- Alabama MSA																						
132150001	Health Dept.	Muscogee			S																	
132150008	Airport	Muscogee	S		S	S																
132150009	UPS	Muscogee											S									
132150010	Fort Benning	Muscogee											S									
132150011	Cusseta Elementary	Muscogee			S		X						S									
132151003	Crime Lab	Muscogee																		NR		
Savannah MSA																						
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	Evans	Columbia	S																	NR		
132450091	Bungalow Rd.	Richmond	S		S	S	X					S		S						NR		

SITE ID	SITE 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	Pb	PM_{10}	PM_{10} Cont.	PAMS VOC	VOC	SVOC	Carb-onyls	Meteo-rology	Black Carbon	Metals
Atlanta-Sandy Springs-Marietta MSA																						
130630091	Forest Park	Clayton			S																	
130670003	Kennesaw	Cobb	S		S																	
130770002	Newnan	Coweta	S			S														NR		
130850001	Dawsonville	Dawson	S																	NR		
130890002	South DeKalb	DeKalb	S/P/C	S/P/C	S/C	S/C	T/C	S	S/P	S/P	S/P/C	C			C	P	N	N	P/N	P/C		N
130890003	DMRC Near-Road	DeKalb							R	R							R				R	
130970004	W. Strickland St.	Douglas	S																	NR		
131210039	Fire Station #8	Fulton			S									S								
131210055	Confederate Ave.	Fulton	S			S						S								NR		
131210056	Georgia Tech Near-Road	Fulton		R	R					R										R	R	
131350002	Gwinnett Tech	Gwinnett	S		S	S																
131510002	McDonough	Henry	S			S																
132319991	EPA CASTNET	Pike	A																			
132470001	Conyers	Rockdale	S																	NR/P		
Chattanooga Tennessee-Georgia MSA																						
132950002	Maple Street	Walker			S	S	X															
Not in an MSA																						
130550001	Summerville	Chattooga	S																			
130690002	General Coffee	Coffee			S		X										NR	NR				NR
132611001	Leslie	Sumter	S																			
133030001	Sandersville	Washington			S																	

Monitoring Types: S=SLAMS; P=PAMS; C=NCore; X=Supplemental Speciation; T=STN; N=NATTS; R=Near-road; NR=Non-Regulatory; G=General Information; A=CASTNET

Table 2: 2017 Georgia Air Monitoring Network

2.0 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 ($PM_{2.5}$ and PM_{10}), carbon monoxide, ozone, nitrogen dioxide, and lead. The EPA 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[1]. 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. An exceedance does not always imply that a violation of the standard took place. For each pollutant, there are specific rules for a given time period before a pattern of exceedances is considered a violation of the NAAQS. If a violation occurs, it may result in regulatory actions to further clean up the air in the area where the violation occurred. 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.

3.0 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).

[1] For a list of the most current standards, please refer to EPA's website https://www.epa.gov/criteria-air-pollutants/naaqs-table .

Monitoring objectives and associated spatial scales are taken from Appendix D of 40CFR58, Table D-1, and summarized in Table 3 below.

Table 3: Monitoring Objective and Spatial Scale

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

4.0 Description of Networks

4.1 NCore

The State of Georgia is required to have one National Core (NCore) Multipollutant Monitoring station, and GA EPD complies with this requirement at the South DeKalb site (13-089-0002) in DeKalb County. The NCore site monitoring equipment includes: $PM_{2.5}$ FRM, $PM_{2.5}$ continuous, $PM_{2.5}$ speciation, ozone (collecting data year-round), trace level carbon monoxide (CO), trace level sulfur dioxide (SO_2), trace level nitrogen oxide (NO), total reactive nitrogen (NOy), wind direction, wind speed, temperature, and relative humidity. The site has operated since January 1, 2011. Refer to GA EPD's "2011 Ambient Air Monitoring Plan, Appendix C, Ambient Air Monitoring Plan for National Core (NCore) Multipollutant Monitoring Station" for details regarding establishing and full description of the NCore site. NCore monitoring network sites have 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

4.2 Sulfur Dioxide

On June 2, 2010, EPA lowered the sulfur dioxide (SO_2) NAAQS standard to a 1-hour primary standard of 75 ppb, and added new SO_2 ambient monitoring requirements (Federal Register: Vol. 75, No. 119, 06/22/10). The rule combines air quality modeling and monitoring. The rule requires refined dispersion modeling to determine if areas with sources that have the potential to cause or contribute to a violation of the new SO_2 standard can comply with the standard. The

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 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. GA EPD complies with these requirements by monitoring for SO_2 at the Confederate Avenue (13-121-0055), South DeKalb (13-089-0002), Augusta-Bungalow Road (13-245-0091), Savannah-L&A (13-051-1002), and Macon-Forestry (13-021-0012) sites. In addition, GA EPD chose to continue monitoring for SO_2 with another monitor in the Savannah MSA (Savannah-E. President Street, 13-051-0021) and at the Rome-Coosa Elementary site (13-115-0003) since these monitors have concentrations close to or above 85% of the SO_2 standard.

In accordance with the EPA Data Requirements Rule for sulfur dioxide (Federal Register: Vol. 80, No. 162, 08/21/15), GA EPD modeled SO_2 concentrations in 2016 in order to select the most appropriate location for the Rome SO_2 monitor that would capture the maximum SO_2 emissions from the nearby facilities. As of January 1, 2017, the Rome SO_2 monitor was moved from the Coosa location (13-115-0003) to the Kraftsman Road location (13-115-0006) to meet this requirement. For site details, see Appendix A. For more information regarding location selection and modeling, see the "2016 Ambient Air Monitoring Plan, Appendix D-International Paper-Rome Modeling Report".

As an NCore site, the South DeKalb site (13-089-0002) also began monitoring trace level sulfur dioxide as of October 1, 2010. GA EPD collects and reports 5-minute maximum data with all the SO_2 monitors in the state.

4.3 Nitrogen Dioxide

On January 22, 2010, EPA revised the nitrogen dioxide (NO_2) National Ambient Air Quality Standard and monitoring requirements. Near-road NO_2 monitors were 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) (Federal Register, Vol. 75, No. 26, 02/09/10). GA EPD meets this requirement with two monitors in the Atlanta-Sandy Springs-Marietta MSA. The first near-road NO_2 monitor was set up at the near-road site on the Georgia Institute of Technology campus (site ID 13-121-0056) on June 15, 2014. NO_2/NO/NOx, CO, $PM_{2.5}$, black carbon, wind speed and wind direction are monitored at this site. For details regarding the establishment of the first near-road site in the Atlanta-Sandy Springs-Marietta MSA, refer to Appendix E of the "2014 Ambient Air Monitoring Plan". The second near-road monitoring site was set up in the Atlanta-Sandy Springs-Marietta MSA on January 1, 2015 at the established DMRC site (13-089-0003). At the DMRC site, NO_2/NO/NOx, volatile organic compounds, and black carbon are monitored for the near-road network. For details regarding the establishment of the second near-road site, refer to GA EPD's Addendum to the "2015 Ambient Air Monitoring Plan".

In addition to the near-road NO_2 requirements, GA EPD is required to operate at least one area-wide NO_2 monitor in the Atlanta-Sandy Springs-Marietta MSA. These monitors should be placed in CBSAs with a population of 1,000,000 or more, and are expected to have the highest concentrations representing a neighborhood or larger spatial scale (40CFR58, Appendix D, Section 4.3.3). The South DeKalb site (13-089-0002) is GA EPD's PAMS site (discussed

below), and collects area-wide NO_2 data for the Atlanta-Sandy Springs-Marietta MSA. 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 NO_2 monitor satisfies the area-wide requirement.

4.4 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 NO_2 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 this monitoring requirement, the State of Georgia is required to have one CO monitor located in the Atlanta-Sandy Springs-Marietta MSA, collocated with an NO_2 near-road monitor. GA EPD meets this monitoring requirement with a CO monitor that began monitoring at the near-road site at Georgia Institute of Technology (13-121-0056) on June 15, 2014. In addition, the South DeKalb site (13-089-0002) is GA EPD's NCore site and collects CO data as part of that network (discussed above).

4.5 Lead

On December 27, 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 (75FR81126). GA EPD meets this requirement with lead monitors located in the Columbus Georgia-Alabama MSA in Muscogee County near a source of lead emissions. One lead monitoring site is required, and at its discretion, GA EPD has chosen to have two additional lead monitoring sites in the area. There is one lead 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). The Columbus-Fort Benning (13-215-0010) site has two collocated lead monitors.

4.6 $PM_{2.5}$ Speciation Trends Network (STN)

EPA expanded $PM_{2.5}$ monitoring to characterize the make-up of the $PM_{2.5}$ sample with Speciation Trends Network (STN) (40CFR58, Appendix D, Section 4.7.4). With this speciation 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 constituents in regional haze. There are 52 Speciation Trends sites across the United States. GA EPD meets this requirement with the South DeKalb site (site ID 13-089-0002). The South DeKalb Speciation Trends site began monitoring on October 1, 2000, and samples every three days. Additionally, there are six more $PM_{2.5}$ speciation monitors that GA EPD has chosen to operate. These sites are located in Rome (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.

4.7 Photochemical Assessment Monitoring Stations (PAMS)

On October 26, 2015, EPA made revisions to the ozone standard, and with those changes, also revamped the regulations for the supporting PAMS stations (Federal Register, Vol.80, No. 206, page 65467). EPA is requiring that PAMS measurements be collected at NCore sites only. GA EPD meets this requirement with the South DeKalb (13-089-0002) site, which is GA EPD's NCore site. Therefore, for the PAMS requirements, GA EPD will continue the hourly collection of speciated volatile organic compounds in June, July, and August; three 8-hour samples of carbonyls collected every third day during June, July and August; hourly ozone, NO, NO_2, NO_Y, temperature, wind direction, wind speed, barometric pressure, relative humidity, precipitation, and sigma theta at the South DeKalb site. As discussed in Section 1.4, solar radiation and ultraviolet radiation are monitored at the Conyers (13-247-0001) site due to siting conditions.

The South DeKalb site is located in DeKalb County in order to provide neighborhood scale measurements in the area that the chemicals that form ozone have the greatest impact. The data measurements generated at the South DeKalb site are used principally for development and evaluation of imminent and future control strategies, corroboration of NOx 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 O_3, $PM_{2.5}$, PM_{10}, CO, SO_2, and NO_2.

4.8 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 pollutants. The NATTS network was established to produce data that is consistent and of standardized quality to be able to perform comparisons of air toxics data nationwide. There are 27 NATTS locations across the nation, with 20 urban sites to address the range of population exposure in urban areas and seven rural sites to characterize exposure to non-urban populations, establish background concentrations, and better assess environmental impacts of emissions of air toxic pollutants. GA EPD meets the requirement with the location of the NATTS station at the South DeKalb site (13-089-0002). As part of the NATTS network, GA EPD samples metals with a PM_{10} sampler, semi-volatile organic compounds, volatile organic compounds, and carbonyls. Samples are collected from midnight to midnight for a 24-hour sample, every 6 days. In addition, an 8-hour carbonyls sample is collected three times a day, every third day through June, July, and August.

4.9 Air Toxics Network

In addition to its required monitoring duties, GA EPD has chosen to measure more compounds in ambient air than are required by the Federal Clean Air Act. GA EPD's Air Toxics Network consists of three sites: Macon-SE (13-021-0012), Savannah-E.President's St. (13-051-0021), and General Coffee (13-069-0002). Similar to the NATTS station discussed above, the Air Toxics Network equipment samples for metals, semi-volatile organic compounds, volatile organic compounds. The Savannah site monitors carbonyls, along with the South DeKalb NATTS site.

5.0 Site Evaluations

GA EPD performs site evaluations throughout the year on an annual basis for each site. The following table details when the most recent site evaluations were performed and a summary of the comments that the evaluator made about each site.

SITE ID	COMMON NAME	COUNTY	SITE EVALUATION DATE	COMMENTS	ACTION TAKEN
Rome MSA					
131150003	Rome	Floyd	5/25/2016	The two tall oaks form an obstruction to the northwest of the samplers. However, over 90% of the monitoring path is not affected by the trees.	Trees >10m away. Data quality not affected.
Brunswick MSA					
131270006	Brunswick	Glynn	12/9/2016	Samplers meet siting criteria. No deficiencies.	Not applicable.
Valdosta MSA					
131850003	Valdosta	Lowndes	10/12/2016	Samplers meet siting criteria. The BAM door appears to have been previously broken and rigged into place. A new sampler housing may be necessary. DAS screen does not work. Housing seal falling off 2025, taped on.	Data quality not affected. DAS no longer used.
Warner Robins MSA					
131530001	Warner Robins	Houston	4/7/2016	Samplers meet siting criteria. Construction with earth moving equipment adjacent. BAM door held in place with tape and a concrete block.	Data quality not affected.
Dalton MSA					
132130003	Fort Mountain	Murray	10/26/2016	Samplers meet siting criteria. Few trees to the south are inside 10x height differential with the MET tower. Ground slopes off severely to the north and east. Brush to the north and east of the trailer has been cut down.	Data quality not affected.
Albany MSA					
130950007	Albany	Dougherty	2/11/16	Samplers meet siting criteria. DAS not taking inputs from keypad or keyboard accurately.	Data quality not affected. DAS no longer used.
Gainesville MSA					
131390003	Gainesville	Hall	12/21/2016	Samplers meet siting criteria. No deficiencies observed.	Not applicable.
Athens-Clark County MSA					
130590002	Athens	Clarke	2/4/2016	Water damage around a/c ports. Door rusted at bottom.	Data quality not affected.
Macon MSA					
130210007	Macon-Allied	Bibb	7/21/2016	Samplers meet siting criteria.	Not applicable.
130210012	Macon-Forestry	Bibb	10/13/2016	Samplers meet siting criteria. The meteorological tower is bent in several spots. It is difficult to lower safely. The metal and PUF samplers need at least 0.3m further elevation to meet inlet siting guidance of 2-7 meters. The floor around the door is rotting out. The floor covering is cracked and has a hole.	Meteorological tower replaced. ATN samplers here are not subject to NATTS guidance.

SITE ID	COMMON NAME	COUNTY	SITE EVALUATION DATE	COMMENTS	ACTION TAKEN
Columbus MSA					
132150001	Columbus-Health Dept.	Muscogee	8/26/2016	Sampler meets siting criteria. No deficiencies.	Not applicable.
132150008	Columbus-Airport	Muscogee	7/14/2016	Samplers meet siting criteria. No deficiencies.	Not applicable.
132150009	Columbus-UPS	Muscogee	3/10/2016	Samplers meet siting criteria. The platform needs to be replaced and the fence door and part of the fence is bent. Vines on fence around inlet <1m. Nearest drip line taller than inlet is 6.4m away.	New deck in place. Drip line not in direction of source.
132150010	Columbus-Ft. Benning	Muscogee	2/17/2016	Drip line too close. Trees overgrowing site.	Drip line not in direction of source.
132150011	Columbus-Cusseta	Muscogee	3/10/16	Samplers meet siting criteria. No deficiencies.	Not applicable.
132151003	Columbus-Crime Lab	Muscogee	2/19/2016	Samplers meet siting criteria. No deficiencies.	Not applicable.
Savannah MSA					
130510021	Savannah-E. President St.	Chatham	6/21/2016	Samplers meet siting criteria. No deficiencies.	Not applicable.
130510091	Savannah-Mercer	Chatham	5/20/2016	Sampler meets siting criteria. No deficiencies.	Not applicable.
130511002	W. Lathrop & Augusta Ave.	Chatham	5/27/2016	Samplers meet siting criteria. Floor soft around doorway. Trees have grown back.	Data quality not affected.
Augusta MSA					
130730001	Evans	Columbia	7/13/2016	Sampler meets siting criteria.	Not applicable.
132450091	Augusta	Richmond	9/23/2016	Samplers meet siting criteria.	Not applicable.
Atlanta-Sandy Springs-Marietta MSA					
130630091	Forest Park	Clayton	9/28/2016	Sampler meets siting criteria. No deficiencies.	Not applicable.
130670003	National Guard	Cobb	1/10/2017	Samplers meet siting criteria. No deficiencies.	Not applicable.
130770002	Newnan	Coweta	12/19/2016	Samplers meet siting criteria. No deficiencies.	Not applicable.
130850001	Dawsonville	Dawson	11/8/2016	Samplers meet siting criteria. A large swath of trees has been cut down to the south and west of the trailer. Met tower is inside 10x height differential with a few trees to the north.	Data quality not affected.
130890002	South DeKalb	DeKalb	12/22/2016	Samplers do not meet siting criteria. The tall trees to the north are inside twice height-distance differential for the samplers. The predominant wind direction is not from the north, however.	Trees have been cut and more trees are scheduled to be removed soon.

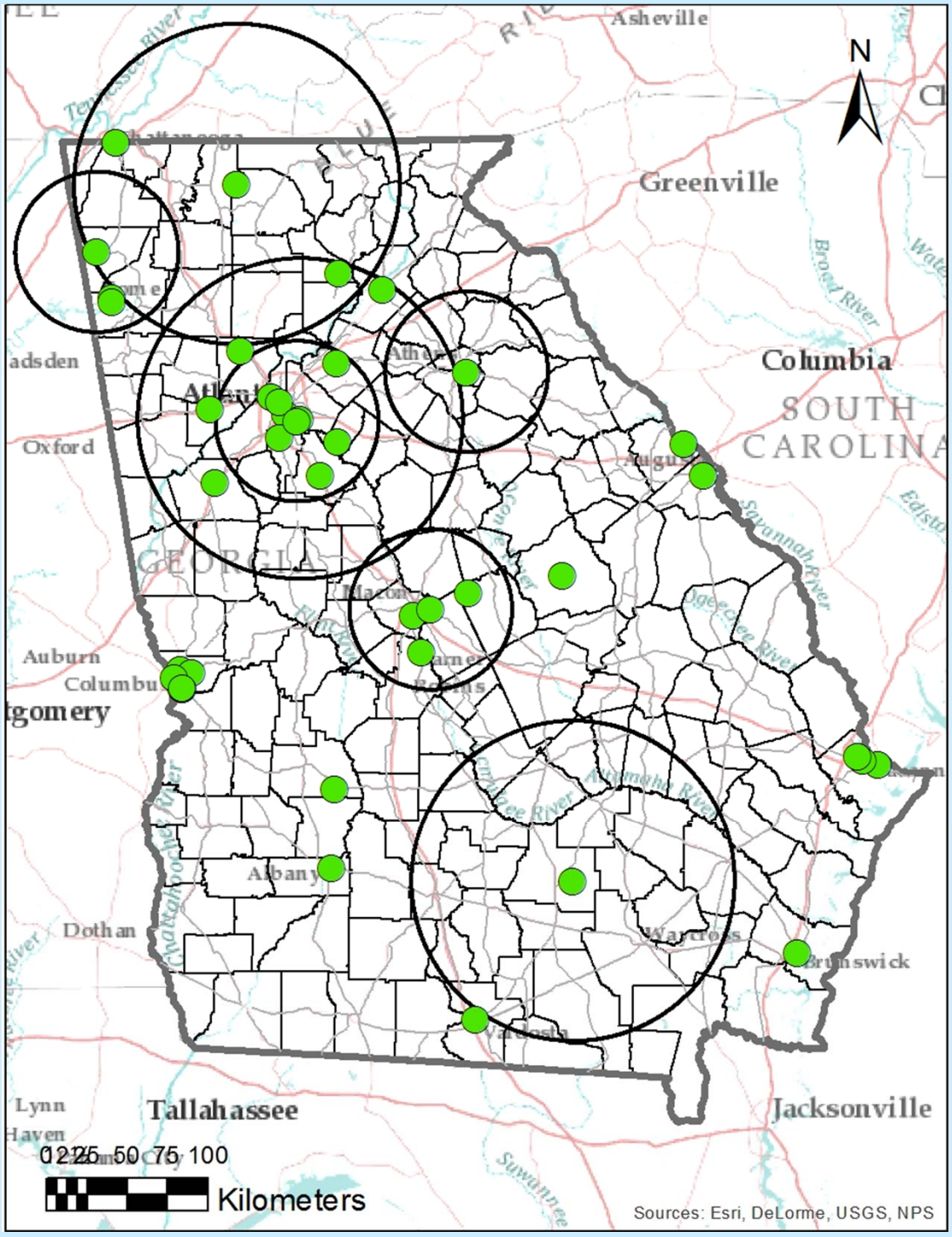
SITE ID	COMMON NAME	COUNTY	SITE EVALUATION DATE	COMMENTS	ACTION TAKEN
130890003	DMRC	DeKalb	4/18/2016	Samplers meet siting criteria.	Not applicable.
130970004	Douglasville	Douglas	7/20/2016	Samplers meet siting criteria.	Not applicable.
131210039	Fire Station #8	Fulton	9/28/2016	Samplers meet siting criteria. No deficiencies.	Not applicable.
131210055	Confederate Ave.	Fulton	2/13/2017	Samplers meet siting criteria. No deficiencies.	Not applicable.
131210056	GA Tech	Fulton	3/23/2016	Samplers meet siting criteria. No deficiencies.	Not applicable.
131350002	Gwinnett Tech	Gwinnett	4/26/2016	Samplers meet siting criteria. The sampling trailer is surrounded on west (25 meters away) and northeast (22 meters away) by college parking lot. The trailer floor is bucking up slightly because of water infiltration on plywood support. A small wooden board is broken on the Partisol platform. No deficiencies noted that would affect sampling performance.	Data quality not affected. Plan to replace shelter and roof platform by 2018.
131510002	McDonough	Henry	7/5/2016	Samplers meet siting criteria. Water damage to shelter interior. Rooftop taller than inlets ~8m from TEOM, ~10m from O_3. Dripline 23.3m across road. Exact measurement difficult due to shipping containers, clutter around shelter.	Data quality not affected.
132470001	Conyers	Rockdale	8/24/2016	Samplers meet siting criteria. The closest tall tree to the southeast is slightly inside of twice the height differential to the inlets, but is not in the path of prevailing air flow. More than 90% of the monitoring path at the site is obstruction free (all trees are an adequate distance away from the inlets based their height and the inlets' height). The silica gel in the UV and solar radiation sensors needs to be replenished.	Data quality not affected.
Chattanooga Tennessee-Georgia MSA					
132950002	Rossville	Walker	11/15/2016	Samplers meet siting criteria.	Not applicable.
Not in an MSA					
130550001	Summerville	Chattooga	6/24/2016	Sampler meets siting criteria. No deficiencies.	Not applicable.
130690002	General Coffee	Coffee	12/7/2016	Samplers meet siting criteria. URG not operational.	URG repaired.
132611001	Leslie	Sumter	3/3/2016	Sampler does not meet siting criteria. Shelter floor buckled. Water damage to ceiling, around door jamb, and along base of walls. The drip-line is now 6.3m East of inlet, or about one meter closer than last year. Trees should be removed or shelter relocated in clearing away from trees.	Shelter will be replaced and relocated by 2018.
133030001	Sandersville	Washington	4/13/2016	Sampler meets siting criteria. Partisol 2025 seal rotted and broken. Dripline 100m from $PM_{2.5}$ inlet.	Not applicable.

Table 4: Site Evaluations

Appendix A:
Individual Site Information
Grouped by Metropolitan Statistical Area
(Smallest to Largest)

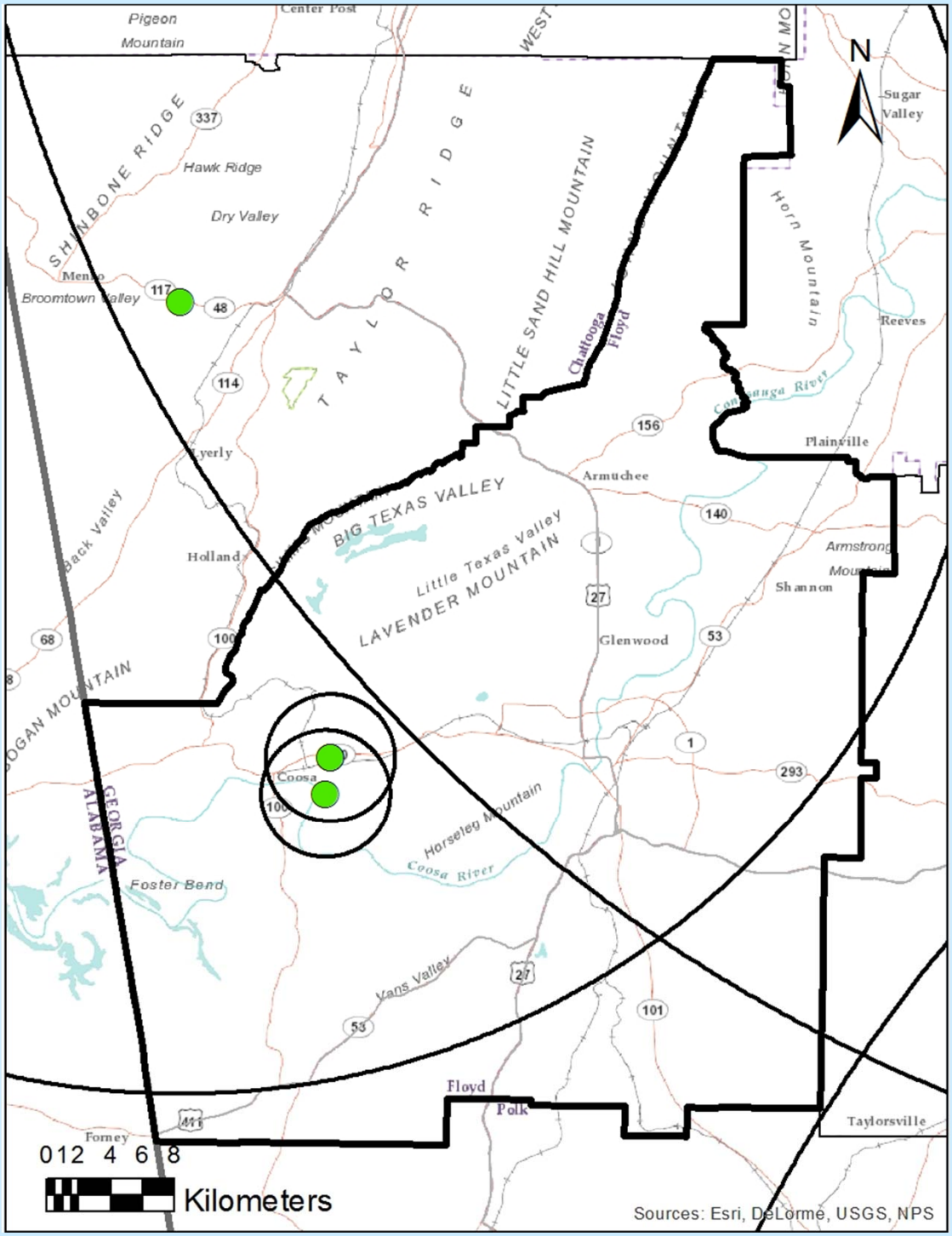
Georgia Department of Natural Resources
Environmental Protection Division

Spatial Scales of GA EPD's Ambient Air Monitors



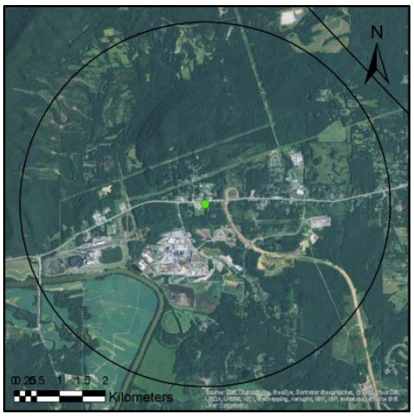
Radius of Circles on Map
Micro Scale: up to 100m
Middle Scale: up to 0.5km
Neighborhood Scale: up to 4.0km
Urban Scale: up to 50km
Regional Scale: up to 100s of km (100km shown)

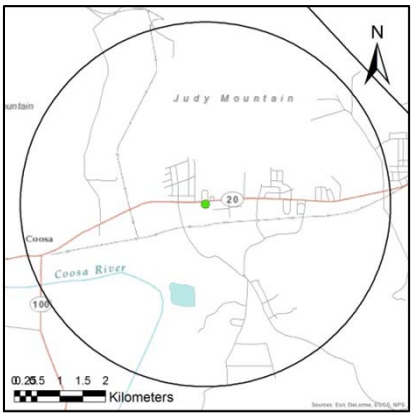
Rome MSA



Radius of Circles on Map
Micro Scale: up to 100m
Middle Scale: up to 0.5km
Neighborhood Scale: up to 4.0km
Urban Scale: up to 50km
Regional Scale: up to 100s of km (100km shown)

Rome- Coosa Elementary





AQS ID: 131150003

Address: Coosa Elementary School, Highway 20, Rome, Floyd County, Georgia 30165

Site Established: 1/1/74

Latitude/Longitude: N34.26051/W-85.32328

Elevation: 186 meters

Area Represented: Rome MSA

Site History: Established as SO_2 site

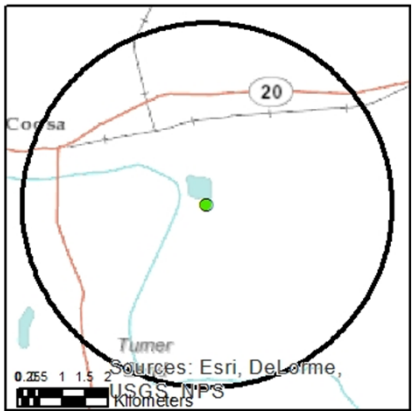
North South East West

Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
$PM_{2.5}$ Speciation	Population Exposure	Every 6 days	2 m	Neighborhood	3/1/02
$PM_{2.5}$ Continuous	Population Exposure	Continuous	2 m	Neighborhood	1/1/08*

*Sampler inactive from 1/1/15 until reopened 2/15/17

GA EPD's plans for this site : Continue monitoring

Rome- Kraftsman Road



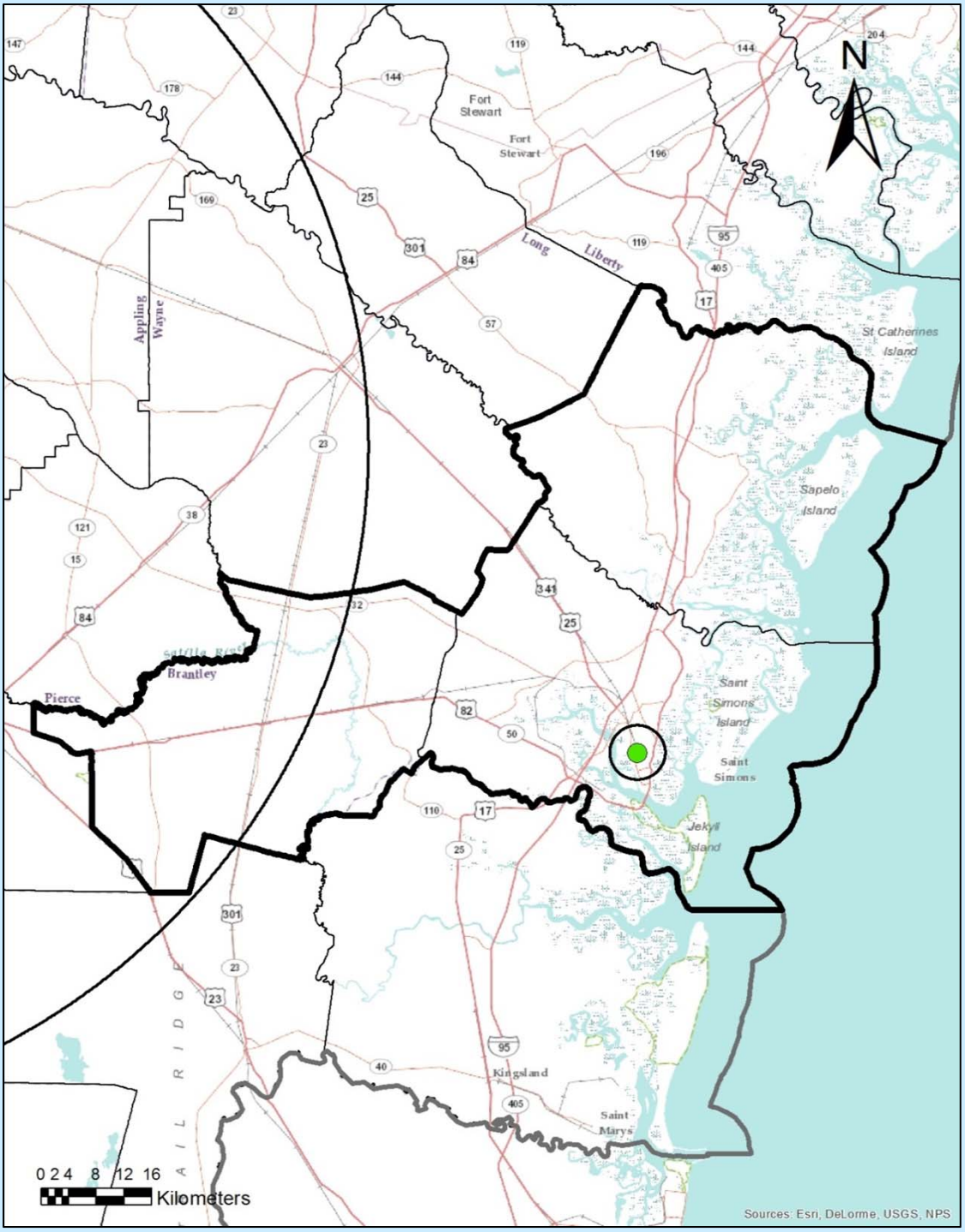
AQS ID: 131150006
Address: 5041 Alabama Highway, Rome, Floyd County, Georgia 30165
Site Established: 1/1/17
Latitude/Longitude: 34.243646/-85.325948
Elevation: 191 meters
Area Represented: Rome MSA
Site History: Established as SO_2 site

North South East West

Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
SO_2	Population Exposure	Continuous	4 m	Neighborhood	1/1/2017
SO_2 5-Minute Maximum	Population Exposure	Continuous	4 m	Neighborhood	1/1/2017
Wind Speed	Population Exposure	Continuous	10 m	Neighborhood	1/1/2017
Wind Direction	Population Exposure	Continuous	10 m	Neighborhood	1/1/2017

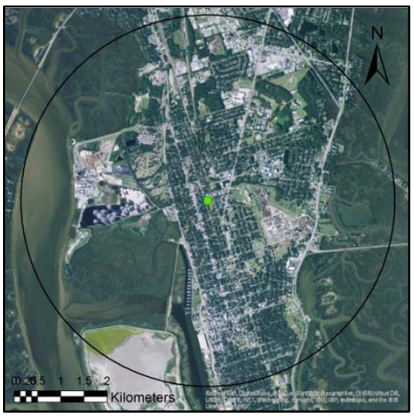
GA EPD's plans for this site: Continue monitoring

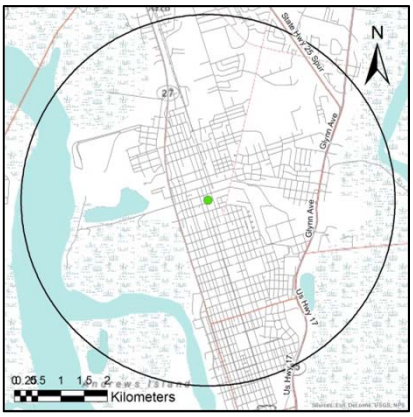
Brunswick MSA



Radius of Circles on Map
Micro Scale: up to 100m
Middle Scale: up to 0.5km
Neighborhood Scale: up to 4.0km
Urban Scale: up to 50km
Regional Scale: up to 100s of km (100km shown)

Brunswick- Risley Middle School





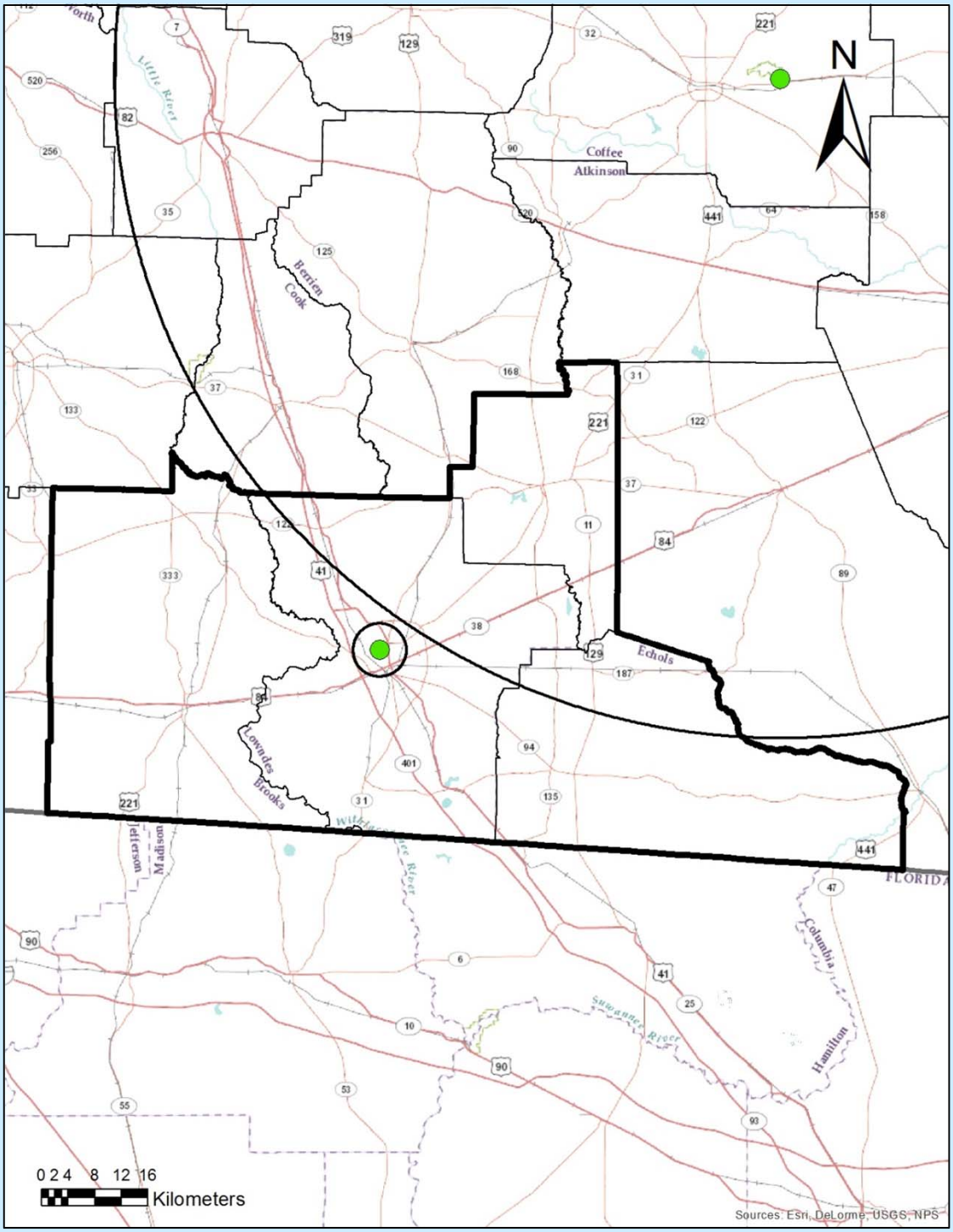
AQS ID: 131270006
Address: Risley Middle School, 2900 Albany Street, Brunswick, Glynn County, Georgia 31520
Site Established: 1/1/87
Latitude/Longitude: N31.169530/W-81.496046
Elevation: 2 meters
Area Represented: Brunswick MSA
Site History: Established as SO_2 site

North South West

Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
$PM_{2.5}$	Population Exposure	Every 3 days	5 m	Neighborhood	8/31/95
O_3	Population Exposure	Continuous (Mar-Oct)	8 m	Neighborhood	3/1/95
Wind Speed	General/ Background	Continuous	10 m	Neighborhood	1/1/04
Wind Direction	General/ Background	Continuous	10 m	Neighborhood	1/1/04

GA EPD's plans for this site: Continue monitoring

Valdosta MSA



Radius of Circles on Map
Micro Scale: up to 100m
Middle Scale: up to 0.5km
Neighborhood Scale: up to 4.0km
Urban Scale: up to 50km
Regional Scale: up to 100s of km (100km shown)

Valdosta- Mason Elementary

AQS ID: 131850003

Address: S.L. Mason Elementary School, 821 West Gordon Street, Valdosta, Lowndes County, Georgia 31601

Site Established: 12/17/99

Latitude/Longitude: N30.848056/W-83.294444

Elevation: 58 meters

Area Represented: Valdosta MSA

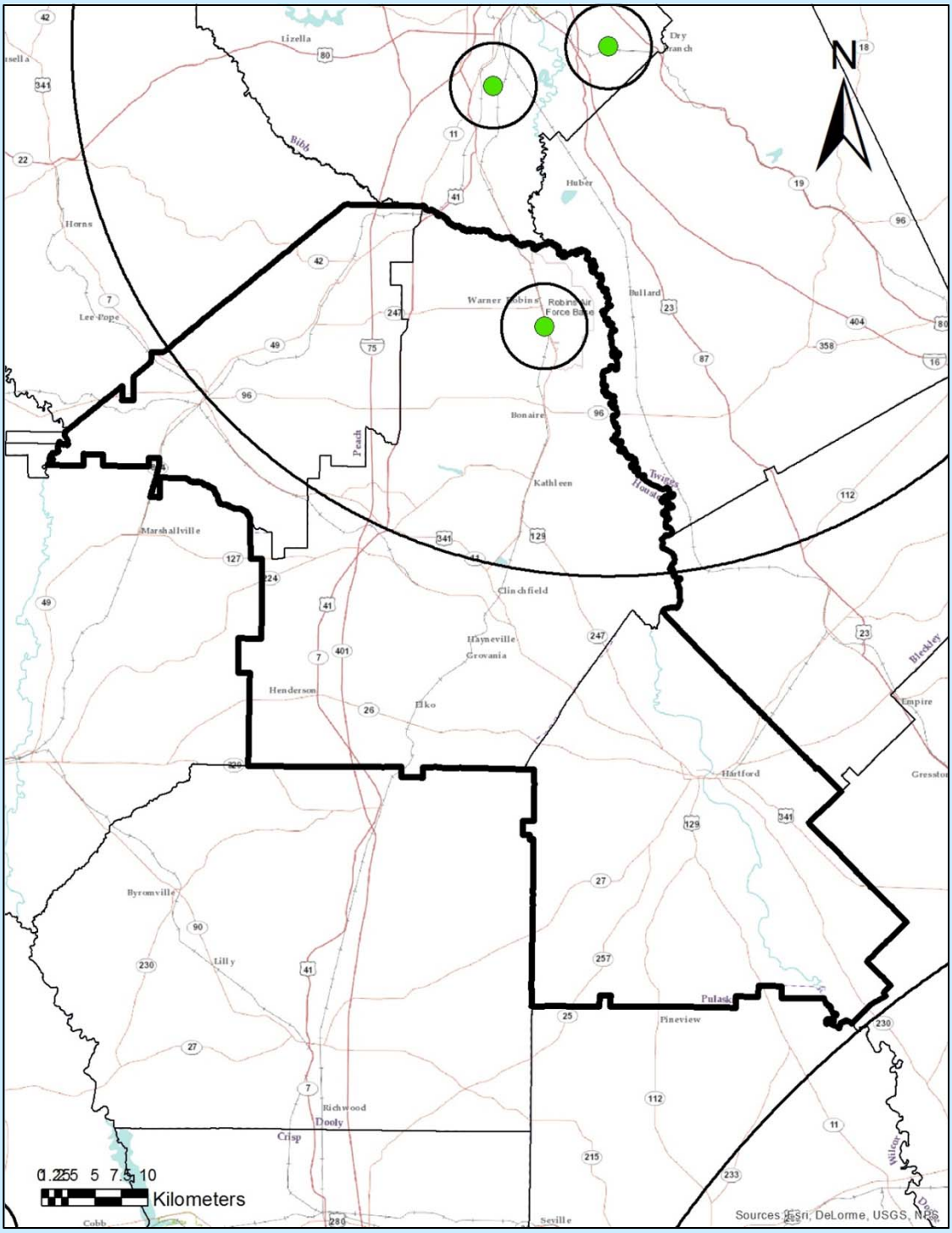
Site History: Established as $PM_{2.5}$ site

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

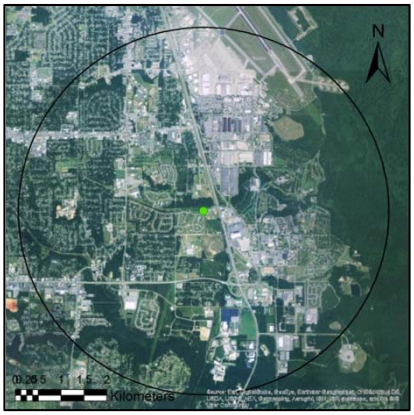
GA EPD's plans for this site: Continue monitoring

Warner Robins MSA



Radius of Circles on Map
Micro Scale: up to 100m
Middle Scale: up to 0.5km
Neighborhood Scale: up to 4.0km
Urban Scale: up to 50km
Regional Scale: up to 100s of km (100km shown)

Warner Robins- Air Force Base



AQS ID: 131530001

Address: Warner Robins Air Force Base, Memorial Park, 800 South 1st Street, Warner Robins, Houston County, Georgia 31088

Site Established: 6/15/00

Latitude/Longitude: N32.605600/W-83.597907

Elevation: 113 meters

Area Represented: Warner Robins MSA

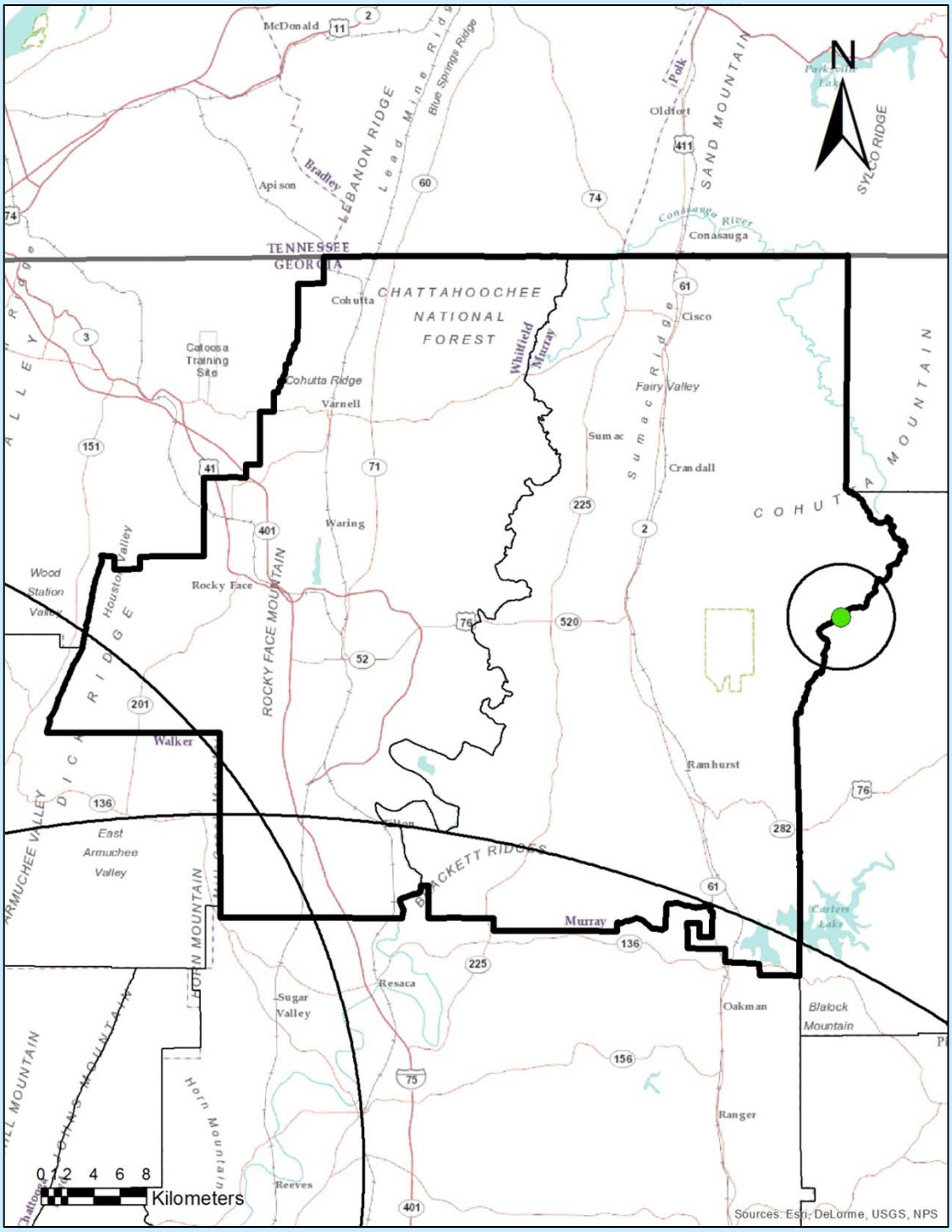
Site History: Established as $PM_{2.5}$ site

North South

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 Exposure	Continuous	2 m	Neighborhood	1/1/08

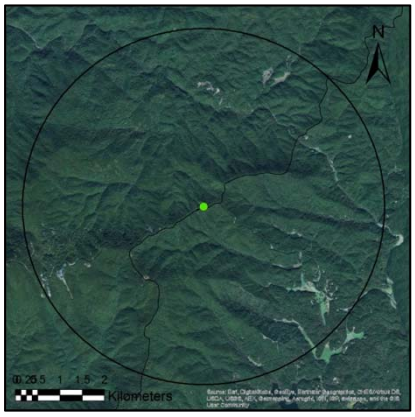
GA EPD's plans for this site: Continue monitoring; considering configuring continuous $PM_{2.5}$ sampler as an FEM, which would be compared to the NAAQS, and until GA EPD gains confidence in the FEM monitor, daily 24-hour samples will be collected with the $PM_{2.5}$ FRM monitor to assess how well data correlates between these two samplers

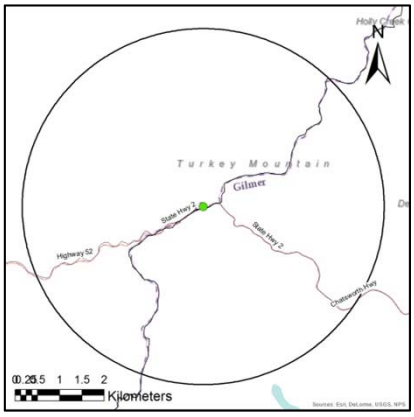
Dalton MSA

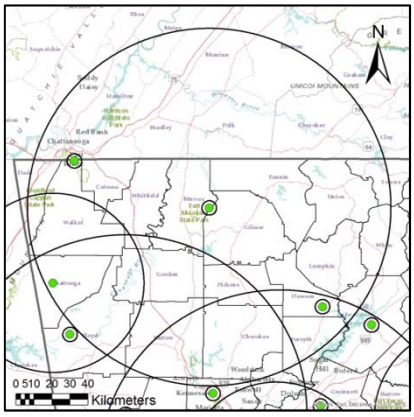


Radius of Circles on Map
Micro Scale: up to 100m
Middle Scale: up to 0.5km
Neighborhood Scale: up to 4.0km
Urban Scale: up to 50km
Regional Scale: up to 100s of km (100km shown)

Chatsworth- Fort Mountain







AQS ID: 132130003

Address: Fort Mountain, State Highway 52, Cohutta Overlook, Chatsworth, Murray County, Georgia 30705

Site Established: 3/23/99

Latitude/Longitude: N34.785078/W-84.626499

Elevation: 980 meters

Area Represented: Dalton MSA

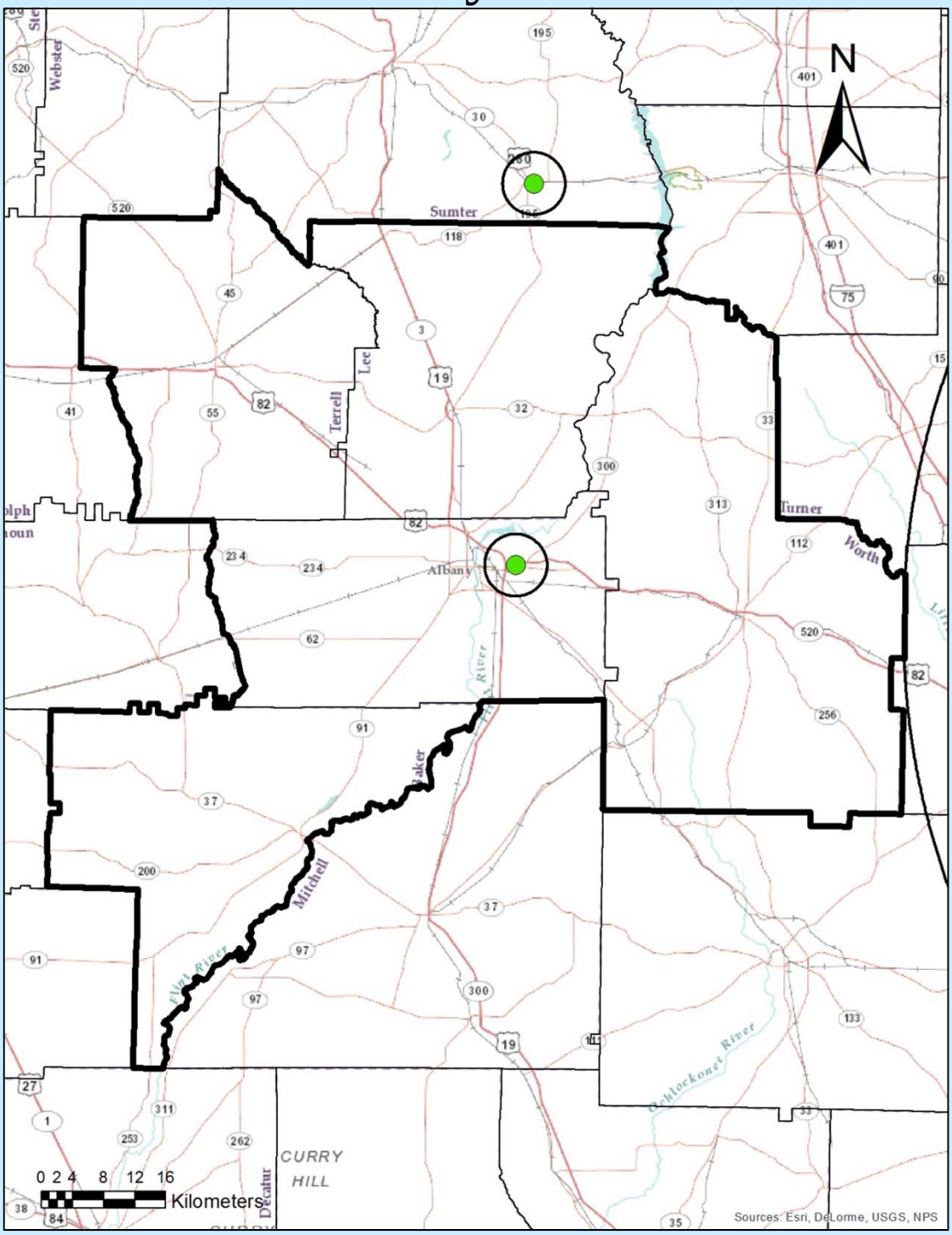
Site History: Established as O_3 site

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

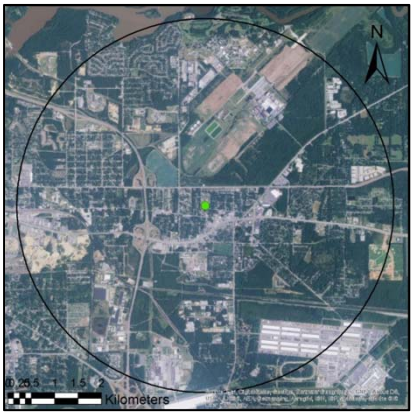
GA EPD's plans for this site: Continue monitoring

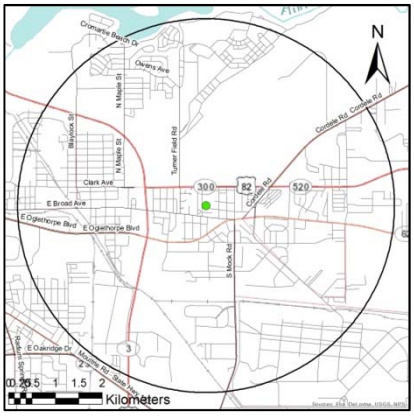
Albany MSA



Radius of Circles on Map
Micro Scale: up to 100m
Middle Scale: up to 0.5km
Neighborhood Scale: up to 4.0km
Urban Scale: up to 50km
Regional Scale: up to 100s of km (100km shown)

Albany- Turner Elementary





AQS ID: 130950007

Address: Turner Elementary School, 2001 Leonard Avenue, Albany, Dougherty County, Georgia 31705

Site Established: 7/31/91

Latitude/Longitude: N31.576917/W-84.100194

Elevation: 61 meters

Area Represented: Albany MSA

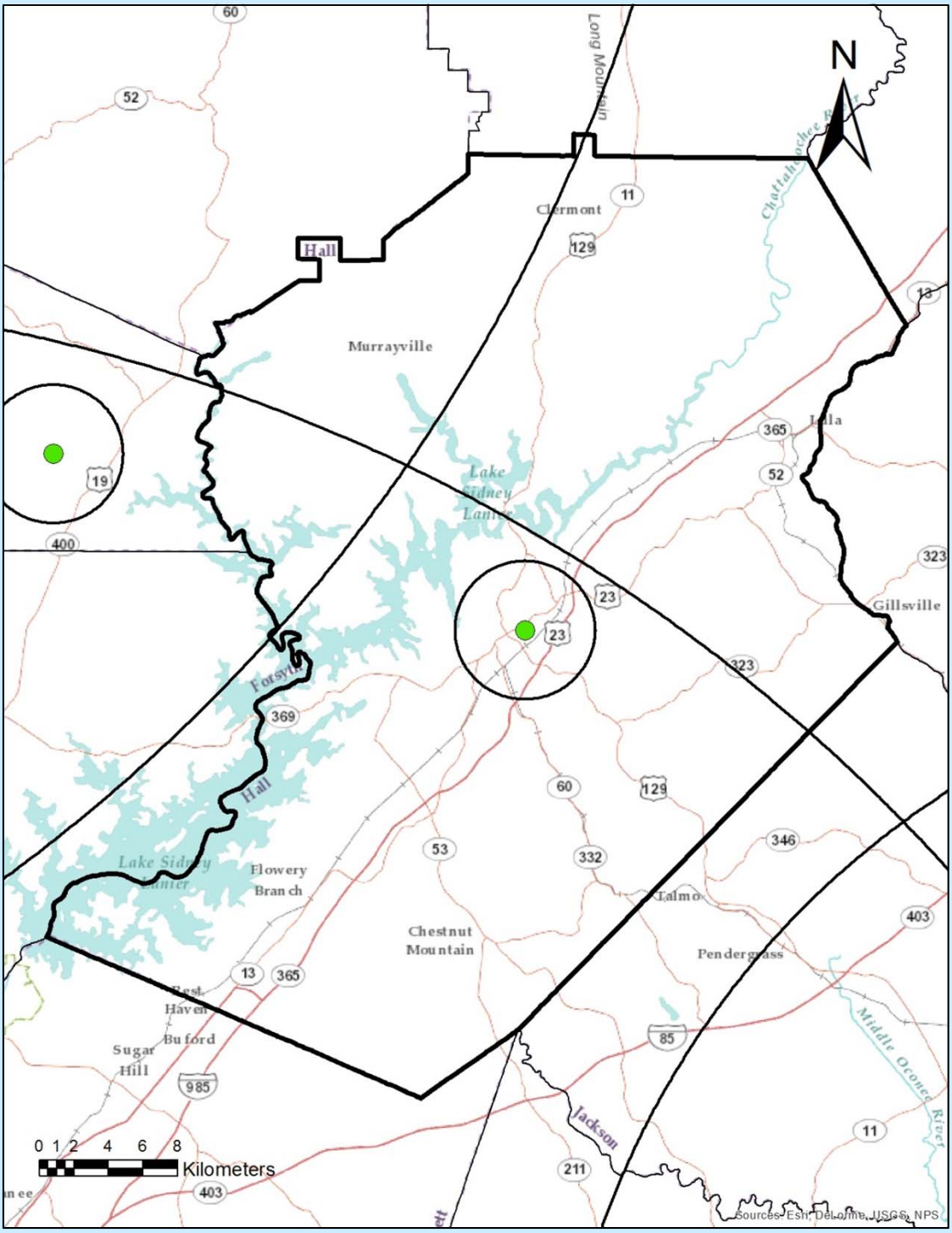
Site History: Established as TSP site

North South East West

Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
$PM_{2.5}$	Population Exposure	Every 3 days	6 m	Neighborhood	2/2/99
$PM_{2.5}$	Quality Assurance	Every 12 days	6 m	Neighborhood	1/10/13
$PM_{2.5}$	Population Exposure	Continuous	6 m	Neighborhood	5/11/08

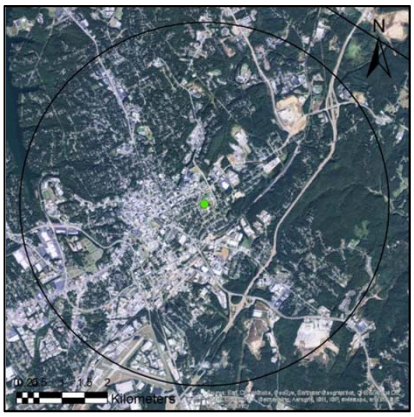
GA EPD's plans for this site: Continue monitoring; Running continuous monitor as FEM as of 1/10/13; Schedule of $PM_{2.5}$ FRM sampler based on EPA requirements, however actual operation is daily

Gainesville MSA



Radius of Circles on Map
Micro Scale: up to 100m
Middle Scale: up to 0.5km
Neighborhood Scale: up to 4.0km
Urban Scale: up to 50km
Regional Scale: up to 100s of km (100km shown)

Gainesville- Fair Street School



AQS ID: 131390003
Address: Fair Street School, 695 Fair Street, Gainesville, GA 30501
Site Established: 1/1/97
Latitude/Longitude: N34.2994082/W-83.8134716
Elevation: 353 meters
Area Represented: Gainesville MSA
Site History: Established as $PM_{2.5}$ site

North/Northwest

South/Southeast

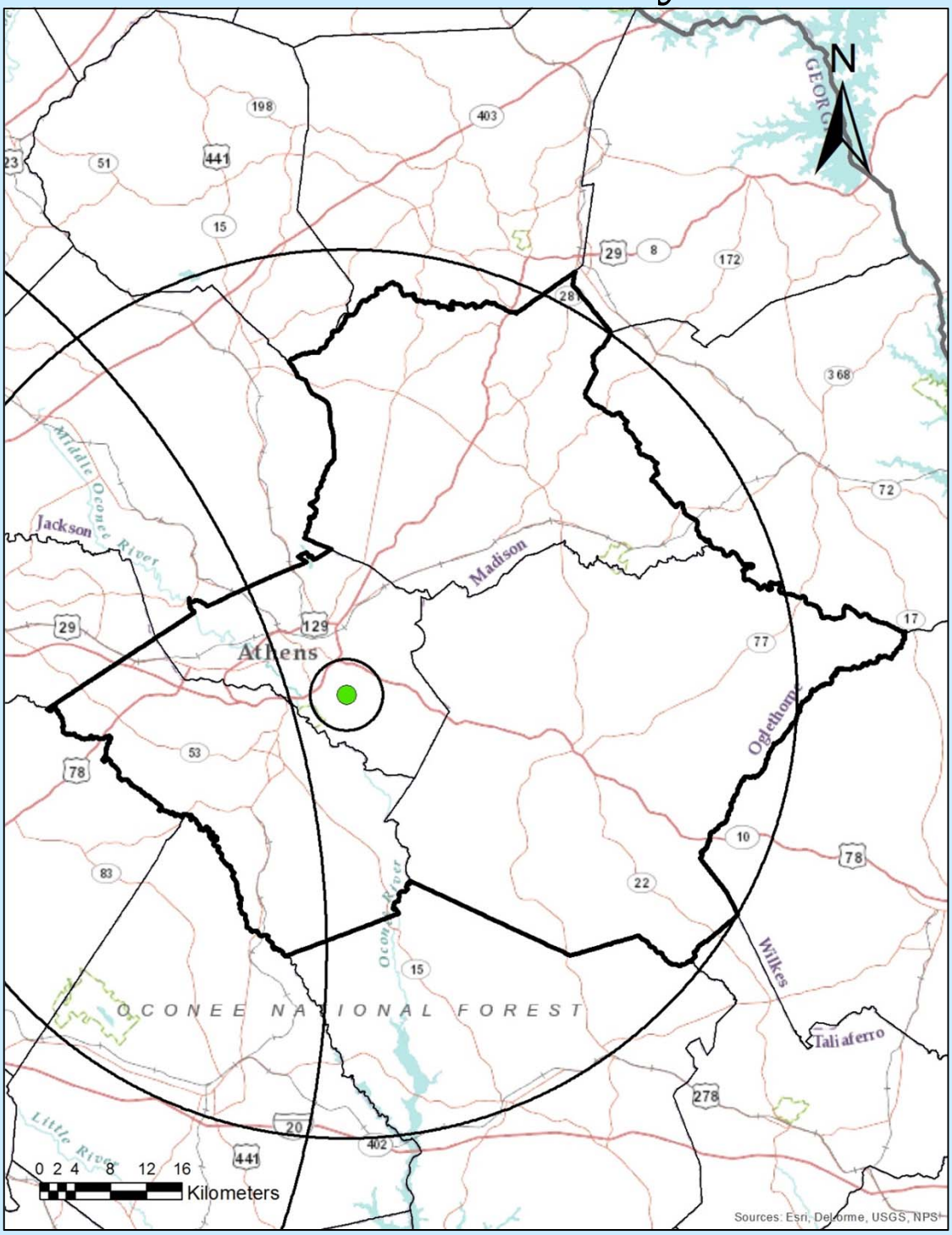
Northeast

West

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

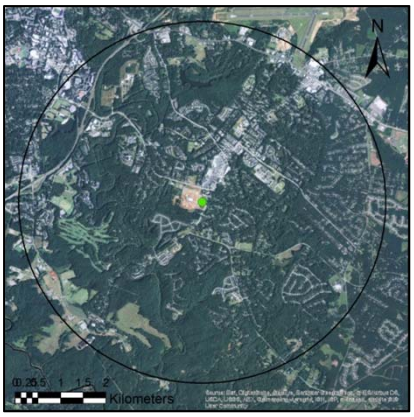
GA EPD's plans for this site: Continue monitoring

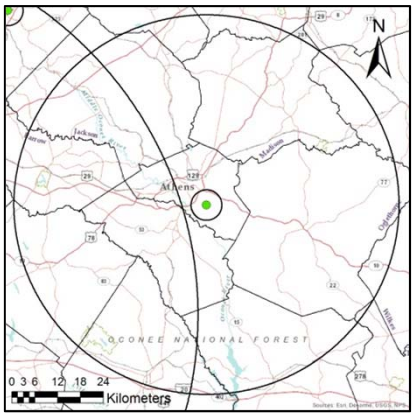
Athens-Clarke County MSA



Radius of Circles on Map
Micro Scale: up to 100m
Middle Scale: up to 0.5km
Neighborhood Scale: up to 4.0km
Urban Scale: up to 50km
Regional Scale: up to 100s of km (100km shown)

Athens- College Station Road





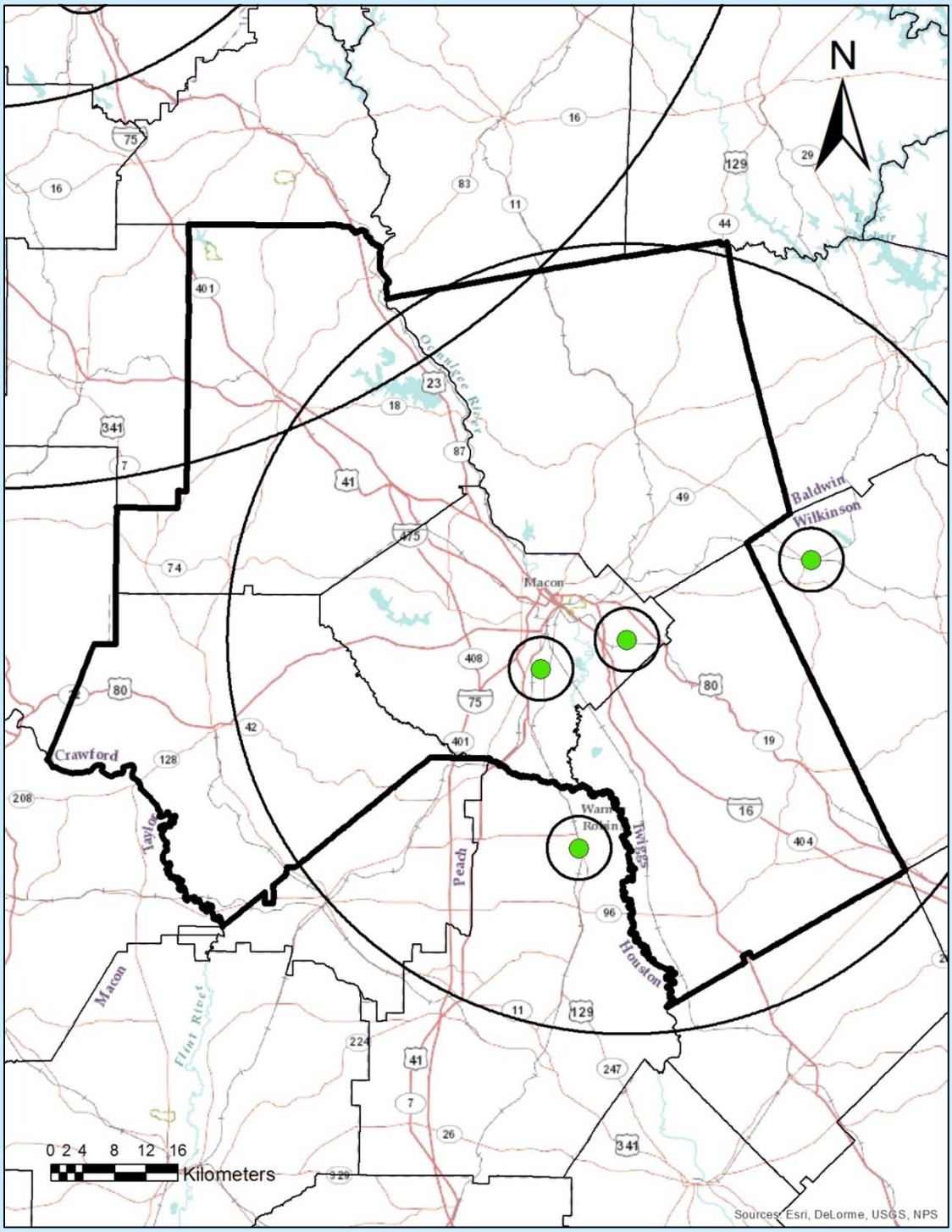
AQS ID: 130590002
Address: Fire Station #7, 2350 Barnett Shoals Road, Athens, Clarke County, Georgia 30603
Site Established: 3/1/02
Latitude/Longitude: N33.91793/-W83.34461
Elevation: 233 meters
Area Represented: Athens-Clarke County MSA
Site History: Established as O_3 and PM site

North South East 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

GA EPD's plans for this site: Continue monitoring

Macon MSA



Radius of Circles on Map
Micro Scale: up to 100m
Middle Scale: up to 0.5km
Neighborhood Scale: up to 4.0km
Urban Scale: up to 50km
Regional Scale: up to 100s of km (100km shown)

Macon- Allied Chemical

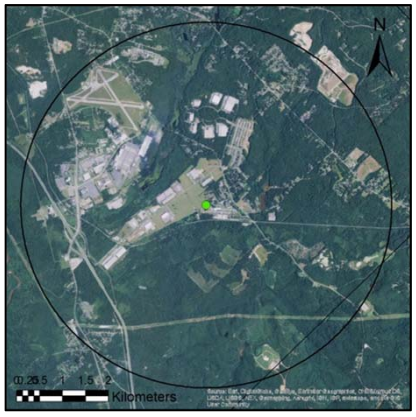
AQS ID: 130210007
Address: Allied Chemical, 600 Guy Paine Road, Macon, Bibb County, Georgia 31206
Site Established: 1/1/74
Latitude/Longitude: N32.77729/W-83.64120
Elevation: 106 meters
Area Represented: Macon MSA
Site History: Established as TSP site

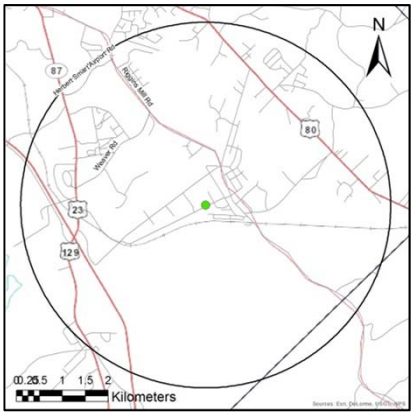
North South East West

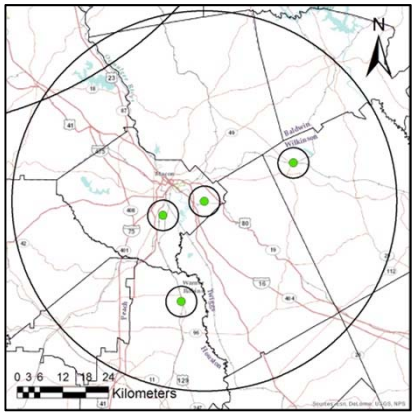
Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
$PM_{2.5}$ Speciation	Population Exposure	Every 6 days	4 m	Neighborhood	3/1/02
$PM_{2.5}$	Population Exposure	Every 3 days	4 m	Neighborhood	2/2/99
$PM_{2.5}$	Quality Assurance	Every 12 days	4 m	Neighborhood	2/2/99

GA EPD's plans for this site: Continue monitoring

Macon- GA Forestry Commission







AQS ID: 130210012

Address: Georgia Forestry Commission, 5645 Riggins Mill Road, Dry Branch, Bibb County, Georgia 31020

Site Established: 5/7/97

Latitude/Longitude: N32.805244/W-83.543628

Elevation: 103 meters

Area Represented: Macon MSA

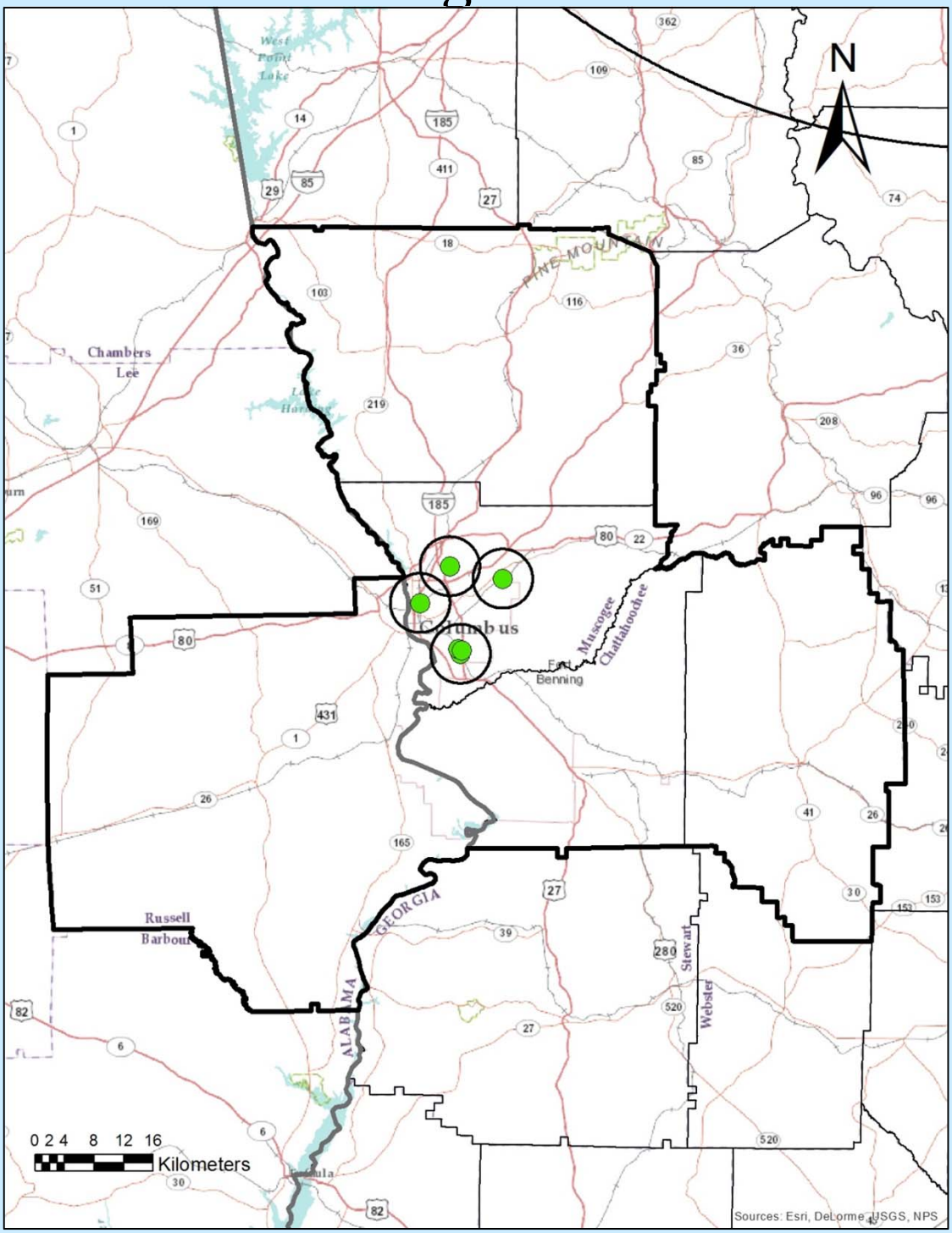
Site History: Established as O_3 and SO_2 site

North South

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

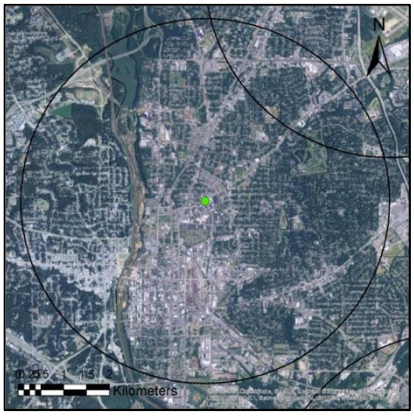
GA EPD's plans for this site: Continue monitoring

Columbus Georgia-Alabama MSA



Radius of Circles on Map
Micro Scale: up to 100m
Middle Scale: up to 0.5km
Neighborhood Scale: up to 4.0km
Urban Scale: up to 50km
Regional Scale: up to 100s of km (100km shown)

Columbus- Health Department



AQS ID: 132150001

Address: Muscogee City Health Department, 1958 8th Avenue, Columbus, Muscogee County, Georgia 31904

Site Established: 1/1/57

Latitude/Longitude: N32.484226/W-84.978925

Elevation: 101 meters

Area Represented: Columbus Georgia-Alabama MSA

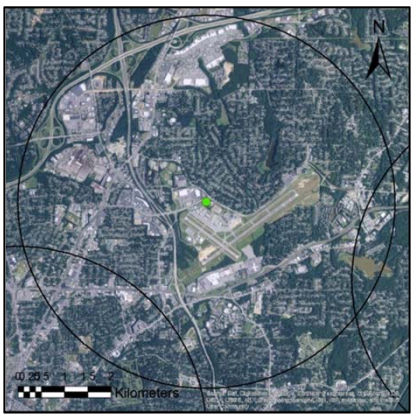
Site History: Established as TSP site

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

GA EPD's plans for this site: Continue monitoring

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 O_3 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
$PM_{2.5}$	Population Exposure	Every 3 days	4 m	Neighborhood	6/2/03
$PM_{2.5}$	Population Exposure	Continuous	4 m	Neighborhood	6/1/03

GA EPD's plans for this site: Continue monitoring

Columbus- UPS

AQS ID: 132150009
Address: 4365 Allied Drive, Columbus, Muscogee County, Georgia 31906
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

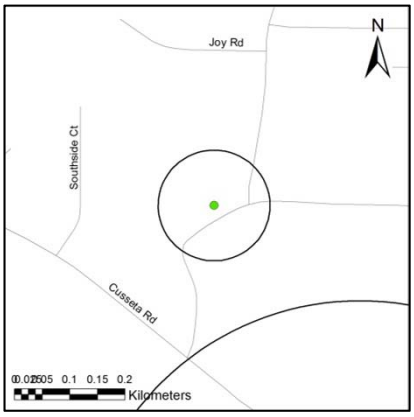
North South East West

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

GA EPD's plans for this site: Continue monitoring

Columbus- Fort Benning



AQS ID: 132150010
Address: Ft. Benning Junction, 975 Joy Road, Columbus, Muscogee County, Georgia 31906
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

Northwest

South

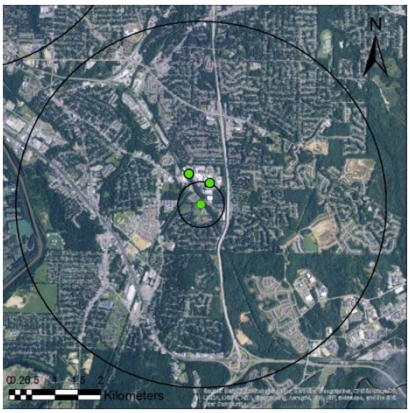
East

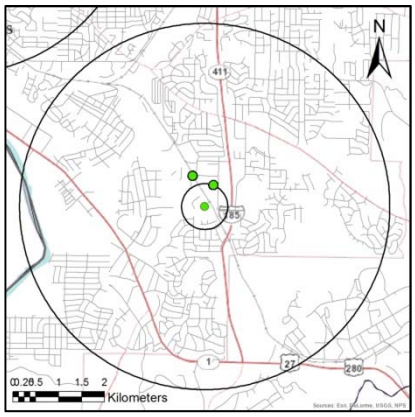
Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
Lead	Source Oriented	Every 6 days	2 m	Micro	3/1/91*
Lead	Quality Assurance /Source Oriented	Every 12 days	2 m	Micro	4/10/13

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

GA EPD's plans for this site: Continue monitoring

Columbus- Cusseta Road Elementary





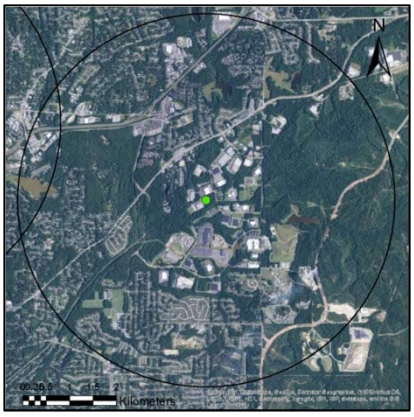
AQS ID: 132150011
Address: Cusseta Road Elementary School, 4150 Cusseta Road, Columbus, Muscogee County, Georgia 31903
Site Established: 9/4/91
Latitude/Longitude: N32.42905/W-84.93160
Elevation: 88 meters
Area Represented: Columbus Georgia-Alabama MSA
Site History: Established as lead site

North South East West

Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
Lead	Population Exposure/Source Oriented	Every 6 days	5 m	Middle	9/4/91
$PM_{2.5}$	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

GA EPD's plans for this site: Continue monitoring

Columbus- Crime Lab



AQS ID: 132151003

Address: Columbus Crime Lab, 8695 Beaver Run Road, Midland, Muscogee County, Georgia 31820

Site Established: 6/30/80

Latitude/Longitude: N32.50854/W-84.88037

Elevation: 122 meters

Area Represented: Columbus Georgia-Alabama MSA

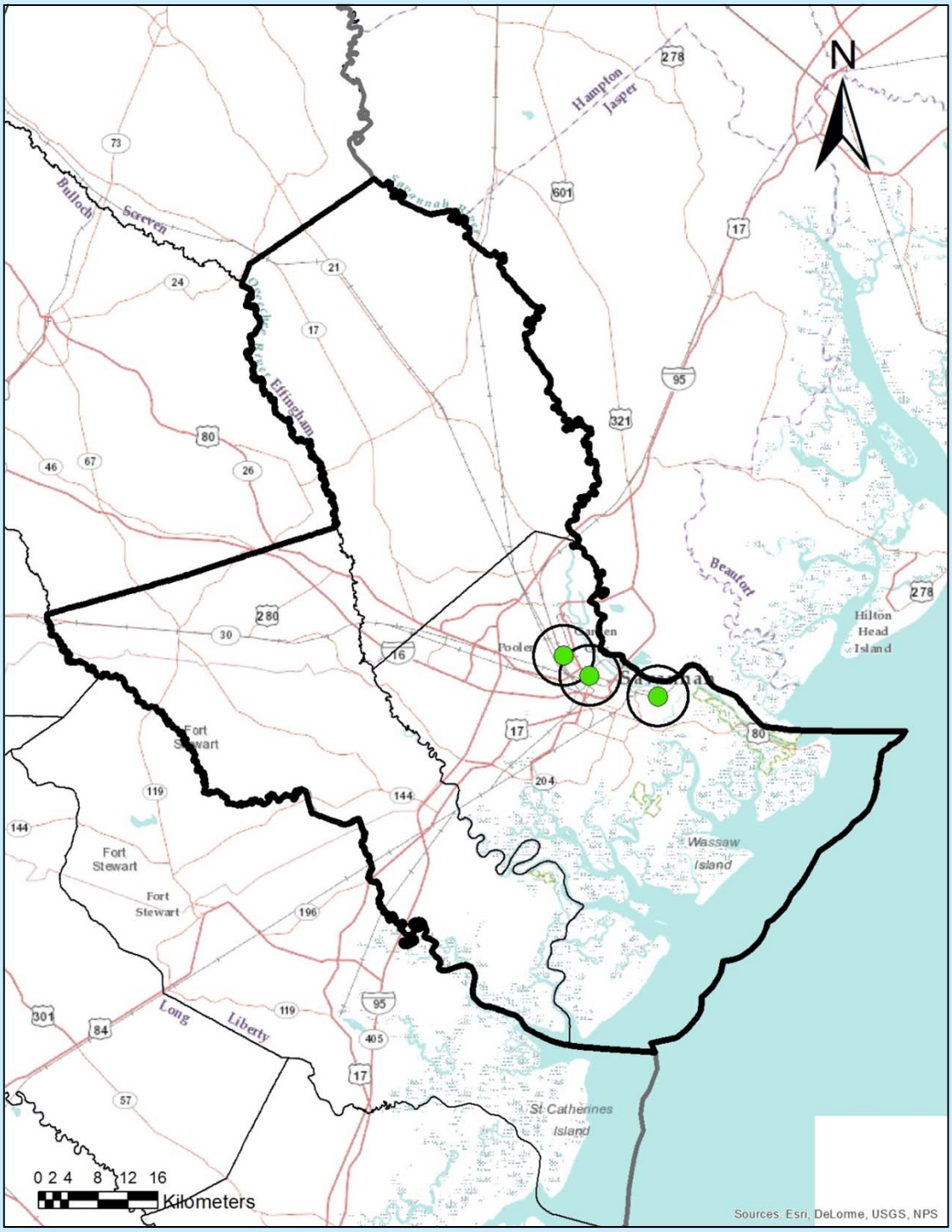
Site History: Established as O_3 site

North South East 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

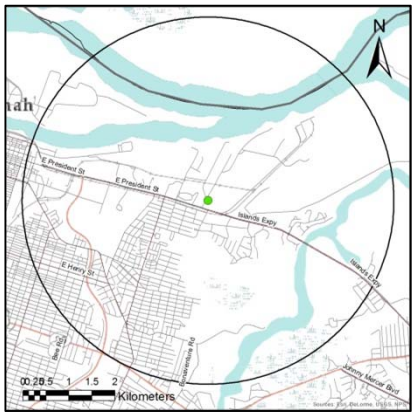
GA EPD's plans for this site: Continue monitoring

Savannah MSA



Radius of Circles on Map
Micro Scale: up to 100m
Middle Scale: up to 0.5km
Neighborhood Scale: up to 4.0km
Urban Scale: up to 50km
Regional Scale: up to 100s of km (100km shown)

Savannah- E. President Street



AQS ID: 130510021

Address: American Red Cross, 2500 E. President Street, Bd-A, Savannah, Chatham County, Georgia 31404

Site Established: 2/1/95

Latitude/Longitude: N32.069050/W-81.048949

Elevation: 2 meters

Area Represented: Savannah MSA

Site History: Established as SO_2 and H_2S site

North

South

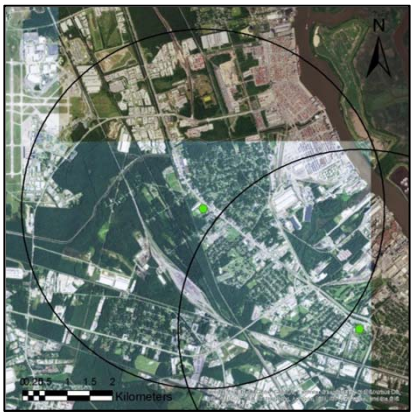
East

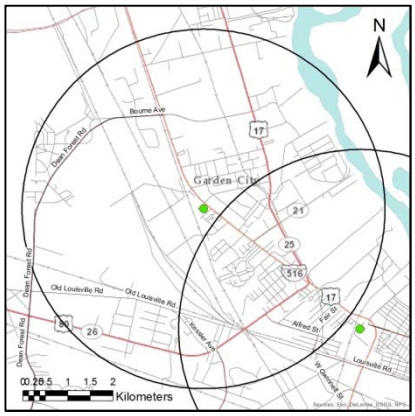
West

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

GA EPD's plans for this site: Continue monitoring

Savannah- Mercer School





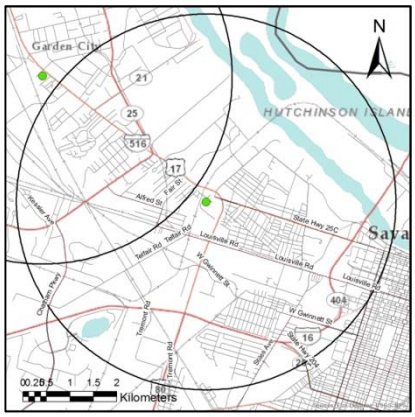
AQS ID: 130510091
Address: Mercer Middle School, 201 Rommel Avenue, Savannah, Chatham County, Georgia 31408
Site Established: 7/7/76
Latitude/Longitude: N32.110580/W-81.162024
Elevation: 4 meters
Area Represented: Savannah MSA
Site History: Established as TSP site

North South

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

GA EPD's plans for this site: Continue monitoring

Savannah- Lathrop and Augusta



AQS ID: 130511002

Address: Pumping Station at Intersection of West Lathrop and Augusta Avenue, Savannah, Chatham County, Georgia 31415

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

Northwest

Southeast

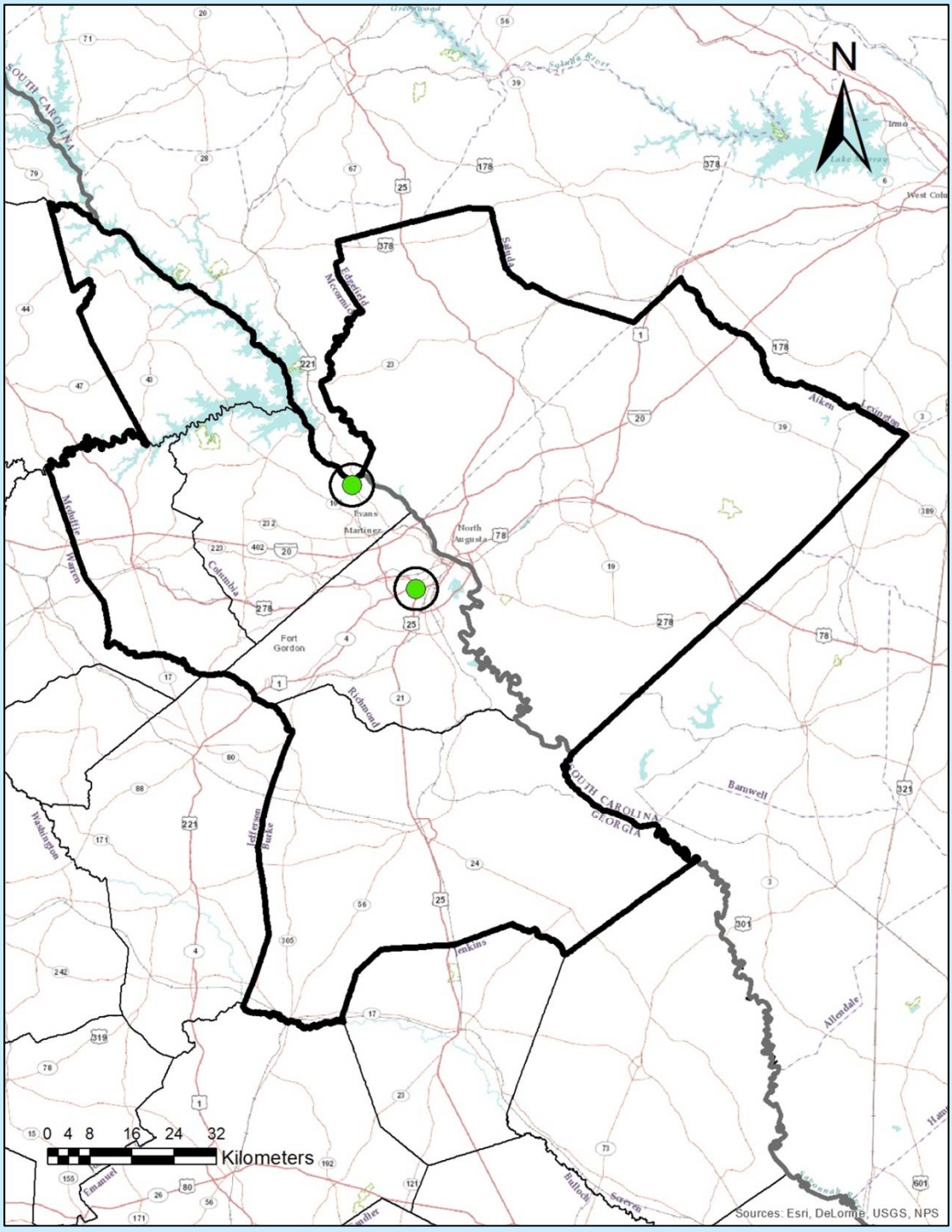
Southwest

South

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

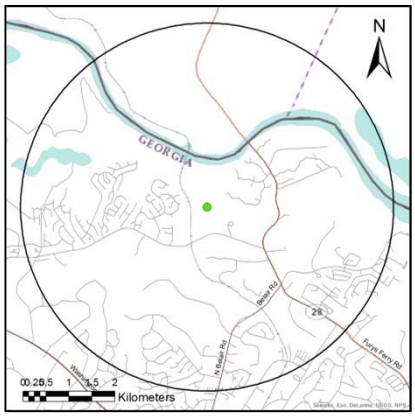
GA EPD's plans for this site: Continue monitoring; propose to add an ozone monitor when initiated by EPA

Augusta-Richmond County, Georgia-South Carolina MSA



Radius of Circles on Map
Micro Scale: up to 100m
Middle Scale: up to 0.5km
Neighborhood Scale: up to 4.0km
Urban Scale: up to 50km
Regional Scale: up to 100s of km (100km shown)

Evans- Riverside Park



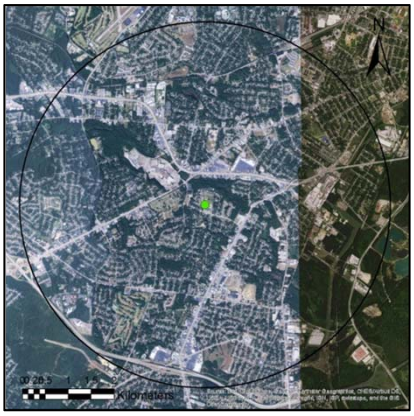
AQS ID: 130730001
Address: Riverside Park, 4431 Hardy McManus Road, Evans, Columbia County, Georgia 30809
Site Established: 2/17/05
Latitude/Longitude: N33.582000/W-82.131340
Elevation: 74 meters
Area Represented: Augusta-Richmond County, Georgia-South Carolina MSA
Site History: Established as O_3 and 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
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

GA EPD's plans for this site: Continue monitoring

Augusta- Bungalow Road Elementary



AQS ID: 132450091

Address: Bungalow Road Elementary School, 2216 Bungalow Rd, Augusta, Richmond County, Georgia 30906

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

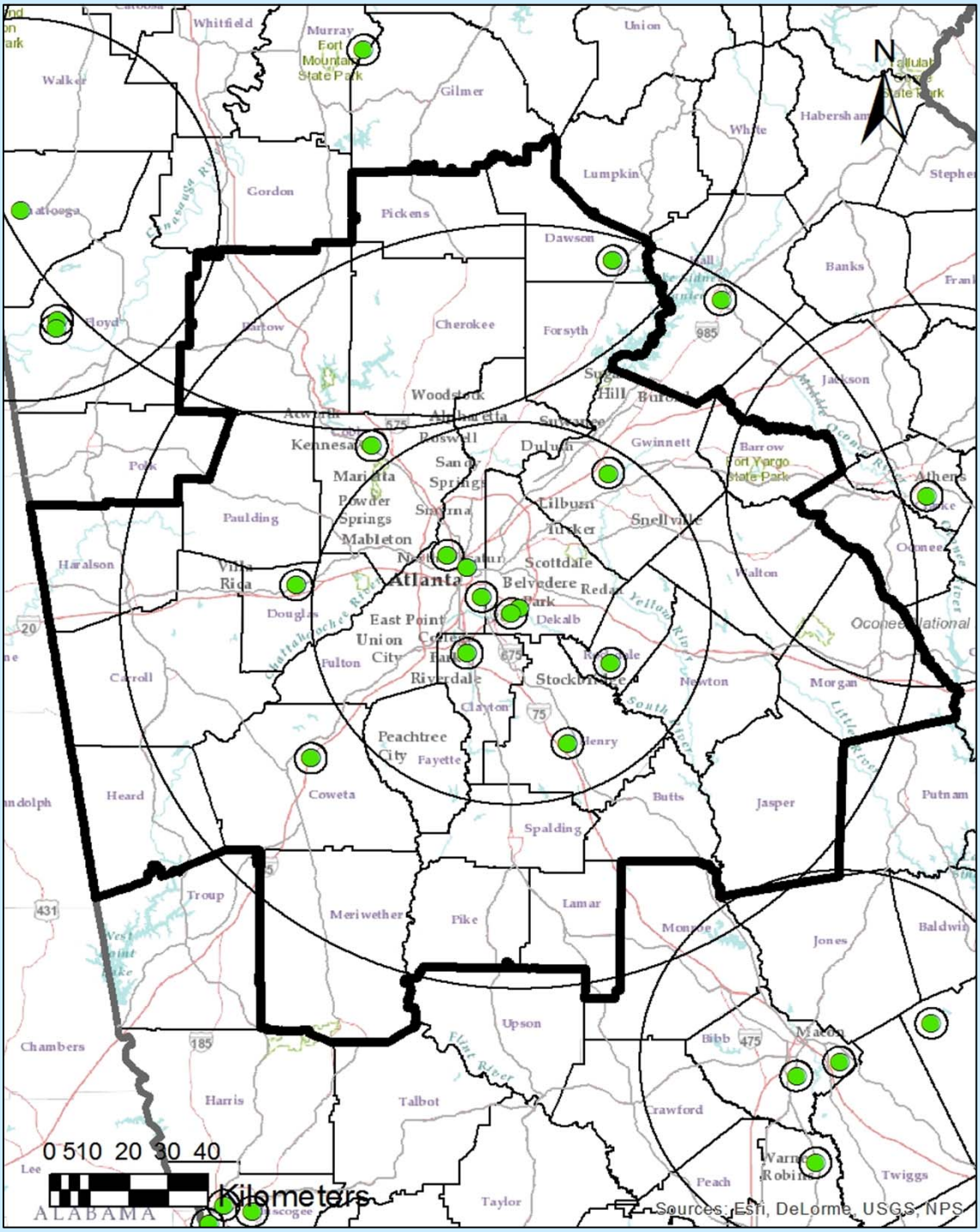
Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
O_3	Population Exposure	Continuous (Mar-Oct)	5 m	Neighborhood	4/27/89
PM_{10}	Population Exposure	Continuous	6 m	Neighborhood	4/9/96
$PM_{2.5}$ Speciation	Population Exposure	Every 6 days	6 m	Neighborhood	3/2/02
$PM_{2.5}$	Population Exposure	Every 3 days	6 m	Neighborhood	2/8/99
$PM_{2.5}$	Population Exposure	Continuous	6 m	Neighborhood	10/1/03
SO_2	Population Exposure	Continuous	6 m	Neighborhood	1/14/13
SO_2 5-Minute Maximum	Population Exposure	Continuous	6 m	Neighborhood	1/14/13

Augusta- Bungalow Road Elementary (continued)

Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
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
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

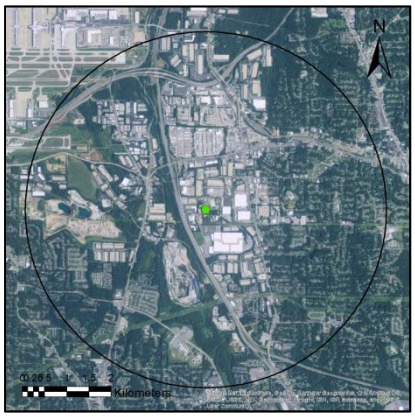
GA EPD's plans for this site: Continue monitoring; plan to change PM_{10} to a continuous FEM monitor; plan to change $PM_{2.5}$ continuous monitor to an FEM monitor, and until GA EPD gains confidence in the FEM monitor, daily 24-hour samples will be collected with the $PM_{2.5}$ FRM monitor to assess how well data correlates between these two samplers

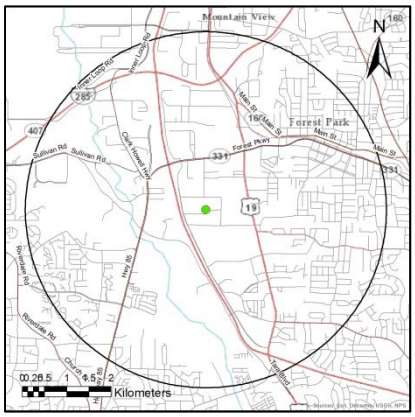
Atlanta-Sandy Springs-Marietta MSA



Radius of Circles on Map
Micro Scale: up to 100m
Middle Scale: up to 0.5km
Neighborhood Scale: up to 4.0km
Urban Scale: up to 50km
Regional Scale: up to 100s of km (100km shown)

Forest Park- Georgia DOT





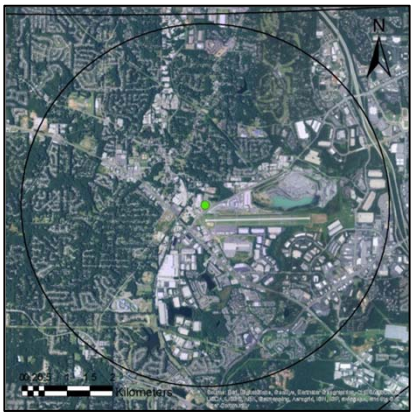
AQS ID: 130630091
Address: 25 Kennedy Drive, Forest Park, Clayton County, Georgia 30297
Site Established: 1/1/78
Latitude/Longitude: N33.610852/W-84.390797
Elevation: 288 meters
Area Represented: Atlanta-Sandy Springs-Marietta MSA
Site History: Established as TSP site

North South East West

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

GA EPD's plans for this site: 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	Every 3 Days	4 m	Neighborhood	2/7/99

GA EPD's plans for this site: Continue monitoring

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

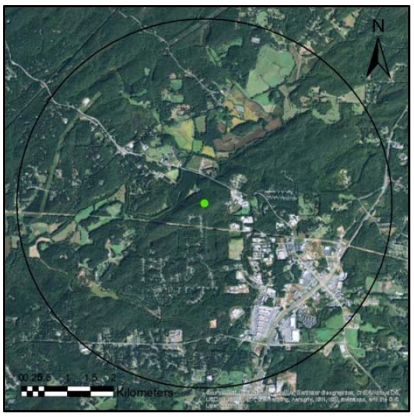
Site History: Established as O_3 site

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

GA EPD's plans for this site: Continue monitoring

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

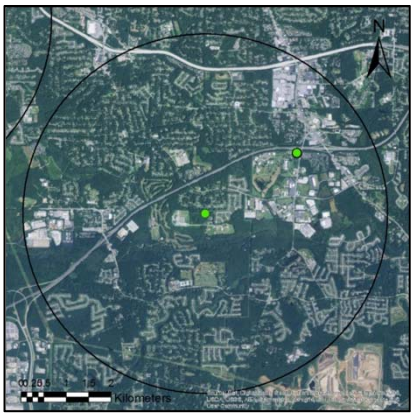
Site History: Established as O_3 site

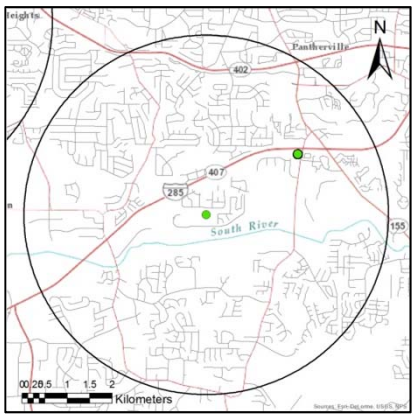
North South East West

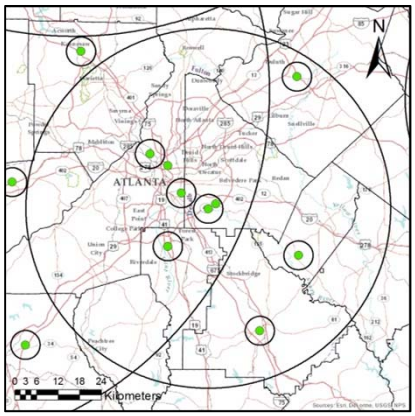
Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
O_3	Population Exposure	Continuous (Mar-Oct)	4 m	Neighborhood	1/1/85
Wind Speed	General/ Background	Continuous	10 m	Regional	1/1/05
Wind Direction	General/ Background	Continuous	10 m	Regional	1/1/05

GA EPD's plans for this site: Continue monitoring

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 O_3 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	2.7 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
CO	Population Exposure	Continuous	4 m	Neighborhood	5/19/03

Decatur- South DeKalb (continued)

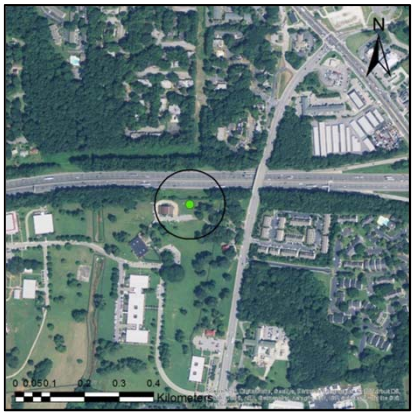
Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
NOy	Population Exposure	Continuous	10 m	Neighborhood/ Urban	1/1/98
NO	Population Exposure	Continuous	4 m	Neighborhood/ Urban	4/1/94
NOx	Population Exposure	Continuous	4 m	Neighborhood/ Urban	4/1/94
NO_2	Population Exposure	Continuous	5 m	Neighborhood/ Urban	7/21/78
Carbonyls (PAMS)	Max Precursor Emissions	Three 8-hour samples every third day in summer	4 m	Neighborhood	6/1/93
Carbonyls (NATTS)	Population Exposure	Every 6 days	4 m	Neighborhood	6/1/93
Carbonyls (NATTS)	Quality Assurance	Every 12 days	4 m	Neighborhood	1/1/06
PM_{10} Select Metals (NATTS)	Population Exposure	Every 6 days	2 m	Neighborhood	1/1/00
PM_{10} Select Metals (NATTS)	Quality Assurance	Every 12 days	2 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 (June-August)	4 m	Neighborhood	6/1/93
VOCs (NATTS)	Population Exposure	Every 6 days	4 m	Neighborhood	6/1/93
VOCs (NATTS)	Quality Assurance	Every 6 days	4 m	Neighborhood	1/1/05
Semi-VOCs (NATTS)	Population Exposure	Every 6 days	2 m	Neighborhood	4/30/07
Semi-VOCs (NATTS)	Quality Assurance	Every 12 days	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

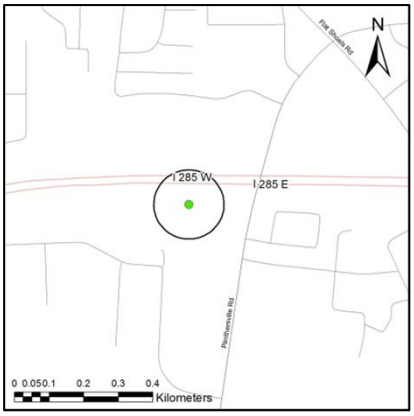
Decatur- South DeKalb (continued)

Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
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

GA EPD's plans for this site: Continue monitoring; NCore site (Refer to GA EPD's '2011 Ambient Air Monitoring Plan, Appendix C, Ambient Air Monitoring Plan for National Core (NCore) Multipollutant Monitoring Station' for full description and approval); Schedule of $PM_{2.5}$ FRM sampler based on EPA requirements, however actual operation is daily; Considering configuring continuous PM_{10}-$PM_{2.5}$ system with another FEM type sampler after assessing how well data correlates with FRM sampler and GA EPD gains confidence in the FEM monitor; Solar radiation and Ultraviolet radiation for South DeKalb PAMS are currently monitored at the Conyers site due to equipment specifications (see Section 1.4 for waiver request)

Decatur- DMRC Near-Road





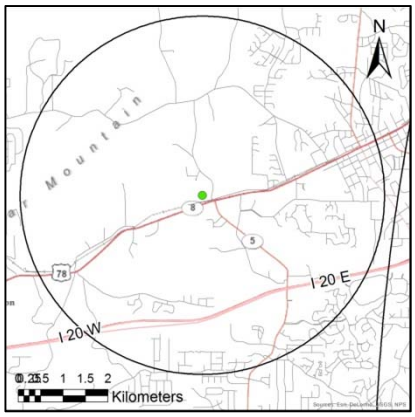
AQS ID: 130890003
Address: D.M.R.C., 3073 Panthersville Road, Decatur, DeKalb County, Georgia 30034
Site Established: 7/1/86
Latitude/Longitude: N33.698468/W-84.272694
Elevation: 238 meters
Area Represented: Atlanta-Sandy Springs-Marietta MSA
Site History: Established as lead site

North South East West

Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
NO_2	Population Exposure	Continuous	4 m	Micro	1/1/15
NO	Population Exposure	Continuous	4 m	Micro	1/1/15
NOx	Population Exposure	Continuous	4 m	Micro	1/1/15
VOCs	Population Exposure	Every 6 days	2 m	Micro	3/31/15
Black Carbon	Population Exposure	Continuous	4 m	Micro	9/1/15

GA EPD's plans for this site: Continue monitoring; Near-road site as of 1/1/15 (see 'Addendum to 2014 Ambient Monitoring Plan' for full description)

Douglasville- W. Strickland Street



AQS ID: 130970004

Address: Douglas County Water Authority, 7725 W. Strickland St., Douglasville, Douglas County, Georgia 30134

Site Established: 8/15/97

Latitude/Longitude: N33.743514/W-84.779263

Elevation: 368 meters

Area Represented: Atlanta-Sandy Springs-Marietta MSA

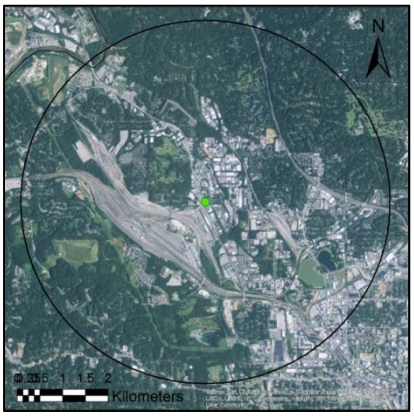
Site History: Established as O_3 site

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

GA EPD's plans for this site: Continue monitoring

Atlanta- Fire Station #8



AQS ID: 131210039
Address: Fire Station #8, 1711 Marietta Blvd., Atlanta, Fulton County, Georgia 30318
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

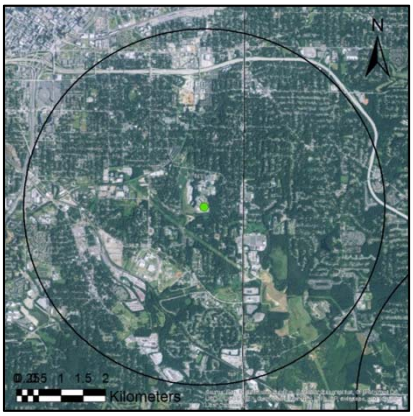
North South East West

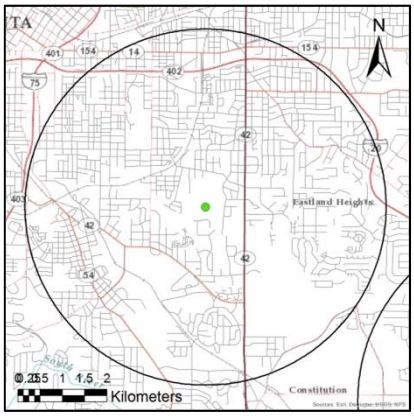
Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
$PM_{2.5}$	Population Exposure	Every 3 days	4 m	Neighborhood	1/21/99*
PM_{10}	Population Exposure	Every 6 days	4 m	Neighborhood	1/1/86**
PM_{10}	Population Exposure/Quality Assurance	Every 12 days	4 m	Neighborhood	2/1/86***

* Sampler inactive from 9/30/06 to 12/1/08, **Sampler inactive from 9/26/06 to 1/3/13, ***Sampler inactive from 10/12/87 to 1/1/06 and from 9/26/06 to 6/1/17

GA EPD's plans for this site: Continue monitoring

Atlanta- Confederate Avenue





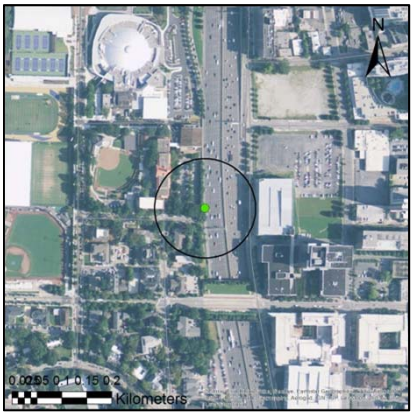
AQS ID: 131210055
Address: 935 East Confederate Avenue, Atlanta, Fulton County, Georgia 30316
Site Established: 10/1/91
Latitude/Longitude: N33.72005/W-84.35714
Elevation: 292 meters
Area Represented: Atlanta-Sandy Springs-Marietta MSA
Site History: Established as O_3 and SO_2 site

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

GA EPD's plans for this site: Continue monitoring

Atlanta-Georgia Tech Near-Road



AQS ID: 131210056
Address: Georgia Institute of Technology, 6th Street, Atlanta, Fulton County, Georgia, 30313
Site Established: 6/15/14
Latitude/Longitude: N33.778315/W-84.391418
Elevation: 286 meters
Area Represented: Atlanta-Sandy Springs-Marietta MSA
Site History: Established as near-road site

North South East West

Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
NO_2	Source Oriented	Continuous	4 m	Micro	6/15/14
NO	Source Oriented	Continuous	4 m	Micro	6/15/14
NOx	Source Oriented	Continuous	4 m	Micro	6/15/14
CO	Source Oriented	Continuous	4 m	Micro	6/15/14
$PM_{2.5}$	Source Oriented	Every 3 days	5 m	Micro	1/1/15
Black Carbon	Source Oriented	Continuous	4 m	Micro	7/9/15
Wind Speed	Source Oriented	Continuous	7 m	Micro	8/20/14

Atlanta-Georgia Tech Near-Road (continued)

Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
Wind Direction	Source Oriented	Continuous	7 m	Micro	8/20/14

GA EPD's plans for this site: Continue monitoring; Plan to place a continuous non-FEM $PM_{2.5}$ monitor in summer of 2017; See Appendix E of '2014 Ambient Air Monitoring Plan' for near-road site establishment and details.

Lawrenceville- Gwinnett Tech

AQS ID: 131350002

Address: Gwinnett Tech, 5150 Sugarloaf Parkway, Lawrenceville, Gwinnett County, Georgia 30043

Site Established: 3/17/95

Latitude/Longitude: N33.96127/W-84.06901

Elevation: 290 meters

Area Represented: Atlanta-Sandy Springs-Marietta MSA

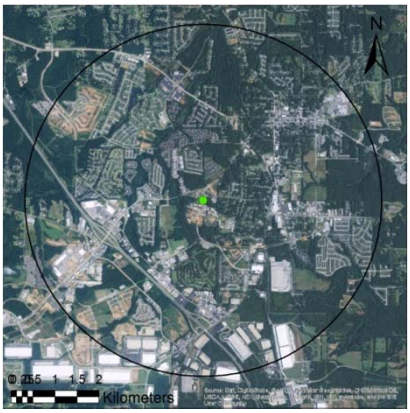
Site History: Established as O_3 site

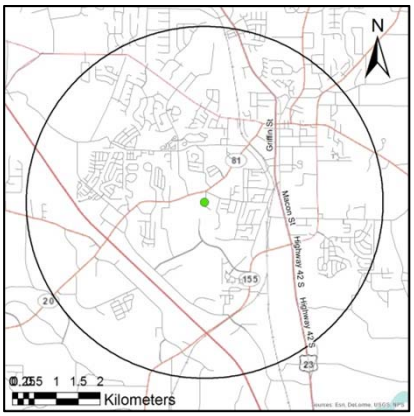
North South East West

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

GA EPD's plans for this site: Continue monitoring; considering configuring continuous $PM_{2.5}$ sampler as an FEM, which would be compared to the NAAQS, and until GA EPD gains confidence in the FEM monitor, daily 24-hour samples will be collected with the $PM_{2.5}$ FRM monitor to assess how well data correlates between these two samplers

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

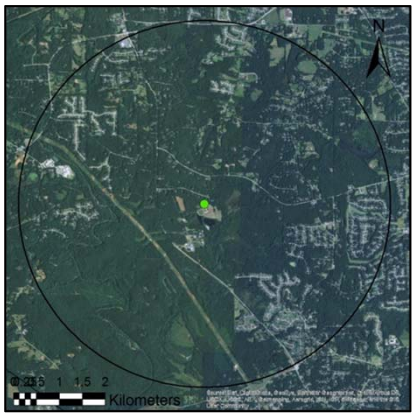
Site History: Established as O_3 site

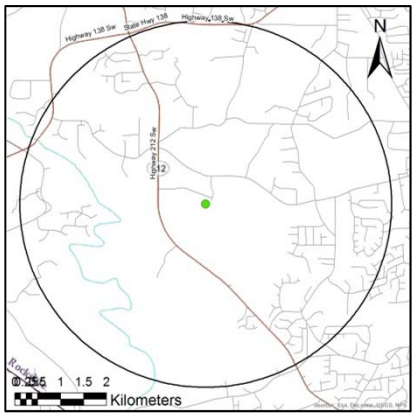
North South East West

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

GA EPD's plans for this site: Continue monitoring

Conyers- Monastery





AQS ID: 132470001
Address: Monastery of the Holy Spirit, 2625 Georgia Highway 212, Conyers, Rockdale County, Georgia 30094
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 O_3 site

North South East West

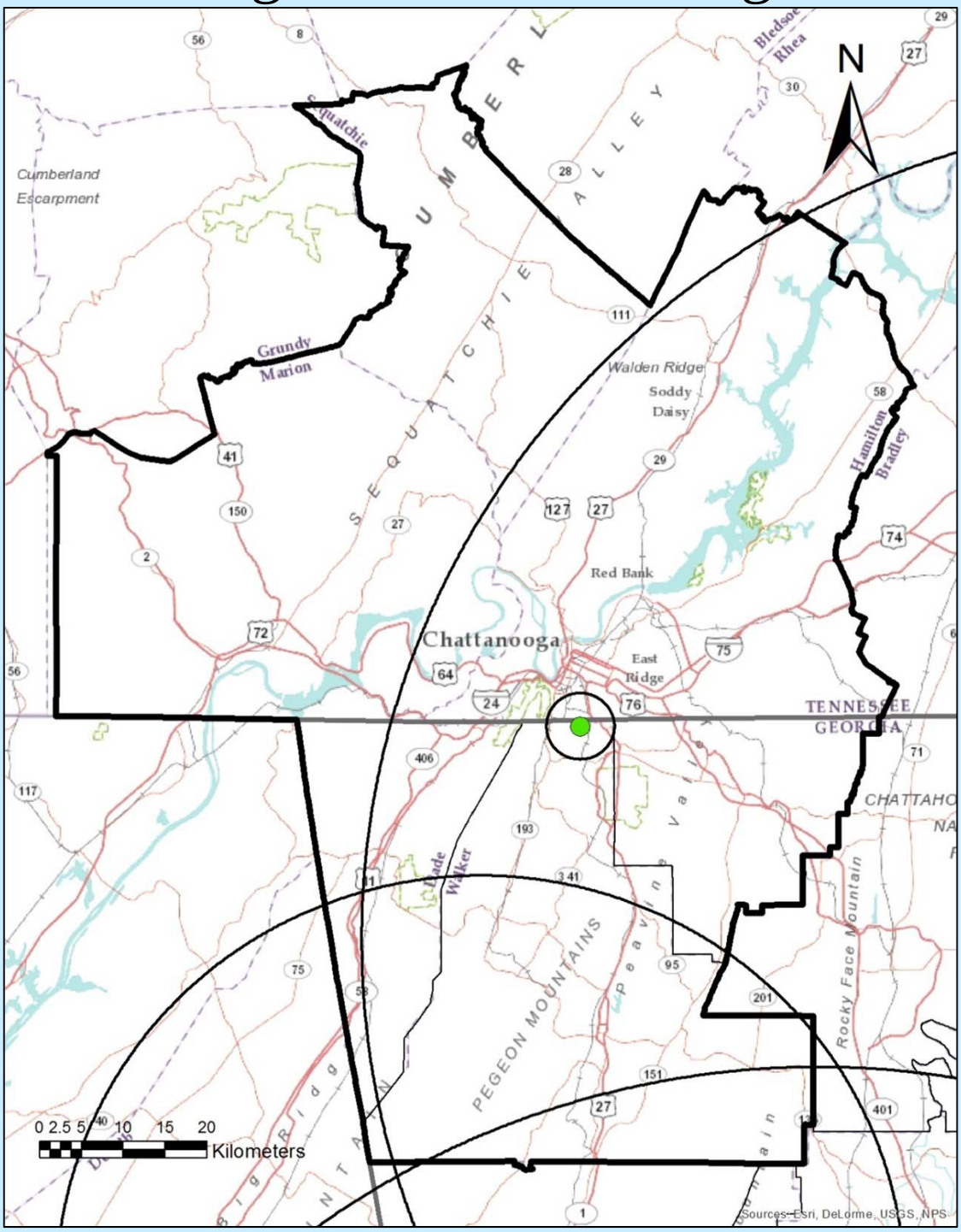
Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
O_3	Maximum Concentration	Continuous (Mar-Oct)	5 m	Neighborhood	7/26/78
Relative Humidity	General/ Background	Continuous	2 m	Neighborhood	6/1/94
Barometric Pressure	General/ Background	Continuous	2 m	Neighborhood	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

Conyers- Monastery (continued)

Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
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

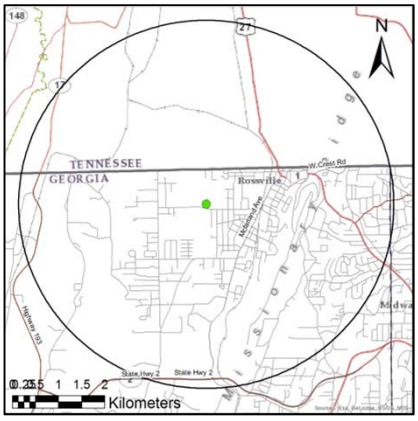
GA EPD's plans for this site: Continue monitoring; Ultraviolet radiation and solar radiation monitored at Conyers are also used to fulfill meteorological requirements for South DeKalb PAMS (see Section 1.4 for waiver request)

Chattanooga Tennessee-Georgia MSA



Radius of Circles on Map
Micro Scale: up to 100m
Middle Scale: up to 0.5km
Neighborhood Scale: up to 4.0km
Urban Scale: up to 50km
Regional Scale: up to 100s of km (100km shown)

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 SO_2/NO_2 site

North South East West

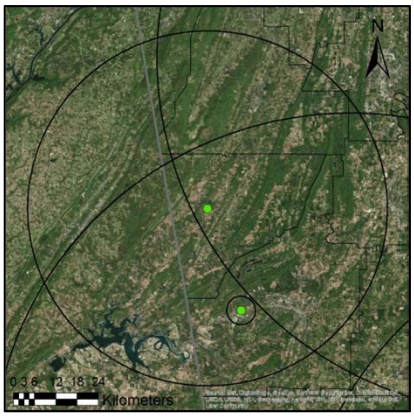
Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
$PM_{2.5}$	Population Exposure	Continuous	6 m	Neighborhood	1/24/07
$PM_{2.5}$	Population Exposure/ Regional Transport	Every 3 days	6 m	Neighborhood	1/1/00
$PM_{2.5}$ Speciation	Population Exposure	Every 6 days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

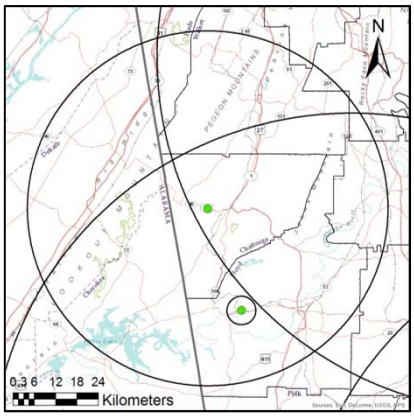
GA EPD's plans for this site: Continue monitoring

Sites Not in an MSA

(Listed in AQS ID Order)

Summerville- DNR Fish Hatchery





AQS ID: 130550001

Address: DNR 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

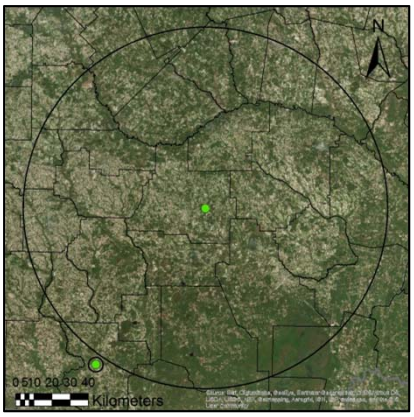
Site History: Established as Acid Rain site

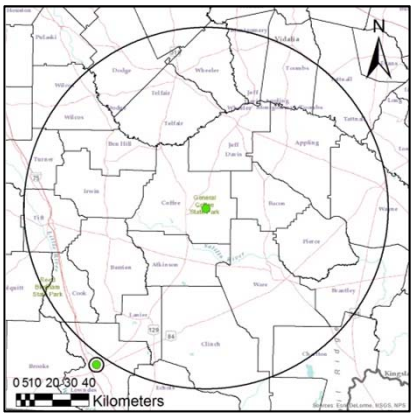
North South East West

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

GA EPD's plans for this site: Continue monitoring

Douglas- General Coffee State Park





AQS ID: 130690002

Address: General Coffee State Park, 6635 State Highway 32, Nicholls, Coffee County, Georgia 31554

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

North

South

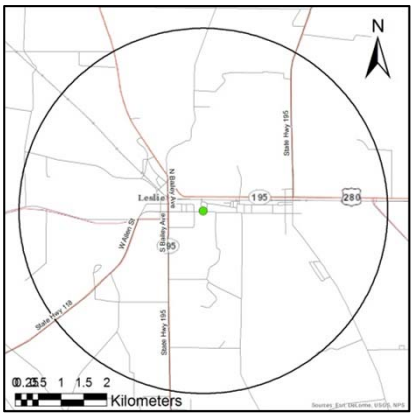
East

West

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
$PM_{2.5}$	General Background	Every 3 days	3 m	Regional	2/1/17

GA EPD's plans for this site: Continue monitoring

Leslie- Union High School



AQS ID: 132611001

Address: Leslie Community Center, N Bass St/E Allen St, Leslie, Sumter County, Georgia 31764

Site Established: 1/1/81

Latitude/Longitude: N31.954112/W-84.081149

Elevation: 100 meters

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

Site History: Established as O_3 site

Northwest

Southeast

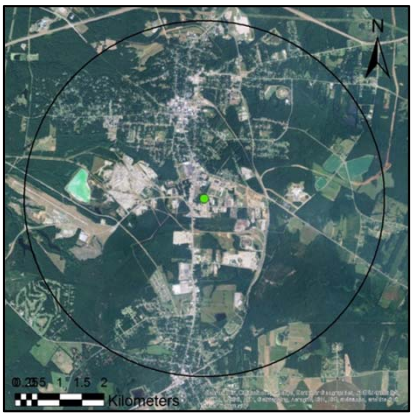
East

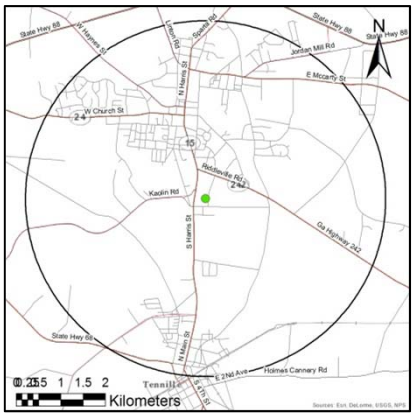
West

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

GA EPD's plans for this site: Continue monitoring

Sandersville- Health Department





AQS ID: 133030001

Address: Oconee Center Washington County Service Center, 824 Golden Hawk Drive, Sandersville, Washington County, Georgia 31082

Site Established: 1/1/74

Latitude/Longitude: N32.967251/W-82.806780

Elevation: 140 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
$PM_{2.5}$	Population Exposure	Every 3 days	3 m	Neighborhood	1/30/99

GA EPD's plans for this site: Continue monitoring

Appendix B:
Inventory of Ambient Monitoring Equipment

Georgia Department of Natural Resources
Environmental Protection Division

SITE NAME	EQUIPMENT NAME	EQUIPMENT DESCRIPTION	COND./ AGE
Rome MSA			
Rome - Coosa Elementary	ESC DAS	Datalogger 8832	good/ >4
	Met-One SASS	Speciated PM2.5 Sampler	good/ >3
	TEOM	Continuous PM2.5 Sampler	good/ >3
Rome -Kraftsman	ESC DAS	Datalogger 8832	good/>3
	Thermo SO2 Analyzer	43i	good/ >3
	Thermo SO2 Calibrator	146i	good/ >3
	Environics Zero Air Supply	7000	good/ >2
Brunswick MSA			
Brunswick - Risley Middle School	ESC DAS	Datalogger 8832	good/ >4
	Thermo O3 Analyzer	49i	good/ >6
	Thermo O3 Calibrator	49C-PS	good/ >6
	Thermo 2025	PM2.5 Sampler	good/ >6
	Sonic Anemometer	81000	good/ >3
	Environics Zero Air Supply	7000	good/ >3
Valdosta MSA			
Valdosta - Mason Elementary	Thermo 2025	PM2.5 Sampler	good/ >3
	Met-One BAM Monitor	1020 Continuous PM2.5 Sampler	good/ >4
	ESC DAS	Datalogger 8832	good/ >3
Warner Robins MSA			
Warner Robins - Air Force Base	Thermo 2025	PM2.5 Sampler	good/ >2
	Teledyne T640	Continuous PM2.5 Sampler	good/new
Dalton MSA			
Chatsworth - Fort Mountain	ESC DAS	Datalogger 8832	good/ >4
	Thermo O3 Analyzer	49i	good/ >6
	Thermo O3 Calibrator	49C-PS	good/ >6
	RM Young Wind Instrument	05305vm	good/ >9
	RM Young Temp/Relative Humidity	41375VC	good/ >3
	Environics Zero Air Supply	7000	good/>2
Gainesville MSA			
Gainesville - Fair Street School	Thermo 2025	PM2.5 Sampler	good/ >2
	Met-One BAM Monitor	1020 Continuous PM2.5 Sampler	good/ >4
	ESC DAS	Datalogger 8832	good/ >4
Albany MSA			
Albany - Turner Elementary	Thermo 2025	PM2.5 Sampler	good/ >2
	Thermo 2025	PM2.5 Sampler Co-locate	good/ >2
	Met-One BAM Monitor	Continuous PM2.5 Sampler	good/ >3
	ESC DAS	Datalogger 8832	good/ >4
Athens-Clarke County MSA			
Athens - Fire Station #7	Thermo O3 Analyzer	49i	good/ >6
	Thermo O3 Calibrator	49i-PS	good/ >6
	Thermo 2025	PM2.5 Sampler	good/ >2
	R&P PM2.5 Sampler	1400 A series TEOM	good/ >7
	ESC DAS	Datalogger 8832	good/ >4
	Environics Zero Air Supply	7000	good/ >2
Macon MSA			
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/ >9
	URG Sequential Sampler	Speciation Particulate 3000N MOD C	good/ >9
Macon - GA Forestry Commission	ESC DAS	Datalogger 8832	good/ >4
	Thermo O3 Analyzer	49i	good/ >9
	Thermo O3 Calibrator	49iPS	good/ >9
	Thermo SO2 Analyzer	43i	good/ >6
	Thermo SO2 Calibrator	146i	good/ >9

SITE NAME	EQUIPMENT NAME	EQUIPMENT DESCRIPTION	COND./ AGE
Macon - GA Forestry Commission (cont'd)	Environics Zero Air Supply	7000	good/>2
	Thermo 2025	PM2.5 Sampler	good/ >2
	Graseby PUF Sampler	GPS1-11	good/ >9
	Graseby HIVOL Sampler (metals)	2000H	good/ >9
	AVOCS	VOC Sampler	good/ >9
	RM Young Wind Instrument	05305vm	good/ >9
Columbus Georgia-Alabama MSA			
Columbus - Health Department	Thermo 2025	PM2.5 Sampler	good/ >2
Columbus - Airport	ESC DAS	Datalogger 8832	good/ >4
	Thermo O3 Analyzer	49i	good/ >9
	Thermo O3 Calibrator	49C	good/ >4
	Thermo 2025	PM2.5 Sampler	good/ >2
	R&P PM2.5 Sampler	TEOM 1400 AB	good/ >6
	R&P	Sample Equil System	good/ >9
	Environics Zero Air Supply	7000	good/ >2
Columbus - UPS	General Metal Hi-Volume	HIVOL Sampler (lead) 2000H	good/ >9
Columbus - Fort Benning	General Metal Hi-Volume	HIVOL Sampler (lead) 2000H	good/ >9
Columbus - Cusseta Elementary	Thermo 2025	PM2.5 Sampler	good/ >2
	Met-One SASS	Speciation Control Box	good/ >4
	URG Sequential Sampler	Speciation Particulate 3000N MOD C	good/ >2
	General Metal Hi-Volume	HIVOL Sampler (lead) 2000H	good/ >9
Columbus - Crime Lab	Sonic Anemometer	81000	good/ >4
	RM Young BP Sensor	Barometric Pressure	good/ >3
	Nova Lynx	Tipping Bucket	good/ >3
	RM Young Temp/Relative Humidity	41375VC	good/ >3
	ESC DAS	Datalogger 8832	good/ >4
Savannah MSA			
Savannah - E. President Street	ESC DAS	Datalogger 8832	good/ >4
	Thermo O3 Analyzer	49C	good/ >6
	Thermo O3 Calibrator	49C	good/ >6
	Thermo SO2 Analyzer	43i	good/ >6
	Thermo SO2 Calibrator	146i	good/ >6
	GRASEBY/GMW PUF Sampler	GSP1	good/ >6
	Andersen HIVOL Sampler	GBM2000HBL Metals Sampler	good/ >6
	ATEC Carbonyl Sampler	100	good/ >6
	XONTECK VOC Sampler	VOC Sampler	good/ >6
	Environics Zero Air Supply	7000	good/ >2
	Sonic Anemometer	81000	good/ >4
Savannah - Mercer School	Thermo 2025	PM2.5 Sampler	good/ >2
Savannah - Lathrop & Augusta Ave.	ESC DAS	Datalogger 8832	good/ >4
	Thermo SO2 Analyzer	43i	good/ >6
	Thermo SO2 Calibrator	146i	good/ >6
	R&P PM2.5 Sampler	TEOM 1400 AB Series Continuous	good/ >6
	Sonic Anemometer	81000	good/ >2
	Environics Zero Air Supply	7000	good/ >2
Augusta-Richmond County, Georgia-South Carolina MSA			
Evans - Riverside Park	Thermo O3 Analyzer	Thermo 49C	good/ >5
	Thermo O3 Calibrator	Thermo 49C-PS	good/ >4
	RM Young Wind Instrument	05305vm	good/ >9
	Tower	Fold Over	good/ >4
	ESC DAS	Datalogger 8832	good/ >4
	RM Young Temp/Relative Humidity	41382VC	good/ >2
	Environics Zero Air Supply	7000	good/ >2

SITE NAME	EQUIPMENT NAME	EQUIPMENT DESCRIPTION	COND./ AGE
Augusta - Bungalow Road Elem.	Thermo O3 Analyzer	49C	good/ >6
	Thermo O3 Calibrator	49C-PS	good/ >6
	Thermo SO2 Analyzer	43i	good/ >6
	Environics Zero Air Supply	7000	good/ >2
	Thermo SO2 Calibrator	146i	good/ >6
	R&P PM10 Sampler	TEOM 1400 AB Series Continuous	good/ >6
	Thermo 2025	PM2.5 Sampler	good/ >2
	Teledyne T640	Continuous PM2.5 Sampler	good/new
	Met-One SASS	Speciated PM2.5 Sampler	good/ >3
	URG 3000N	Speciated PM2.5 Sampler	good/ >3
	Sonic Anemometer	81000	good/ >3
	ESC DAS	Datalogger 8832	good/ >4
	Nova Lynx	Tipping Bucket	good/ >3
	RM Young Temp/Relative Humidity	41375VC	good/ >3
	RM Young BP Sensor	Barometric Pressure	good/ >3
	Environics Zero Air Supply	7000	good/ >2
Atlanta-Sandy Springs-Marietta MSA			
Forest Park - GA DOT	Thermo 2025	PM2.5 Sampler	good/ >2
Kennesaw - National Guard	ESC DAS	Datalogger 8832	good/ >4
	Thermo O3 Analyzer	49i	good/ >6
	Thermo O3 Calibrator	49C-PS	good/ >6
	Environics Zero Air System	7000	good/ >3
	Thermo 2025	PM2.5 Sampler	good/ >2
	Environics Zero Air Supply	7000	good/ >2
Newnan - Univ. of West Georgia	ESC DAS	Datalogger 8832	good/ >6
	Thermo O3 Analyzer	49C	good/ >6
	Thermo O3 Calibrator	49C-PS	good/ >6
	Environics Zero Air Supply	7000	good/ <3
	R&P PM2.5 Sampler	TEOM 1400 A Series Continuous	good/ >4
	Sonic Anemometer	81000	good/ >3
Decatur - South DeKalb	ESC DAS	Datalogger 8832	good/ >4
	Thermo O3 Analyzer	49i	good/ >1
	Thermo O3 Calibrator	49iPS	good/ >2
	Environics Dynamic Gas Calibrator	6103	good/ >2
	Environics Gas Calibrator	9100 Gas Dilution Calibrator	good/ >2
	Thermo NOy Analyzer	42iY	good/ >6
	Thermo NOx Analyzer	42i	good/ >6
	Thermo CO Analyzer	48i-TLE	good/ >2
	Thermo SO2 Analyzer	43i-TLE	good/ >2
	Thermo 2025	PM2.5 Sampler	good/ >2
	Thermo 2025	PM2.5 Sampler Co-locate	good/ >2
	Teledyne T640X	PM2.5, PM10, PMcoarse	good/new
	Met-One SASS	Speciated PM2.5 Sampler	good/ >2
	URG 3000N	Speciated PM2.5 Sampler	good/ >6
	Environics Zero Air Supply	7000 H	good/ >2
	Perkin Elmer Autosystem XL GC	Gas Chromatograph	good/ >9
	Perkin Elmer Turbomatrix TD	Thermal Desorber	good/ >3
	Perkin Elmer Nelson Interface	NCI 900 Interface	good/ >9
	Parker Balston TOC	Zero Air Gas Generator	good/ >9
	Parker Balston TOC	Zero Air Gas Generator	good/ >9
	Perkin Elmer Clarus 500	Gas Chromatograph	good/ >3
	Perkin Elmer Turbomatrix TD 300	Thermal Desorber	good/ >2
	ATEC Carbonyl Sampler	Model 8000	good/ >2
	ATEC Carbonyl Sampler	Model 8000	good/ >2

SITE NAME	EQUIPMENT NAME	EQUIPMENT DESCRIPTION	COND./ AGE
Decatur - South DeKalb cont'd	Shawnee Instruments	PM10 Sampler	good/ >6
	Shawnee Instruments	PM10 Sampler Co-locate	good/ >6
	PUF	Semi-VOCs Sampler	good/ >5
	PUF	Semi-VOCs Sampler Co-locate	good/ >5
	ATEC 2200	VOCs Sampler	good/ >6
	ATEC 2200	VOCs Sampler Co-locate	good/ >6
	RM Young Wind Instrument	05305vm	good/ >3
	RM Young Temp/Relative Humidity	41375VC	good/ >3
	Nova Lynx	Tipping Bucket	good/ >3
	RM Young BP Sensor	Barometric Pressure	good/ >3
Decatur - DMRC	TAPI T200UP	NOx	good/ >2
	Xonteck 911	VOC Sampler	good/ >6
	Environics Calibrator	6103	good/ >2
	Thermo MAAP 5012 BC	Black Carbon	good/ >1
Douglasville - W. Strickland Street	Thermo O3 Analyzer	49i	good/ >6
	Thermo O3 Calibrator	49i-PS	good/ >6
	RM Young Wind Instrument	05305VM	good/ >2
	Environics Zero Air Supply	7000	good/ >2
	ESC DAS	Datalogger 8832	good/ >3
Atlanta - Fire Station #8	Met-One	PM2.5 Sampler	good/ >2
	Tisch PM10 Sampler	PM10 Sampler	good/new
	Tisch PM10 Sampler	PM10 Sampler Co-locate	good/new
Atlanta - Confederate Avenue	ESC DAS	Datalogger 8832	good/ >3
	Thermo O3 Analyzer	49i	good/ >4
	Thermo O3 Calibrator	49i-PS	good/ >3
	Thermo SO2 Analyzer	43i	good/ >3
	Thermo SO2 Calibrator	146i	good/ >1
	R&P PM2.5 Sampler	TEOM 1400 AB Series Continuous	good/ >6
	Environics Zero Air Supply	7000	good/ >2
	RM Young Wind Instrument	05305vm	good/ >3
Atlanta- GA Tech Near-road	ESC DAS	Datalogger 8832	good/ >3
	Thermo NO2 Analyzer	42i	good/ >2
	Thermo CO Analyzer	48i	good/ >6
	Thermo 2025	PM2.5 Sampler	good/ >2
	Nephelometer	PM2.5 Sampler	good/new
	Environics Zero Air Supply	7000	good/ >2
	Environics Calibrator	6103	good/ >2
Lawrenceville - Gwinnett Tech.	ESC DAS	Datalogger 8832	good/ >3
	Thermo O3 Analyzer	49C	good/ >6
	Thermo O3 Calibrator	49C-PS	good/ >6
	Environics Zero Air Supply	7000	good/ >2
	Thermo 2025	PM2.5 Sampler	good/ >6
	Teledyne T640	Continuous PM2.5 Sampler	good/new
McDonough - County Extension	ESC DAS	Datalogger 8832	good/ >4
	Thermo O3 Analyzer	49i	good/ >6
	Thermo O3 Calibrator	49i-PS	good/ >6
	Environics Zero Air Supply	7000	good/ >2
	R&P PM2.5 Sampler	TEOM 1400 A Series Continuous	good/ >6
Conyers - Monastery	ESC DAS	Datalogger 8832	good/ >4
	Thermo O3 Analyzer	49i	good/ >6
	Thermo O3 Calibrator	49iPS	good/ >6
	Environics Zero Air Supply	7000	good/ >2
	RM Young Wind Instrument	05305vm	good/ >2
	PSP	Solar Radiation Instrument	good/ >6

SITE NAME	EQUIPMENT NAME	EQUIPMENT DESCRIPTION	COND./ AGE
Conyers - Monastery cont'd	TUVR	Ultraviolet Radiation Instrument	good/ >6
	Nova Lynx	Tipping Bucket	good/ >3
	RM Young Temp/Relative Humidity	41375VC	good/ >3
	RM Young BP Sensor	Barometric Pressure	good/ >3
Chattanooga Tennessee-Georgia MSA			
Rossville - Maple Street	ESC DAS	Datalogger 8832	good/ >4
	Thermo 2025	PM2.5 Sampler	good/ >3
	Met-One SASS	Speciated PM2.5 Sampler	good/ <3
	URG 3000N	Speciated PM2.5 Sampler	good/ <3
	Met-One BAM Monitor	1020 Continuous PM2.5 Sampler	good/ <3
Sites Not in an MSA			
Summerville - DNR Fish Hatchery	ESC DAS	Datalogger 8832	good/ >4
	Thermo O3 Analyzer	49i	good/ >6
	Thermo O3 Calibrator	49i-PS	good/ >6
	Environics Zero Air Supply	7000	good/ >2
Douglas - General Coffee SP	Met-One SASS	Speciated PM2.5 Sampler	good/ >2
	URG 3000N	Speciated PM2.5 Sampler	good/ >6
	Thermo 2025	PM2.5 Sampler	good/ >9
	Graseby HIVOL Sampler (metals)	2000H	good/ >9
	AVOCS	VOC Sampler	good/ >5
Leslie - Union High School	ESC DAS	Datalogger 8832	good/ >4
	Thermo O3 Analyzer	49i	good/ >9
	Thermo O3 Calibrator	49i-PS	good/ >9
	Environics Zero Air Supply	7000	good/ >2
Sandersville - Health Department	Thermo 2025	PM2.5 Sampler	good/ >6
Georgia EPD Air Branch			
Quality Assurance Unit	TriCal (1)	Flow Standard	good/ >4
	General Metal Works	Hi-Volume Orifice	good/ >4
	Graseby GMW	PUF Orifice	good/ >4
	DC-Lite DCL-H	Flow Standard	good/ >4
	DC-Lite DCL-L	Flow Standard	good/ >4
	DC-2	DryCal Flow Standard Base	good/ >4
	DC-HC-1	DryCal High Flow Cell	good/ >4
	DC--LC-1	DryCal Low Flow Cell	good/ >4
	DC-MC-1	DryCal Medium Flow Cell	good/ >4
	DeltaCal (3)	Flow Standard	good/ >4
	Gilibrator Flow Cell (6)	Flow Standard	good/ >4
	VRC	Variable HiVol orifice	good/ >4
	Thermo 146I (2)	Multi-gas Calibrator	good/ >4
	Thermo 49PS (2)	Ozone Standard	good/ >4
Meteorology Unit Workshop	Sonic Anemometer (16)	81000	Varies
	Sonic Anemometer (7)	85000	Varies
	PSP (9)	Solar Radiation Instrument	Varies
	TUVR (13)	Ultraviolet Radiation Instrument	Varies
	RM Young Wind Instrument (2)	05305VM	good/ >6
	Nova Lynx	Tipping Bucket	good/ >6
	RM Young Temp/Relative Humidity	41375VC	good/ >2
	RM Young BP Sensor	Barometric Pressure	good/ >6
Warehouse/Storage	AGILAIRE (14)	8832 Data System Controller Data Logger	Varies
	ESC (1)	8816 Data Logger	good/ >9
	THERMO (13)	49i O3 Analzer	Varies
	THERMO (7)	49i Calibrator	Varies
	THERMO (5)	49c O3 Analyzer	Varies

SITE NAME	EQUIPMENT NAME	EQUIPMENT DESCRIPTION	COND./ AGE
Warehouse/Storage (cont'd)	THERMO (5)	49c O3 Calibrator	Varies
	THERMO (5)	48c CO Analyzer	Varies
	THERMO (5)	43i SO2 Analyzer	Varies
	THERMO (5)	146c Gas Calibrator	Varies
	THERMO (6)	42i NO, NO2, NOX Analyzer	Varies
	THERMO (8)	43c SO2 Analyzer	Varies
	THERMO (9)	146i Gas Calibrator	Varies
	THERMO (1)	42iy NO Diff NOY	good/ >6
	THERMO (8)	42c NO, NO2, Nox Anlayzer	Varies
	THERMO (5)	48i CO Analyzer	good/ >9
	ENVIRONICS (6)	Zero Air Generator Model 7000	good/ >2
	ENVIRONICS (2)	Series 9100 Cal System	good/ >2
	TELEDYNE (2)	Zero Air Generator Model 701	Varies
	MET ONE (2)	SASS Sampler Tripod	good/ >6
	MET ONE (7)	SASS Sampler	good/ >5
	ENVIRONICS (4)	6103 Calibrator	good/ >2
	MET ONE (10)	BAM 1020	Varies
	THERMO, TEOM (2)	Control Unit	Varies
	SABIO (2)	Model 1001 Zero Air System	good/ >3
	THERMO (7)	2025 2.5 Sampler	Varies
	THERMO (6)	2025i 2.5 Sampler	good/ >3
	MET ONE (4)	URG	good/ >3
	R&P PM2.5 Sampler	TEOM 1400 AB Series Continuous	good/ >6
	Graseby PUF Sampler	BMPS1-11	good/ >11
	General Metal Hi-Volume (3)	HIVOL Sampler 2000H	good/ >11
	ATEC VOCs Sampler	2200 - 1PX	good/ >6
	ATEC Carbonyl Sampler	100	good/ >6

Appendix C:
Pollutant Description, Analysis Method, and Quality Assurance Schedule

Georgia Department of Natural Resources
Environmental Protection Division

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 (SOP). Field personnel visit sampling sites, replace sample media, and check the operation and calibration of monitors per the SOP.

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 to EPA.

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 monitoring data.

1.0 Particulate Matter

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 monitored: PM_{10}, $PM_{2.5}$, and PMcoarse (10-2.5). PM_{10} is particulate matter with an aerodynamic diameter less than or equal to 10 micrometers (µm). $PM_{2.5}$ are 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. $PM_{2.5}$ is also referred to as "fine" particles. $PM_{10-2.5}$ is called PMcoarse. The PMcoarse 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 are formed 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

GA EPD conducts PM_{10} monitoring on an integrated basis at two sites in Georgia. GA 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 to 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 GA EPD's Quality Assurance Unit on a semi-annual basis.

b. Particulate Matter (PM_{10}) Continuous

GA EPD conducts PM_{10} monitoring on a continuous basis at one site in Georgia. GA 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 turned off while the tape transport operates, and the 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 GA EPD's Quality Assurance Unit on a semi-annual basis.

c. Fine Particulate Matter ($PM_{2.5}$) Integrated

GA EPD conducts $PM_{2.5}$ monitoring on an integrated basis at twenty-four sites in Georgia. At sites where $PM_{2.5}$ 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 $PM_{2.5}$ 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 $PM_{2.5}$ 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 FRM, 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 of this document and in Table 1 below. On a semi-annual basis, GA EPD's Quality Assurance Unit audits these $PM_{2.5}$ samplers.

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

GA EPD monitors for $PM_{2.5}$ on a continuous basis at seventeen sites in Georgia. At six sites, the beta attenuation method (BAM-1020) is used. The MetOne BAM-1020 is 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 turned off while the tape transport operates, and the 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" (VSCC), these samplers will be used for making attainment decisions relative to the NAAQS.

For two sites, GA EPD utilizes a VSCC on the BAM-1020, and the $PM_{2.5}$ data collected with these two samplers is comparable to the NAQQS. The BAM-1020 was set up as an FEM with the VSCC at the South DeKalb site (13-089-0002) as of January 1, 2011, and at the Albany-Turner Elementary site (13-095-0007) on January 1, 2013. These $PM_{2.5}$ samplers are used as collocated quality assurance monitors at these two sites. For the remaining four BAM samplers, GA EPD has not configured the monitors as FEMs, and the samplers are used for the Air Quality Index (AQI) and informational purposes.

At the other locations where GA EPD samples $PM_{2.5}$ on a continuous basis, GA EPD uses the Thermo Scientific 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. The sampling method for the TEOM type of continuous $PM_{2.5}$ monitor was approved as Federal Equivalent Method (FEM) in Notices of the Federal Register/Vol.74; page 28696 dated June 17, 2009 when used with a "Filter Dynamics Measurement System (FDMS)". The FDMS component estimates and adjusts for the volatile component of the mass. Currently, the TEOMs in the ambient air monitoring network are not configured to sample as FEMs. Therefore, data collected from the TEOM samplers cannot be used for making attainment decisions relative to the NAAQS.

Both types of continuous samplers are used to support development of air quality models and forecasts, including the 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 GA EPD's Quality Assurance Unit on a semi-annual basis.

GA EPD is in the process of assessing the Teledyne T640 in the continuous $PM_{2.5}$ network, and is evaluating suitable locations at this time. This sampler has been approved as an FEM (81 FR 45285), and GA EPD is investigating its use as an FEM sampler in the network based on the correlation of data with the FRM samplers. The T640 uses an optical aerosol spectrometer that converts optical measurements to mass measurements using 90° white-light scattering with polychromatic LED. The T640 is self-contained and includes an internal 5-lpm vacuum pump, aerosol sample conditioner, and sample flow controller. The T640x option can be used to measure PM_{10} and PM_{coarse}. With the use of the T640 and T640x, the PM data could be compared to the NAAQS for attainment purposes.

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 1. GA EPD's Quality Assurance Unit subjects these samplers to audits on a semi-annual basis.

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

As part of the NCore requirements (discussed in Section 4.1), the South DeKalb site began PMcoarse sampling as of January 1, 2011. GA EPD uses the "Met One Instruments BAM-1020 $PM_{10\text{-}2.5}$ Measurement System Automated Equivalent Method: EQPM-0709-185 consisting of 2 BAM-1020 monitors, the first of which (PM2.5 measurement) is configured as a PM2.5 FEM (EQPM-0308-170). The second BAM-1020 monitor (PM10 measurement) is configurable as a PM2.5 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 PM2.5

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 PM10-2.5 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 1, and the attached Appendix A. The $PM_{2.5}$ samplers highlighted in yellow are the $PM_{2.5}$ samplers that are used for comparison to the NAAQS for attainment purposes.

Site ID	Common Name	City	County	Integrated	Continuous	Speciation
Rome MSA						
131150003	Coosa Elementary	Rome	Floyd		$PM_{2.5}$	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)	$PM_{2.5}$	
Warner Robins MSA						
131530001	Robins Air Base	Warner Robins	Houston	$PM_{2.5}$ (3 Day)	$PM_{2.5}$	
Albany MSA						
130950007	Turner Elem.	Albany	Dougherty	2 $PM_{2.5}$ (3 Day, 12 Day)	FEM $PM_{2.5}$	
Gainesville MSA						
131390003	Fair Street School	Gainesville	Hall	$PM_{2.5}$ (3 Day)	$PM_{2.5}$	
Athens-Clarke County MSA						
130590002	College Station Rd.	Athens	Clarke	$PM_{2.5}$ (3 Day)	$PM_{2.5}$	
Macon						
130210007	Allied Chemical	Macon	Bibb	2 $PM_{2.5}$ (3 Day, 12 Day)		6 Day
130210012	Forestry	Macon	Bibb	$PM_{2.5}$ (3 Day)	$PM_{2.5}$	
Columbus Georgia- Alabama MSA						
132150001	Health Dept.	Columbus	Muscogee	$PM_{2.5}$ (3 Day)		
132150008	Airport	Columbus	Muscogee	$PM_{2.5}$ (3 Day)	$PM_{2.5}$	
132150011	Cusseta Elementary	Columbus	Muscogee	$PM_{2.5}$ (3 Day)		6 Day
Savannah MSA						
130510091	Mercer Middle	Savannah	Chatham	$PM_{2.5}$ (3 Day)		
130511002	W. Lathrop & Augusta Ave.	Savannah	Chatham		$PM_{2.5}$	
Augusta Georgia-South Carolina MSA						
132450091	Bungalow Rd.	Augusta	Richmond	$PM_{2.5}$ (3 Day)	$PM_{2.5}$	6 Day
Atlanta MSA						
130630091	Georgia DOT	Forest Park	Clayton	$PM_{2.5}$ (3 Day)		
130670003	National Guard	Kennesaw	Cobb	$PM_{2.5}$ (3 Day)		
130770002	Univ. of West GA	Newnan	Coweta		$PM_{2.5}$	
130890002	South DeKalb	Decatur	DeKalb	2 $PM_{2.5}$ (3 Day, 12 Day)	FEM $PM_{2.5}$	3 Day

131210039	Fire Station #8	Atlanta	Fulton	$PM_{2.5}$ (3 Day)		
131210055	Confederate Ave.	Atlanta	Fulton		$PM_{2.5}$	
131210056	Georgia Tech	Atlanta	Fulton	$PM_{2.5}$ (3 Day)		
131350002	Gwinnett Tech	Lawrenceville	Gwinnett	$PM_{2.5}$ (3 Day)	$PM_{2.5}$	
131510002	County Extension	McDonough	Henry		$PM_{2.5}$	
Chattanooga Tennessee-Georgia MSA						
132950002	Maple Street	Rossville	Walker	$PM_{2.5}$ (3 Day)	$PM_{2.5}$	6 Day
Not In An MSA						
130690002	General Coffee State Park	Douglas	Coffee	$PM_{2.5}$ (3 Day)		6 Day
133030001	Co. Health Dept.	Sandersville	Washington	$PM_{2.5}$ (3 Day)		

Highlighted samplers used for comparison to NAAQS

Table 1: $PM_{2.5}$ Sampling Frequency

2.0 Carbon Monoxide (CO)

Carbon monoxide (CO) is a colorless and poisonous gas produced by incomplete burning of fossil fuels used in vehicles, space heating, and industrial processes. Boilers and other fuel burning heating systems are also significant sources.

Breathing elevated levels of 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/m^3) 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 nitrogen (N_2). 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 N_2 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 GA EPD's Quality Assurance Unit twice a year.

3.0 Ozone (O_3)

Ozone (O_3) is a clear gas that forms in the troposphere (lower atmosphere) by chemical reactions involving hydrocarbons (also called volatile organic compounds) and oxides of nitrogen in the presence of sunlight. Even low concentrations of tropospheric ozone, also called ground level ozone are harmful to people, animals, vegetation and materials.

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 generally higher during the daytime, when temperatures are moderate or hot, and during seasons when conditions are dry and 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 may experience breathing difficulty when exposed to short-term concentrations at higher levels of ozone. 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 monitors is used to determine compliance with the NAAQS for ozone.

As required by Table D-3 of 40 CFR Part 58, Appendix D (4.1)(c)(3)(i), GA EPD 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, as required by 40 CFR Part 58. During the monitoring season, analyzers are subjected to weekly ZPS checks and quarterly multipoint calibrations. GA EPD's Quality Assurance Unit audits these samplers on an annual basis.

EPA established a Clean Air Status and Trends Network (CASTNET) monitoring site in Georgia in 1988. The CASTNET site is part of a national air quality monitoring network put in place to assess long-term trends in atmospheric deposition and ecological effects of air pollutants. The CASTNET site is one of 85 regional sites across rural areas of the United States and Canada measuring nitrogen, sulfur, and ozone concentrations, and deposition of sulfur and nitrogen. Like the South DeKalb ozone monitor, the CASTNET ozone monitor also collects data year-round. Since 2011, the CASTNET ozone monitor has met requirements for quality assurance and completeness criteria and can be used for comparison to the NAAQS [40 CFR 58, (1.1)(b)].

4.0 Sulfur Dioxide (SO_2)

Sulfur dioxide (SO_2) 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 SO_2 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 SO_2 exposure. Commercially important plants sensitive to SO_2 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 reference method instruments as defined in 40 CFR Part 53. 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 SO_2 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 (A) 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 GA EPD's Quality Assurance Unit on an annual basis.

5.0 Nitrogen Oxides (NOx)

Several gaseous oxides of nitrogen (NO_x) 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 immediately reacts with oxygen 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 higher NO_2 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 significant local NO_2 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 (O_3) react to produce a characteristic luminescence with intensity linearly proportional to the NO concentration. Infrared light emission results when electronically excited NO_2 molecules decay to lower energy states. NO_2 must first be converted to NO before it can be measured using the chemiluminescent reaction. NO_2 is converted to NO by a molybdenum NO_2-to-NO converter heated to about 325^{o}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 NO_2-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 NO_2 molecules. A photomultiplier tube housed in a thermoelectric cooler detects the NO_2 luminescence. The NO and NO_2 concentrations calculated in the NO and NO_x modes are stored in memory, and the difference between the concentrations are used to calculate the NO_2 concentration. The sampler outputs NO, NO_2, 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, NO_2, and NO_x. NO_y analyzers measure NO and NO_y, but cannot measure NO_2. 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 NO_2 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 GA EPD's Quality Assurance Unit on an annual basis.

6.0 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, SO_2, NO_2 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, GA 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 PM_{10} 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. GA EPD's Quality Assurance Unit audits these lead samplers on an annual basis.

7.0 Metals

A sub-group of the Air Toxics Network includes the metals group, which encompass compounds such as cadmium, mercury, chromium and lead. The Air Toxics pollutants, also known as Hazardous Air Pollutants (HAPs), are those pollutants that are known or suspected to cause cancer or other serious health effects, such as damage to the immune system, reproductive effects or birth defects, developmental or neurological problems, or adverse environmental effects. 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. 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.

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 high-volume sampler used for sampling metals as part of the Air Toxics Network is a timed sampler. The sampler is calibrated to collect 1000 to 2000 liters (L) 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 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 PM_{10} sampler used for sampling toxic metal particles less than or equal to 10 microns in diameter as part of the NATTS network is a timed sampler. Collecting 1020 to 1240 liters (L) 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.

8.0 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 and react with NO_2 in sunlight to form ground level ozone. Some VOCs are also hazardous air pollutants, which can cause serious health effects. 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 a significant source of VOCs. VOCs include chemicals such as benzene, toluene, methylene chloride and methyl chloroform. Some VOCs are naturally occurring. VOCs such as pinenes and terpenes emitted from pine trees are a significant source of VOCs in the southeastern United States.

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 GA 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/flame 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 GA 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 GA EPD's Quality Assurance Unit on an annual basis.

9.0 Carbonyls

Carbonyl compounds are a subset of VOCs, and 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 site, during June, July, and August, three 8-hour 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 GA 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 GA EPD's Quality Assurance Unit annually.

10.0 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. PAHs can occur in air attached to dust particles, and some can evaporate into the air from soil or surface waters. PAHs can stick tightly to particles and seep through soil to contaminate groundwater. They do not dissolve easily in water and can stick to solid particles and settle to the bottoms of lakes and rivers. Many PAHs are known or suspected carcinogens. The PUF (polyurethane foam) sampler used for sampling 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 the GA EPD laboratory and analyzed using gas chromatography with an electron capture detector (ECD). The semi-VOCs samplers are subjected to quarterly checks and audited by GA EPD's Quality Assurance Unit annually.

11.0 Black Carbon

Black carbon is a particulate aerosol formed from the incomplete combustion of fossil fuels, biomass, and biofuels. Diesel engines are a large contributor of black carbon. Sampling for black carbon provides an estimate of the anthropogenic portion of carbon sources in ambient air pollution. For continuous sampling of black carbon, GA EPD currently uses a Multiangle Absorption Photometer (MAAP) at the DMRC Near-Road (13-089-0003) and Georgia Tech Near-Road (13-121-0056) sites. Operating at 60 Watts/110V AC, these instruments use 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 GA EPD's Quality Assurance Unit every six months.

12.0 Meteorological Parameters

GA EPD has fifteen meteorological stations across the state. Surface meteorological measurements, including wind speed and wind direction, are measured at each location. In addition, as part of the Photochemical Assessment Monitoring Site (PAMS) in the metropolitan Atlanta area, a complete suite of meteorological instrumentation is used to characterize meteorological conditions. The PAMS station measures hourly-averaged vector 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 total hourly 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 GA EPD's Quality Assurance Unit on an annual basis. For upper air measurement, GA EPD uses a Vaisala BL-VIEW Ceilometer in conjunction with balloon rawinsonde data collected from NWS at Peachtree City. This upper air system is useful for monitoring the mixing height and low-level winds during smoke transport events.

Appendix D:
List of Closed Ambient Monitors
(in order of shut down date)

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/NOx/NOy/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
131130001	Fayetteville-GA DOT	Ozone, Wind Speed, Wind Direction	10/31/08	2013
131270006	Brunswick-Risley Middle	Total Reduced Sulfur	10/31/08	2013
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, NOx	4/30/09	2011
130150003	Cartersville	Wind Speed, Wind Dir	12/31/11	2011
130730001	Evans –Riverside Park	NO_y	7/28/2008	2012
130210013	Macon-Lake Tobesofkee	NO_y, O_3	10/31/2008	2012
131270006	Brunswick-Risley Middle	SO_2	12/31/12	2012
132150008	Columbus -Airport	SO_2	12/31/12	2012
130510017	Savannah-Market St.	$PM_{2.5}$	12/31/12	2012
132450005	Augusta-Medical College	$PM_{2.5}$	12/31/12	2012
131210032	Atlanta-E. Rivers School	$PM_{2.5}$, PM_{10}	12/31/12	2012
130892001	Doraville Health Center	$PM_{2.5}$	12/31/12	2012
130670004	Powder Springs-Macland Aquatic Ctr.	$PM_{2.5}$	12/31/12	2012
130210007	Macon-Allied Chemical	PM_{10}	12/31/12	2012
130510014	Savannah-Shuman Middle	PM_{10}	12/31/12	2012
130550001	Summerville-Fish Hatchery	PM_{10}	12/31/12	2012
130892001	Doraville Health Center	PM_{10}	12/31/12	2012
130950007	Albany-Turner Elementary	PM_{10}	12/31/12	2012
131150003	Rome-Coosa Elementary	PM_{10}	12/31/12	2012
131210048	Atlanta-Georgia Tech	PM_{10}	12/31/12	2012
131270004	Brunswick-Arco Pump	PM_{10}	12/31/12	2012

	Station			
132150011	Columbus-Cusseta Road	PM_{10}	12/31/12	2012
133030001	Sandersville-Health Dept	PM_{10}	12/31/12	2012
130893001	Tucker-Idlewood Road	Wind Speed, Wind Direction, Temp, RH, Solar Radiation, UV Radiation, BP, Precip	5/31/13	2013
130890002	Decatur-South DeKalb	Hexavalent chromium	7/15/13	2013
132470001	Conyers-Monastery	Continuous Gas Chromatograph	8/31/13	2013
130150003	Cartersville	Lead	2/22/14	2013
131210099	Roswell Road	CO	3/5/14	2013
130590002	Athens	$PM_{2.5}$ Speciation	1/24/15	2014
132230003	Yorkville	Continuous Gas Chromatograph	8/31/15	2015
132230003	Yorkville	6-Day PAMs, $NO/NO_2/NOx$, CO	12/31/15	2015
130850001	Dawsonville	Air Toxics/Carbonyls	12/31/15	2015
132470001	Conyers-Monastery	6-Day PAMs, $NO/NO_2/NOx$	12/31/15	2015
130890003	DMRC	Lead	6/30/16	2016
130890002	South DeKalb	Black carbon	12/31/16	2016
133190001	Gordon	$PM_{2.5}$	12/31/16	2016
132230003	Yorkville	O_3	12/31/16	2016
132230003	Yorkville	$PM_{2.5}$, Continuous $PM_{2.5}$, VOCs, Semi-VOCs, Carbonyls, Metals, Wind Speed, Wind Direction, Temp, RH, Solar Radiation, UV Radiation, BP, Precip	1/31/17	2016

Appendix E:
Memorandum of Agreement

Georgia Department of Natural Resources
Environmental Protection Division

MEMORANDUM OF AGREEMENT

ON AIR QUALITY MONITORING FOR CRITERIA POLLUTANTS FOR

THE CHATTANOOGA-WALKER COUNTY

METROPOLITAN STATISTICAL AREA MSA

January 13, 2009

Participating Agencies:

Georgia
Georgia Department of Natural Resources (GA DNR)
Environmental Protection Division GA EPD APB

Tennessee
Chattanooga-Hamilton County Air Pollution Control Bureau

I. PURPOSE/OBJECTIVES/GOALS

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 (PM2.5), 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)[1].

II. BACKGROUND

The Chattanooga-Hamilton Co-Walker Co, GA MSA consists of the following counties: Dade, Walker, Catoosa, Hamilton, Marion, and Sequatchie. GA EPD APB has jurisdiction over Dade, Walker, and Catoosa Counties in Georgia and CHCAPCB has jurisdiction over Hamilton County, Tennessee. The State of Tennessee has jurisdiction over Marion and Sequatchie Counties in Tennessee, but does not have any permanent air monitoring sites in those counties. The CHCAPCB and GA EPD APB are required by the Clean Air Act to measure for certain criteria pollutants in the ambient air in the Chattanooga-Hamilton County-Walker Co, GA Metropolitan Statistical Area (MSA). The United States Environmental Protection Agency (EPA) has established minimum monitoring requirements based on the size of the MSA and the quality of the air in the

MSA for particles of an aerodynamic diameter of 10 micrometers and less (PM10), particles of an aerodynamic diameter of 2.5 micrometers and less (PM2.5), and ozone.

40 CFR 58 Appendix D, Section 2, (e)[1] states (in part):

"…The EPA recognizes that there may be situations where the EPA Regional Administrator and the affected State or local agencies may need to augment or to divide the overall MSA/CSA monitoring responsibilities and requirements among these various agencies to achieve an effective network design. Full monitoring requirements apply separately to each affected State or local agency in the absence of an agreement between the affected agencies and the EPA Regional Administrator."[1]

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

I. ROLES AND RESPONSIBILITIES

The parties agree to the following terms and conditions:

- CHCAPCB and GA EPD APB (the "affected agencies") commit to conducting appropriate monitoring in their respective jurisdictions of the MSA; as needed, to collectively meet EPA minimum monitoring requirements for the entire MSA for PM10, PM2.5, and ozone, as well as other criteria air pollutant monitoring deemed necessary to meet the needs of the MSA as determined reasonable by all affected agencies. The minimum air quality monitoring requirement (for PM10, PM2.5, and ozone described in 40 CFR 58) for the MSA shall apply to the MSA in its entirety and shall not apply to any sole affected agency within the MSA unless agreed upon by all affected agencies.

- The affected agencies commit to coordinating monitoring "…responsibilities and requirements…to achieve an effective network design…"[1] regarding criteria air pollutant monitoring conducted in the MSA and commit to communicate unexpected or unplanned changes in monitoring activities within their jurisdictions to the other affected agencies of this MOA. As conditions warrant, the affected agencies may conduct telephone conference calls, meetings, or other communications to discuss monitoring activities for the MSA. Each affected agency shall inform the other affected agencies via telephone or e-mail of any monitoring changes occurring in its jurisdiction of the MSA at its earliest convenience after learning of the need for the change or making the changes. Such unforeseen changes may include evictions from monitoring sites, destruction of monitoring sites due to natural disasters, or similar occurrences that result in a loss of more than 25% data in a quarter or a permanent change in the monitoring network. At least once a year in the second quarter of the year or before June 15th, each agency shall make available to the other agencies who are a party to this agreement, a copy of its proposed monitoring plan for the MSA for the next

year. The CHCAPCB will submit the network review that is submitted to the State of Tennessee for inclusion in the State's monitoring plan.

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

III. LIMITATIONS

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

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

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

V. PROPRIETARY INFORMATION AND INTELLECTUAL PROPERTY

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

VI. POINTS OF CONTACT

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

GA EPD APB
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FAX: (423)643-5972

VII. MODIFICATION/DURATION/TERMINATION

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

VIII. REFERENCE

1 – United States Environmental Protection Agency, Title 40 Code of Federal Regulations, Parts 53 and 58, Revisions to Ambient Air Monitoring Regulations; Final Rule. Part 58-[AMENDED]. 'Appendix D to part 58-Network Design Criteria for Ambient Air Quality Monitoring, Section 2(e)." Federal Register/Vol.71, No. 200/Tuesday, October 17, 2006, Rules and Regulations, Page 61317.

IX. APPROVALS

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

BY: James Capp

TITLE: Branch Chief

DATE: January 23, 2009

Chattanooga-Hamilton County Air Pollution Bureau (CHCAPCB)

BY: Robert H Lee

TITLE: Director

DATE: January 14, 2009

DHEC MOA#: 2017-429

MEMORANDUM OF AGREEMENT

ON AIR QUALITY MONITORING FOR CRITERIA POLLUTANTS FOR

THE AUGUSTA - RICHMOND COUNTY

METROPOLITAN STATISTICAL AREA (MSA)

January 2017

Participating Agencies:

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

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

I. PURPOSE/OBJECTIVES/GOALS

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

II. BACKGROUND

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

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

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

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

III. ROLES AND RESPONSIBILITIES

The parties agree to the following terms and conditions:

- SCDHEC, and GA EPD (the "affected agencies") commit to conducting appropriate monitoring in their respective jurisdictions of the MSA; as needed, to collectively meet EPA minimum monitoring requirements for the entire MSA for PM10, PM2.5, and ozone, as well as any other criteria air pollutant monitoring deemed necessary to meet the needs of the MSA as determined reasonable by all affected agencies. The minimum air quality monitoring requirements (for PM10, PM2.5, and ozone described in 40 CFR 58) for the MSA shall apply to the MSA in its entirety and shall not apply to any sole affected agency within the MSA unless agreed upon by all affected agencies.

- The affected agencies commit to coordinating monitoring "responsibilities and requirements…to achieve an effective network design" regarding criteria air pollutant monitoring conducted in the MSA and commit to communicate unexpected or unplanned changes in monitoring activities within their jurisdictions to the other affected agency. As conditions warrant, the affected agencies may conduct telephone conference calls, meetings, or other

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

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

IV. LIMITATIONS

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

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

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

V. PROPRIETARY INFORMATION AND INTELLECTUAL PROPERTY

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

VI. POINTS OF CONTACT

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

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

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

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

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

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

VII. MODIFICATION/DURATION/TERMINATION

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

VIII. REFERENCE

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

IX. APPROVALS

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

BY: Richard E. Dunn

TITLE: Director

DATE: 2/21/17

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

BY: Myra C. Reece

TITLE: Bureau Chief

DATE: 03/01/17

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

Francine Miller

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

5

Appendix F:
Comments

Georgia Department of Natural Resources
Environmental Protection Division

The following section includes a copy of the comments that were received during the public notice and comment period for the 2017 Ambient Air Monioring Plan. A copy of GA EPD's response to these comments is shown after the comments.

Comments from 'Sierra Club and Green Law comments on GA 2017 proposed ambient monitoring plan FINAL':

GreenLaw
Giving Georgia's Environment Its Day In Court

June 2, 2017

By email to DeAnna.Oser@dnr.ga.gov
DeAnna Oser, Program Manager
Ambient Monitoring Program
Air Protection Branch
Environmental Protection Division
Georgia Department of Natural Resources
4244 International Parkway, Suite 120
Atlanta, Georgia 30354

Re: Comments on the State of Georgia Proposed 2017 Ambient Air Monitoring Plan

Dear Ms. Oser,

In response to the public notice dated May 9, 2017, GreenLaw, on behalf of Sierra Club and its nearly 12,000 Georgia members, respectfully submits the following comments on the Georgia Ambient Air Monitoring Plan for 2017 ("Plan") as presented by the Air Protection Branch (APB) of the Environmental Protection Division (EPD) of the Department of Natural Resources (DNR).

We are concerned about EPD's continuing refusal to plan for future air monitoring requirements and air quality issues. Some of these issues have been highlighted by the Environmental Protection Agency (EPA), and others by EPD itself in its 2015 Five-Year Assessment of Georgia's air monitoring network. In order to protect the public health and welfare of all Georgians, EPD must consider maintaining monitoring stations above and beyond the federally mandated minimums, particularly with regards to sensitive or underserved populations, regional pollutant hotspots, and some of Georgia's rapidly growing urban areas that have yet to grow large enough to trigger mandatory federal monitoring requirements. We are concerned that Georgia's young, rural, elderly, impoverished, and minority residents may be subject to unmonitored exposure to harmful concentrations of criteria pollutants, including exceedances of the National Ambient Air Quality Standards (NAAQS).

1. Failure to Monitor Modelled Ozone Concentrations

Monitors for ozone (O3) are vital to maintaining an adequate air monitoring network and protecting public health in Georgia. Ozone forms when nitrogen oxides react with volatile organic compounds (VOCs) in the atmosphere.[1] The reaction is catalyzed by sunlight, meaning high ozone days occur most frequently during hot, stagnant summers.[2] Major sources of ozone

[1] *See* NASA, *Chemistry of Ozone Formation*, http://earthobservatory.nasa.gov/Features/ChemistrySunlight/chemistry_sunlight3.php (May 31, 2017, 9:11AM)
[2] *Id.*

State Bar of Georgia Building | 104 Marietta Street, Suite 430 | Atlanta, Georgia 30303 | 404-659-3122 | 404-522-5290 Fax | www.greenlaw.org

precursors include coal-fired power plants, large industrial facilities, motor vehicles, and gasoline vapors,[3] though rural areas are susceptible as well because ozone and ozone precursors can be transported long distances.[4]

Ozone exposure can lead to premature death and an array of respiratory problems, including coughing, sore throats, damage to the lungs, and aggravation of asthma, emphysema, and chronic bronchitis.[5] There is no evidence that there is a safe level of ozone exposure, and exposure even below the NAAQS can cause negative health effects.[6] EPA has repeatedly lowered the ozone NAAQS in recent years, lowering it to 80 parts per billion ("ppb") in 1997, to 75ppb in 2008, and most recently to 70ppb in 2015.

On September 23, 2016, EPD recommended that eight counties in the Atlanta-Athens-Clarke County-Sandy Springs, GA Combined Statistical Area (CSA) be designated nonattainment under the 2015 ozone NAAQS, with five monitors measuring exceedances of the 70ppb standard.[7] While EPD recommended that the rest of the state be designated as attainment/unclassifiable, every other monitor in Georgia recorded values during the 2013-2015 and 2014-2016 periods of at least 80% of the 2015 ozone NAAQS.[8] Not included in EPD's designation recommendations for the 2015 ozone NAAQS was data from some areas in the state modeled as having the highest ozone densities, in parts of Savannah and northern Macon.[9] Residents of these areas may be unwittingly subject to ozone NAAQS exceedances and their attendant health effects.

a. Savannah MSA

Savannah, a city of 379,199 people, is currently served by a single O3 monitoring station at the E. President Street monitoring site.[10] If that monitor reports a value equal to or greater than 85% of the 70ppb ozone NAAQS, EPD will be required to construct a second O3 monitor in the Savannah MSA.[11] During the 2013-2015 and 2014-2016 periods, the E. President Street monitor reported a value of 58ppb, just one ppb short of the 85% threshold.[12] Based on the 2013-2015 period, last year's EPA approval letter of EPD's 2016 Ambient Air Monitoring Plan strongly suggested that EPD build a second O_3 monitoring facility in Savannah due to its proximity to the 85% threshold.[13] The Savannah MSA remained just as close to the 85% threshold once again

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[3] *Id.*
[4] *Id.*
[5] *See generally* EPA, *Health Effects of Ozone Pollution*, https://www.epa.gov/ozone-pollution/health-effects-ozone-pollution (May 30, 2017, 3:50PM).
[6] *See Am. Trucking Associations, Inc. v. EPA*, 283 F.3d 355, 360 (D.C. Cir. 2002)
[7] Memorandum from Richard E. Dunn, Director, Ga. Environmental Protection Division to Heather McTeer Toney, Regional Administrator, EPA Region Four (September 23, 2016) (on file with www.epa.gov)
[8] *Id.* at Attachments 5 (2016)
[9] Letter from Jeaneanne M. Gettle, Acting Director, Air, Pesticides, and Toxics Management Division of EPA Region Four, to Karen Hays, Chief, Air Protection Branch of the Ga. Environmental Protection Division (October 18, 2016) (on file with www.epa.gov) at 4; FIVE-YEAR ASSESSMENT at 190—191
[10] *See* Letter from Jeaneanne Gettle to Karen Hays, *supra* note 9 at 4; 2017 PLAN at 53—55
[11] *See* Letter from Jeaneanne Gettle to Karen Hays, *supra* note 9, at 4
[12] *See* Memorandum from Richard Dunn to Heather Toney, *supra* note 7, at Attachments 5
[13] *See* Letter from Jeaneanne Gettle to Karen Hays, *supra* note 9, at 4

during the 2014-2016 period, and yet in the 2017 Plan EPD only proposes to add an ozone monitor "when initiated by EPA."[14] Making matters more pressing, the Savannah MSA is home to a substantial population over the age of 65, with Chatham county home to a census tract with the second-highest density of individuals over the age of 65 in the state: 49%.[15] This demographic group is particularly susceptible to the adverse health effects of ozone at any concentration, let alone at concentrations approaching 85% of the NAAQS standard.[16]

The Savannah MSA's large population, its notable concentration of sensitive individuals, its habitual proximity to the 85% threshold, and Ozone's negative health impacts at any concentration lead us to strongly encourage EPD and EPA to work together to establish a second O3 monitor in the Savannah MSA. Not only is such an action likely to become federally required soon, but doing so would allow for a more nuanced understanding of the area's air quality which is particularly important for the welfare of the area's elderly population. We urge EPD and EPA to work together to find a suitable site for a second ozone monitor in the Savannah MSA.

b. Macon MSA

In EPD's 2015 Five-Year Assessment of Georgia's air monitoring program, the northern area of the Macon MSA was modelled as having 2018 ozone concentrations in the highest tier in the state.[17] At projected concentrations between 75.01 and 112.81, this region will be firmly in exceedance of the 2015 ozone NAAQS in 2018. EPD has not yet laid out plans to capture data at this hotspot, missing out on crucial context that could be used to better inform EPD's air quality designations and to better protect the population living within the hotspot. We recommend that EPD evaluate sites within the modelled hotspot for constructing an ozone monitor to capture data on the high ozone density.

2. Failure to Monitor Multiple Modelled Pollutant Hotspots in Hinesville MSA

EPD should consider adding monitors for criteria pollutants, particularly $PM_{2.5}$, to the rapidly growing Hinesville MSA. This area's population grew by 16% between the 2010 and 2013 censuses, eclipsing 80,000.[18] Census data also indicates that the Hinesville MSA has an above average concentration of young children.[19] At the same time, EPD has modeled record pollutant densities within the metropolitan area for $PM_{2.5}$,[20] PM_{10},[21] CO,[22] and VOCs[23] for 2018.

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[14] GA. DEPARTMENT OF NATURAL RESOURCES ENVTL. PROTECTION BRANCH, 2017 AMBIENT AIR MONITORING PLAN 55 (2017) [hereinafter 2017 PLAN]
[15] GA. DEPARTMENT OF NATURAL RESOURCES ENV'TL PROTECTION BRANCH, 2015 FIVE-YEAR NETWORK ASSESSMENT OF AMBIENT AIR MONITORING PROGRAM 117 (2015) [hereinafter FIVE-YEAR ASSESSMENT]
[16] *See generally* EPA, *Health Effects of Ozone Pollution*, https://www.epa.gov/ozone-pollution/health-effects-ozone-pollution (May 30, 2017, 4:32PM).
[17] FIVE-YEAR ASSESSMENT at 190—191 (2015)
[18] FIVE-YEAR ASSESSMENT at 318 (2015)
[19] *Id.* at 318 (2015)
[20] *Id.* at 182 (2015)
[21] *Id.* at 178 (2015)
[22] *Id.* at 188—189 (2015)
[23] *Id.* at 318 (2015)

June 2, 2017

Of particular concern is Hinesville's modeled 2018 24-hour $PM_{2.5}$ concentrations.[24] Fine particulate matter can cause health problems like heart attacks, asthma attacks, decreased lung function, and bronchitis.[25] Reduction in fine particle matter concentrations add months to people's lives.[26] Like ozone, there is no evidence of a safe level of exposure to fine particulate matter.[27] Exposure to fine particle concentrations as low as 10 micrograms per cubic meter, below the current federal standard, is associated with a 2% increase in premature deaths for exposures as brief as two days, and a 9% increases in the long term.[28] Hinesville's modelled 2018 8th highest daily average $PM_{2.5}$ concentration ranges between 35.0 and 57.2 micrograms per cubic meter. The low end of that range, 35.0, is three-and-a-half times that level and equal to the federal standard.[29]

Hinesville's modeled 2018 24-hour $PM_{2.5}$ concentrations are equal to or greater than the federal standards, and are certainly high enough to produce negative health effects in the population. Placing a $PM_{2.5}$ monitor in the Hinesville MSA would help keep citizens apprised of pollutant concentrations and health effects stemming from $PM_{2.5}$ exposure. Additionally, adding a $PM_{2.5}$ monitor to the Hinesville MSA would help address the southeastern portion of the state's inadequate $PM_{2.5}$ coverage that EPD identified as a potential flaw in Georgia's monitoring network in its Five-Year Assessment.[30] The Brunswick and Savannah $PM_{2.5}$ monitors currently cover a contiguous area of 23,542 miles,[31] an area roughly equivalent to half the State of Georgia.

Finally, now that Hinesville's population has surged past 50,000, the area is subject to the $PM_{2.5}$ minimum monitoring requirements for Metropolitan Statistical Areas.[32] EPD needs to consider changes in population over time to ensure that it is meeting its population-oriented requirements for monitoring ambient air.[33] Where the most recent 3-year design value for an area with a population between 50,000 and 500,000 is greater than or equal to 85% of any $PM_{2.5}$ standard, at least one $PM_{2.5}$ monitor is required.[34] Hinesville's population has entered that range in recent years, and while the region doesn't have three-year design values available, the single-year modeled exceedances of the 24-hour $PM_{2.5}$ standard for 2018 suggest that if EPD were to develop three-year design values for the area they would be equal to or greater than 85% of the federal standards for 24-hour $PM_{2.5}$ concentration. As EPD gathers or models more data for the area over time, a $PM_{2.5}$ monitor may become a minimum monitoring requirement. Additionally,

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[24] *Id.* at 182 (2015)
[25] *See generally* EPA, *Health and Environmental Effects of Particulate Matter (PM)*, https://www.epa.gov/pm-pollution/health-and-environmental-effects-particulate-matter-pm (May 30, 2017, 9:21PM)
[26] *See* C. Arden Pope III et al., *Fine-Particulate Air Pollution and Life Expectancy in the United States*, 360(4) NEW ENG. J. MED. 2009 376, 382—84 (2009)
[27] *See Am. Trucking Associations, Inc. v. EPA*, 283 F.3d 355, 360 (D.C. Cir. 2002)
[28] Liuhua Shi et al., *Low-Concentration PM2.5 and Mortality: Estimating Acute and Chronic Effects in a Population Based Study*, 124 ENVTL. HEALTH PERSP. 1 (2016)
[29] FIVE-YEAR ASSESSMENT at 179—184 (2015)
[30] *Id.* at 168—169 (2015)
[31] *Id.* at 168—169 (2015)
[32] 40CFR58 App. D Table D-5
[33] FIVE-YEAR ASSESSMENT at 100 (2015)
[34] 40CFR58 App. D Table D-5

it is EPD's responsibility to evaluate if proposed or existing sites support air quality characterization in areas with high populations of susceptible individuals such as Hinesville's large youth population.[35] We urge EPD to evaluate sites in the Hinesville area for establishing a monitoring site for fine particulate matter.

3. Closing the Yorkville Site

We urge EPD to reconsider its decision to eliminate—and not relocate—the Yorkville site's ozone and particulate matter monitors. The Yorkville site provided enormous value to the Atlanta area, which EPD recognized when it ranked the Yorkville site as one of Georgia's most valuable in its Five-Year Assessment due to the site's long monitoring history, numerous active monitors, and location in a fast-growing statistical area.[36] The Yorkville site's monitors have been useful in ensuring the health and welfare of the area's residents, and the site's $PM_{2.5}$ and ozone monitors have been particularly useful. EPD should consider either renewing the lease on the Yorkville site or relocating these monitors to an equivalent site in the area.

The Yorkville site's $PM_{2.5}$ monitor was useful in enabling EPD to provide the public with accurate air quality reports through the Air Quality Index (AQI) and helped position EPD to respond effectively to the area's consistently high $PM_{2.5}$ concentrations (a pollutant that is unsafe at any level of exposure).[37] Almost all the $PM_{2.5}$ monitors in the Atlanta-Marietta-Roswell MSA regularly record ambient $PM_{2.5}$ concentrations at or near 85% of the 24-hour $PM_{2.5}$ NAAQS threshold.[38] Given these high readings, the additional monitoring data provided by the Yorkville site provided a welcome layer of additional protection for affected communities.

Similarly, shutting down the Yorkville site's ozone monitors impairs the ability of EPD and EPA to protect public health in a Combined Statistical Area (CSA), which contained all five of Georgia's violating monitors under the 2015 Ozone NAAQS.[39] Even though Paulding County, where the Yorkville site was located, is not one of the eight counties designated nonattainment under the 2015 Ozone NAAQS, Yorkville's O_3 monitor recorded design values in the 2013-2015 and 2014-2016 periods in excess of 85% of the ozone NAAQS threshold.[40] Additionally, Paulding County borders both Bartow and Cobb counties, which are classified as nonattainment areas.[41] Considering the Yorkville site's location in a CSA, which contains all eight of Georgia's nonattainment counties, the Yorkville site's already-elevated readings, permanently closing Yorkville's O_3 monitoring station would affect EPD's ability to protect the population of the Atlanta area from the negative health effects of elevated ozone concentrations.

Given how frequently the Atlanta area violates or comes close to violating the PM2.5 and ozone NAAQS, the additional monitoring provided by the Yorkville site served an important role

[35] FIVE-YEAR ASSESSMENT at 100, 318 (2015)
[36] FIVE-YEAR ASSESSMENT at 318 (2015)
[37] *See* Shi et al., *supra* note 29
[38] FIVE-YEAR ASSESSMENT at 60—61, 145 (2015)
[39] *See* Memorandum from Richard Dunn to Heather Toney, *supra* note 7
[40] *See* Memorandum from Richard Dunn to Heather Toney, *supra* note 7, at Attachments 5
[41] *See* Memorandum from Richard Dunn to Heather Toney, *supra* note 7, at Attachments 7

in ensuring the safety of the area's residents. EPD should not eliminate these important monitors, but should consider either renewing the Yorkville site's lease or relocating the monitors to an equivalent location nearby.

4. Black Carbon Discrepancy

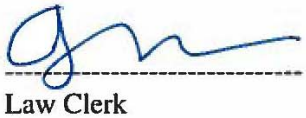
EPD claims that it operates three Black Carbon monitoring facilities in the state (two Multiangle Absorption Photometer samplers at the DMRC and Georgia Tech near-road sites and one aethalometer at the South DeKalb site).[42] However, in another section of the document, EPD explains that it has already shut down the South DeKalb site's Black Carbon monitor as of 12/31/16.[43] We recommend that EPD correct this discrepancy in its 2017 Ambient Air Monitoring Plan.

Conclusion

Together, ozone and particulate matter pollution contributes to over 200,000 premature deaths in the United States every year.[44] Limiting the number of monitoring stations in the State of Georgia to at best only the minimum number federally required is insufficient to protect the public health and welfare, particularly where sensitive or susceptible communities and less populated pollutant hot spots are involved. Additionally, considering that air quality regulations have only tightened over time and that Georgia is in the midst of an unprecedented population boom, we urge EPD to begin the process of creating robust ambient air monitoring networks in areas of the state where current population alone does not trigger federal monitoring requirements. Addressing these issues will improve air quality, public health, and public welfare for all Georgians, present and future.

Respectfully submitted,

s/Alec J. McCreadie



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[42] 2017 PLAN at 105 (2017)
[43] *Id.* at 108 (2017)
[44] See Steven R.H. Barrett et al., *Air Pollution and Early Deaths in the United States Part I: Quantifying the Impact of Major Sectors in 2005*, 79 ATMOSPHERIC ENVIRONMENT 198, 198 (2013) (modeling particulate matter and ozone emissions from combustion sectors and concluding that these pollutants result in approximately 200,000 premature deaths in the United States annually).

Comment:

1. Failure to Monitor Modelled Ozone Concentrations

Monitors for ozone (O3) are vital to maintaining an adequate air monitoring network and protecting public health in Georgia. Ozone forms when nitrogen oxides react with volatile organic compounds (VOCs) in the atmosphere.[1] The reaction is catalyzed by sunlight, meaning high ozone days occur most frequently during hot, stagnant summers.[2] Major sources of ozone precursors include coal-fired power plants, large industrial facilities, motor vehicles, and gasoline vapors,[3] though rural areas are susceptible as well because ozone and ozone precursors can be transported long distances.[4]

Ozone exposure can lead to premature death and an array of respiratory problems, including coughing, sore throats, damage to the lungs, and aggravation of asthma, emphysema, and chronic bronchitis.[5] There is no evidence that there is a safe level of ozone exposure, and exposure even below the NAAQS can cause negative health effects.[6] EPA has repeatedly lowered the ozone NAAQS in recent years, lowering it to 80 parts per billion ("ppb") in 1997, to 75ppb in 2008, and most recently to 70ppb in 2015.

On September 23, 2016, EPD recommended that eight counties in the Atlanta-Athens-Clarke County-Sandy Springs, GA Combined Statistical Area (CSA) be designated nonattainment under the 2015 ozone NAAQS, with five monitors measuring exceedances of the 70ppb standard.[7] While EPD recommended that the rest of the state be designated as attainment/unclassifiable, every other monitor in Georgia recorded values during the 2013-2015 and 2014-2016 periods of at least 80% of the 2015 ozone NAAQS.[8] Not included in EPD's designation recommendations for the 2015 ozone NAAQS was data from some areas in the state modeled as having the highest ozone densities, in parts of Savannah and northern Macon.[9] Residents of these areas may be unwittingly subject to ozone NAAQS exceedances and their attendant health effects.

a. Savannah MSA

Savannah, a city of 379,199 people, is currently served by a single O3 monitoring station at the E. President Street monitoring site.[10] If that monitor reports a value equal to or greater than 85% of the 70ppb ozone NAAQS, EPD will be required to construct a second O3 monitor in the Savannah MSA.[11] During the 2013-2015 and 2014-2016 periods, the E. President Street monitor reported a value of 58ppb, just one ppb short of the 85% threshold.[12] Based on the 2013-2015 period, last year's EPA approval letter of EPD's 2016 Ambient Air Monitoring Plan strongly suggested that EPD build a second O_3 monitoring facility in Savannah due to its proximity to the 85% threshold.[13] The Savannah MSA remained just as close to the 85% threshold once again

during the 2014-2016 period, and yet in the 2017 Plan EPD only proposes to add an ozone monitor "when initiated by EPA."[14] Making matters more pressing, the Savannah MSA is home to a substantial population over the age of 65, with Chatham county home to a census tract with the second-highest density of individuals over the age of 65 in the state: 49%.[15] This demographic group is particularly susceptible to the adverse health effects of ozone at any concentration, let alone at concentrations approaching 85% of the NAAQS standard.[16]

The Savannah MSA's large population, its notable concentration of sensitive individuals, its habitual proximity to the 85% threshold, and Ozone's negative health impacts at any concentration lead us to strongly encourage EPD and EPA to work together to establish a second O3 monitor in the Savannah MSA. Not only is such an action likely to become federally required soon, but doing so would allow for a more nuanced understanding of the area's air quality which is particularly important for the welfare of the area's elderly population. We urge EPD and EPA to work together to find a suitable site for a second ozone monitor in the Savannah MSA.

GA EPD Response:

The Savannah MSA includes portions of South Carolina, and GA EPD has had several discussions with EPA and the South Carolina Department of Health and Environmental Control regarding the possibility of additional ozone monitoring within the Savannah MSA. These discussions included modeling the best location for an additional monitor. According to the modeling analysis, the best placement for the ozone monitor appeared to be downwind of the city of Savannah, which would put the monitor on the South Carolina side of the Savannah MSA. It was determined that if the design value for the Savannah MSA went above 85% of the ozone NAAQS, the South Carolina Department of Health and Environmental Control would provide the second ozone monitor. However, the most current (2014-2016) ozone design value for the Savannah MSA is 0.057 ppm, and the design value for the Savannah MSA remains below 85% of the 2015 ozone NAAQS. Therefore, siting of a second ozone monitor in the Savannah MSA is not required at this time.

Comment:

b. Macon MSA

In EPD's 2015 Five-Year Assessment of Georgia's air monitoring program, the northern area of the Macon MSA was modelled as having 2018 ozone concentrations in the highest tier in the state.[17] At projected concentrations between 75.01 and 112.81, this region will be firmly in exceedance of the 2015 ozone NAAQS in 2018. EPD has not yet laid out plans to capture data at this hotspot, missing out on crucial context that could be used to better inform EPD's air quality designations and to better protect the population living within the hotspot. We recommend that EPD evaluate sites within the modelled hotspot for constructing an ozone monitor to capture data on the high ozone density.

GA EPD Response:

EPD meets the requirement for monitoring ozone in the Macon MSA, according to 40CFR58, Appendix D. The air quality in Georgia continues to improve, and the ozone design values for the Macon MSA have decreased signficantly since the 2007 base year used in the preparation of

the 2015 Five-Year Assessment[1]. The ozone design value for 2014-2016 for the Macon MSA was 0.065 ppm, compared to 0.081 ppm for 2005-2007 time period.

Comment:

2. Failure to Monitor Multiple Modelled Pollutant Hotspots in Hinesville MSA

EPD should consider adding monitors for criteria pollutants, particularly $PM_{2.5}$, to the rapidly growing Hinesville MSA. This area's population grew by 16% between the 2010 and 2013 censuses, eclipsing 80,000.[18] Census data also indicates that the Hinesville MSA has an above average concentration of young children.[19] At the same time, EPD has modeled record pollutant densities within the metropolitan area for $PM_{2.5}$,[20] PM_{10},[21] CO,[22] and VOCs[23] for 2018.

Of particular concern is Hinesville's modeled 2018 24-hour $PM_{2.5}$ concentrations.[24] Fine particulate matter can cause health problems like heart attacks, asthma attacks, decreased lung function, and bronchitis.[25] Reduction in fine particle matter concentrations add months to people's lives.[26] Like ozone, there is no evidence of a safe level of exposure to fine particulate matter.[27] Exposure to fine particle concentrations as low as 10 micrograms per cubic meter, below the current federal standard, is associated with a 2% increase in premature deaths for exposures as brief as two days, and a 9% increases in the long term.[28] Hinesville's modelled 2018 8th highest daily average $PM_{2.5}$ concentration ranges between 35.0 and 57.2 micrograms per cubic meter. The low end of that range, 35.0, is three-and-a-half times that level and equal to the federal standard.[29]

Hinesville's modeled 2018 24-hour $PM_{2.5}$ concentrations are equal to or greater than the federal standards, and are certainly high enough to produce negative health effects in the population. Placing a $PM_{2.5}$ monitor in the Hinesville MSA would help keep citizens apprised of pollutant concentrations and health effects stemming from $PM_{2.5}$ exposure. Additionally, adding a $PM_{2.5}$ monitor to the Hinesville MSA would help address the southeastern portion of the state's inadequate $PM_{2.5}$ coverage that EPD identified as a potential flaw in Georgia's monitoring network in its Five-Year Assessment.[30] The Brunswick and Savannah $PM_{2.5}$ monitors currently cover a contiguous area of 23,542 miles,[31] an area roughly equivalent to half the State of Georgia.

[1] The Southeastern Modeling, Analysis and Planning project (SEMAP) model used in development of the 2015 Five-Year Assessment used 2007 emissions data and 2007 meteorological data to predict the 2018 values.

Finally, now that Hinesville's population has surged past 50,000, the area is subject to the $PM_{2.5}$ minimum monitoring requirements for Metropolitan Statistical Areas.[32] EPD needs to consider changes in population over time to ensure that it is meeting its population-oriented requirements for monitoring ambient air.[33] Where the most recent 3-year design value for an area with a population between 50,000 and 500,000 is greater than or equal to 85% of any $PM_{2.5}$ standard, at least one $PM_{2.5}$ monitor is required.[34] Hinesville's population has entered that range in recent years, and while the region doesn't have three-year design values available, the single-year modeled exceedances of the 24-hour $PM_{2.5}$ standard for 2018 suggest that if EPD were to develop three-year design values for the area they would be equal to or greater than 85% of the federal standards for 24-hour $PM_{2.5}$ concentration. As EPD gathers or models more data for the area over time, a $PM_{2.5}$ monitor may become a minimum monitoring requirement. Additionally, it is EPD's responsibility to evaluate if proposed or existing sites support air quality characterization in areas with high populations of susceptible individuals such as Hinesville's large youth population.[35] We urge EPD to evaluate sites in the Hinesville area for establishing a monitoring site for fine particulate matter.

GA EPD Response:

EPD's current $PM_{2.5}$ monitoring network meets or exceeds the requirements of 40CFR58, Appendix D, and design values for $PM_{2.5}$ have dropped significantly statewide in the past decade. In producing the 2015 Five-Year Network Assessment, EPD performed a thorough evaluation of the network, and considered possible changes to the networks. EPD assessed health aspects, various monitoring coverage aspects, emissions data, etc. in an effort to eliminate redundancy and ensure proper ambient air monitoring coverage. EPD noted in the 2015 Five-Year Network Assessment that some modeling results suggest relocating an existing $PM_{2.5}$ ambient air monitor to the Hinesville MSA as an option. In light of this comment, EPD will continue to evaluate this option.

Comment:

3. Closing the Yorkville Site

We urge EPD to reconsider its decision to eliminate—and not relocate—the Yorkville site's ozone and particulate matter monitors. The Yorkville site provided enormous value to the Atlanta area, which EPD recognized when it ranked the Yorkville site as one of Georgia's most valuable in its Five-Year Assessment due to the site's long monitoring history, numerous active monitors, and location in a fast-growing statistical area.[36] The Yorkville site's monitors have been useful in ensuring the health and welfare of the area's residents, and the site's $PM_{2.5}$ and ozone monitors have been particularly useful. EPD should consider either renewing the lease on the Yorkville site or relocating these monitors to an equivalent site in the area.

The Yorkville site's $PM_{2.5}$ monitor was useful in enabling EPD to provide the public with accurate air quality reports through the Air Quality Index (AQI) and helped position EPD to respond effectively to the area's consistently high $PM_{2.5}$ concentrations (a pollutant that is unsafe at any level of exposure).[37] Almost all the $PM_{2.5}$ monitors in the Atlanta-Marietta-Roswell MSA regularly record ambient $PM_{2.5}$ concentrations at or near 85% of the 24-hour $PM_{2.5}$ NAAQS threshold.[38] Given these high readings, the additional monitoring data provided by the Yorkville site provided a welcome layer of additional protection for affected communities.

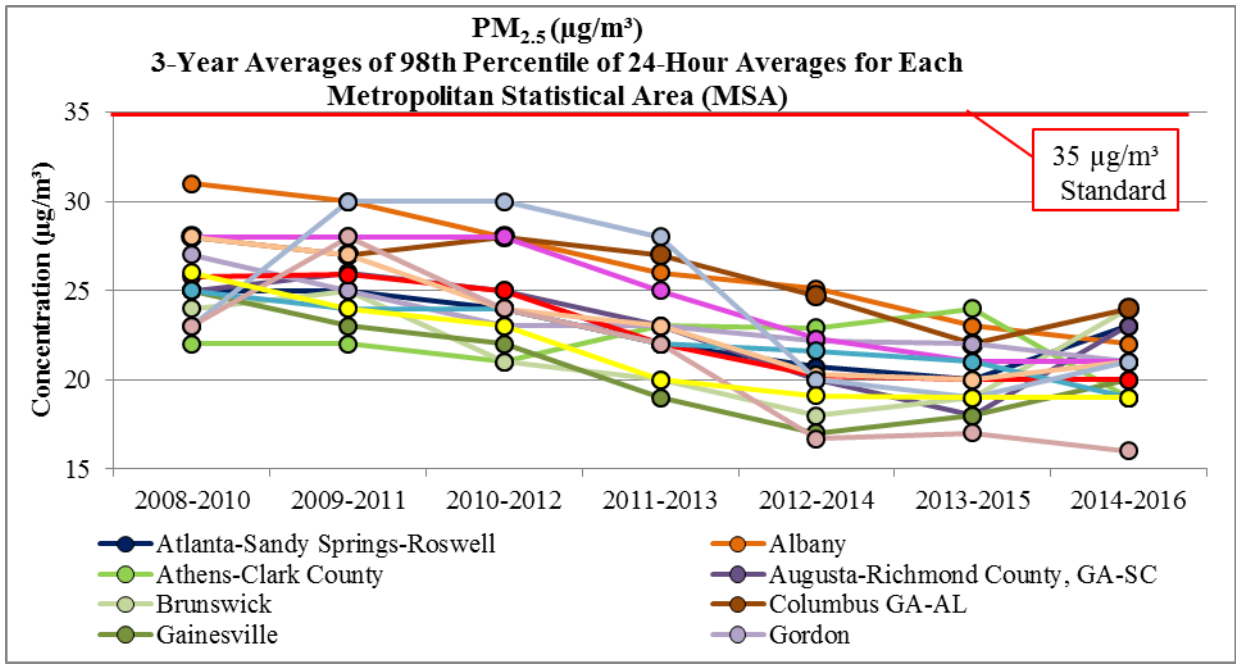
Similarly, shutting down the Yorkville site's ozone monitors impairs the ability of EPD and EPA to protect public health in a Combined Statistical Area (CSA), which contained all five of Georgia's violating monitors under the 2015 Ozone NAAQS.[39] Even though Paulding County, where the Yorkville site was located, is not one of the eight counties designated nonattainment under the 2015 Ozone NAAQS, Yorkville's O_3 monitor recorded design values in the 2013-2015 and 2014-2016 periods in excess of 85% of the ozone NAAQS threshold.[40] Additionally, Paulding County borders both Bartow and Cobb counties, which are classified as nonattainment areas.[41] Considering the Yorkville site's location in a CSA, which contains all eight of Georgia's nonattainment counties, the Yorkville site's already-elevated readings, permanently closing Yorkville's O_3 monitoring station would affect EPD's ability to protect the population of the Atlanta area from the negative health effects of elevated ozone concentrations.

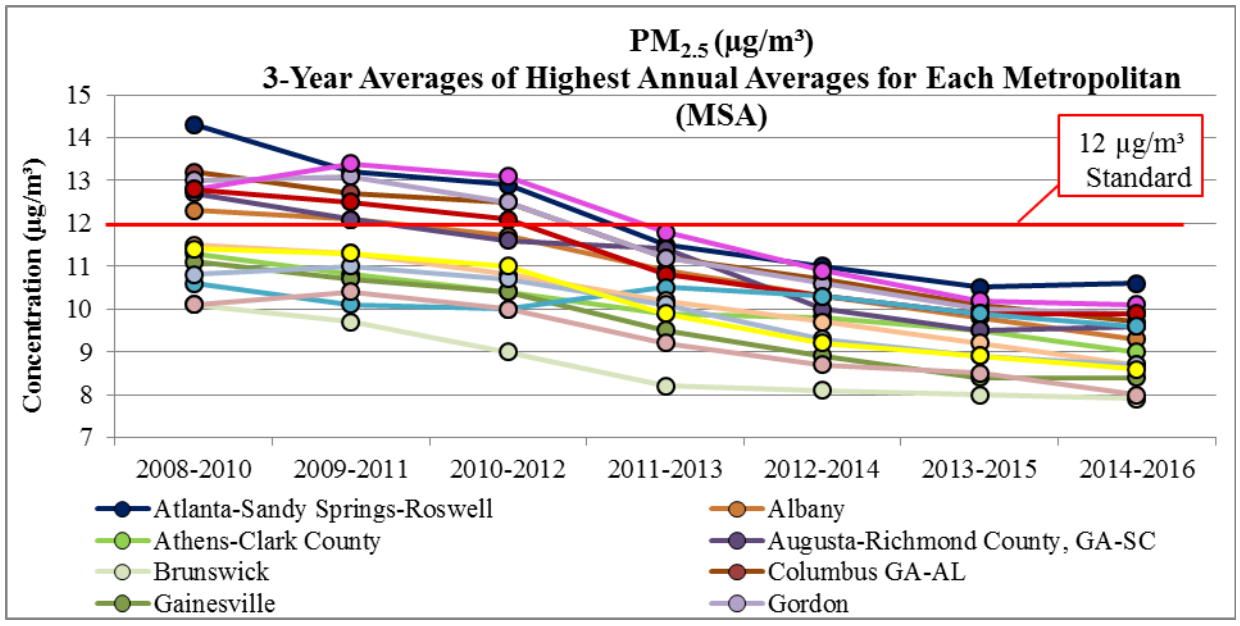
Given how frequently the Atlanta area violates or comes close to violating the PM2.5 and ozone NAAQS, the additional monitoring provided by the Yorkville site served an important role in ensuring the safety of the area's residents. EPD should not eliminate these important monitors, but should consider either renewing the Yorkville site's lease or relocating the monitors to an equivalent location nearby.

GA EPD Response:

EPD operates more than the required number of ozone and $PM_{2.5}$ sites in the Atlanta-Sandy Springs-Roswell MSA, according to 40CFR58, Appendix D. There are currently 10 ozone monitors, while only 3 are required. There are currently 6 $PM_{2.5}$ FRM monitors, while only 3 are required. The Yorkville site has consistently had one of the lowest ozone and $PM_{2.5}$ averages in the Atlanta-Sandy Springs-Roswell MSA. The 2014-2016 ozone design value for the Yorkville site was 0.068 ppm, while the highest value for the Atlanta-Sandy Springs-Roswell MSA was 0.075 ppm. The 2014-2016 $PM_{2.5}$ design values for the Yorkville site were 16 $\mu g/m^3$ for the 24-

hr standard and 7.8 µg/m^3 for the annual standard, while the highest values for the Atlanta-Sandy Springs-Roswell MSA were 23 µg/m^3 and 10.6 µg/m^3 respectively. The Atlanta-Sandy Springs-Roswell MSA has been well below both the $PM_{2.5}$ 24-hour standard (35 µg/m^3) and $PM_{2.5}$ annual standard (12 µg/m^3) for several years. See graphs below, depicting GA EPD's $PM_{2.5}$ data.





While the Yorkville site scored higher on the 2015 Five-Year Assessment matrix, the decision to eliminate the site involved funding and best use of resources. On October 26, 2015, EPA changed the PAMS requirement and reallocated the PAMS funding (Federal Register, Vol. 80, No. 206, page 65467). The hourly PAMS monitors were shut down as of 8/31/15, and the PAMS canisters that are were collected every 6 days were subsequently shut down as of 12/31/15. The Air Toxics monitoring was state funded at the site. Since GA EPD surpassed the federal

requirements for monitoring both the ozone and $PM_{2.5}$ air quality (40CFR58, Appendix D), it was determined that it was not cost effective to keep the Yorkville site operating. In addition, The $PM_{2.5}$ monitor previously located at Yorkville has been relocated to General Coffee State Park. EPA concurred with GA EPD's decision to not operate the Yorkville site. See EPA's approval letter to shut down the Yorkville site below.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

June 23, 2017

Mr. Richard E. Dunn
Director
Air Protection Branch
Georgia Department of Natural Resources
Environmental Protection Division
4244 International Parkway, Suite 120
Atlanta, Georgia 30354

Dear Mr. Dunn:

Thank you for submitting the "Addendum to 2016 Ambient Air Monitoring Plan" dated March 6, 2017. The plan was made available for public comment from February 2, 2017 to March 6, 2017 and no comments were received. This addendum proposes several modifications to your ambient air monitoring network, including: shutting down the Yorkville ambient air monitoring site (AQS ID 13-223-0003), relocating the background particulate matter less than 2.5 microns ($PM_{2.5}$) regulatory monitor from Yorkville to the existing General Coffee site (AQS ID 13-069-0002), and terminating aethalometer measurements at the South DeKalb site (AQS ID 13-089-0002). We have reviewed this addendum and have the following comments.

The U.S. Environmental Protection Agency approves terminating all ambient air monitoring from the Yorkville site and closing the site; relocating only the $PM_{2.5}$ federal reference method sampler to the General Coffee site where it will maintain a 1-in-3-day sampling frequency and serve as the background $PM_{2.5}$ monitor for the state as required by 40 CFR Part 58, Appendix. D, 4.7.3; and discontinuing the aethalometer measurements at South DeKalb.

If you have any questions or concerns, please be sure to contact me or have your staff contact Mr. Todd Rinck of my staff at (404) 562-9062 or rinck.todd@epa.gov.

Sincerely,

Carol H. Kemker for

Beverly H. Banister
Director
Air, Pesticides and Toxics Management Division

Comment:

4. Black Carbon Discrepancy

EPD claims that it operates three Black Carbon monitoring facilities in the state (two Multiangle Absorption Photometer samplers at the DMRC and Georgia Tech near-road sites and one aethalometer at the South DeKalb site).[42] However, in another section of the document, EPD explains that it has already shut down the South DeKalb site's Black Carbon monitor as of 12/31/16.[43] We recommend that EPD correct this discrepancy in its 2017 Ambient Air Monitoring Plan.

GA EPD Response:

This has been corrected on page 105 to reflect the two sites at DMRC and Georgia Tech.

Comments from Glynn Environmental Coalition:

From: gec@glynnenvironmental.org [mailto:gec@glynnenvironmental.org]
Sent: Tuesday, May 09, 2017 2:34 PM
To: Oser, DeAnna
Cc: Sharon G. Ehle; Pamela E. Tillman; Permar, M; MichaelHall
Subject: GA-EPD Air Monitoring Plan Comments

Ms. Oser,

The following are comments concerning the Georgia Environmental Protection Division draft Ambient Air Monitoring Plan. Notice:

https://epd.georgia.gov/sites/epd.georgia.gov/files/related_files/document/2017%20Draft%20Ambient%20Air%20Monitoring%20Plan.pdf

I have commented several times on the Air Monitoring Plan in an effort to get our Air Toxics Monitoring Station back in Brunswick Georgia. Since the Air Toxic Monitoring Station was removed, we had a serious air release from the Georgia-Pacific Pulp and Paper Mill that resulted in calls to 911 and folks becoming very concerned about their health and welfare. Obviously, if folks are calling 911, they feel like life and health is in eminent peril.

Calls to the Glynn Environmental Coalition from people in respiratory distress are not at all uncommon. We do have days in Brunswick when the conditions put the air releases in close proximity to ground level. When we have an inversion, the conditions get even worse. Releases from numerous sources combine to produce conditions that cause respiratory distress. An Air Toxics Air Monitoring station would provide helpful information to sort out the source of the respiratory irritants and toxics.

Air releases in Brunswick extend beyond those permitted by the GA-EPD Title V Permitting Program. For example, in addition to the air releases permitted by the GA-EPD we have the Port of Brunswick and large ship emissions. Do we need to mandate low sulfur fuels when these ships are in port? An Air monitoring station would help answer this question and other similar questions. The sources other than those regulated under the GA-EPD Title V Permitting Program need to be evaluated and considered as part of the air permitting decision-making process.

Within the GA-EPD Title V Air Permitting program there are a number of assumptions being made about the height of the release and dispersion and dilution. An Air Toxics Monitoring Station would be helpful in determining if these assumptions are proven, or disproven. Monitoring at the “stacks” (point of the emission) is helpful but we need information past the fence line. Point of release data does not identify air releases that stay concentrated in a bolus, plume, or lens configuration, which appear to be occurring regularly in the Brunswick area.

Our Glynn County school nurses know when we have a “bad air day” and the number of children with respiratory distress coming to their office for treatment or discharge to get them out of the air pollutants increases. The GA-EPD would be well served to utilize this information, in addition to air

monitoring, to evaluate air quality and Title V permitting goals of protecting the public and the most vulnerable very young and every old populations.

Are air standards being met in Brunswick, Glynn County, Georgia? The reports of respiratory distress indicate that there is a problem. An Air Toxics Monitoring Station would be a prudent first step towards answering this question. A review of readily available school nurse records for significant respiratory distress days would make any monitoring data more robust and could be done retroactively to identify the severity of the problem and, perhaps, assist in locating an air toxics/respiratory irritants monitoring station.

In closing, the GA-EPD currently measures ozone and particulate matter (PM) in Brunswick. While ozone and particulate matter data is interesting, current monitoring does not identify the respiratory irritants being permitted for release by the GA-EPD under the Title V Permitting Program. Air Monitoring Stations should measure the toxic chemicals the GA-EPD is permitting for release in our community.

GA EPD Response:

Both the ozone and $PM_{2.5}$ design values for the Brunswick area are well below the National Ambient Air Quality Standards (NAAQS) federal limits. For 2014-2016, the Brunswick MSA had an ozone design value of 0.056 ppm (compared to NAAQS of 0.070 ppm) and $PM_{2.5}$ design values of 24 $\mu g/m^3$ and 7.9 $\mu g/m^3$ (compared to 35 $\mu g/m^3$ for the 24-hour standard and 12.0 $\mu g/m^3$ for the annual standard, respectively).

The American Lung Association (ALA) State of the Air 2017 report states that the Brunswick area is one of the cleanest in the United States. Brunswick is on the list for 'Cleanest U.S. Cities for Short-Term Particle Pollution (24-hour $PM_{2.5}$)' and 'Cleanest U.S. Cities for Ozone Air Pollution'. Also, Glynn County is listed in both the 'Cleanest Counties for Short Term Particle Pollution (24-hour $PM_{2.5}$)' and 'Cleanest Counties for Ozone Air Pollution'. In addition, Glynn County was given a grade of "A" for both the High Ozone Days and High Particle Days (www.lung.org).

SO_2 was monitored in the Brunswick MSA until 12/31/12. The Brunswick monitor consistently had the lowest SO_2 values in Georgia. For the last four 1-hour design values (three-year averages of the 99^{th} percentile of 1-hour maximum values), the Brunswick SO_2 monitor had readings of 11 ppb, 8 ppb, 8 ppb, and 6 ppb. These values are compared to a federal SO_2 standard of 75 ppb. See GA EPD's '2012 Ambient Air Surveillance Report' for more detailed information.

GA EPD funded the operation of air toxics monitors in the Brunswick MSA from 9/18/86 to 10/31/08. There were no significant findings during that time.

For the air permits, GA EPD uses a model that is developed and approved by EPA. The height of release and dispersion are a function of the model and based on the air permit application data submitted to GA EPD. The model is run considering normal operating procedures with real-time historical meteorological data vetted for use in the model, and the stack height matches the National Emissions Inventory (NEI) information. Air permits are issued in accordance with the regulations in the Georgia Rules for Air Quality Control Chapter 391-3-1-.03 (2) and (3), and are outside the scope of the Ambient Air Monitoring Plan.