GEORGIA
DEPARTMENT OF NATURAL RESOURCES

ENVIRONMENTAL PROTECTION DIVISION

2016 Ambient Air Monitoring Plan

Air Protection Branch
Ambient Monitoring Program

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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
EPD	Georgia Environmental Protection Division
FEM	Federal Equivalent Method
FRM	Federal Reference Method- the official measurement technique for a given pollutant
GEO MEAN	Geometric Mean
HAP	Hazardous Air Pollutant
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
NAMS	National Ambient Monitoring Site
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
ODC	Ozone depleting Chemicals
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 2016 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, Special Purpose Monitoring (SPM) Stations, 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
- assist in enforcement actions
- track air quality improvements
- measure the impact of industrial expansion
- provide air pollution information to the public.

Since the publication of the '2015 Ambient Air Monitoring Plan', there have been some changes to the state's ambient air monitoring network that should be noted.

New monitors:

- The DMRC near-road site (13-089-0003) in the Atlanta-Sandy Springs-Marietta MSA began monitoring:
  - volatile organic compounds on March 31, 2015
  - black carbon on September 1, 2015

- The GA Tech near-road site (13-121-0056) in the Atlanta-Sandy Springs-Marietta MSA began monitoring black carbon on July 9, 2015.

- GA EPD began monitoring carbonyls at the Yorkville site (13-223-0003) on January 13, 2016.

Discontinued monitors:

- Due to changes to the ozone regulations and supporting PAMS stations, GA EPD shut down the following PAMS monitors:

1. Hourly gas chromatography unit with a Flame Ionization Detector (FID) that collects samples in June, July, and August at the Yorkville site (13-223-0003);
2. Twenty-four hour integrated 56 hydrocarbon samples taken every sixth day throughout the year at the Yorkville site and Conyers site (13-247-0001);
3. NO/NO2/NOx at the Yorkville and Conyers sites;
4. CO at the Yorkville site;

The last samples were collected with the monitors on December 31, 2015. Please see Section 4.7 for more details.

- GA EPD shut down the Air Toxics monitors (VOCs, metals, semi-VOCs, and carbonyls) at the Dawsonville site (13-085-0001) on December 31, 2015.

- GA EPD plans to shut down the $PM_{2.5}$ FRM monitor at the Gordon site (13-319-0001) by January 1, 2017 to conserve resources and eliminate redundancy between the Gordon and Sandersville (13-303-0001) sites (see Appendix E of this document for additional information on monitor discontinuation).

- Due to changes in the NCore regulations [40CFR58, Appendix D (3)(b)], GA EPD plans to shut down the lead monitor at the DMRC site (13-089-0003) by June 30, 2016.

Relocated monitors:

- By January 1, 2017, GA EPD will be relocating the Rome-Coosa Elementary site (13-115-0003) to a location closer to the maximum SO_2 concentration. In accordance with the EPA Data Requirements Rule for sulfur dioxide, GA EPD conducted a modeling analysis of SO_2 emissions to determine the optimal location to measure the maximum SO_2 emissions from applicable facilities (see Appendix D of this document for the draft International Paper-Rome Modeling Report submitted to EPA). GA EPD will be relocating the Rome-Coosa Elementary School site (13-115-0003) to a location as close to the maximum SO_2 concentration as practical and has been working with EPA to decide the optimal location of the samplers at the site (SO_2, $PM_{2.5}$ FRM, $PM_{2.5}$ continuous, and $PM_{2.5}$ speciation). For additional information, see Appendix E of this document. By January 1, 2017 GA EPD plans to begin sampling with a $PM_{2.5}$ TEOM continuous sampler and shut down the $PM_{2.5}$ FRM sampler at this site (see Appendix E of this document for additional information on monitor discontinuation). The TEOM will be used to support development of air quality models and forecasts, including the Air Quality Index (AQI), and to provide the public with information about pollutant concentrations in real time. Please see Appendix C 1.1.d of this document for more details. GA EPD will also begin monitoring wind speed and wind direction at this site beginning January 1, 2017.

- Due to building renovation, the Sandersville site (13-303-0001) moved to another location less than a mile from the original site, and the first sample was collected at the new location on May 21, 2015.

- The Gainesville site (13-139-0003) will be relocated back to its original location at the Fair Street School at 695 Fair St. Gainesville, GA 30501 by December 31, 2016. Monitoring began at this location in 1997 but due to the school being demolished for rebuilding the Gainesville site was temporarily moved to the adjacent property of the Boys and Girls Club in 2011. GA EPD will investigate the continuous $PM_{2.5}$ BAM to

be used as an FEM at this site. If the BAM correlates well with the $PM_{2.5}$ FRM data, then GA EPD may propose to run this BAM as an FEM and shut down the FRM. See Appendix E of this document for additional information on monitor discontinuation.

- The Forest Park site (13-063-0091) was moved from its location on the roof at 25 Kennedy Drive, Forest Park GA to the ground at the same address on April 5, 2016.

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.
(b) The annual monitoring network plan must contain the following information for each existing and proposed site:
(1) The AQS site identification number.
(2) The location, including street address and geographical coordinates.
(3) The sampling and analysis method(s) for each measured parameter.
(4) The operating schedules for each monitor.
(5) Any proposals to remove or move a monitoring station within a period of 18 months following plan submittal.
(6) The monitoring objective and spatial scale of representativeness for each monitor as defined in appendix D to this part.
(7) The identification of any sites that are suitable and sites that are not suitable for comparison against the annual $PM_{2.5}$ NAAQS as described in § 58.30.
(8) The MSA, CBSA, CSA or other area represented by the monitor.
(c) The annual monitoring network plan must document how States and local agencies provide for the review of changes to a $PM_{2.5}$ monitoring network that impact the location of a violating $PM_{2.5}$ monitor or the creation/change to a community monitoring zone, including a description of the proposed use of spatial averaging for purposes of making

comparisons to the annual $PM_{2.5}$ NAAQS as set forth in appendix N to part 50 of this chapter. The affected State or local agency must document the process for obtaining public comment and include any comments received through the public notification process within their submitted plan.
(d) The State, or where applicable local, agency shall perform and submit to the EPA Regional Administrator an assessment of the air quality surveillance system every 5 years to determine, at a minimum, if the network meets the monitoring objectives defined in appendix D to this part, whether new sites are needed, whether existing sites are no longer needed and can be terminated, and whether new technologies are appropriate for incorporation into the ambient air monitoring network. The network assessment must consider the ability of existing and proposed sites to support air quality characterization for areas with relatively high populations of susceptible individuals (e.g., children with asthma), and, for any sites that are being proposed for discontinuance, the effect on data users other than the agency itself, such as nearby States and Tribes or health effects studies. For $PM_{2.5}$, the assessment also must identify needed changes to population-oriented sites. The State, or where applicable local, agency must submit a copy of this 5-year assessment, along with a revised annual network plan, to the Regional Administrator. The first assessment is due July 1, 2010.
(e) All proposed additions and discontinuations of SLAMS monitors in annual monitoring network plans and periodic network assessments are subject to approval according to § 58.14.

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(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/).

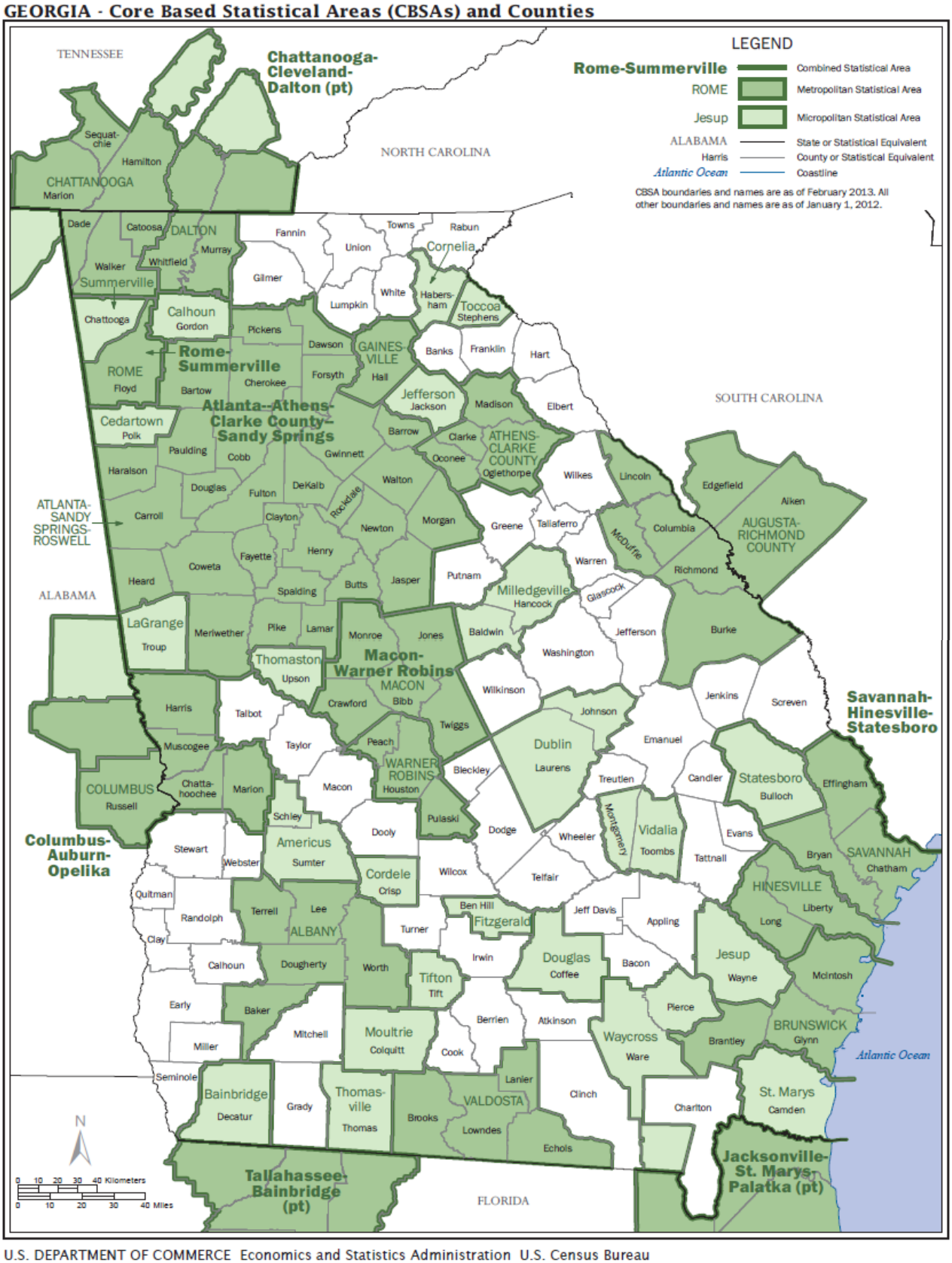


Figure 1: Map of Statistical Areas in Georgia

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 stations. GA EPD does not hold ownership rights to the land at any of its ambient air monitoring stations. If GA EPD loses its lease or is otherwise forced to leave a given site, that site's monitoring 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)."

The Memorandum of Agreement dated October 9, 2007 states, "The purpose of the Memorandum of Agreement (MOA) is to establish the Augusta-Richmond County Metropolitan Statistical Area (MSA) Criteria Pollutant Air Quality Monitoring Agreement between SCDHEC [South Carolina Department of Health and Environmental Control] and GA EPDAPB (collectively referred to as the "affected agencies") to collectively meet United States Environmental Protection Agency (EPA) minimum monitoring requirements for particles of an aerodynamic diameter of 10 micrometers and less (PM10), particles of an aerodynamic diameter of 2.5 micrometers and less (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) (October 17, 2006)."

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 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 daily measured concentrations of a major pollutant. Certain stations in GA EPD's SLAMS network provide data used in daily AQI reporting.
Figure 2 shows how the recorded 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; 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 the Chattanooga-Hamilton County Air Pollution Control Bureau. 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									
$PM_{2.5}$ (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	AQI Value	Descriptor	EPA Health Advisory
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

1.5 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-CAP-11-2015	Quality Assurance Project Plan of the Georgia Ambient Air Quality Monitoring Project for the Criteria Air Pollutants (November 2015 Version)	11-13-2015	To be approved by EPA
GA-AAQMP-QAPP-NR-12-2014	Quality Assurance Project Plan of the Georgia Ambient Air Quality Monitoring Project for the Near Road Monitoring Network (December 2014 Version)	12-31-2014	To be approved by EPA
GA-AAQMP-QAPP-PM25-01-2013	Quality Assurance Project Plan of the Georgia Ambient Air Quality Monitoring Project for PM2.5 (January 2013 Version)	1-29-2013	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-NCORE-01-2010	Quality Assurance Project Plan of the Georgia Ambient Air Quality Monitoring Project for the National Core Multi- Pollutant Network (June 2010 Version)	6-30-2010	5-23-2011
GA-AAQMP-QAPP-PAMS-02-2010	Quality Assurance Project Plan of the Georgia Ambient Air Quality Monitoring Project for the Photochemical Assessment Monitoring Stations State of Georgia (February 2010 Version)	2-24-2010	7-21-2010

Table 1: List of Georgia EPD's QAPPs

1.6 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/.

1.7 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.

1.8 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*	S	X					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	Boys and Girls Club	Hall			S	S																
Athens-Clark 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																			
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	N
130890003	DMRC Near-Road	DeKalb							R	R			S**				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																
132230003	Yorkville	Paulding	S		S	S											NR	NR	NR	NR		NR
132470001	Conyers	Rockdale	S																	NR		
Chattanooga Tennessee-Georgia MSA																						
132950002	Maple Street	Walker			S	S	X															
Not in an MSA																						
130550001	Summerville	Chattooga	S																			
130690002	General Coffee	Coffee					X										NR	NR				NR
132611001	Leslie	Sumter	S																			
133030001	Sandersville	Washington			S																	
133190001	Gordon	Wilkinson			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

**Will be discontinued by December 31, 2016*

***Will be discontinued by June 30, 2016*

+To begin by January 1, 2017

Table 2: 2016 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 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 that may result in regulatory actions to further clean up the air in the area where the violations 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).

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

[1] For a list of the most current standards, please refer to EPA's website https://www3.epa.gov/ttn/naaqs/criteria.html.

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 National Core (NCore) Multipollutant Monitoring network is a network measuring several pollutants including particles, gases, and meteorology. The NCore site for the State of Georgia is the South DeKalb site (13-089-0002) in DeKalb County. The site has operated since January 1, 2011. The NCore sampling equipment at the South DeKalb site includes: $PM_{2.5}$ FRM, $PM_{2.5}$ continuous, $PM_{2.5}$ speciation, ozone (collecting data year-round), trace level carbon monoxide, trace level sulfur dioxide, trace level nitrogen oxide, total reactive nitrogen (NOy), wind direction, wind speed, temperature, and relative humidity. The DMRC site (13-089-0003) is located approximately 2 kilometers away from the South DeKalb site, and is the location of lead samplers which were part of the NCore network. As of March 28, 2016, EPA no longer required lead to be measured as part of the NCore network [40CFR58, Appendix D (3)(b)], and GA EPD plans to shut down this lead monitor by the end of June 30, 2016. Refer to GA EPD's '2014 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. According to this monitoring rule, GA EPD would need five monitors to accommodate the new SO_2 rule. Two monitors should be in place in the Atlanta-Sandy Springs-Marietta CBSA, one in the Augusta-Richmond County, GA-SC CBSA, one in the Macon CBSA, and one in the Savannah CBSA.

As required by 40CFR58.10 (a) (6), the 2011 Ambient Air Monitoring Plan included a plan for establishing new SO_2 monitoring sites to meet the monitoring requirements of Appendix D of part 58 to 40CFR. These sites were to be operational by January 1, 2013. In addition, the SO_2 5-minute maximum for every hour was to be reported by August 23, 2010.

GA EPD started sampling in the Augusta-Richmond County, GA-SC MSA at the Augusta-Bungalow Road site (13-245-0091) on January 14, 2013. GA EPD continued monitoring at the Confederate Avenue site (13-121-0055), the South DeKalb site (13-089-0002), and the Macon-Forestry site (13-021-0012). In addition, GA EPD continued sampling with both monitors in the Savannah MSA (Savannah-E. President Street, 13-051-0021 and Savannah-L&A, 13-051-1002) and at the Rome-Coosa Elementary site (13-115-0003) since these three monitors have concentrations close to or above 85% of the new SO_2 standard. Additionally, as of August 1, 2010, GA EPD began collecting and reporting 5-minute maximum data with all the SO_2 samplers in the state.

As an NCore site, the South DeKalb site (13-089-0002) also began sampling trace level sulfur dioxide as of October 1, 2010. This sampler also began collecting SO_2 5-minute maximum data on October 1, 2010.

Due to the site property being purchased, GA EPD will be relocating the Rome-Coosa Elementary School site (13-115-0003) to the same vicinity during the second half of calendar year 2016. For more information on site relocations, see Appendix E of this document. In accordance with the EPA Data Requirements Rule for sulfur dioxide, SO_2 concentrations were modeled in order to select the most appropriate location for the SO_2 monitor that would capture the maximum SO_2 emissions from the nearby facilities. See Appendix D of this document for the draft International Paper-Rome Modeling Report submitted to EPA.

4.3 Nitrogen Dioxide

On January 22, 2010, EPA revised the nitrogen dioxide (NO_2) National Ambient Air Quality Standard and monitoring requirements. As required by 40CFR58.10 (a) (5), the Annual Plan submitted by July 1, 2012 included a plan for establishing NO_2 monitoring sites to meet the new monitoring requirements of 40CFR58, Appendix D, 4.3.2. These sites were to be operational by January 1, 2013 (Federal Register, Vol. 75, No. 26, 02/09/10). EPA later amended the date for the first phase sites to be operational to January 1, 2014, with the second phase operational by January 1, 2015, and the third phase operational by January 1, 2017. These monitors are to be set up in CBSAs with 500,000 or more population (additional monitor with CBSA population above 2,500,000), average traffic counts of 250,000 vehicles or greater, and represent a microscale (no more than 50 meters from the edge of the nearest traffic lane). According to these requirements, GA EPD would need to have two near-road NO_2 monitors in the Atlanta-Sandy Springs-Marietta MSA and one near-road NO_2 monitor in the Augusta-Richmond County, GA-SC MSA.

GA EPD began monitoring near-road NO_2 at the first near-road site on the Georgia Institute of Technology campus (site ID 13-121-0056) in the Atlanta-Sandy Springs-Marietta MSA on June 15, 2014, and the second near-road monitoring site in the Atlanta-Sandy Springs-Marietta MSA

on January 1, 2015 at the established DMRC site (13-089-0003). For the Augusta-Richmond County, GA-SC MSA, GA EPD had analyzed the AADT estimates and planned to meet the monitoring requirement by January 1, 2017. However, as this document is published for public comment, EPA has proposed to remove this requirement for near-road NO_2 monitoring in CBSAs having populations between 500,000 to 1 million (also known as the third phase of the near-road network) from Appendix D, 4.3.2 of 40CFR58[2].

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. Until the end of 2015, GA EPD had three other NO_2 monitors at the Photochemical Assessment Monitoring Stations (PAMS) in the Atlanta-Sandy Springs-Marietta MSA: South DeKalb (13-089-0002), Yorkville (13-223-0003), and Conyers (13-247-0001). With the revisions to the ozone rule (Federal Register, Vol.80, No. 206, page 65467), and GA EPD revamping its PAMS network, the Yorkville site (13-223-0003) and Conyers (13-247-0001) NO_2 monitors were discontinued at the end of 2015. The South DeKalb site (13-089-0002) continues as GA EPD's PAMS site, and continues to collect 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 the State of Georgia, this monitoring requirement would be one CO monitor located in the Atlanta-Sandy Springs-Marietta MSA, collocated with the NO_2 near-road monitor. GA EPD began monitoring CO at the new near-road site at Georgia Institute of Technology (13-121-0056) in schedule with the NO_2 monitor on June 15, 2014.

Until the end of 2015, GA EPD had two other CO monitors at the Photochemical Assessment Monitoring Stations (PAMS) in the Atlanta-Sandy Springs-Marietta MSA. With the revisions to the ozone rule (Federal Register, Vol.80, No. 206, page 65467), and GA EPD revamping its PAMS network, the Yorkville site (13-223-0003) CO monitor was discontinued at the end of 2015. The South DeKalb site (13-089-0002) continues as GA EPD's PAMS site and continues to collect CO data.

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. In addition, EPA required that lead monitors be placed at the NCore sites by December 27, 2011 (75FR81126).

Georgia EPD's ambient lead monitoring network currently consists of monitors located at four sites. One of these lead monitoring sites is located in the Atlanta-Sandy Springs-Marietta MSA at the DMRC site in DeKalb County (13-089-0003) and consists of two collocated monitors. The

[2] 40CFR58 [EPA-HQ-OAR-2015-0486] proposed rule

NCore site for the State of Georgia is the South DeKalb site (13-089-0002), and the criteria lead monitor that was historically required as part of the NCore network is located at this nearby established DMRC site (13-089-0003). As of March 28, 2016, the lead monitor is no longer required as part of the NCore network [40CFR58, Appendix D (3)(b)], and GA EPD plans to shut down this lead monitor by June 30, 2016.

The other three lead monitoring sites are in the Columbus Georgia-Alabama MSA in Muscogee County near a source of lead emissions. There is one monitor located at the Cusseta Elementary School (13-215-0011), one at Columbus-UPS (13-215-0009), and one at Columbus-Fort Benning (13-215-0010). The Columbus-Fort Benning (13-215-0010) site has two collocated lead monitors.

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

EPA expanded $PM_{2.5}$ sampling to characterize the make-up of the $PM_{2.5}$ sample with Speciation Trends Network (STN). 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. According to EPA, there are to be 54 Speciation Trends sites across the United States. One of these samplers is located in the State of Georgia, at the South DeKalb site, with site ID 13-089-0002. This sampler began monitoring on October 1, 2000, and samples every three days. There are six more $PM_{2.5}$ speciation monitors in the State of Georgia, 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. All of the $PM_{2.5}$ speciation samplers monitor for 53 species.

4.7 Photochemical Assessment Monitoring Stations (PAMS)

Ozone is the most prevalent photochemical oxidant and an important contributor to smog. The understanding of the chemical processes in ozone formation and the specific understanding of the atmospheric mixture in various nonattainment areas nationwide was considered essential by EPA for solving the ozone nonattainment problems and developing a suitable strategy for solving those problems. As such, the 1990 Amendments to the Clean Air Act included additional requirements for monitoring of ozone precursors in areas declared in serious, severe, or extreme nonattainment of the ambient ozone standard. In February 1993, due in part to the Clean Air Act Amendments of 1990, the Photochemical Assessment Monitoring Stations (PAMS) network was created as a method for obtaining more comprehensive ozone data. Along with ozone, the PAMS network monitors for oxides of nitrogen (NOx), reactive oxides of nitrogen (NOy), carbon monoxide (CO), volatile organic compounds (VOCs), selected carbonyl compounds, and meteorological parameters. The increased monitoring of ozone and its precursor concentrations allows for the characterization of precursor emissions within the area, transport of ozone and its precursors, and the photochemical processes leading to nonattainment. By expanding on the study of ozone formation, PAMS monitoring sites better serve as a means to study trends and spatial and diurnal variability.

On November 6, 1991, the Atlanta nonattainment area was classified as serious, with the 1-hour ozone standard (56FR56694). By 2003, the area was labeled in severe nonattainment of the 1-hour ozone standard (68FR55469) effective January 1, 2004, but by June 14, 2005, was listed as maintenance/attainment (70FR34660). With the 8-hour ozone standard, the Atlanta nonattainment area was classified as marginal, effective June 15, 2004 (69FR23857) and then as moderate nonattainment effective April 7, 2008 (73FR12013). On June 23, 2011, EPA promulgated its determination [76 FR 36873] that the metro Atlanta nonattainment area had

attained the 1997 8-hour ozone NAAQS. EPA published the redesignation in the federal register as a final rule on December 2, 2013 (78 FR 72040). On May 21, 2012, EPA published a final rule in the federal register designating a new 15-county Atlanta area marginal nonattainment for the 2008 8-hour ozone NAAQS. On May 3, 2016, proposed a determination that the 15-county Atlanta area had attained the 2008 ozone standard for the 2013-2015 monitoring period.

In 2015, EPA finalized a new, lower ozone standard of 70 ppb (8-hour standard). EPA expects to finalize designations for the new standard by October 1, 2017.

Due to the Atlanta area's nonattainment status for the ozone standard, GA EPD began establishing the PAMS network in 1993. Initially, the GA PAMS network consisted of three sites; Yorkville (13-223-0003), South DeKalb (13-089-0002), and Conyers (13-247-0001).

Yorkville was a Type 1 site. Type 1 sites characterize the upwind background, transported ozone, and precursor concentrations entering the Atlanta area. The site is located in the predominant morning upwind direction approximately 40 miles from the Atlanta urban fringe area in Paulding County, and should not be influenced by local VOC and NO emissions. The site provides urban scale measurements. Data from the Yorkville site was used for the future development and evaluation of control strategies, identification of incoming pollutants, corroboration of NOx and VOC emission inventories, establishment of boundary conditions for future photochemical grid modeling and mid-course control strategy changes, development of incoming pollutant trends, and determination of attainment with NAAQS for O_3, $PM_{2.5}$, CO, and NO_2.

South DeKalb is a Type 2 site. Type 2 sites monitor the magnitude and type of precursor emissions and are located immediately downwind of the area of maximum precursor emissions receiving the predominant morning downwind wind. This South Dekalb site is located in DeKalb County in order to provide neighborhood scale measurements in the area that the precursors have the greatest impact. The data measurements generated at South DeKalb are used principally for development and evaluation of imminent and future control strategies, corroboration of 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, $PM_{2.5}$, CO, and NO_2.

Conyers was the Type 3 site. Type 3 sites monitor the maximum ozone concentrations occurring downwind from the area of maximum precursor emissions, in Rockdale County. The site is an urban scale location based on the afternoon winds occurring between 1:00 PM and 4:00 PM, when titration of the precursors has occurred and the ozone is at its highest concentration. The data measurements are used in determination of attainment with the NAAQS for O_3 and NO_2, evaluation of future photochemical grid modeling applications, future development and evaluation of control strategies, development of pollutant trends, and characterization of ozone pollutant exposures.

The PAMS VOCs were collected and analyzed with a Gas Chromatograph/Flame Ionization Detector (GC/FID) at the Yorkville (13-223-0003), Conyers (13-247-0001), and South DeKalb (13-089-0002) sites. Throughout the year, a 24-hour VOC sample was collected every 6 days at all three PAMS sites. During June, July, and August, an hourly VOCs sample was also collected at the all three sites. During June, July, and August, three 8-hour carbonyls samples are taken every third day at the South DeKalb (13-089-0002) site. A 24-hour integrated carbonyls sample is also taken every 6 days throughout the year at the South DeKalb (13-089-0002) site. The VOC sampler and carbonyls samplers in the PAMS network are audited every six months by the

Quality Assurance Unit. The Quality Assurance Unit audits the PAMS meteorological equipment on an annual basis.

Then with revisions to the PAMS requirements on October 17, 2006 (71 FR 61236), the EPA only required two sites per PAMS area. According to Table D-6 of Appendix D to part 58 of 40CFR, two sites were required per area, with one site being a Type 2 site (40CFR58, Vol. 71, No. 200, page 61323). With the revision, EPA intended for states to have more flexibility to use resources to address other data collection needs or for other areas of monitoring that might be useful. Showing that GA EPD's PAMS data closely compared for the Conyers and South DeKalb sites, GA EPD shut down the hourly gas chromatography unit with a Flame Ionization Detector (FID) that collects samples in June, July, and August at the Conyers site on 8/31/13. GA EPD continued to collect the 24-hour integrated 56 hydrocarbon samples taken every sixth day throughout the year at the Conyers site. In addition, GA EPD continued to collect hourly data and the 24-hour canisters at the Yorkville and South DeKalb sites.

On October 26, 2015, EPA made revisions to the ozone standard, and with those changes, also further 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. The South DeKalb site is GA EPD's NCore site. Therefore, GA EPD will continue the collection of PAMS hourly gas chromatogram samples in June, July, and August, as well as collect the 24-hour integrated 56 hydrocarbon samples taken every sixth day throughout the year at the South DeKalb site. Since EPA is no longer requiring multiple PAMS sites and to make more efficient use of our resources, GA EPD has evaluated the PAMS network and shut down the following monitors that are no longer required by EPA:

1. Hourly gas chromatography unit with a Flame Ionization Detector (FID) that collects samples in June, July, and August at the Yorkville site;
2. Twenty-four hour integrated 56 hydrocarbon samples taken every sixth day throughout the year at the Yorkville and Conyers sites;
3. NO/NO2/NOx at the Yorkville and Conyers sites;
4. CO at the Yorkville site;

See GA EPD's 'Addendum to 2015 Annual Plan' published December 2015 for more details.

4.8 Air Toxics

In addition to its required monitoring duties, GA EPD measures more compounds in ambient air than are required by the Federal Clean Air Act. In 1993 the EPD began to monitor a number of compounds that, while thought to carry some health risk, have no established ambient air standard. A reassessment of the toxic monitoring program occurred, and in 1996 the EPD embarked on an ambitious project of establishing a statewide hazardous air pollutant-monitoring network. The network was not designed to monitor any one particular industry, but to provide information concerning trend, seasonal variation, and rural versus urban ambient concentration of air toxics. To evaluate the rural air quality, two background sites were proposed: one in North Georgia and one in South Georgia. The majority of the other sites were located in areas with documented emissions to the atmosphere of Hazardous Air Pollutants (HAPs) exceeding one million (1,000,000) pounds per year as indicated by the 1991 Toxic Release Inventory. By 2003 the Air Toxics Network consisted of fifteen sites statewide (including the NATTS site discussed below). Due to budget constraints and lack of available personnel, at the end of 2008, the Air Toxics Network was reduced to six sites (including the NATTS site discussed below): Macon-SE (13-021-0012), Savannah-E.President's St. (13-051-0021), Dawsonville (13-085-0001), South DeKalb (13-089-0002), Yorkville (13-223-0003), and General Coffee (13-069-0002). At the end of 2015, the Air Toxics monitors at the Dawsonville site (13-085-0001) were also discontinued. The Air Toxics equipment samples for metals, semi-volatile organic compounds, volatile organic compounds, and two sites (Savannah and South DeKalb) have carbonyls samplers.

4.9 National Air Toxics Trends Station (NATTS)

The National Air Toxics Trends Stations (NATTS) program is a nationwide monitoring project for the assessment of national trends and variations of several selected air toxics. The 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. The location of the station in Georgia is 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 black and organic carbon. With the exception of the black and organic carbon sampler (aethalometer), samples are collected from midnight to midnight for a 24-hour sample, every 6 days. The aethalometer is a continuous sampler.

4.10 Near-Road

On February 9, 2010, EPA revised the nitrogen dioxide (NO_2) National Ambient Air Quality Standard and monitoring requirements. Included in these revisions was the establishment of near-road monitoring sites. The sites were to be set up in CBSAs with 500,000 or more population (additional monitor with CBSA population above 2,500,000), annual average daily 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) (75 FR 6474). With these requirements, GA EPD needed to have two near-road monitoring sites in the Atlanta-Sandy Springs-Marietta MSA and one near-road monitoring site in the Augusta-Richmond County, GA-SC MSA. According to the U.S. Census Bureau (http://www.census.gov/compendia/statab/cats/population.html), the Atlanta-Sandy Springs-Marietta MSA had a 2010 population of 5,268,860, and the Augusta-Richmond County, GA-SC MSA had a 2010 population of 556,877. On October 5, 2012, EPA proposed that the first phase of site establishment would be January 1, 2014. The second phase of site establishment would be January 1, 2015, and the third phase would be January 1, 2017 (40CFR58, Appendix D, 4.3.2).

GA EPD began operating the initial near-road site on the Georgia Institute of Technology campus (site ID 13-121-0056) in the Atlanta-Sandy Springs-Marietta MSA as of June 15, 2014. At the Georgia Tech site, samplers are in place to monitor NO_2/NO/NOx, CO, $PM_{2.5}$, black carbon, wind speed and wind direction. 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'. According to EPA's schedule, GA EPD set up the second near-road monitoring site 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'. For the Augusta-Richmond County, GA-SC MSA, GA EPD had analyzed the AADT estimates and planned to meet the monitoring requirement by January 1, 2017. However, as this document is made available for public comment, EPA has released a proposal to remove this requirement for near-road NO_2 monitoring in CBSAs having populations between 500,000 to 1 million (also known as the third phase of the near-road network) from Appendix D, 4.3.2 of 40CFR58[3].

[3] 40CFR58 [EPA-HQ-OAR-2015-0486] proposed rule

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
Rome MSA				
131150003	Rome	Floyd	1/29/2015	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.
Brunswick MSA				
131270006	Brunswick	Glynn	12/4/2015	Samplers meet siting criteria. No deficiencies.
Valdosta MSA				
131850003	Valdosta	Lowndes	10/15/2015	Samplers meet siting criteria. The BAM door appears to have been previously broken and rigged into place. A new sampler housing may be necessary. The overall condition appears much the same as recorded on the last survey.
Warner Robins MSA				
131530001	Warner Robins	Houston	4/7/2016	Samplers meet siting criteria. No deficiencies.
Dalton MSA				
132130003	Fort Mountain	Murray	9/23/2015	Samplers meet siting criteria. Drip line too close to ozone inlet.
Albany MSA				
130950007	Albany	Dougherty	2/11/16	Samplers meet siting criteria. No deficiencies.
Gainesville MSA				
131390003	Gainesville	Hall	12/04/2015	Samplers meet siting criteria. No deficiencies.
Athens-Clark County MSA				
130590002	Athens	Clarke	2/4/2016	Water damage around a/c ports. Door rusted at bottom.
Macon MSA				
130210007	Macon-Allied	Bibb	7/27/2015	Samplers meet siting criteria. Drip line 12.8 m from URG sampler.
130210012	Macon-Forestry	Bibb	10/14/2015	Samplers meet siting criteria. The meteorological tower is bent in several spots and is difficult to lower safely. The metal and PUF samplers need at least 0.3m further elevation to meet inlet siting requirements of 2-7 meters. The floor around the door is rotting out. The floor covering is cracked and has a hole. White dust was emitted from the hole when walking near it entering the shelter. Drip line 11m from SO2 inlet and growing.

SITE ID	COMMON NAME	COUNTY	SITE EVALUATION DATE	COMMENTS
Columbus MSA				
132150001	Columbus-Health Dept.	Muscogee	8/12/2015	Sampler meets siting criteria. No deficiencies.
132150008	Columbus-Airport	Muscogee	8/12/2015	Samplers meet siting criteria. The power pole feeding the sampler is tilted about 10 degrees. One of the fluorescent bulbs inside the trailer is burned out.
132150009	Columbus-UPS	Muscogee	12/1/2015	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.
132150010	Columbus-Ft. Benning	Muscogee	2/24/2015	Samplers meet siting criteria. No deficiencies.
132150011	Columbus-Cusseta	Muscogee	3/10/16	Samplers meet siting criteria. No deficiencies.
132151003	Columbus-Crime Lab	Muscogee	2/19/2016	Only meteorological instruments are being run at the site presently. No deficiencies.
Savannah MSA				
130510021	Savannah-E. President St.	Chatham	6/25/2015	Samplers meet siting criteria. No deficiencies.
130510091	Savannah-Mercer	Chatham	5/28/2015	Sampler meets siting criteria. No deficiencies.
130511002	W. Lathrop & Augusta Ave.	Chatham	6/3/2015	Samplers meet siting criteria. Trees have grown back (trees taken down 10/7/15).
Augusta MSA				
130730001	Evans	Columbia	7/9/2015	Sampler meets siting criteria. Integrity and sample lines are routed on floor of shelter, along ground outside, and then up tower to inlet. Recommend lines are replaced and routed up and out at top of wall of shelter to avoid contamination, improve response and standardize with other sites. A port in an appropriate spot has been made for data wiring. Recommend lines are routed out the new port. Site access involved carrying heavy equipment up a steep slope of mud and wet grass. Door jamb rotting, paint peeling.
132450091	Augusta	Richmond	8/26/2015	Samplers meet siting criteria. There is trash inside enclosure from frequent littering by passersby. The URG ram elevator motor is weak and requires manual assistance to exchange the filter cartridge. Bullet hole in shelter siding needs to be patched to prevent water intrusion.
Atlanta-Sandy Springs-Marietta MSA				
130630091	Forest Park	Clayton	11/06/2015	Sampler meets siting criteria. No deficiencies.
130670003	National Guard	Cobb	2/18/2016	Samplers meet siting criteria. No deficiencies.
130770002	Newnan	Coweta	2/12/2015	Samplers meet siting criteria. No deficiencies.
130850001	Dawsonville	Dawson	10/07/2015	Samplers do not meet siting criteria. Trees to the south are inside of the required height distance differential between obstacles and all inlets. Met tower is inside 10x height differential with a few trees to the north. The site is a neighborhood spatial scale.
130890002	South DeKalb	DeKalb	6/25/2015	Samplers do not meet siting criteria. The tall trees to the north are inside twice the height-distance differential for the samplers. The predominant wind direction is not from the north, however.

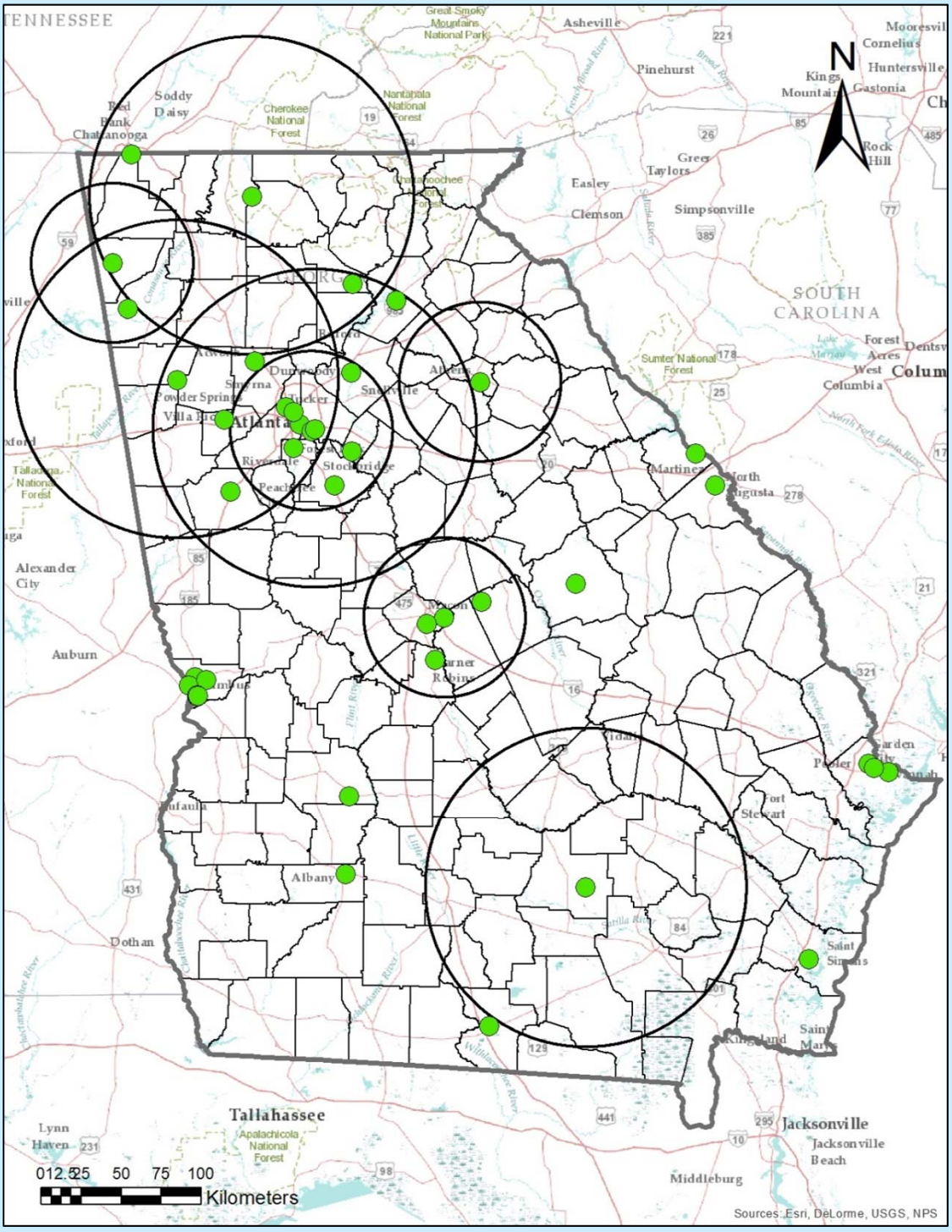
SITE ID	COMMON NAME	COUNTY	SITE EVALUATION DATE	COMMENTS
130890003	DMRC	DeKalb	4/23/2015	Samplers meet siting criteria. No deficiencies.
130970004	Douglasville	Douglas	4/8/2015	Samplers meet siting criteria. The inside trailer siding near the floor and the countertop has become slightly warped due to past water infiltration. The water appears to have gained access through the vent hole on the side of the shelter during heavy rains. There is no outside damage to the shelter that would allow water in.
131210039	Fire Station #8	Fulton	5/20/2015	Samplers meet siting criteria. There are not any deficiencies compromising sampling quality. The tall white pine tree next to the F.S. northeast of the sampler has been cut down since the last survey.
131210055	Confederate Ave.	Fulton	3/30/16	Samplers meet siting criteria. No deficiencies.
131210056	GA Tech	Fulton	6/23/16	Samplers meet siting criteria. No deficiencies.
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 has a few rips in it near the door. The trailer floor is bucking up slightly because of water infiltration on plywood support. A small wooden board is broken on the Partisol platform.
131510002	McDonough	Henry	7/9/2015	Samplers meet siting criteria. No deficiencies.
132230003	Yorkville	Paulding	2/28/2016	Samplers meet siting criteria. No deficiencies.
132470001	Conyers	Rockdale	7/7/2015	Samplers meet siting criteria. No deficiencies.
Chattanooga Tennessee-Georgia MSA				
132950002	Rossville	Walker	11/19/2015	Samplers meet siting criteria. No deficiencies. Weeds need trimming on fence.
Not in an MSA				
130550001	Summerville	Chattooga	2/4/2015	Sampler meets siting criteria. Two tiles on the trailer floor next to the door are missing and the plywood floor beneath is rotting out. The trailer is to be replaced in 2015.
130690002	General Coffee	Coffee	11/05/2015	Samplers meet siting criteria. No deficiencies.
132611001	Leslie	Sumter	3/3/16	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.
133030001	Sandersville	Washington	4/13/2016	Sampler meets siting criteria. Partisol 2000 DNR #135374, Thermo Hi-Vol Motor #1644, and #1604 on site but not in service. Partisol 2025 seal rotted and broken. Sampler repositioned to 13.1 meters from drip line since site survey performed.
133190001	Gordon	Wilkinson	4/2/2015	Samplers meet siting criteria. No deficiencies.

Table 4: Site Evaluations

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

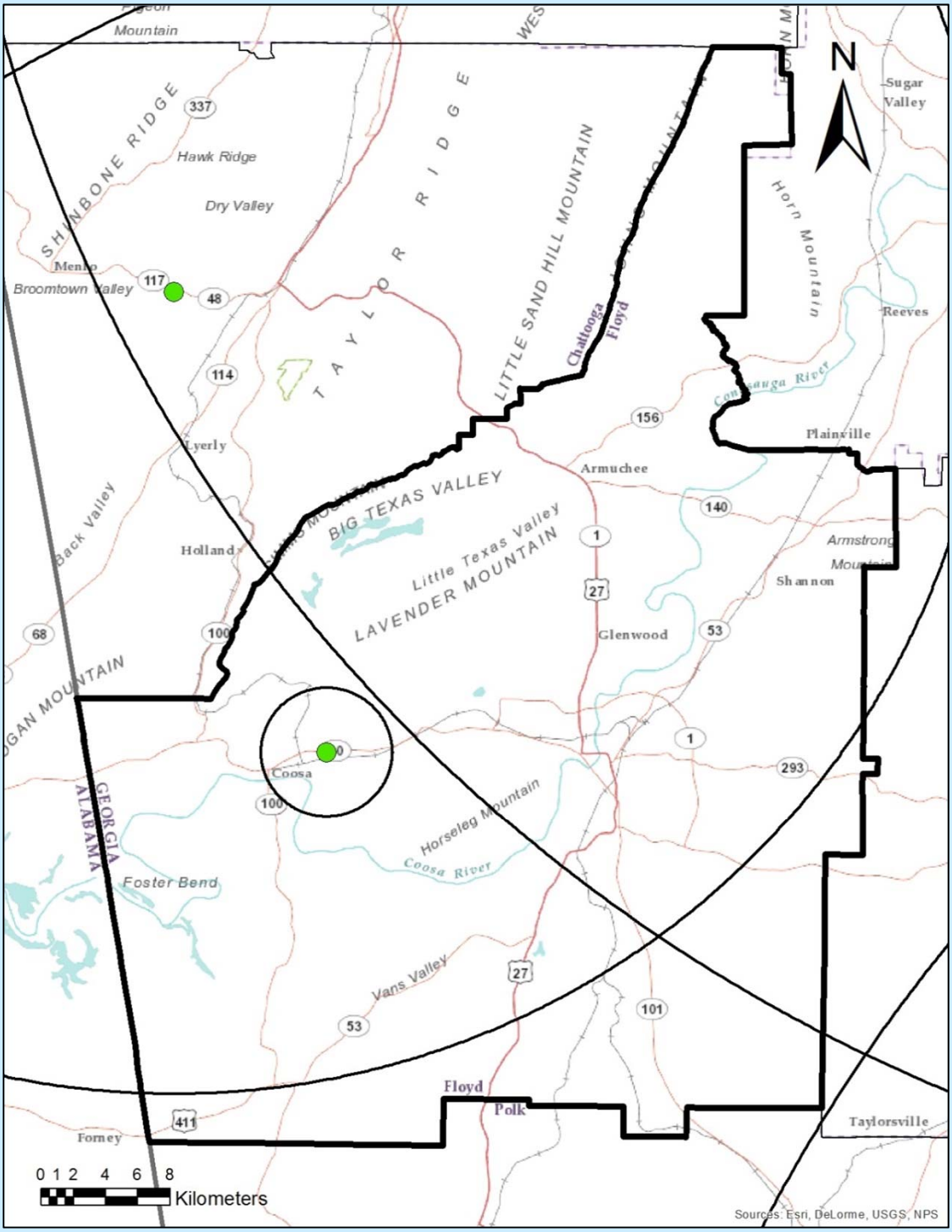
Georgia Department of Natural Resources
Environmental Protection Division

Spatial Scales of GA EPD's Ambient Air Monitors



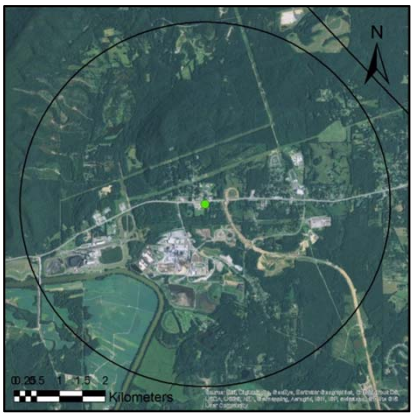
Micro Scale: up to 100m
Middle Scale: up to 0.5km
Neighborhood Scale: up to 4.0km
Urban Scale: up to 50km
Regional Scale: up to 100s of km (100km shown)

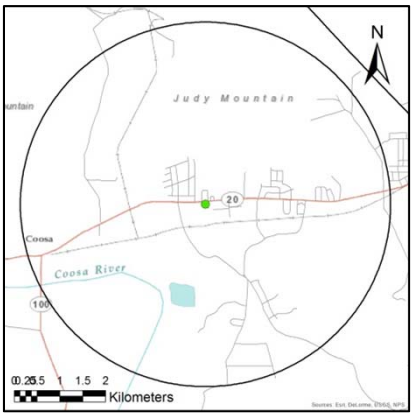
Rome MSA



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





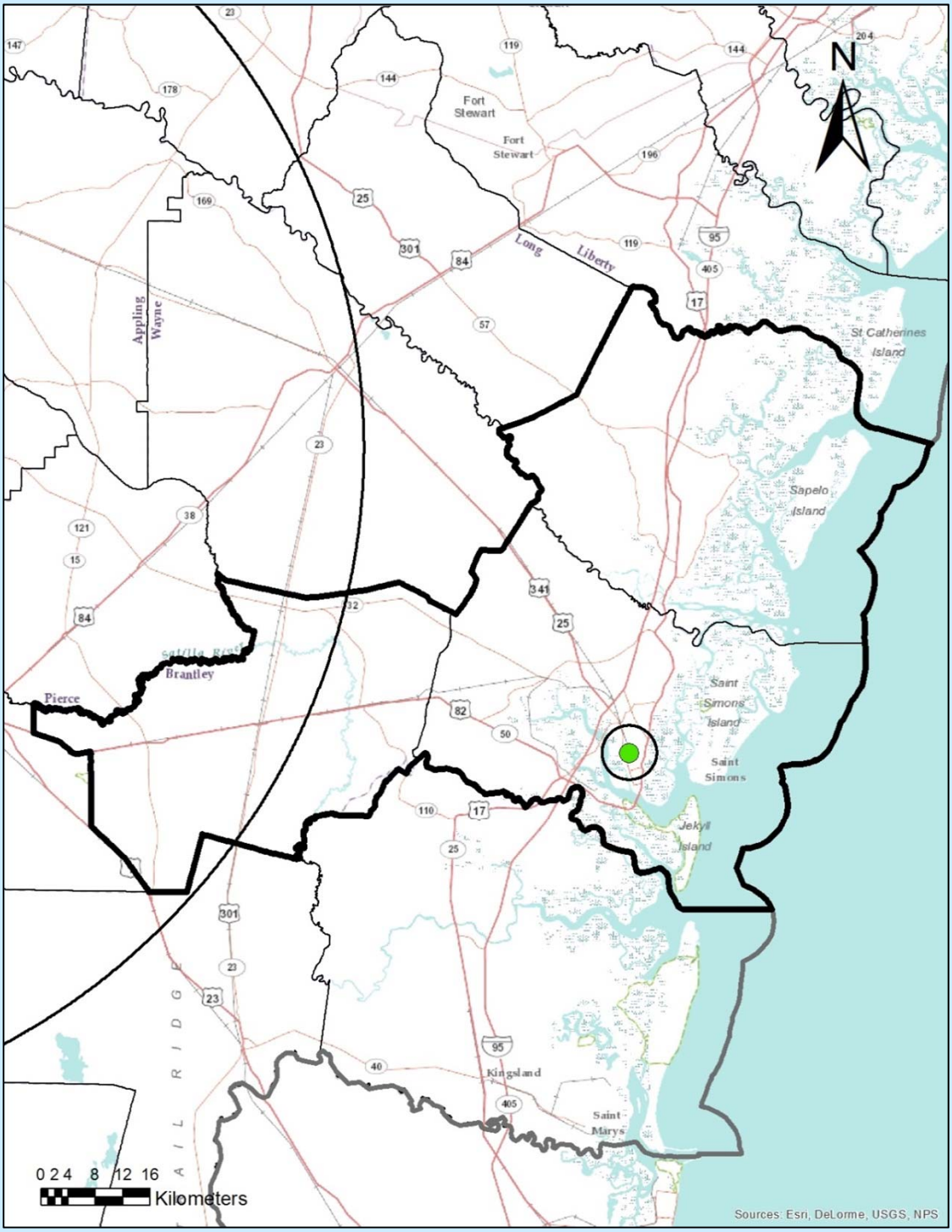
AQS ID: 131150003
Address: Coosa Elementary School, Highway 20, Rome, Floyd County, Georgia 30165
Site Established: 1/1/74
Latitude/Longitude: N34.26051/W-85.32328
Elevation: 186 meters
Area Represented: Rome MSA
Site History: Established as SO_2 site

North South East West

Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
$PM_{2.5}$	Population Exposure	Daily	2 m	Neighborhood	1/18/99
$PM_{2.5}$	Population Exposure	Continuous	3 m	Neighborhood	1/1/08
$PM_{2.5}$ Speciation	Population Exposure	Every 6 days	2 m	Neighborhood	3/1/02
SO_2	Population Exposure	Continuous	4 m	Neighborhood	1/1/75
SO_2 5-Minute Maximum	Population Exposure	Continuous	4 m	Neighborhood	8/1/10

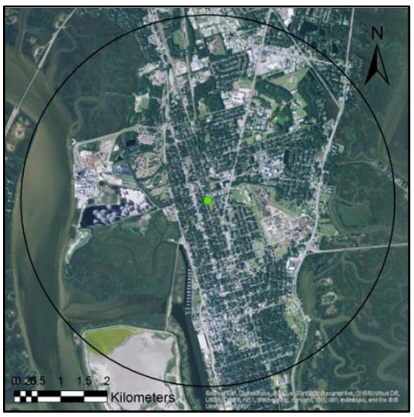
Recommendations: Relocating site as site property was purchased. GA EPD is in the process of selecting an appropriate location in the same vicinity for the new site ,see Appendix E for additional information. $PM_{2.5}$ FRM sampler closing as of December 31, 2016 or when EPA revokes the 1997 NAAQS, whichever is first, see Appendix E for additional information. The continuous $PM_{2.5}$ sampler changing from BAM to TEOM by January 1, 2017, for more information, refer to Section 1.0 of Introduction. GA EPD will begin monitoring wind speed and wind direction beginning January 1, 2017.

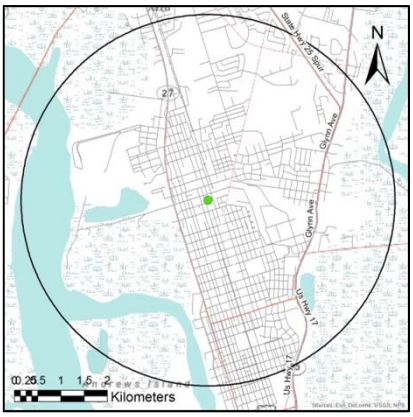
Brunswick MSA



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





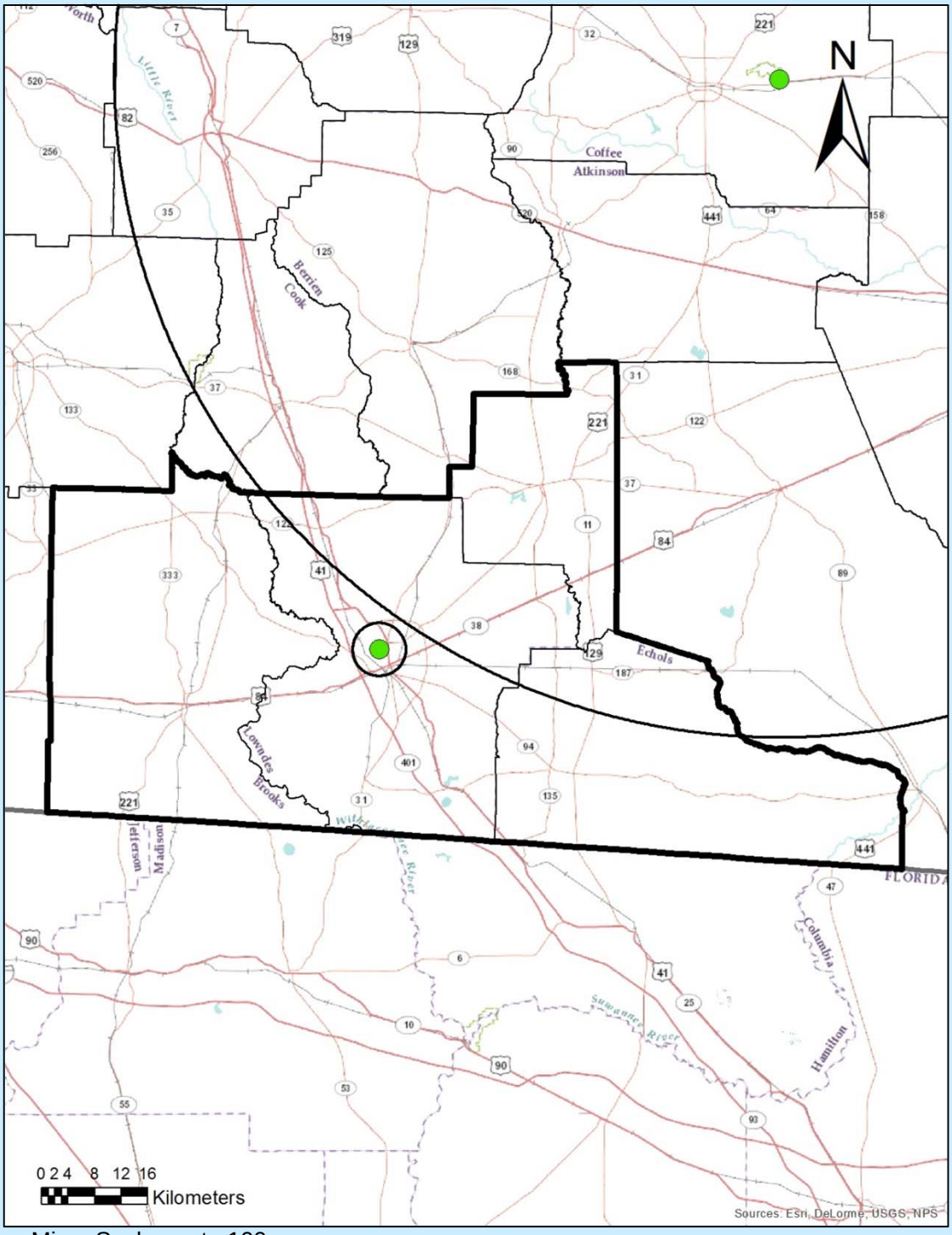
AQS ID: 131270006
Address: Risley Middle School, 2900 Albany Street, Brunswick, Glynn County, Georgia 31520
Site Established: 1/1/87
Latitude/Longitude: N31.169530/W-81.496046
Elevation: 2 meters
Area Represented: Brunswick MSA
Site History: Established as SO_2 site

North South West

Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
$PM_{2.5}$	Population Exposure	Every 6 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

Recommendations: Continue monitoring

Valdosta MSA



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

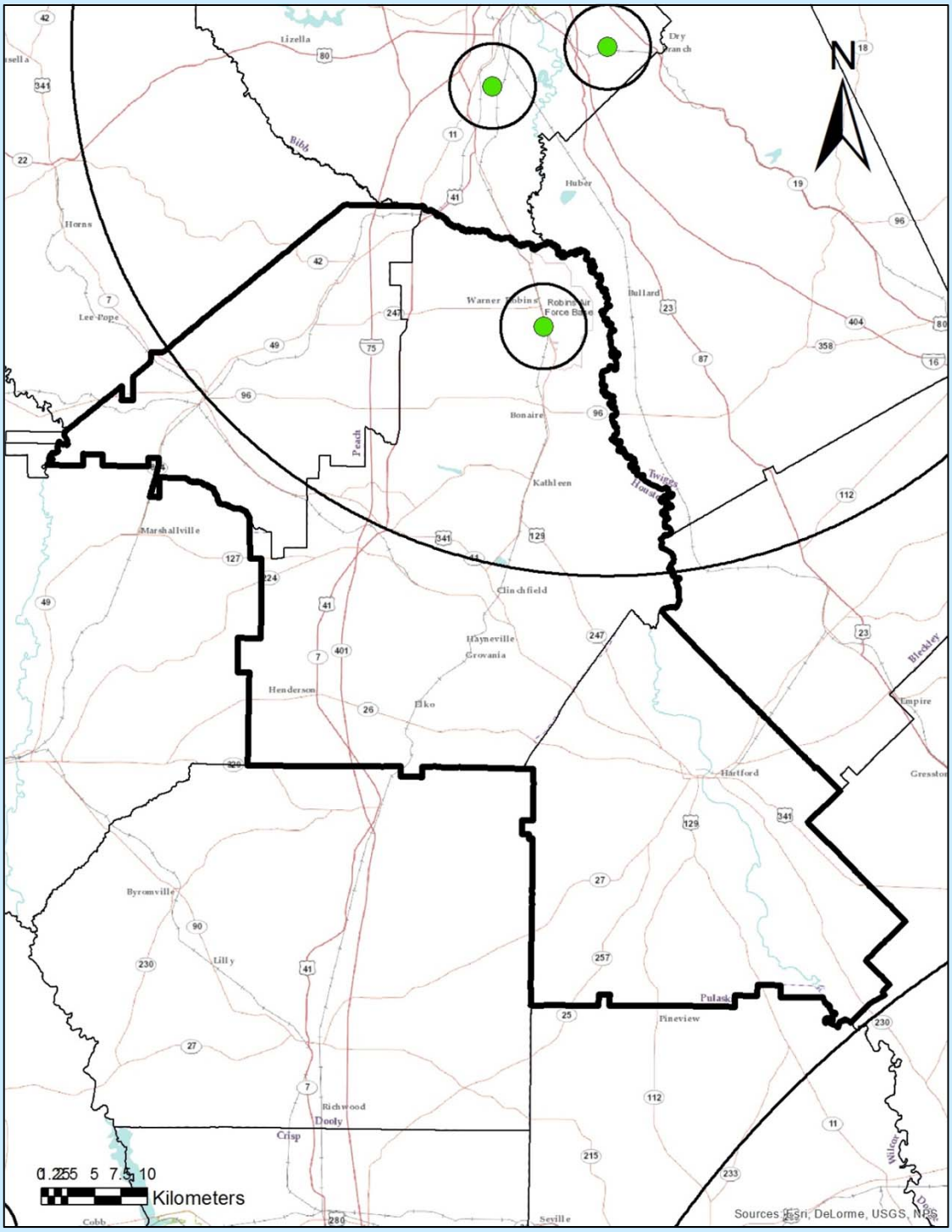
Site History: Established as $PM_{2.5}$ site

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

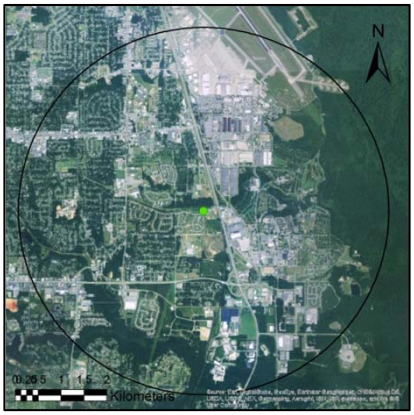
Recommendations: Continue monitoring

Warner Robins MSA



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

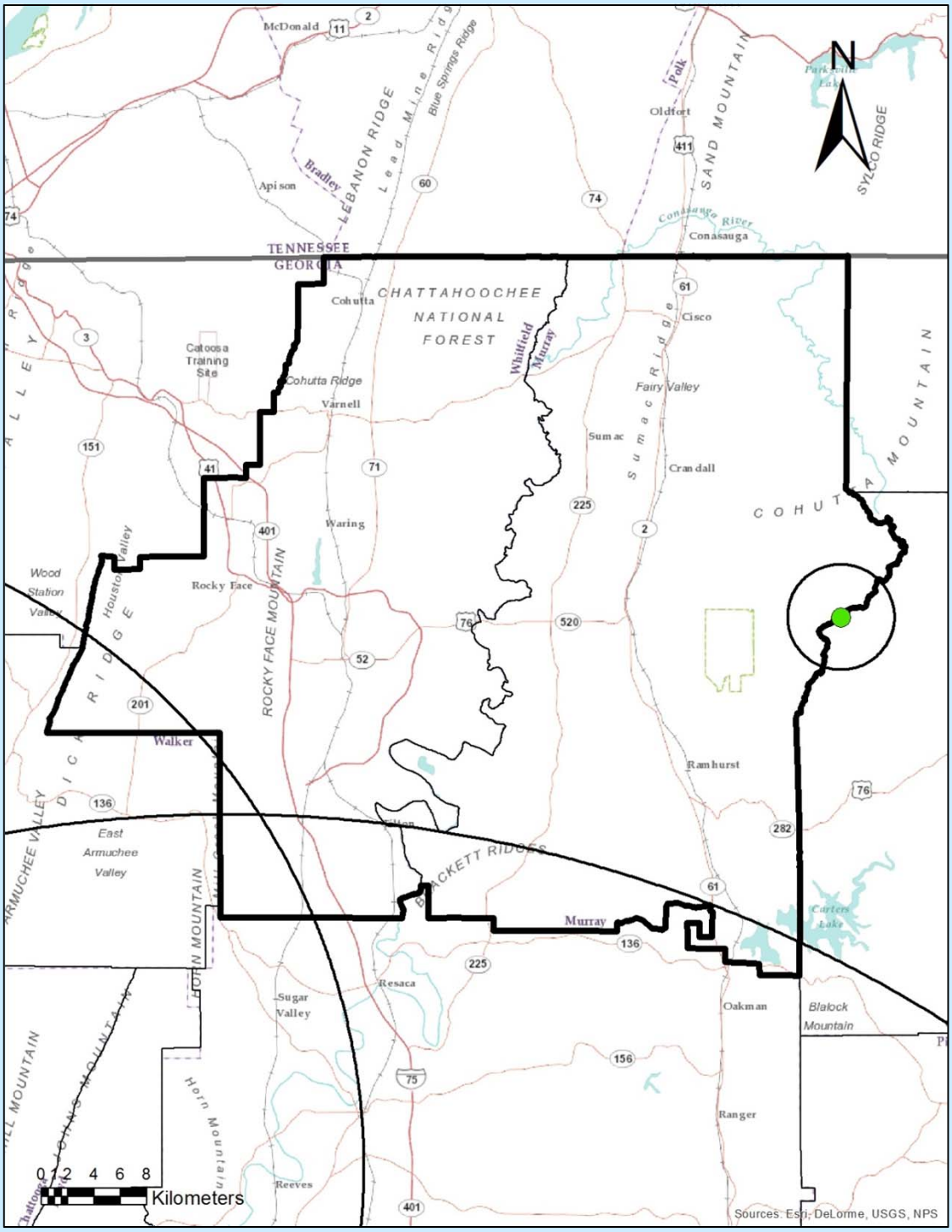
Site History: Established as $PM_{2.5}$ site

North South East West

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

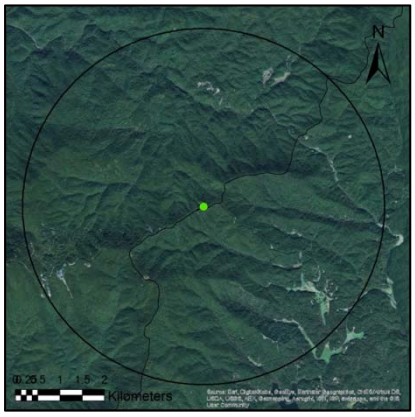
Recommendations: Continue monitoring

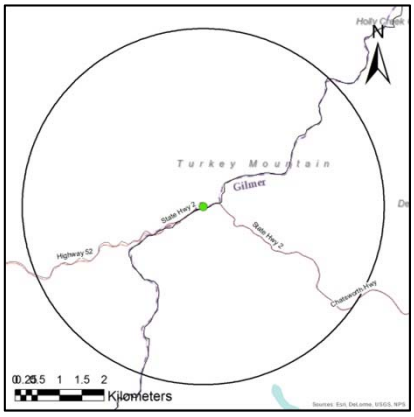
Dalton MSA

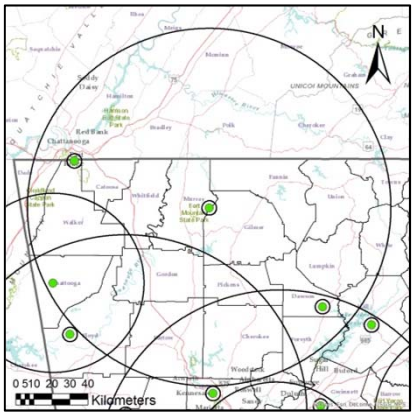


Micro Scale: up to 100m
Middle Scale: up to 0.5km
Neighborhood Scale: up to 4.0km
Urban Scale: up to 50km
Regional Scale: up to 100s of km (100km shown)

Chatsworth- Fort Mountain







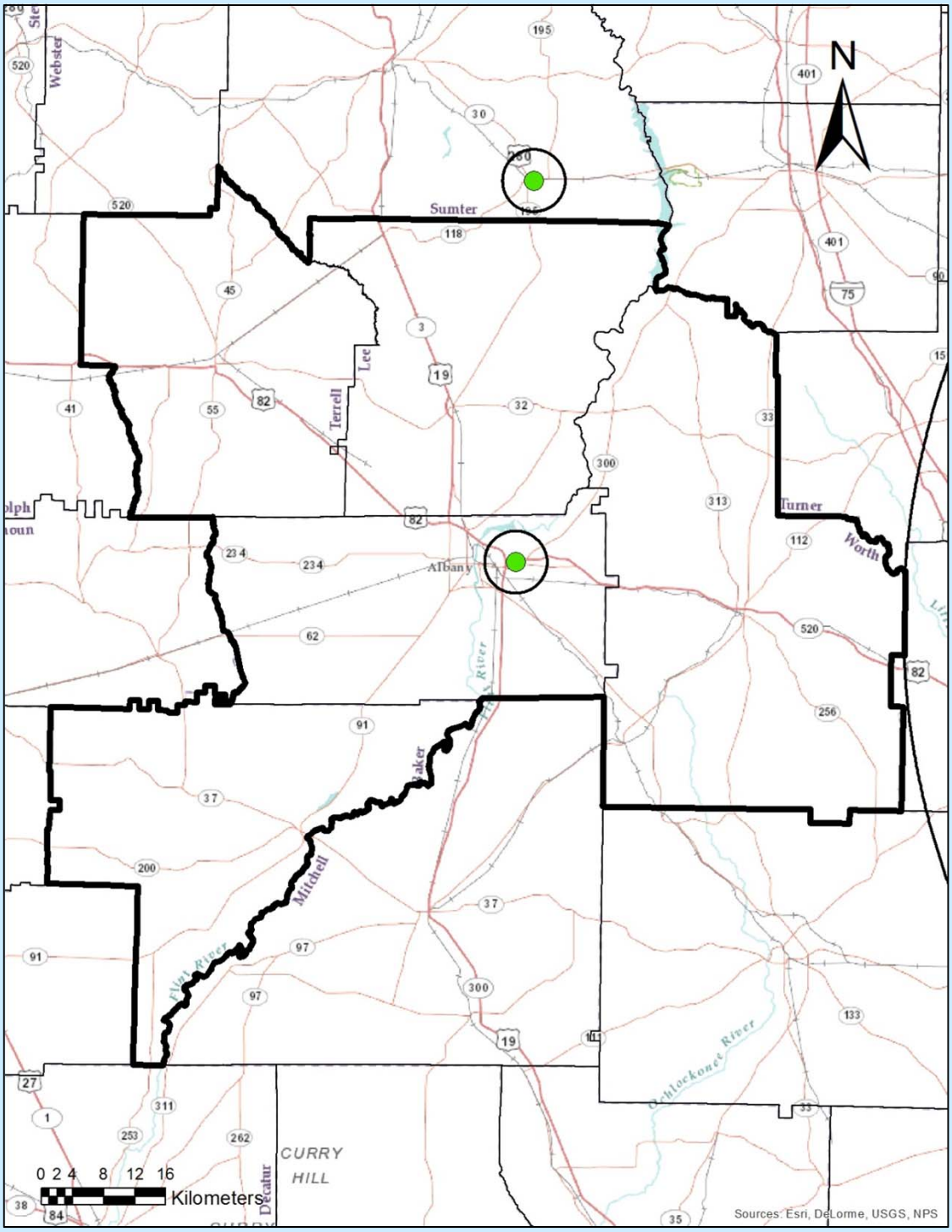
AQS ID: 132130003
Address: Fort Mountain, State Highway 52, Cohutta Overlook, Chatsworth, Murray County, Georgia 30705
Site Established: 3/23/99
Latitude/Longitude: N34.785078/W-84.626499
Elevation: 980 meters
Area Represented: Dalton MSA
Site History: Established as O_3 site

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

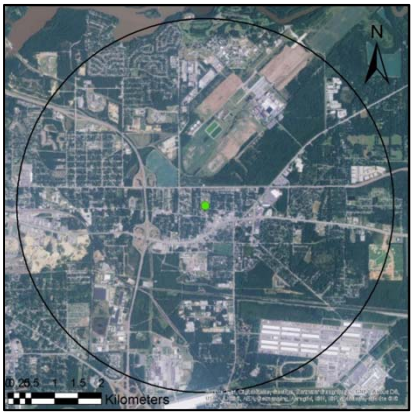
Recommendations: Continue monitoring

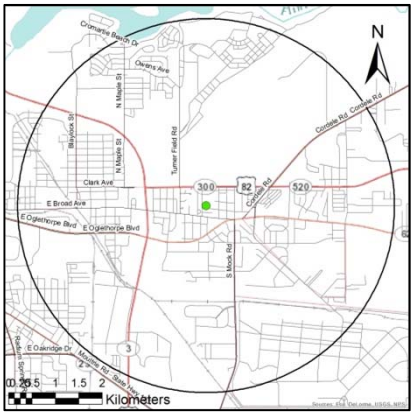
Albany MSA



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





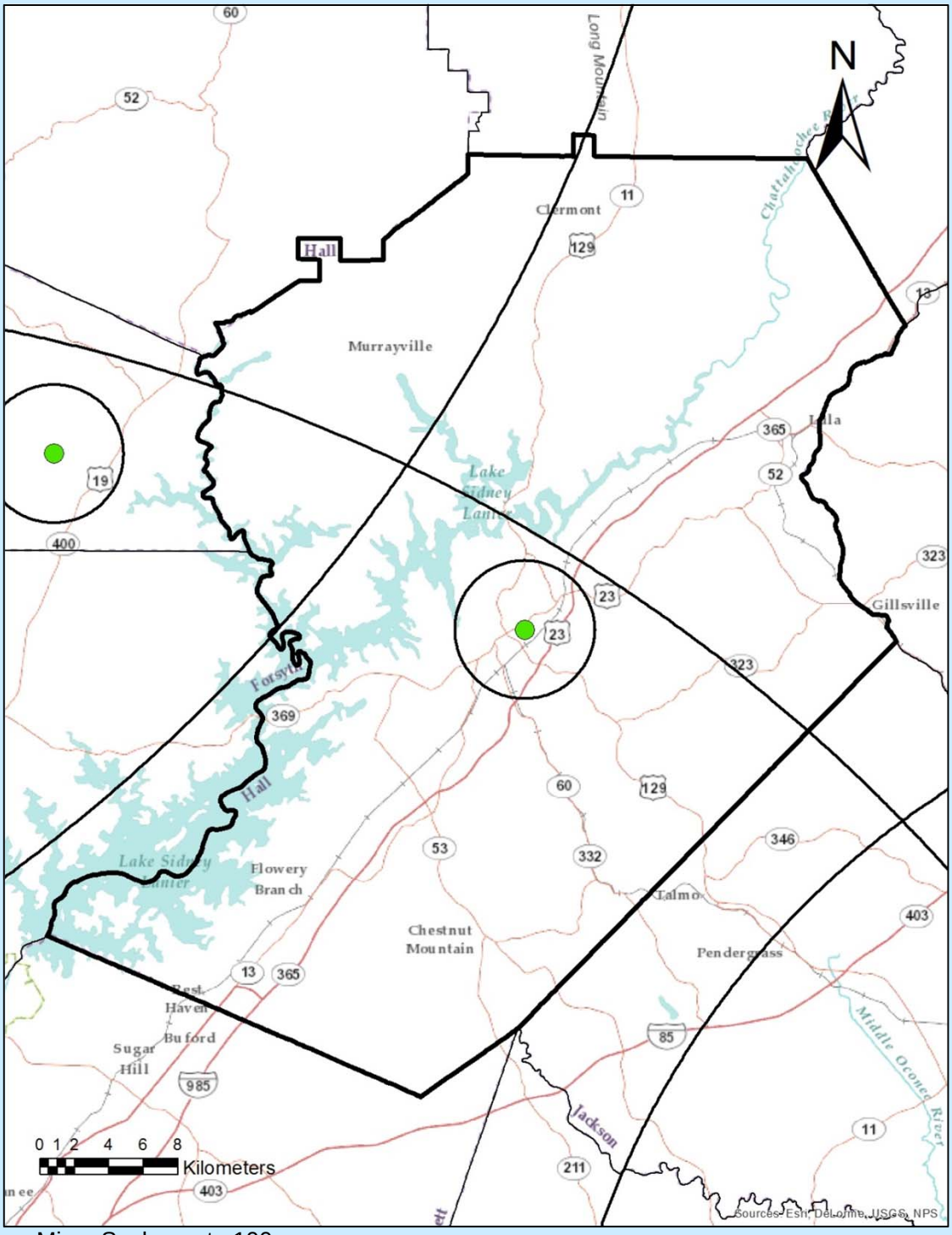
AQS ID: 130950007
Address: Turner Elementary School, 2001 Leonard Avenue, Albany, Dougherty County, Georgia 31705
Site Established: 7/31/91
Latitude/Longitude: N31.576917/W-84.100194
Elevation: 61 meters
Area Represented: Albany MSA
Site History: Established as TSP site

North South East West

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

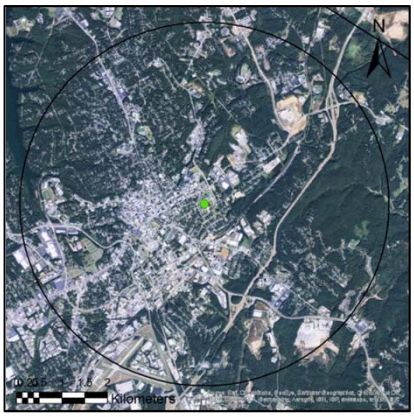
Recommendations: Continue monitoring; Running continuous monitor as FEM as of 1/10/13

Gainesville MSA



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



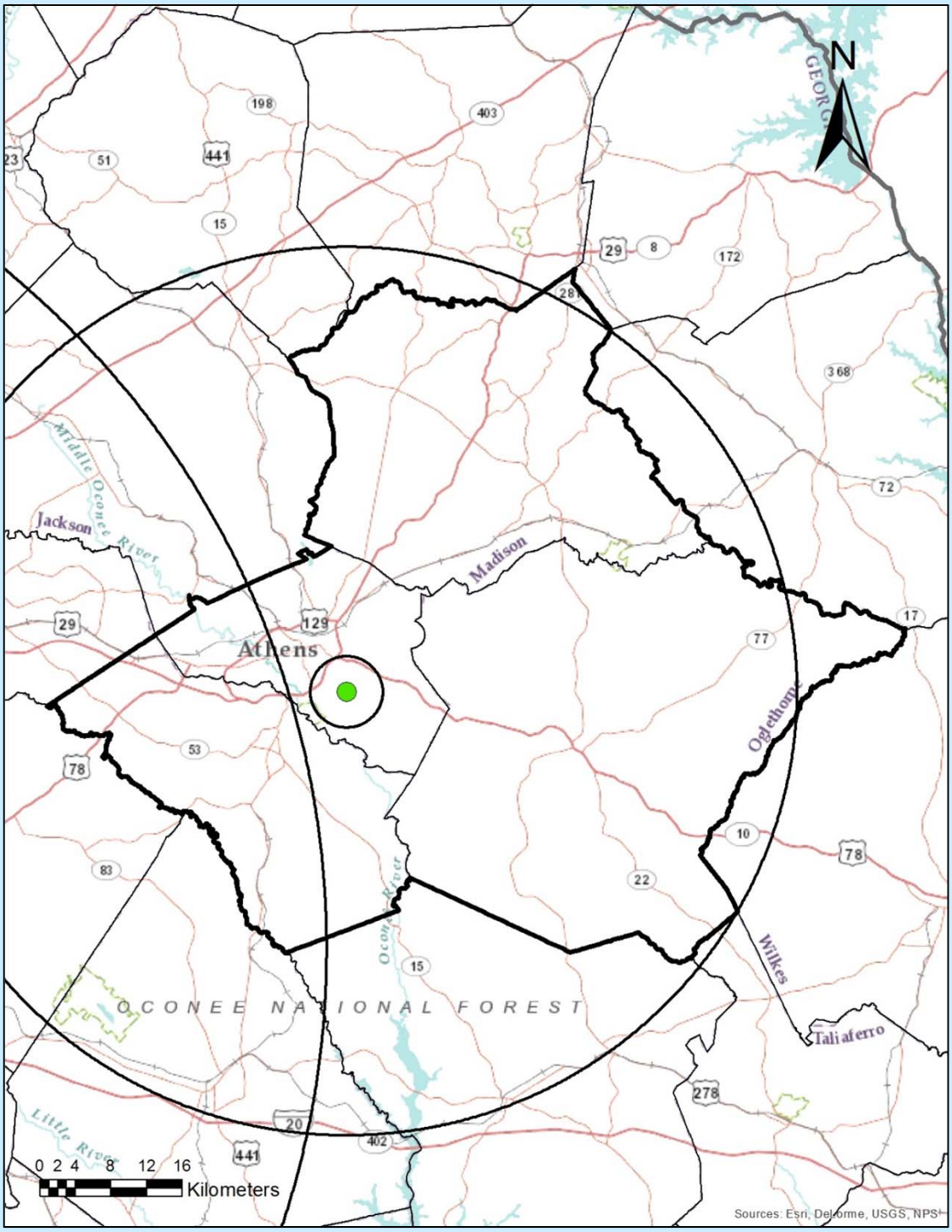
AQS ID: 131390003
Address: Fair Street School, 695 Fair Street, Gainesville, GA 30501
Site Established: 1/1/97
Latitude/Longitude: N34.2994082/W-83.8134716
Elevation: 353 meters
Area Represented: Gainesville MSA
Site History: Established as $PM_{2.5}$ site

North 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	2/14/99
$PM_{2.5}$	Population Exposure	Continuous	3 m	Neighborhood	1/1/08

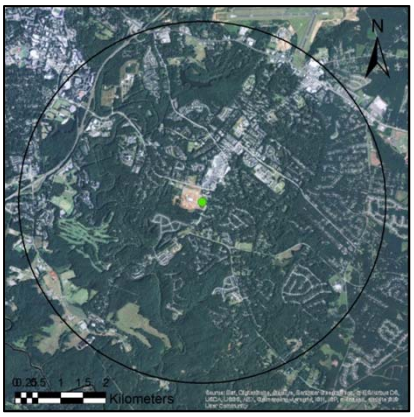
Recommendations: Sampler to be relocated back to 695 Fair St. Gainesville, GA 30501 by December 31, 2016. GA EPD will investigate the continuous $PM_{2.5}$ BAM to be used as an FEM, if the BAM correlates well with $PM_{2.5}$ FRM data.

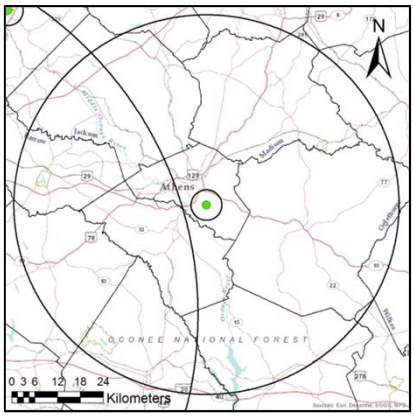
Athens-Clark County MSA



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





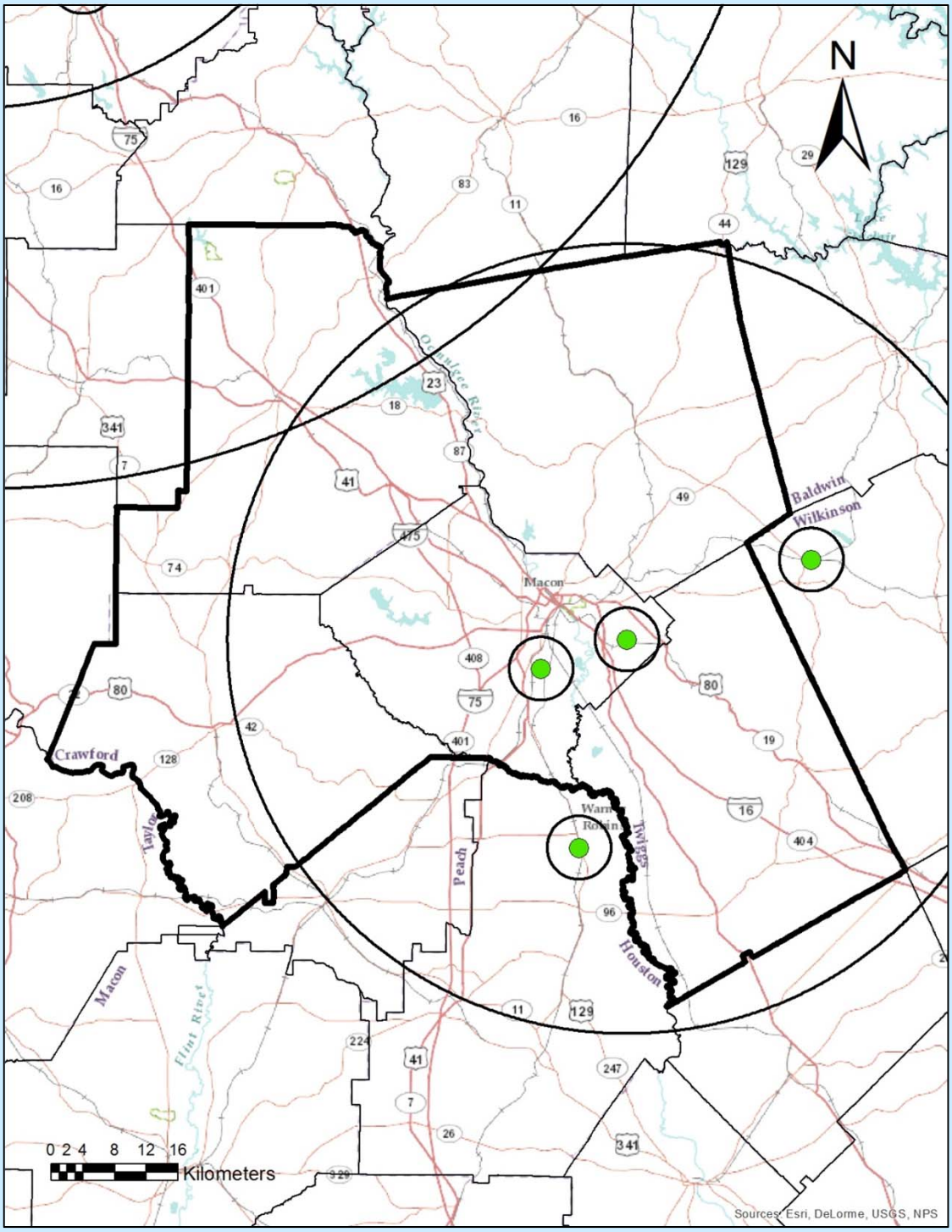
AQS ID: 130590002
Address: Fire Station #7, 2350 Barnett Shoals Road, Athens, Clarke County, Georgia 30603
Site Established: 3/1/02
Latitude/Longitude: N33.91793/-W83.34461
Elevation: 233 meters
Area Represented: Athens-Clarke County MSA
Site History: Established as O_3 and PM site

North South 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

Recommendations: Continue monitoring; considering configuring continuous $PM_{2.5}$ TEOM sampler as an FEM, which would be compared to the NAAQS

Macon MSA



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

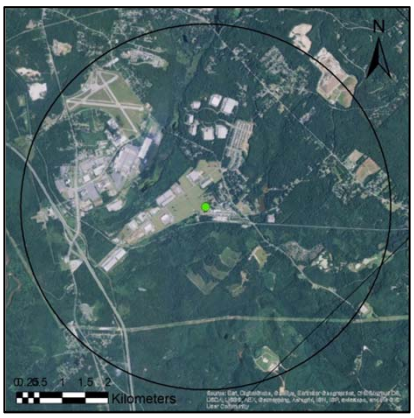
AQS ID: 130210007
Address: Allied Chemical, 600 Guy Paine Road, Macon, Bibb County, Georgia 31206
Site Established: 1/1/74
Latitude/Longitude: N32.77729/W-83.64120
Elevation: 106 meters
Area Represented: Macon MSA
Site History: Established as TSP site

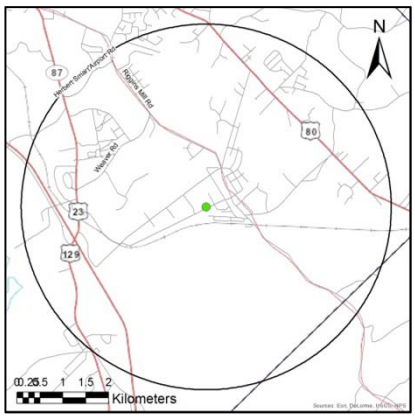
North South East West

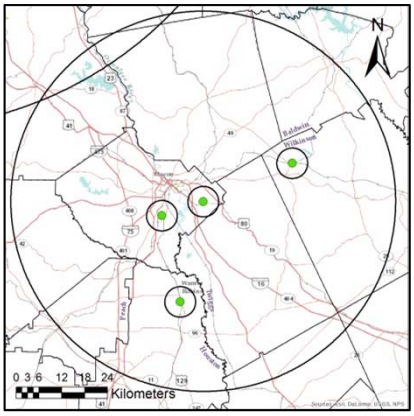
Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
$PM_{2.5}$ Speciation	Population Exposure	Every 6 days	4 m	Neighborhood	3/1/02
$PM_{2.5}$	Population Exposure	Daily	4 m	Neighborhood	2/2/99
$PM_{2.5}$	Quality Assurance	Every 12 days	4 m	Neighborhood	2/2/99

Recommendations: 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

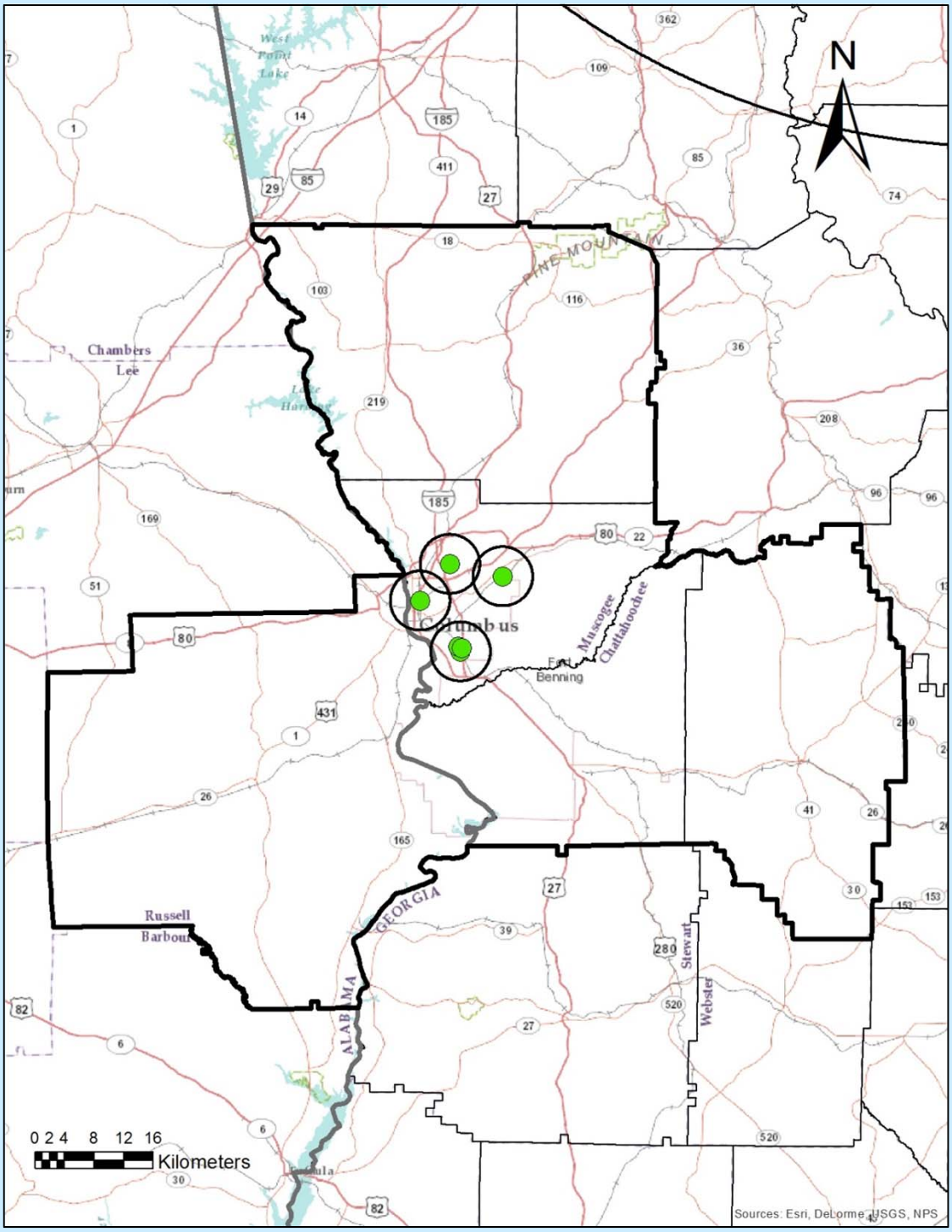
North South East West

Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
$PM_{2.5}$	Population Exposure	Every 3 days	4 m	Neighborhood	2/1/99
$PM_{2.5}$	Population Exposure	Continuous	4 m	Neighborhood	5/5/03
Wind Direction	General/ Background	Continuous	10 m	Neighborhood	1/1/04
Wind Speed	General/ Background	Continuous	10 m	Neighborhood	1/1/04
O_3	Population Exposure	Continuous (Mar-Oct)	4 m	Neighborhood	5/7/97
SO_2	Population Exposure	Continuous	4 m	Urban	5/7/97
SO_2 5-Minute Maximum	Population Exposure	Continuous	4 m	Neighborhood	8/1/10
Toxics	Population Exposure	Every 12 days	2 m	Neighborhood	1/1/99

Macon- GA Forestry Commission (continued)

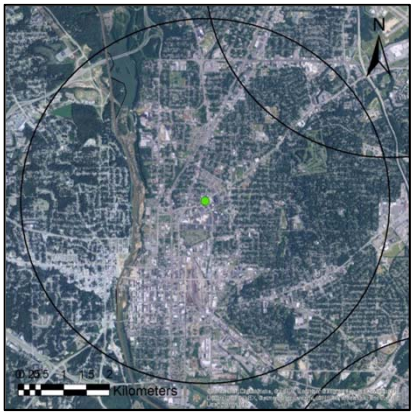
Recommendations: Continue monitoring; considering configuring continuous $PM_{2.5}$ TEOM sampler as an FEM, which would be compared to the NAAQS

Columbus Georgia-Alabama MSA



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

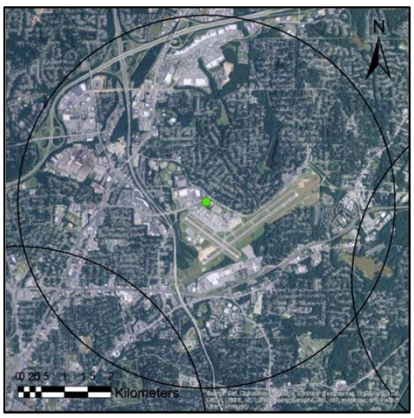
Site History: Established as TSP site

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

Recommendations: 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

Recommendations: 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

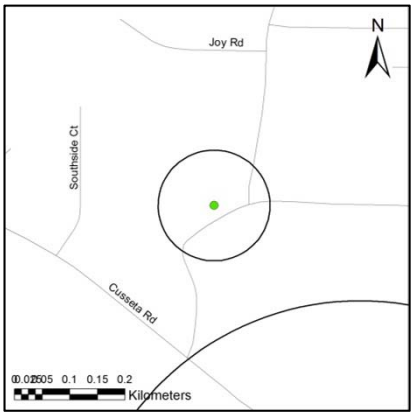
North South East West

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

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

Columbus- Fort Benning



AQS ID: 132150010
Address: Ft. Benning Junction, 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

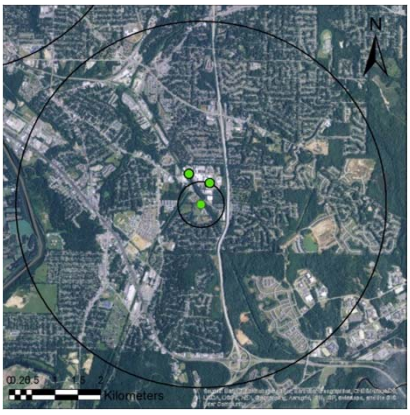
North South West

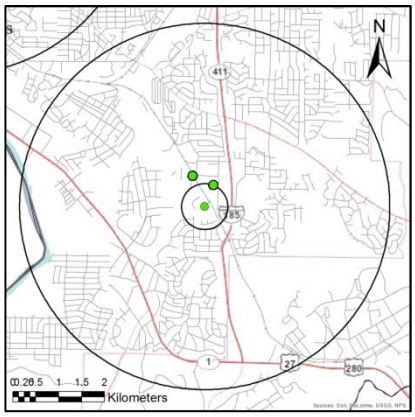
Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
Lead	Source Oriented	Every 6 days	2 m	Micro	3/1/91*
Lead	Source Oriented	Every 6 days	2 m	Micro	4/10/13

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

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

Columbus- Cusseta Road Elementary





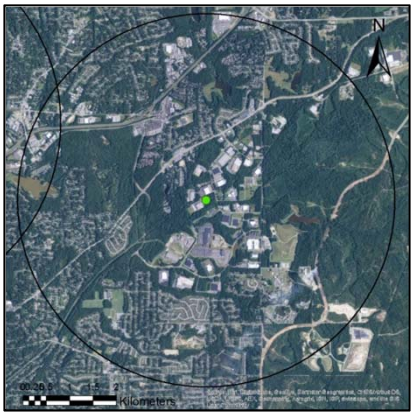
AQS ID: 132150011
Address: Cusseta Road Elementary School, 4150 Cusseta Road, Columbus, Muscogee County, Georgia 31903
Site Established: 9/4/91
Latitude/Longitude: N32.42905/W-84.93160
Elevation: 88 meters
Area Represented: Columbus Georgia-Alabama MSA
Site History: Established as lead site

North South East West

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

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

Columbus- Crime Lab



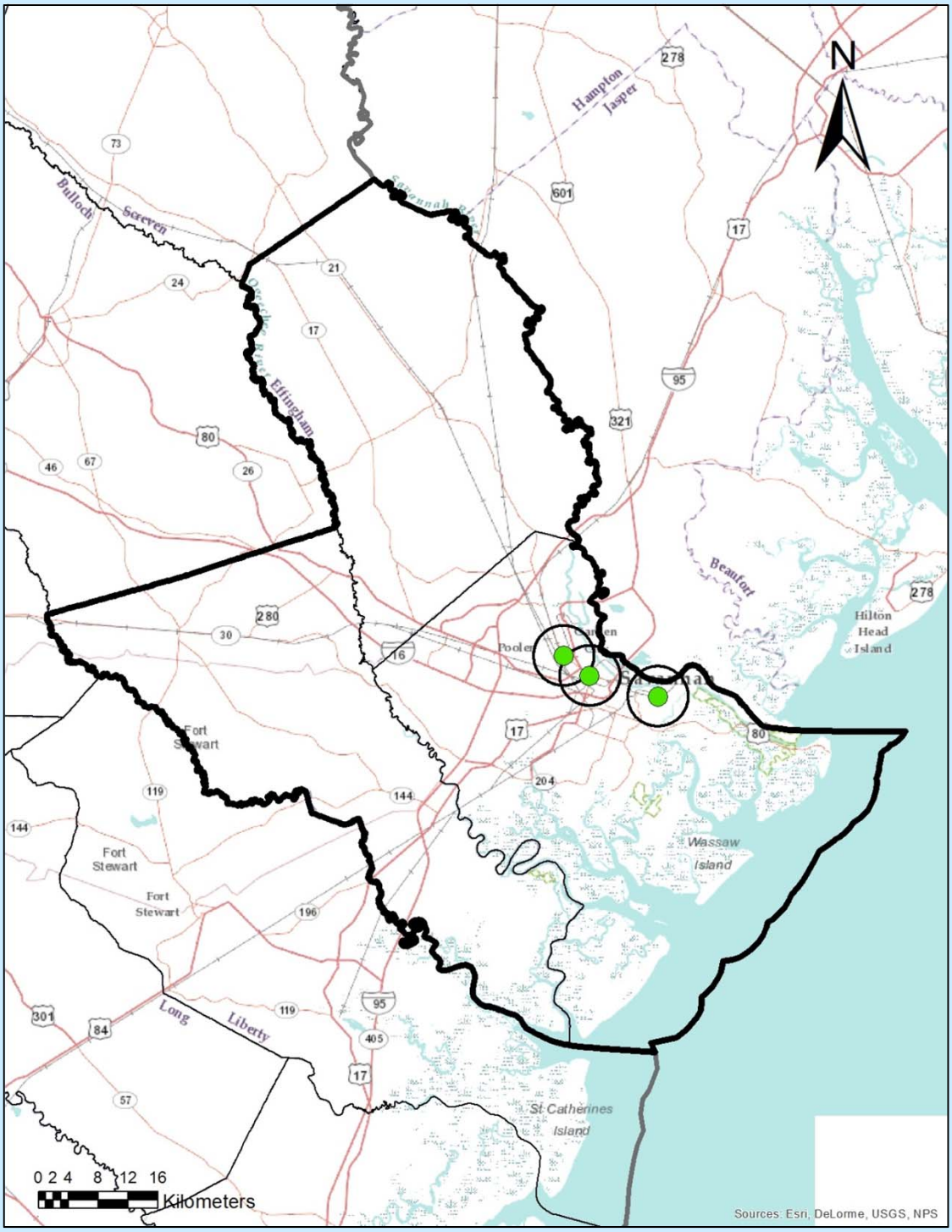
AQS ID: 132151003
Address: Columbus Crime Lab, 8695 Beaver Run Road, Midland, Muscogee County, Georgia 31820
Site Established: 6/30/80
Latitude/Longitude: N32.50854/W-84.88037
Elevation: 122 meters
Area Represented: Columbus Georgia-Alabama MSA
Site History: Established as O_3 site

North South West

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

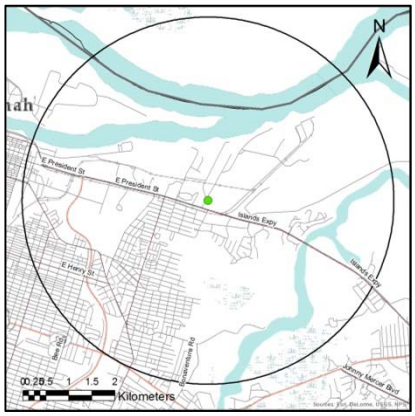
Recommendations: Continue monitoring

Savannah MSA



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

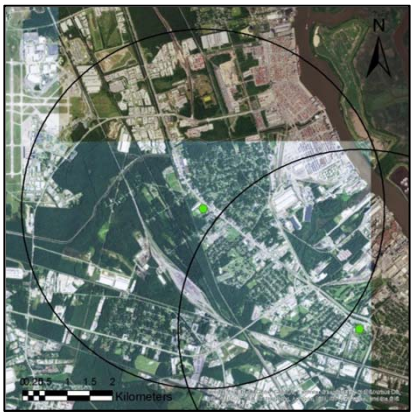
East

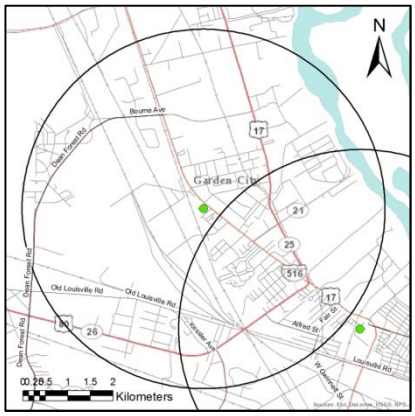
West

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

Recommendations: Continue monitoring

Savannah- Mercer School





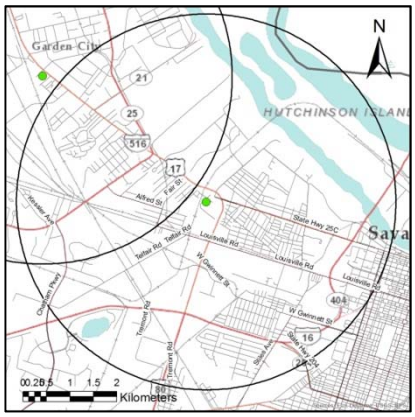
AQS ID: 130510091
Address: Mercer Middle School, 201 Rommel Avenue, Savannah, Chatham County, Georgia 31408
Site Established: 7/7/76
Latitude/Longitude: N32.110580/W-81.162024
Elevation: 4 meters
Area Represented: Savannah MSA
Site History: Established as TSP site

North South East West

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

Recommendations: Continue monitoring

Savannah- Lathrop and Augusta



AQS ID: 130511002

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

Site Established: 1/1/72

Latitude/Longitude: N32.090278/W-81.130556

Elevation: 4 meters

Area Represented: Savannah MSA

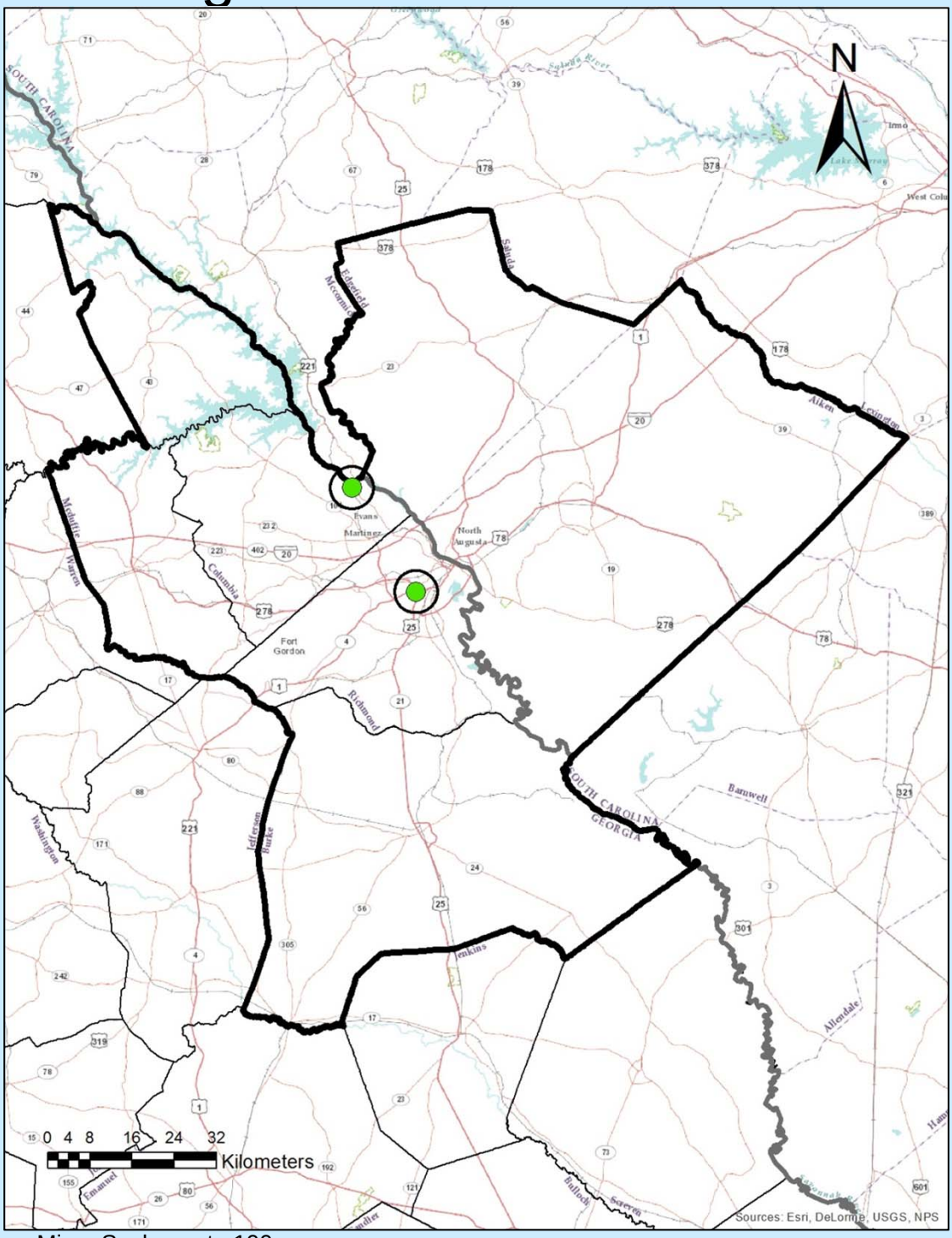
Site History: Established as TSP site

Northeast Southwest

Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
SO_2	Population Exposure	Continuous	4 m	Neighborhood	1/1/98
SO_2 5-Minute Maximum	Population Exposure	Continuous	4 m	Neighborhood	8/1/10
Wind Direction	General/ Background	Continuous	10 m	Neighborhood	1/1/79
Wind Speed	General/ Background	Continuous	10 m	Neighborhood	1/1/79
$PM_{2.5}$	Population Exposure	Continuous	5 m	Neighborhood	10/1/03

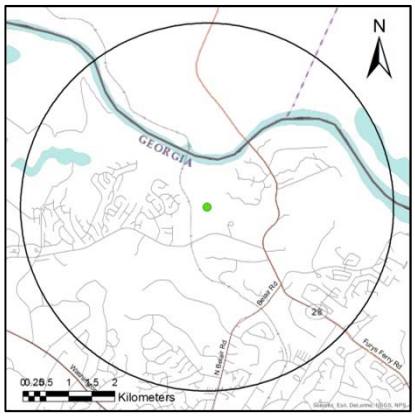
Recommendations: Continue monitoring; propose to add an ozone monitor when initiated by EPA

Augusta-Richmond County, Georgia-South Carolina MSA



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



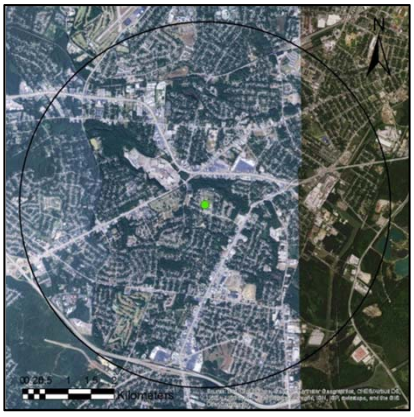
AQS ID: 130730001
Address: Riverside Park, 4431 Hardy McManus Road, Evans, Columbia County, Georgia 30809
Site Established: 2/17/05
Latitude/Longitude: N33.582000/W-82.131340
Elevation: 74 meters
Area Represented: Augusta-Richmond County, Georgia-South Carolina MSA
Site History: Established as O_3 and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

Recommendations: 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	Every 6 days	6 m	Neighborhood	4/9/96
PM_{10}	Quality Assurance	Every 12 days	6 m	Neighborhood	1/10/13
$PM_{2.5}$ 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

Recommendations: Continue monitoring

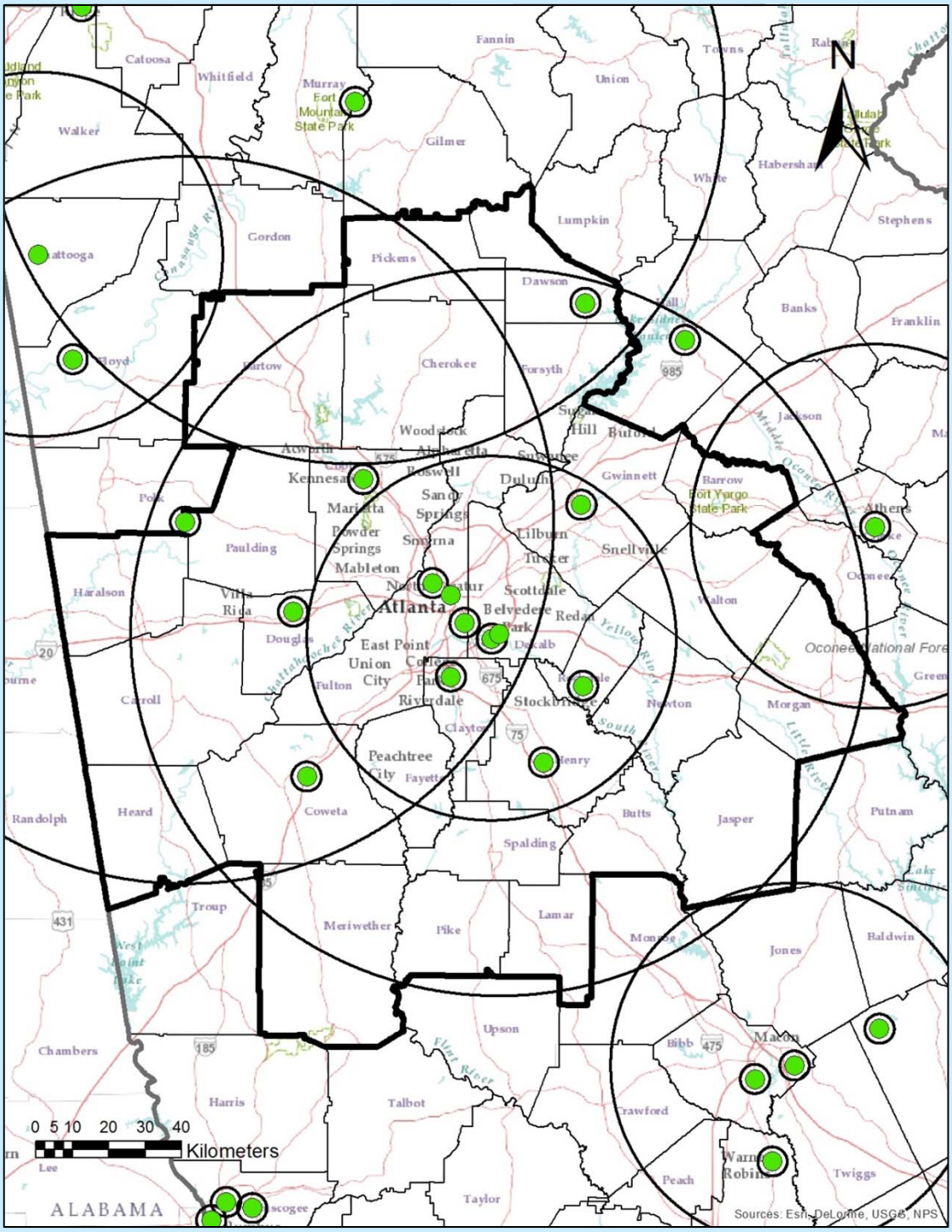
Augusta- Near-Road Monitoring Site

AQS ID: To be determined
Address: Augusta, Richmond County, Georgia (Specifics to be determined)
Site Established: To be determined
Latitude/Longitude: To be determined
Elevation: To be determined
Area Represented: Augusta-Richmond County, Georgia-South Carolina MSA

Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
NO_2	Highest Concentration	Continuous	TBD	Micro	TBD

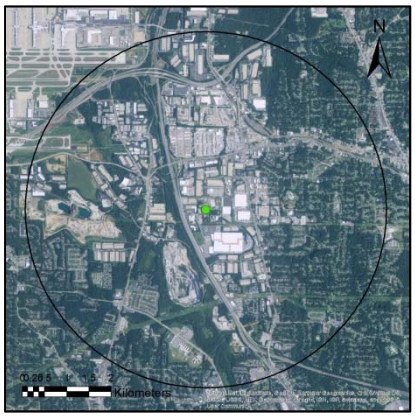
Site was required to be established by January 1, 2017; however, EPA has proposed to remove this requirement. (See Section 4.3 of Introduction for details)

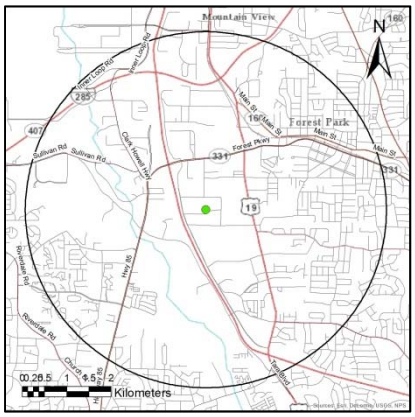
Atlanta-Sandy Springs-Marietta MSA



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

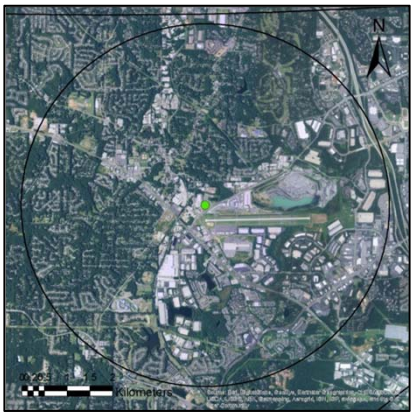
East

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

Recommendations: Continue monitoring

Kennesaw- National Guard



AQS ID: 130670003
Address: Georgia National Guard, 1901 McCollum Parkway, Kennesaw, Cobb County, Georgia, 30144
Site Established: 2/7/99
Latitude/Longitude: N34.015346/W-84.607484
Elevation: 317 meters
Area Represented: Atlanta-Sandy Springs-Marietta MSA
Site History: Established as $PM_{2.5}$ site

North South East West

Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
O_3	Population Exposure	Continuous (Mar-Oct)	4 m	Neighborhood	9/1/99
$PM_{2.5}$	Population Exposure	Daily	4 m	Neighborhood	2/7/99

Recommendations: Continue monitoring

Newnan- University of West Georgia

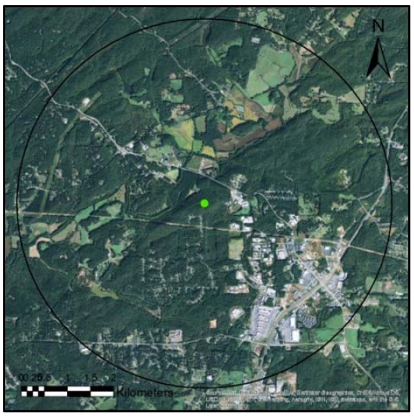
AQS ID: 130770002
Address: Univ. of West GA, Newnan Campus, 7 Solar Circle, Newnan, Coweta County, Georgia 30265
Site Established: 5/5/99
Latitude/Longitude: N33.40389/W-84.74606
Elevation: 271 meters
Area Represented: Atlanta-Sandy Springs-Marietta MSA
Site History: Established as O_3 site

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

Recommendations: 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

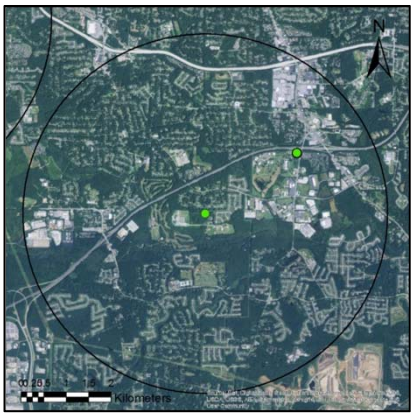
Site History: Established as O_3 site

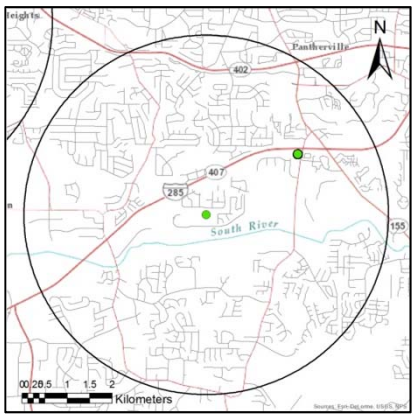
North South East West

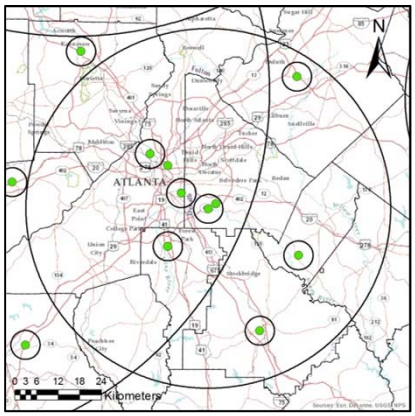
Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
O_3	Population Exposure	Continuous (Mar-Oct)	4 m	Neighborhood	1/1/85

Recommendations: 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	Daily	2.7 m	Neighborhood	1/22/99
$PM_{2.5}$	Quality Assurance	Every 12 days	2.7 m	Neighborhood	12/20/08
$PM_{2.5}$	Population Exposure	Continuous	4 m	Neighborhood	5/1/03
$PM_{2.5}$ Speciation	Population Exposure	Every 3 days	2.6 m	Neighborhood	10/1/00
SO_2	Population Exposure	Continuous	4 m	Neighborhood	10/1/10
SO_2 5-Minute Maximum	Population Exposure	Continuous	4 m	Neighborhood	10/1/10
O_3	Highest Concentration	Continuous	4 m	Neighborhood/ Urban	1/1/74

Decatur- South DeKalb (continued)

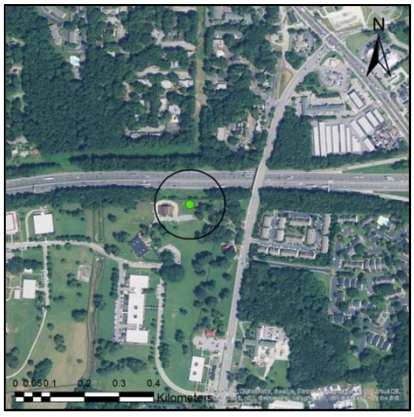
Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
CO	Population Exposure	Continuous	4 m	Neighborhood	5/19/03
NOy	Population Exposure	Continuous	10 m	Neighborhood/ Urban	1/1/98
NO	Population Exposure	Continuous	4 m	Neighborhood/ Urban	4/1/94
NOx	Population Exposure	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/Toxics)	National Trends/ Population Exposure	Every 6 days	4 m	Neighborhood	6/1/93
Carbonyls (NATTS/Toxics)	National Trends/Quality Assurance	Every 12 days	4 m	Neighborhood	1/1/06
PM_{10} Select Metals (NATTS/Toxics)	National Trends/ Population Exposure	Every 6 days	2 m	Neighborhood	1/1/00
PM_{10} Select Metals (NATTS/Toxics)	National Trends/Quality Assurance	Every 12 days	2.3 m	Neighborhood	1/1/05
PM_{10} Continuous	Population Exposure	Continuous	4 m	Neighborhood	1/1/11
PM_{coarse} Continuous	Population Exposure	Continuous	4 m	Neighborhood	1/1/11
VOCs (PAMS)	Max Precursor Emissions	Every 6 days	4 m	Neighborhood	6/1/93
VOCs (NATTS/Toxics)	National Trends/ Population Exposure	Every 6 days	4 m	Neighborhood	6/1/93
VOCs (NATTS/Toxics)	National Trends/Quality Assurance	Every 6 days	4 m	Neighborhood	1/1/05

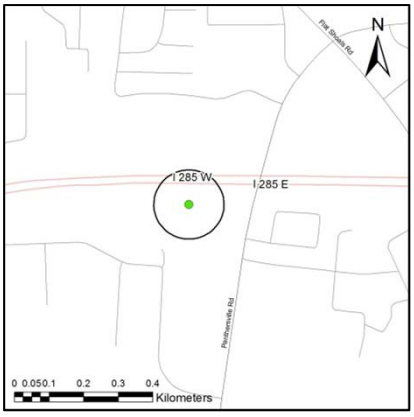
Decatur- South DeKalb (continued)

Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
Elemental Carbon (Aethalometer)	Population Exposure	Continuous	4 m	Neighborhood	6/12/03
Semi-VOCs (NATTS/Toxics)	National Trends/ Population Exposure	Every 6 days	1.6 m	Neighborhood	4/30/07
Semi-VOCs (NATTS/Toxics)	National Trends/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
Wind Speed	General/ Background	Continuous	10 m	Neighborhood	6/1/93
Sigma Theta	General/ Background	Continuous	10 m	Neighborhood	1/1/02
Relative Humidity	General/ Background	Continuous	2 m	Neighborhood	6/1/93

Recommendations: Continue monitoring; NCore site (see Appendix C of 2014 Ambient Air Monitoring Plan for full description and approval) *Solar radiation and Ultraviolet radiation for South DeKalb PAMS are currently monitored at the Conyers site due to equipment specifications

Decatur- DMRC Near-Road





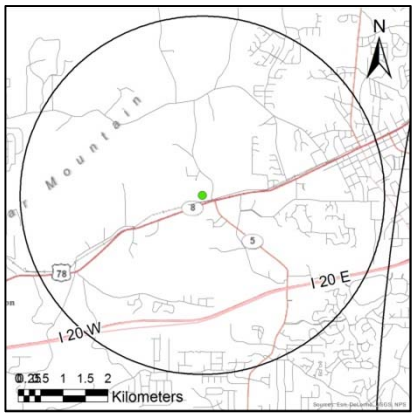
AQS ID: 130890003
Address: D.M.R.C., 3073 Panthersville Road, Decatur, DeKalb County, Georgia 30034
Site Established: 7/1/86
Latitude/Longitude: N33.698468/W-84.272694
Elevation: 238 meters
Area Represented: Atlanta-Sandy Springs-Marietta MSA
Site History: Established as lead site

North South East West

Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
Lead	Regional Transport	Every 6 days	2 m	Regional	7/1/86
Lead	Quality Assurance	Every 12 days	2 m	Regional	8/5/09
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

Recommendations: Continue monitoring; Near-road site as of 1/1/15 (see 'Addendum to 2014 Ambient Monitoring Plan' for full description); Discontinue the lead monitor since no longer required for NCore (see Introduction Section 4.1 for additional information)

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

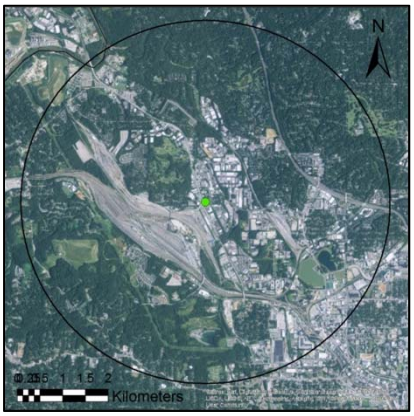
Site History: Established as O_3 site

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

Recommendations: 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

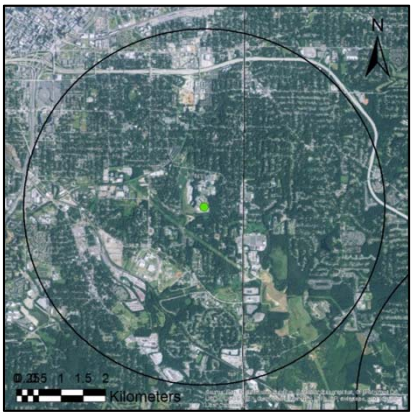
North South East West

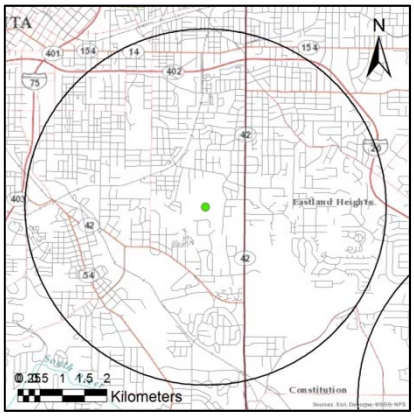
Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
$PM_{2.5}$	Population Exposure	Every 3 days	4 m	Neighborhood	1/21/99*
PM_{10}	Population Exposure	Every 6 days	4 m	Neighborhood	10/18/87**

* Sampler inactive from 9/30/06 to 12/1/08, **Sampler inactive from 9/26/06 to 1/3/13

Recommendations: Continue monitoring

Atlanta- Confederate Avenue





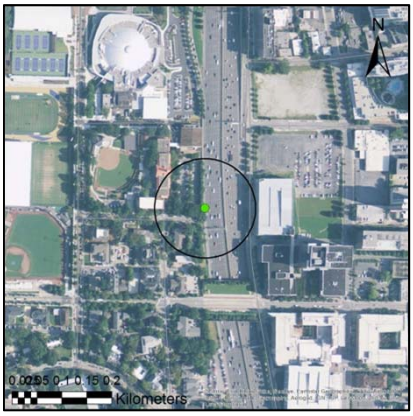
AQS ID: 131210055
Address: 935 East Confederate Avenue, Atlanta, Fulton County, Georgia 30316
Site Established: 10/1/91
Latitude/Longitude: N33.72005/W-84.35714
Elevation: 292 meters
Area Represented: Atlanta-Sandy Springs-Marietta MSA
Site History: Established as O_3 and SO_2 site

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

Recommendations: 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

Northeast Southeast East

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	Continuous	5 m	Micro	1/1/15
Black Carbon	Source Oriented	Continuous	TBD	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

Recommendations: Continue monitoring. See Appendix E of '2014 Ambient Monitoring Plan' for near-road site establishment and details.

Lawrenceville- Gwinnett Tech

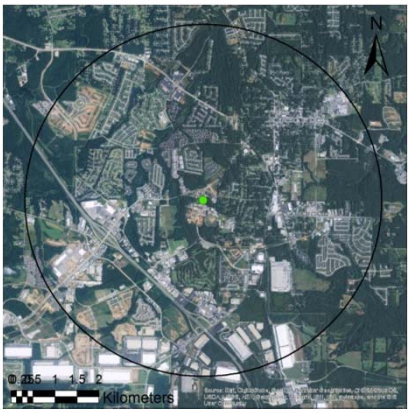
AQS ID: 131350002
Address: Gwinnett Tech, 5150 Sugarloaf Parkway, Lawrenceville, Gwinnett County, Georgia 30043
Site Established: 3/17/95
Latitude/Longitude: N33.96127/W-84.06901
Elevation: 290 meters
Area Represented: Atlanta-Sandy Springs-Marietta MSA
Site History: Established as O_3 site

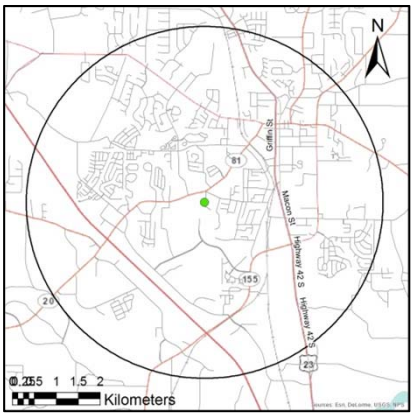
North South East West

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

Recommendations: Continue monitoring

McDonough- County Extension Office





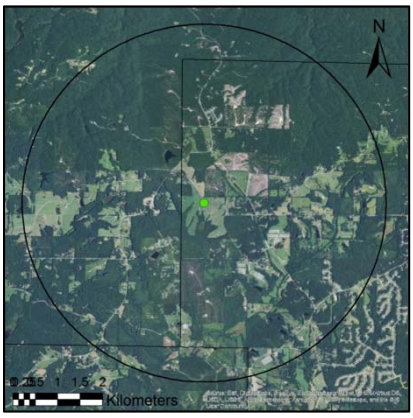
AQS ID: 131510002
Address: Henry County Extension Office, 86 Work Camp Rd, McDonough, Henry County, Georgia 30253
Site Established: 6/7/99
Latitude/Longitude: N33.433426/W-84.161797
Elevation: 249 meters
Area Represented: Atlanta-Sandy Springs-Marietta MSA
Site History: Established as O_3 site

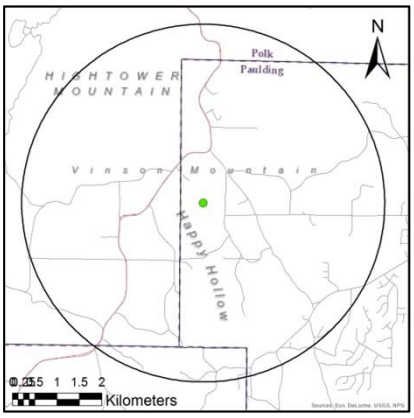
North South East West

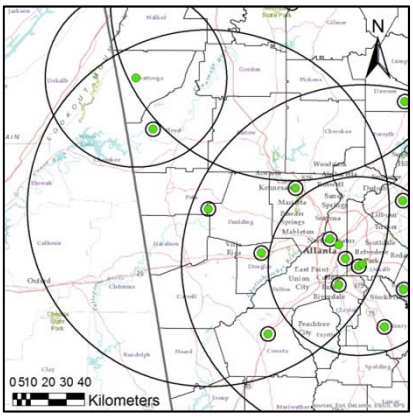
Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
O_3	Population Exposure	Continuous (Mar-Oct)	4 m	Neighborhood	6/7/99
$PM_{2.5}$	Population Exposure	Continuous	4 m	Neighborhood	9/1/03

Recommendations: Continue monitoring

Yorkville- King Farm







AQS ID: 132230003
Address: King Farm, 160 Ralph King Path, Rockmart, Paulding County, Georgia, 30153
Site Established: 1/1/96
Latitude/Longitude: N33.92850/W-85.04534
Elevation: 379 meters
Area Represented: Atlanta-Sandy Springs-Marietta MSA
Site History: Established as PAMS site

North South East

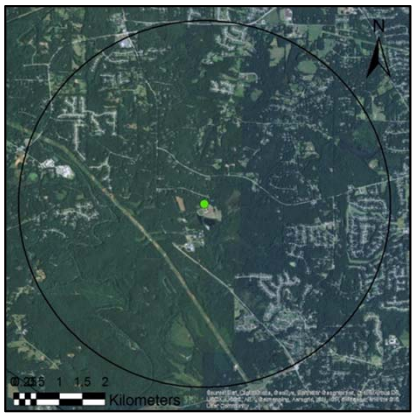
Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
O_3	Population Exposure/ Upwind Background	Continuous (Mar-Oct)	4 m	Regional	1/1/96
$PM_{2.5}$	Upwind Background	Continuous	4 m	Regional	3/1/03
$PM_{2.5}$	Upwind Background/ Regional Transport	Every 3 days	5 m	Regional	1/24/99
Toxics	Regional Transport	Every 12 days	2 m	Neighborhood	1/1/00
VOCs (Toxics)	Regional Transport	Every 12 days	4 m	Neighborhood	1/1/96
Carbonyls (Toxics)	Regional Transport	Every 12 days	4 m	Neighborhood	1/13/16

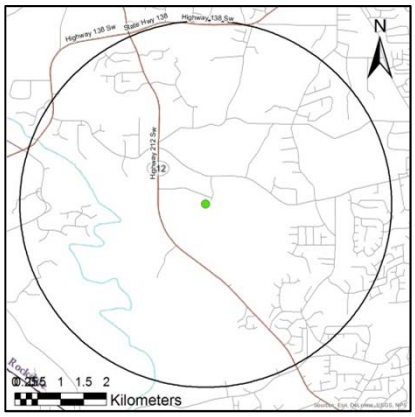
Yorkville- King Farm (continued)

Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
Solar Radiation	General/ Background	Continuous	1.50 m	Regional	1/1/96
Ultraviolet Radiation	General/ Background	Continuous	1.50 m	Regional	1/1/97
Barometric Pressure	General/ Background	Continuous	2 m	Regional	1/1/96
Rain/Melt Precipitation	General/ Background	Continuous	3 m	Regional	1/1/97
Wind Direction	General/ Background	Continuous	10 m	Regional	1/1/96
Wind Speed	General/ Background	Continuous	10 m	Regional	1/1/96
Outdoor Temperature	Regional Transport	Continuous	2 m	Regional	1/1/96
Relative Humidity	General/ Background	Continuous	2 m	Regional	1/1/96

Recommendations: Continue monitoring

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

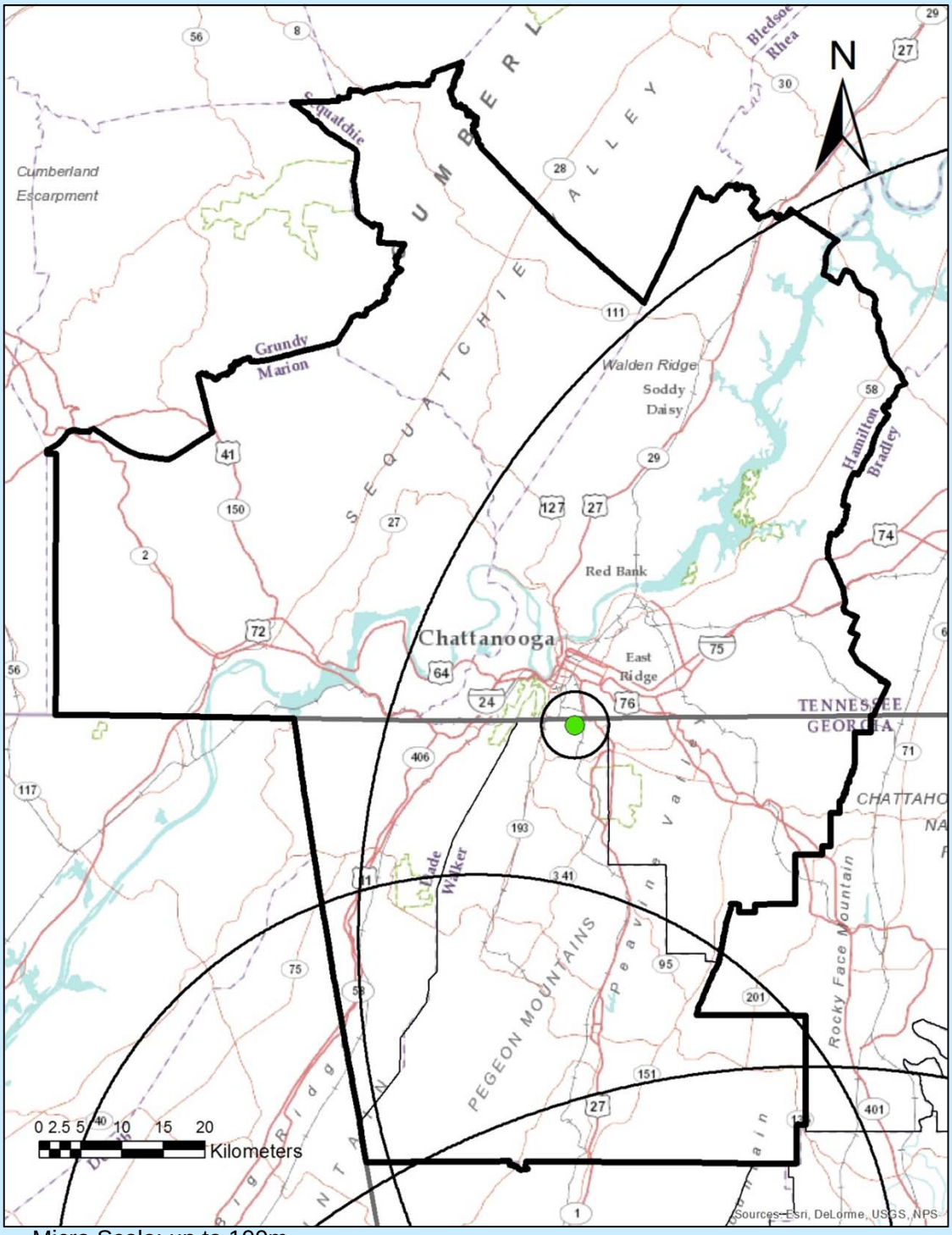
Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
O_3	Maximum Concentration	Continuous (Mar-Oct)	5 m	Neighborhood	7/26/78
Relative Humidity	General/ Background	Continuous	2 m	Neighborhood	6/1/94
Barometric Pressure	General/ Background	Continuous	2 m	Neighborhood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

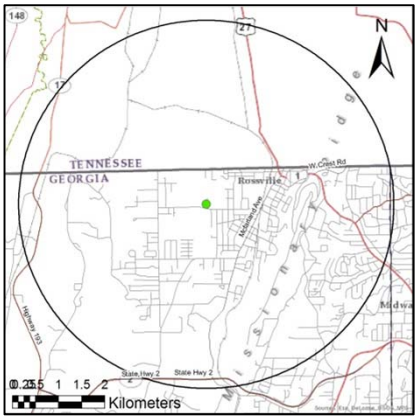
Recommendations: Continue monitoring *Ultraviolet radiation and solar radiation monitored at Conyers are also used to fulfill meteorological requirements for South DeKalb PAMS

Chattanooga Tennessee-Georgia MSA



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

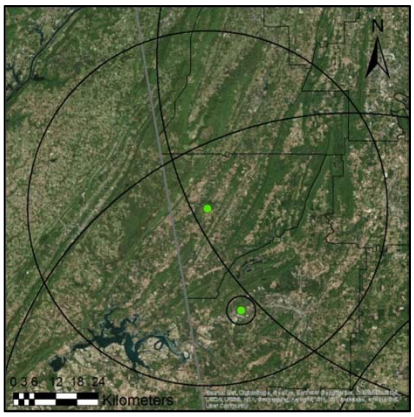
Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Begin Date
$PM_{2.5}$	Population Exposure/ Regional Transport	Continuous	6 m	Neighborhood	1/24/07
$PM_{2.5}$	Population Exposure	Every 3 days	6 m	Neighborhood	1/1/00
$PM_{2.5}$ Speciation	Population Exposure	Every 6 days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

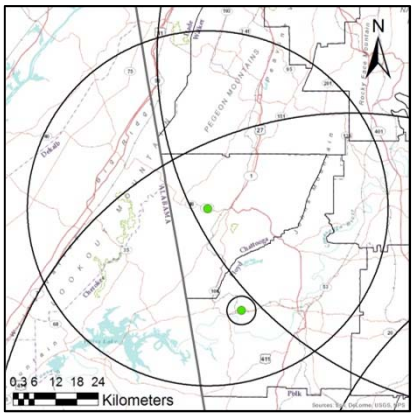
Recommendations: Continue monitoring

Sites Not in an MSA

(Listed in AQS ID Order)

Summerville- DNR Fish Hatchery





AQS ID: 130550001

Address: 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

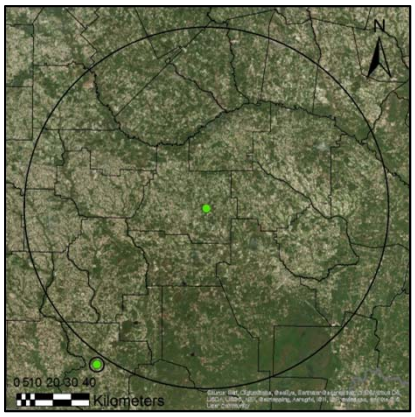
Site History: Established as Acid Rain site

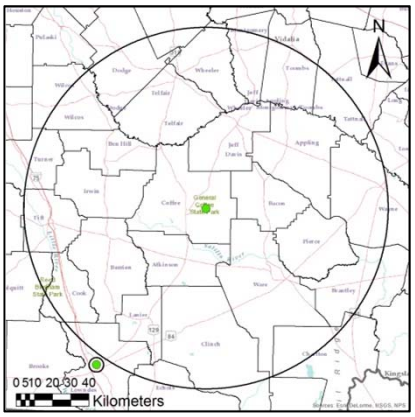
North South East West

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

Recommendations: 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

Northwest

South

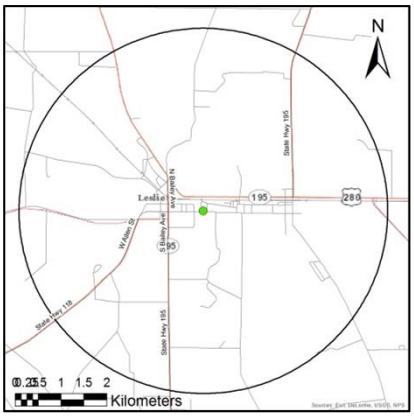
Southeast

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

Recommendations: 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

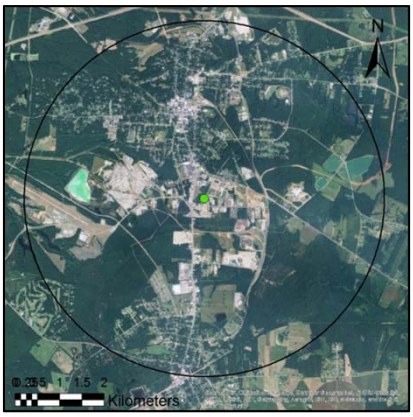
East

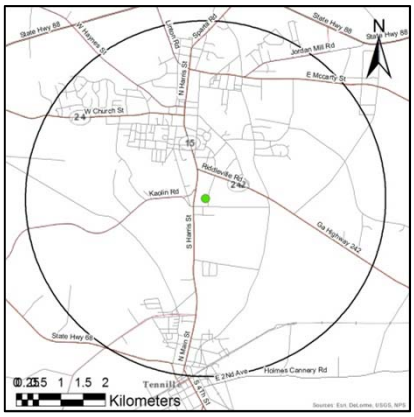
West

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

Recommendations: 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

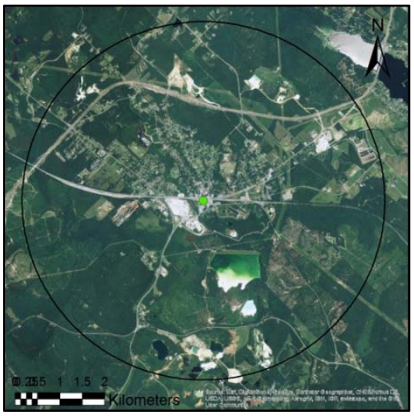
East

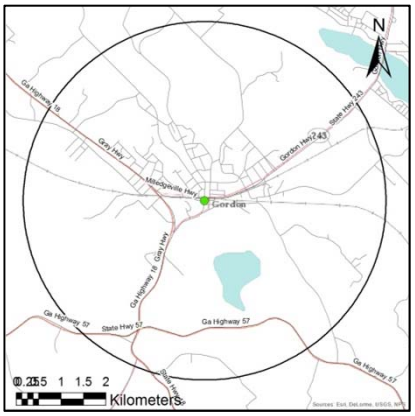
West

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

Recommendations: Continue monitoring

Gordon- Police Department





AQS ID: 133190001
Address: Police Department, 105 Railroad Street, Gordon, Wilkinson County, Georgia 31031
Site Established: 1/1/99
Latitude/Longitude: N32.881667/W-83.333889
Elevation: 103 meters
Area Represented: Not in an MSA, Wilkinson County
Site History: Established as $PM_{2.5}$ site

North South East West

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

Recommendations: GA EPD will discontinue this site by January 1, 2017, see Appendix E for additional information

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/ >3
	Thermo SO2 Analyzer	43i	good/ >2
	Thermo SO2 Calibrator	146i	good/ >2
	Thermo 2025	PM2.5 Sampler	good/ >1
	Met-One SASS	Speciated PM2.5 Sampler	good/ >2
	TEOM	Continuous PM2.5 Sampler	good/ >2
	Environics Zero Air Supply	7000	good/ <2
Brunswick MSA			
Brunswick - Risley Middle School	ESC DAS	Datalogger 8832	good/ >3
	Thermo O3 Analyzer	49C	good/ >5
	Thermo O3 Calibrator	49C-PS	good/ >5
	Thermo 2025	PM2.5 Sampler	good/ >5
	Sonic Anemometer	81000	good/ >2
	Environics Zero Air Supply	7000	good/ <2
Valdosta MSA			
Valdosta - Mason Elementary	Thermo 2025	PM2.5 Sampler	good/ >1
	Met-One BAM Monitor	1020 Continuous PM2.5 Sampler	good/ >2
	ESC DAS	Datalogger 8832	good/ >2
Warner Robins MSA			
Warner Robins - Air Force Base	Thermo 2025	PM2.5 Sampler	good/ >1
	Met-One BAM Monitor	1020 Continuous PM2.5 Sampler	good/ >2
	ESC DAS	Datalogger 8832	good/ >3
Dalton MSA			
Chatsworth - Fort Mountain	ESC DAS	Datalogger 8832	good/ >3
	Thermo O3 Analyzer	49C	good/ >5
	Thermo O3 Calibrator	49C-PS	good/ >5
	RM Young Wind Instrument	05305vm	good/ >8
	RM Young Temp/Relative Humidity	41375VC	good/ >2
	Environics Zero Air Supply	7000	good/ <2
Gainesville MSA			
Gainesville - Girls & Boys Club	Thermo 2025	PM2.5 Sampler	good/ <2
	Met-One BAM Monitor	1020 Continuous PM2.5 Sampler	fair/ >3
	ESC DAS	Datalogger 8832	good/ >3
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/ >2
	ESC DAS	Datalogger 8832	good/ >3
Athens-Clarke County MSA			
Athens - Fire Station #7	Thermo O3 Analyzer	49C	good/ >5
	Thermo O3 Calibrator	49C-PS	good/ >5
	Thermo 2025	PM2.5 Sampler	good/ >1
	R&P PM2.5 Sampler	1400 A series TEOM	good/ >6
	ESC DAS	Datalogger 8832	good/ >3
	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/ >8
	URG Sequential Sampler	Speciation Particulate 3000N MOD	good/ >8
Macon - GA Forestry Commission	ESC DAS	Datalogger 8832	good/ >3
	Thermo O3 Analyzer	49i	good/ >8
	Thermo O3 Calibrator	49iPS	good/ >8
	Thermo SO2 Analyzer	43i	good/ >5

SITE NAME	EQUIPMENT NAME	EQUIPMENT DESCRIPTION	COND./ AGE
Macon - GA Forestry Commission (cont'd)	Thermo SO2 Calibrator	146i	good/ >8
	Environics Zero Air Supply	7000	good/ <2
	Thermo 2025	PM2.5 Sampler	good/ >1
	Graseby PUF Sampler	GPS1-11	good/ >8
	Graseby HIVOL Sampler (metals)	2000H	good/ >8
	AVOCS	VOC Sampler	good/ >8
	RM Young Wind Instrument	05305vm	good/ >8
Columbus Georgia-Alabama MSA			
Columbus - Health Department	Thermo 2025	PM2.5 Sampler	good/ >1
Columbus - Airport	ESC DAS	Datalogger 8832	good/ >3
	Thermo O3 Analyzer	49i	good/ >8
	Thermo O3 Calibrator	49C	good/ >3
	Thermo 2025	PM2.5 Sampler	good/ >1
	R&P PM2.5 Sampler	TEOM 1400 AB	good/ >5
	R&P	Sample Equil System	good/ >8
	Environics Zero Air Supply	7000	good/ <2
Columbus - UPS	General Metal Hi-Volume	HIVOL Sampler (lead) 2000H	good/ >8
Columbus - Fort Benning	General Metal Hi-Volume	HIVOL Sampler (lead) 2000H	good/ >8
Columbus - Cusseta Elementary	Thermo 2025	PM2.5 Sampler	good/ >1
	Met-One SASS	Speciation Control Box	good/ >3
	URG Sequential Sampler	Speciation Particulate 3000N MOD	good/ <2
	General Metal Hi-Volume	HIVOL Sampler (lead) 2000H	good/ >8
Columbus - Crime Lab	Sonic Anemometer	81000	good/ >3
	RM Young BP Sensor	Barometric Pressure	good/ >2
	Nova Lynx	Tipping Bucket	good/ >2
	RM Young Temp/Relative Humidity	41375VC	good/ >2
	ESC DAS	Datalogger 8832	good/ >3
Savannah MSA			
Savannah - E. President Street	ESC DAS	Datalogger 8832	good/ >3
	Thermo O3 Analyzer	49C	good/ >5
	Thermo O3 Calibrator	49C	good/ >5
	Thermo SO2 Analyzer	43i	good/ >5
	Thermo SO2 Calibrator	146i	good/ >5
	GRASEBY/GMW PUF Sampler	GSP1	good/ >5
	Andersen HIVOL Sampler	GBM2000HBL Metals Sampler	good/ >5
	ATEC Carbonyl Sampler	100	good/ >5
	XONTECK VOC Sampler	VOC Sampler	good/ >5
	Environics Zero Air Supply	7000	good/ <2
	Sonic Anemometer	81000	good/ >3
Savannah - Mercer School	Thermo 2025	PM2.5 Sampler	good/ >1
Savannah - Lathrop & Augusta	ESC DAS	Datalogger 8832	good/ >3
	Thermo SO2 Analyzer	43i-TLE	good/ >5
	Thermo SO2 Calibrator	146i	good/ >5
	R&P PM2.5 Sampler	TEOM 1400 AB Series Continuous	good/ >5
	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/ >3
	Thermo O3 Calibrator	Thermo 49C-PS	good/ >3
	RM Young Wind Instrument	05305vm	good/ >8
	Tower	Fold Over	good/ >3
	ESC DAS	Datalogger 8832	good/ >3
	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/ >5
	Thermo O3 Calibrator	49C-PS	good/ >5
	Thermo SO2 Analyzer	43i	good/ >5
	Environics Zero Air Supply	7000	good/ <2
	Thermo SO2 Calibrator	146C	good/ >5
	R&P PM2.5 Sampler	TEOM 1400 AB Series Continuous	good/ >5
	Thermo 2025	PM2.5 Sampler	good/ >1
	Partisol PM10 Sampler	Model 2000	good/ >3
	Partisol PM10 Sampler	Model 2000 Co-locate	good/ >3
	Met-One SASS	Speciated PM2.5 Sampler	good/ >2
	URG 3000N	Speciated PM2.5 Sampler	good/ >2
	Sonic Anemometer	81000	good/ >2
	ESC DAS	Datalogger 8832	good/ >3
	Nova Lynx	Tipping Bucket	good/ >2
	RM Young Temp/Relative Humidity	41375VC	good/ >2
	RM Young BP Sensor	Barometric Pressure	good/ >2
	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/ >3
	Thermo O3 Analyzer	49i	good/ >5
	Thermo O3 Calibrator	49C-PS	good/ >5
	Environics Zero Air System	7000	good/ >2
	Thermo 2025	PM2.5 Sampler	good/ <2
	Environics Zero Air Supply	7000	good/ <2
Newnan - Univ. of West Georgia	ESC DAS	Datalogger 8832	good/ >5
	Thermo O3 Analyzer	49C	good/ >5
	Thermo O3 Calibrator	49C-PS	good/ >5
	Environics Zero Air Supply	7000	good/ <2
	R&P PM2.5 Sampler	TEOM 1400 A Series Continuous	good/ >3
	Sonic Anemometer	81000	good/ >2
Dawsonville - GA Forestry	ESC DAS	Datalogger 8832	good/ >5
	Thermo O3 Analyzer	49C	good/ >5
	Thermo O3 Calibrator	49C-PS	good/ >5
	Environics Zero Air Supply	7000	good/ <2
	RM Young Wind Instrument	05305vm (AQ)	good/ >3
Decatur - South DeKalb	ESC DAS	Datalogger 8832	good/ >3
	Thermo O3 Analyzer	49C	good/ <1
	Thermo O3 Calibrator	49CPS	good/ >1
	Environics Dynamic Gas Calibrator	6103	good/ <2
	Environics Gas Calibrator	9100 Gas Dilution Calibrator	good/ <2
	Thermo NOy Analyzer	42C	good/ >5
	Thermo NOx Analyzer	42i	good/ >5
	Thermo CO Analyzer	48i-TLE	good/>1
	Thermo SO2 Analyzer	43i-TLE	good/ <2
	Thermo 2025	PM2.5 Sampler	good/ <2
	Thermo 2025	PM2.5 Sampler Co-locate	good/<2
	Met-One	BAM 1020 PM10	good />1
	Met-One	BAM 1020 PM2.5	good/ >1
	Met-One SASS	Speciated PM2.5 Sampler	good/ <2
	URG 3000N	Speciated PM2.5 Sampler	good/ >5
	Environics Zero Air Supply	7000 H	good/ <2
	Perkin Elmer Autosystem XL GC	Gas Chromatograph	good/ >8
	Perkin Elmer Turbomatrix TD	Thermal Desorber	good/ <3

SITE NAME	EQUIPMENT NAME	EQUIPMENT DESCRIPTION	COND./ AGE
Decatur - South DeKalb cont'd	Perkin Elmer Nelson Interface	NCI 900 Interface	good/ >8
	Parker Balston TOC	Zero Air Gas Generator	good/ >8
	Parker Balston TOC	Zero Air Gas Generator	good/ >8
	Perkin Elmer Clarus 500	Gas Chromatograph	good/ <3
	Perkin Elmer Turbomatrix TD 300	Thermal Desorber	good/ <2
	Magee Scientific	AethalometerAE-22 ER	good/ <5
	ATEC Carbonyl Sampler	Model 8000	good/ >1
	ATEC Carbonyl Sampler	Model 8000	good/ >1
	Shawnee Instruments	PM10 Sampler	good/ >5
	Shawnee Instruments	PM10 Sampler Co-locate	good/ >5
	PUF	Semi-VOCs Sampler	good/ >4
	PUF	Semi-VOCs Sampler Co-locate	good/ >4
	ATEC 2200	VOCs Sampler	good/ >5
	ATEC 2200	VOCs Sampler Co-locate	good/ >5
	RM Young Wind Instrument	05305vm	good/ >2
	RM Young Temp/Relative Humidity	41375VC	good/ >2
	Nova Lynx	Tipping Bucket	good/ >2
	RM Young BP Sensor	Barometric Pressure	good/ >2
Decatur - DMRC	Graseby HIVOL Sampler (metals)	2000H	fair/ >8
	Graseby HIVOL Sampler (metals)	2000H Co-locate	fair/ >8
	TAPI T200UP	NOx	good/ >1
	Xonteck 911	VOC Sampler	good/ >5
	Environics Calibrator	6103	good/ <2
	Thermo MAAP 5012 BC	Black Carbon	good/ new
Douglasville - W. Strickland Street	Thermo O3 Analyzer	49i	good/ >5
	Thermo O3 Calibrator	49C-PS	good/ >5
	RM Young Wind Instrument	05305VM	good/ <2
	Environics Zero Air Supply	7000	good/ <2
	ESC DAS	Datalogger 8832	good/ >2
Atlanta - Fire Station #8	Thermo 2025	PM2.5 Sampler	good/ >1
	Partisol PM10 Sampler	Model 2000-B	good/ >3
Atlanta - Confederate Avenue	ESC DAS	Datalogger 8832	good/ >2
	Thermo O3 Analyzer	49i	good/ >3
	Thermo O3 Calibrator	49i-PS	good/ >2
	Thermo SO2 Analyzer	43i	good/ >2
	Thermo SO2 Calibrator	146I	good/new
	R&P PM2.5 Sampler	TEOM 1400 AB Series Continuous	good/ >5
	Environics Zero Air Supply	7000	good/ <2
	RM Young Wind Instrument	05305vm	good/ >2
Atlanta- GA Tech Near-road	ESC DAS	Datalogger 8832	good/ >2
	Thermo NO2 Analyzer	42i	good/ >1
	Thermo CO Analyzer	48i	good/ >5
	Thermo 2025	PM2.5 Sampler	good/ <2
	Environics Zero Air Supply	7000	good/ <2
	Environics Calibrator	6103	good/ <2
Lawrenceville - Gwinnett Tech.	ESC DAS	Datalogger 8832	good/ >2
	Thermo O3 Analyzer	49C	good/ >5
	Thermo O3 Calibrator	49C-PS	good/ >5
	Environics Zero Air Supply	7000	good/ <2
	Thermo 2025	PM2.5 Sampler	good/ >5
	R&P PM2.5 Sampler	TEOM 1400 AB Series Continuous	good/ >5
McDonough - County Extension	ESC DAS	Datalogger 8832	good/ >3
	Thermo O3 Analyzer	49i	good/ >5
	Thermo O3 Calibrator	49C-PS	good/ >5

SITE NAME	EQUIPMENT NAME	EQUIPMENT DESCRIPTION	COND./ AGE
McDonough - County Extension	Environics Zero Air Supply	7000	good/ <2
cont'd	R&P PM2.5 Sampler	TEOM 1400 A Series Continuous	good/ >5
Yorkville - King Farm	Thermo O3 Analyzer	49i	good/ >5
	Thermo O3 Calibrator	49C-PS	good/ >5
	Thermo 2025	PM2.5 Sampler	good/ >8
	R&P PM2.5 Sampler	TEOM 1400 AB Series Continuous	good/ >5
	Graseby PUF Sampler	BMPS1-11	good/ >10
	General Metal Hi-Volume	HIVOL Sampler 2000H	good/ >10
	ATEC VOCs Sampler	2200 - 1PX	good/ >5
	ATEC Carbonyl Sampler	100	good/ >5
	RM Young Wind Instrument	05305VM	good/ >5
	PSP	Solar Radiation Instrument	good/ >3
	TUVR	Ultraviolet Radiation Instrument	good/ >5
	ESC DAS	Datalogger 8832	good/ >2
	Nova Lynx	Tipping Bucket	good/ >5
	RM Young Temp/Relative Humidity	41375VC	good/ <2
	RM Young BP Sensor	Barometric Pressure	good/ >5
	Environics Zero Air Supply	7000	good/ <2
Conyers - Monastery	ESC DAS	Datalogger 8832	good/ >3
	Thermo O3 Analyzer	49i	good/ >5
	Thermo O3 Calibrator	49iPS	good/ >5
	Environics Zero Air Supply	7000	good/ <2
	RM Young Wind Instrument	05305vm	good/ <2
	PSP	Solar Radiation Instrument	good/ >5
	TUVR	Ultraviolet Radiation Instrument	good/ >5
	Nova Lynx	Tipping Bucket	good/ >2
	RM Young Temp/Relative Humidity	41375VC	good/ >2
	RM Young BP Sensor	Barometric Pressure	good/ >2
Chattanooga Tennessee-Georgia MSA			
Rossville - Maple Street	ESC DAS	Datalogger 8832	good/ >3
	Thermo 2025	PM2.5 Sampler	good/ >2
	Met-One SASS	Speciated PM2.5 Sampler	good/ <2
	URG 3000N	Speciated PM2.5 Sampler	good/ <2
	Met-One BAM Monitor	1020 Continuous PM2.5 Sampler	good/ <2
Sites Not in an MSA			
Summerville - DNR Fish Hatchery	ESC DAS	Datalogger 8832	good/ >3
	Thermo O3 Analyzer	49C	good/ >5
	Thermo O3 Calibrator	49C-PS	good/ >5
	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/ >5
	Andersen PUF Sampler		good/ >8
	Graseby HIVOL Sampler (metals)	2000H	good/ >8
	AVOCS	VOC Sampler	good/ >4
Leslie - Union High School	ESC DAS	Datalogger 8832	good/ >3
	Thermo O3 Analyzer	49i	good/ >8
	Thermo O3 Calibrator	49C-PS	good/ >8
	Environics Zero Air Supply	7000	good/ <2
Sandersville - Health Department	Thermo 2025	PM2.5 Sampler	good/ >5
Gordon - Police Department	Thermo 2025	PM2.5 Sampler	good/ >2

SITE NAME	EQUIPMENT NAME	EQUIPMENT DESCRIPTION	COND./ AGE
Georgia EPD Air Branch			
Quality Assurance Unit	TriCal (1)	Flow Standard	good/ >3
	General Metal Works	Hi-Volume Orifice	good/ >3
	Graseby GMW	PUF Orifice	good/ >3
	DC-Lite DCL-H	Flow Standard	good/ >3
	DC-Lite DCL-L	Flow Standard	good/ >3
	DC-2	DryCal Flow Standard Base	good/ >3
	DC-HC-1	DryCal High Flow Cell	good/ >3
	DC--LC-1	DryCal Low Flow Cell	good/ >3
	DC-MC-1	DryCal Medium Flow Cell	good/ >3
	DeltaCal (3)	Flow Standard	good/ >3
	Gilibrator Flow Cell (6)	Flow Standard	good/ >3
	VRC	Variable HiVol orifice	good/ >3
	Thermo 146I (2)	Multi-gas Calibrator	good/ >3
	Thermo 49PS (2)	Ozone Standard	good/ >3
Meteorology Unit Workshop	Sonic Anemometer (16)	81000	Varies
	Sonic Anemometer (7)	85000	Varies
	PSP (8)	Solar Radiation Instrument	Varies
	TUVR (12)	Ultraviolet Radiation Instrument	Varies
Warehouse/Storage	AGILAIRE (7)	8832 Data System Controller Data Logger	Varies
	ESC (1)	8816 Data Logger	good/ >8
	THERMO (15)	49i O3 Analzer	Varies
	THERMO (3)	49i Calibrator	Varies
	THERMO (8)	49c O3 Analyzer	Varies
	THERMO (13)	49c O3 Calibrator	Varies
	THERMO (5)	48c CO Analyzer	Varies
	THERMO (5)	43i SO2 Analyzer	Varies
	THERMO (5)	146c Gas Calibrator	Varies
	THERMO (2)	42i NO, NO2, NOX Analyzer	Varies
	THERMO (9)	43c SO2 Analyzer	Varies
	THERMO (6)	146i Gas Calibrator	Varies
	THERMO (1)	42iy NO Diff NOY	good/ >5
	THERMO (7)	42c NO, NO2, Nox Anlayzer	Varies
	THERMO (1)	48i CO Analyzer	good/ >8
	ENVIRONICS (2)	Zero Air Generator Model 7000	good/ <2
	ENVIRONICS (1)	Series 9100 Cal System	good/ <2
	TELEDYNE (2)	Zero Air Generator Model 701	Varies
	MAGEE SCIENTIFIC (1)	Aethalometer	good/ >5
	THERMO (1)	49 O3 Analyzer	good/ >4

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. Field personnel will typically visit manual sampling sites at least once every six days to replace sample media and check the operation and calibration of monitors. Personnel will check continuous monitors at least twice monthly for proper instrument operation.

Quality assurance activities are carried out to determine the quality of the collected ambient data, improve the quality of the data, and evaluate how well the entire monitoring system operates. The goal of quality assurance activities is to produce high quality monitoring data.

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.

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. $PM_{10\text{-}2.5}$ 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.

Another type of $PM_{2.5}$ beta attenuation monitor being evaluated to be used as an FEM (with a VSCC), and comparable to the NAAQS when deployed in the GA EPD network, is the BAM-1022. The BAM-1022 is updated from the BAM-1020 model and operates on the same principle as the BAM-1020. If the BAM-1022 correlates well with the $PM_{2.5}$ FRM data, then GA EPD may propose to run this BAM as an FEM.

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. GA EPD plans to place this type

of TEOM with a "Filter Dynamics Measurement System (FDMS)" configuration in the network, and is evaluating suitable locations at this time. GA EPD will investigate the TEOM to be used as an FEM (federal equivalent method) sampler in the network based on the correlation between the samplers. If the TEOM is set up as an FEM, the $PM_{2.5}$ data could be compared to the National Ambient Air Quality Standards (NAAQS) for attainment purposes. 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.

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 ($PM_{10-2.5}$)

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 $PM_{10-2.5}$ 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	$PM_{2.5}$ (Daily)**	TEOM $PM_{2.5}$	6 Day
Brunswick MSA						
131270006	Risley Middle	Brunswick	Glynn	$PM_{2.5}$ (3 Day)		
Valdosta MSA						
131850003	Mason Elem.	Valdosta	Lowndes	$PM_{2.5}$ (3 Day)	BAM $PM_{2.5}$	
Warner Robins MSA						
131530001	Robins Air Base	Warner Robins	Houston	$PM_{2.5}$ (3 Day)	BAM $PM_{2.5}$	
Albany MSA						
130950007	Turner Elem.	Albany	Dougherty	2 $PM_{2.5}$ (Daily, 12 Day)	FEM BAM $PM_{2.5}$	
Gainesville MSA						
131390003	Boys and Girls Club	Gainesville	Hall	$PM_{2.5}$ (3 Day)	BAM $PM_{2.5}$ *	
Athens-Clark County MSA						
130590002	College Station Rd.	Athens	Clarke	$PM_{2.5}$ (3 Day)	TEOM $PM_{2.5}$	
Macon						
130210007	Allied Chemical	Macon	Bibb	2 $PM_{2.5}$ (Daily, 12 Day)		6 Day
130210012	Forestry	Macon	Bibb	$PM_{2.5}$ (3 Day)	TEOM $PM_{2.5}$	
Columbus Georgia- Alabama MSA						
132150001	Health Dept.	Columbus	Muscogee	$PM_{2.5}$ (3 Day)		
132150008	Airport	Columbus	Muscogee	$PM_{2.5}$ (3 Day)	TEOM $PM_{2.5}$	
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		TEOM $PM_{2.5}$	
Augusta Georgia-South Carolina MSA						
132450091	Bungalow Rd.	Augusta	Richmond	$PM_{2.5}$ (3 Day)	TEOM $PM_{2.5}$	6 Day
Atlanta MSA						
130630091	Georgia DOT	Forest Park	Clayton	$PM_{2.5}$ (3 Day)		
130670003	National Guard	Kennesaw	Cobb	$PM_{2.5}$ (Daily)		
130770002	Univ. of West GA	Newnan	Coweta		TEOM $PM_{2.5}$	
130890002	South DeKalb	Decatur	DeKalb	2 $PM_{2.5}$ (Daily, 12 Day)	FEM BAM $PM_{2.5}$	3 Day
131210039	Fire Station #8	Atlanta	Fulton	$PM_{2.5}$ (3 Day)		
131210055	Confederate Ave.	Atlanta	Fulton		TEOM $PM_{2.5}$	
131210056	Georgia Tech	Atlanta	Fulton	$PM_{2.5}$ (3 Day)		
131350002	Gwinnett Tech	Lawrenceville	Gwinnett	$PM_{2.5}$ (3 Day)	TEOM $PM_{2.5}$	
131510002	County Extension	McDonough	Henry		TEOM $PM_{2.5}$	
132230003	Yorkville	Yorkville	Paulding	$PM_{2.5}$ (3 Day)	TEOM $PM_{2.5}$	
Chattanooga Tennessee-Georgia MSA						
132950002	Maple Street	Rossville	Walker	$PM_{2.5}$ (3 Day)	BAM $PM_{2.5}$	6 Day
Not In An MSA						
130690002	General Coffee State Park	Douglas	Coffee			6 Day
133030001	Co. Health Dept.	Sandersville	Washington	$PM_{2.5}$ (3 Day)		
133190001	Police Dept.	Gordon	Wilkinson	$PM_{2.5}$ (3 Day)**		

Highlighted samplers used for comparison to NAAQS;
**GA EPD plans on converting to FEM BAM by December 31, 2016;*
***Will be discontinued by December 31, 2016*

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/m³) can cause cardiac damage. Other health effects associated with exposure to CO include central nervous system effects and pulmonary function difficulties. Ambient CO apparently does not adversely affect vegetation or materials.

Carbon monoxide (CO) is monitored using EPA-approved reference or equivalent methods. These analyzers are self-contained and capable of measuring ambient CO on a continuous, real-time basis using the non-dispersive infrared analysis and gas filter correlation techniques. CO is monitored using specialized analyzers based on the principle that CO absorbs infrared radiation. The sample is drawn through the sample bulkhead and the optical bench. Radiation from an infrared source is chopped and then passed through a gas filter alternating between CO and 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 on an annual basis.

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^oC. 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 an aethalometer at the South DeKalb site (13-089-0002) and 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:
International Paper-Rome Modeling Report

Georgia Department of Natural Resources
Environmental Protection Division

International Paper Rome Dispersion Modeling for the 2010 1-Hour SO_2 NAAQS
April 11, 2016

International Paper (IP-Rome) is a containerboard mill located in Rome, GA (Floyd County) whose SO_2 emissions were greater than 2,000 tons in 2014. Therefore, this facility is subject to EPA's Data Requirements Rule (DRR) for the 2010 1-hour SO_2 National Ambient Air Quality Standard (NAAQS). To satisfy the requirements of the DRR, IP-Rome notified Georgia EPD that it will characterize air quality through the ambient monitoring option and submitted a dispersion modeling report and related modeling files (prepared by All4, Inc.) on August 10, 2015 to help site the SO_2 monitor at the location of maximum impact. Georgia EPD reviewed the modeling report and files to ensure that the dispersion modeling was conducted in accordance with the final DRR and Modeling and Monitoring Technical Assistance Documents (TADs). Then, GA EPD added emissions from Plant Hammond and reran the model. This report discusses the combined dispersion modeling results.

MONITORING DATA

Currently, there is a SO_2 monitor (13-115-0003) located near the IP-Rome facility. The highest four monitored concentrations for 2012-2014 are shown in Table 1. The 2012-2014 design value at the current monitor is 46 ppb, which is well below the level of the NAAQS (75 ppb).

Table 1. Monitored SO_2 Concentrations for 2012-2014.

Rank	2012 (ppb)	2013 (ppb)	2014 (ppb)	3-year Average (ppb)
1st High	161	88	59	
2nd High	134	40	40	
3rd High	96	34	36	
4th High	**76**	**28**	**34**	**46**

INPUT DATA

Meteorological Data – Since no on-site meteorological data was available, the hourly meteorological data of surface and upper air observations from the Richard Russell Airport located in Rome, GA (surface) and the Peachtree City, GA (upper) NWS stations for the period of 2012-2014 were used in this modeling. The data was compiled and provided by GA EPD. The AERMET processor (v15181) was used to convert the NWS data into AERMOD model-ready meteorological data files using the AERSURFACE surface characteristics evaluation utility (13016). Figure 1 contains the three year wind rose at the KRMG (Richard Russell Airport) for 2012-2014. Values of the surface characteristics (albedo, Bowen ratio, and surface roughness) surrounding the Rome, GA NWS surface station and the project site were derived for each of twelve 30-degree sectors over four seasons, in accordance with the AERMOD Implementation Guide (09078). GA EPD compared the above AERSURFACE generated surface characteristics, and found no significant differences in the albedo, Bowen ratio, and surface roughness for the two sites. Therefore, a meteorological dataset with the airport site surface characteristics was used in the modeling.

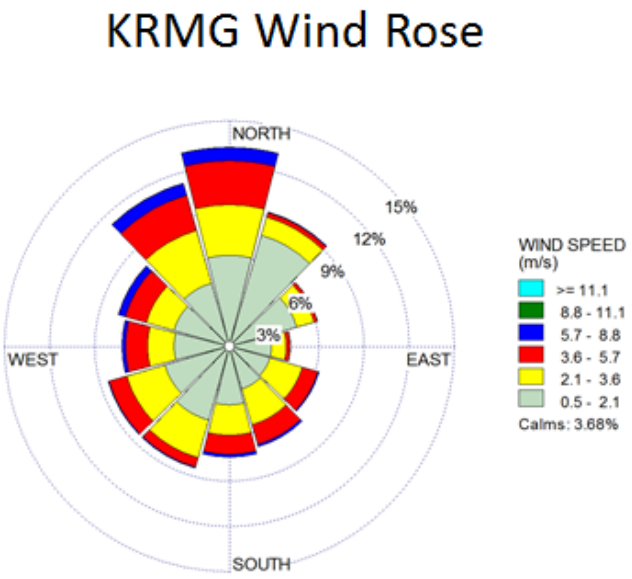


Figure 1. Three year wind rose at the KRMG (Richard Russell Airport) for 2012-2014.

Source Data – IP-Rome includes seven emission units: No. 1 Lime Kiln (LK1), No. 2 Lime Kiln (LK2), No. 5 Smelt Dissolving Tank (SDT5), No. 4 Power Boiler (PB4), No. 5 Recovery Furnace (RF5), No. 2 Package Boiler (PK2), and Waste Fuel Boiler (WFB). The hourly emissions from the seven units except WFB during 2012-2014 were developed using emissions factors, while the hourly emissions from the WFB were based on continuous emissions monitoring systems (CEMS) measurements. Three CEMS are installed for the WFB boiler, one for each of the three stacks. The hourly emissions from all emission units during 2012-2014 were normalized by a factor of 10 and the normalized emissions were used in the dispersion modeling in accordance with the Monitoring TAD. For example, 10 lb/hr of actual emissions was normalized to 1 lb/hr in the air quality modeling.

Georgia Power Plant Hammond is located adjacent to IP-Rome. The 2012-2014 hourly emissions from Plant Hammond were also normalized and used together with the normalized emission from IP-Rome in this air quality modeling. Plant Hammond contains two point sources: HAMFGD which is a common scrubber stack shared by all 4 units and HAMBYP which represents the dual-flue bypass stack as a merged source with equivalent stack parameters in the same manner as was done for Plant Scherer. Figures 2, 3, and 4 show the normalized hourly SO_2 emission rates (g/s) that were modeled through each stack in 2012, 2013, and 2014. Table 2 and 3 present the annual emissions (TPY) for IP-Rome and Plant Hammond in 2012-2014.

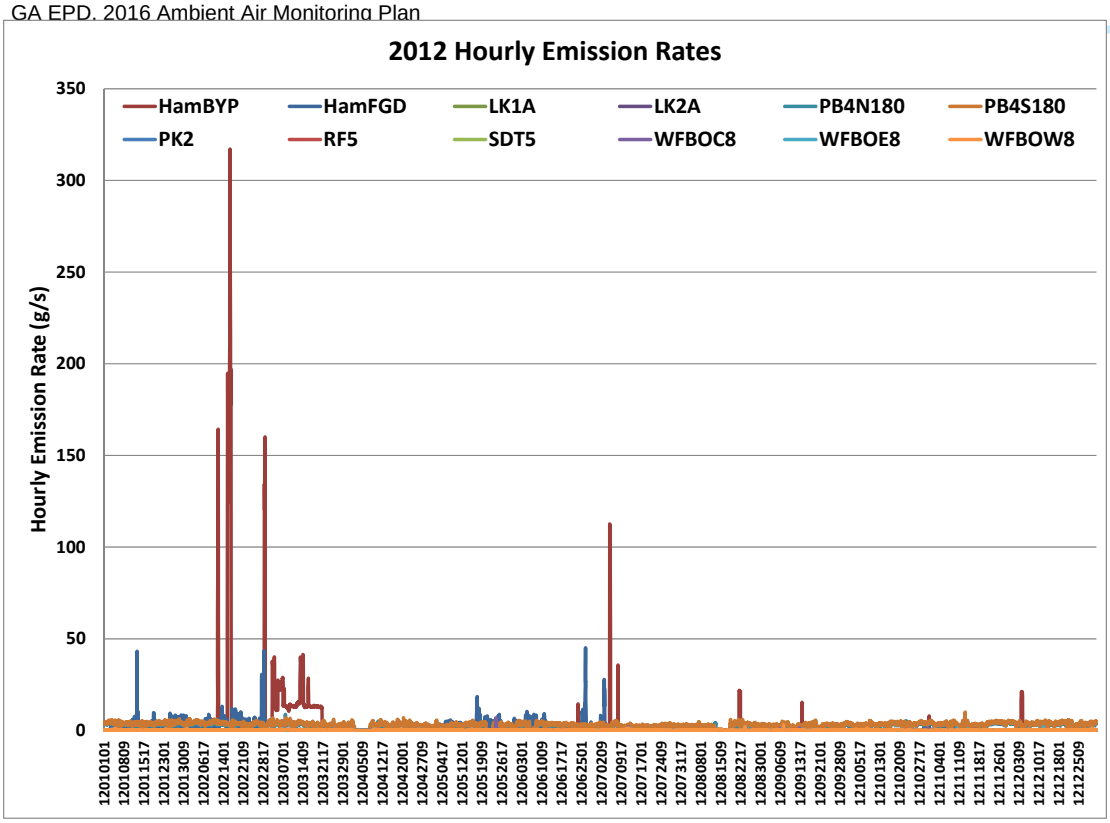


Figure 2. Normalized hourly (2012) SO_2 emission rates (g/s) modeled through each stack.

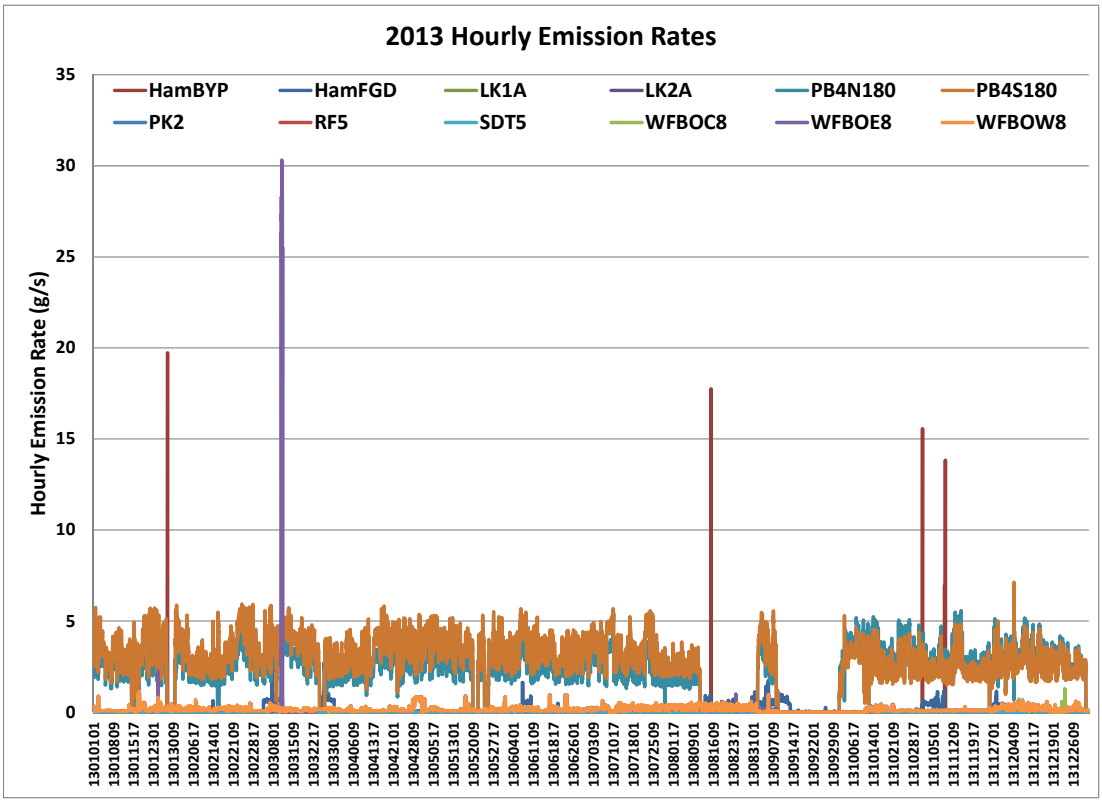


Figure 3. Normalized hourly (2013) SO_2 emission rates (g/s) modeled through each stack.

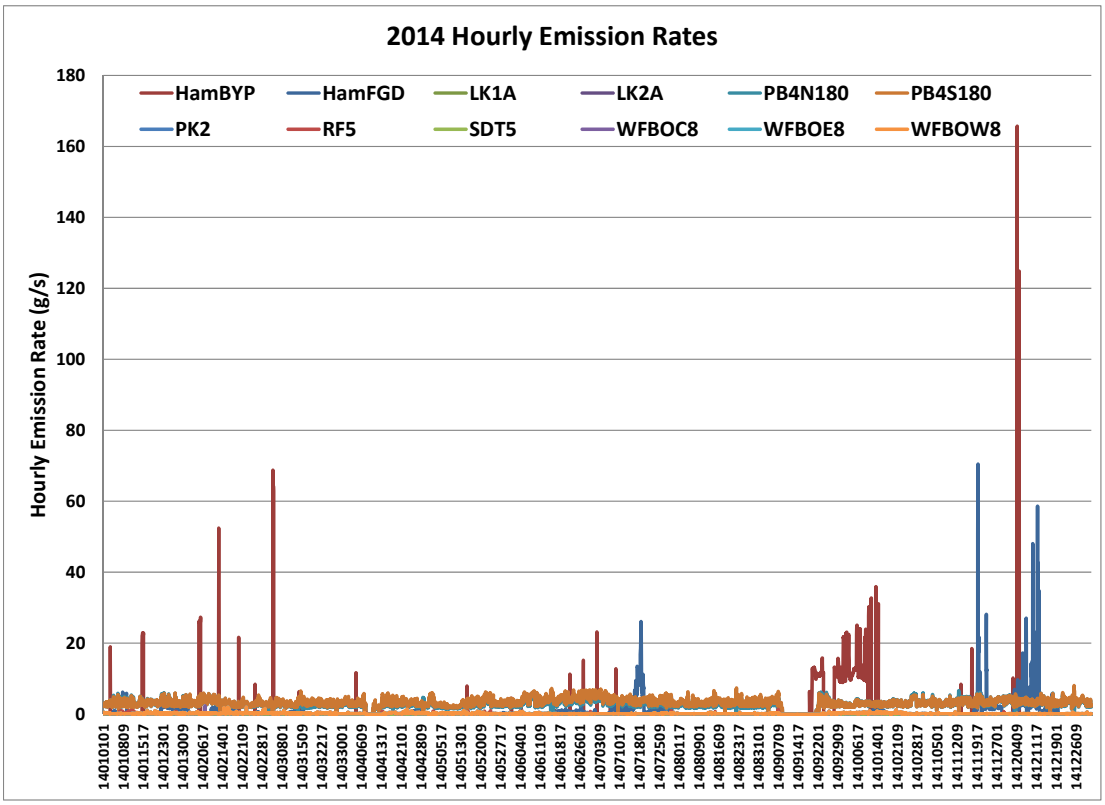


Figure 4. Normalized hourly (2014) SO_2 emission rates (g/s) modeled through each stack.

Table 2. Annual SO_2 emissions (TPY) for IP-Rome in 2012-2014.

Units (TPY)	2012	2013	2014
LK1A	2	1	1
LK2A	3	3	4
PB4N180	927	807	996
PB4S180	1,124	953	1,123
PK2	0	0	0
RF5	20	17	25
SDT5	1	0	0
WFBOC8	61	51	56
WFBOE8	56	64	56
WFBOW8	64	52	58
Total	**2,258**	**1,949**	**2,318**

Table 3. Annual SO_2 emissions (TPY) for Plant Hammond in 2012-2014.

Units (TPY)	2012	2013	2014
HamBYP	648	4	313
HamFGD	333	30	227
Total	**981**	**34**	**541**

Receptor Locations – Figure 5 is a map of IP-Rome and Plant Hammond. A Cartesian receptor grid extending to approximately 10 km from IP-Rome was used in the modeling analysis to assess ground-level SO_2 concentrations. The discrete receptors were placed according to the following configuration based on the center of the plant:

- 0 – 2 km ➔ 100 meters apart
- 2 km – 5 km ➔ 300 meters apart
- 5 km – 7 km ➔ 500 meters apart
- 7 km – 10 km ➔ 1000 meters apart

Receptors at which it is not feasible to site an ambient monitor such as rivers and lakes were removed in the modeling in accordance with the Modeling TAD. Figure 6 and 7 show the modeling receptor grid and receptors. This domain is sufficient to capture the maximum impact. All receptor locations are represented in the Universal Transverse Mercator projections, Zone 16, North American Datum 1983.

Figure 5. Google map of IP-Rome and Plant Hammond facilities with the current monitor location.

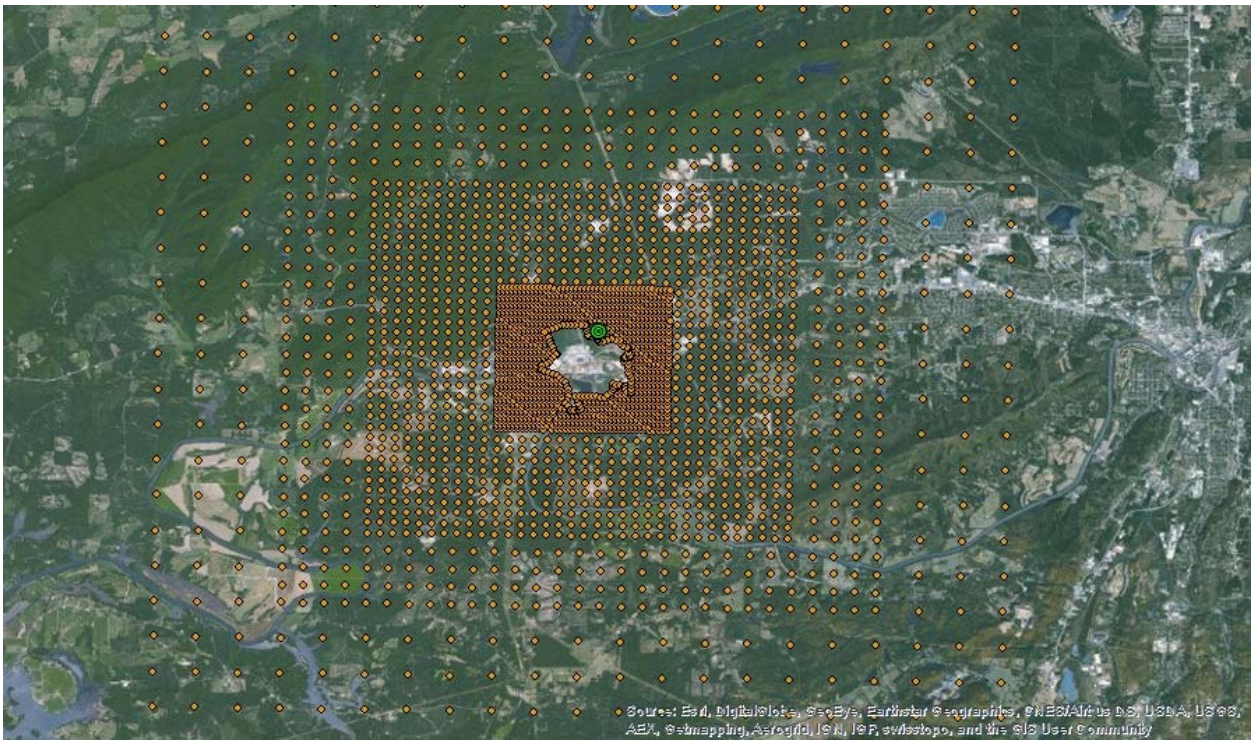


Figure 6. Receptor grid with receptors in the modeling domain.

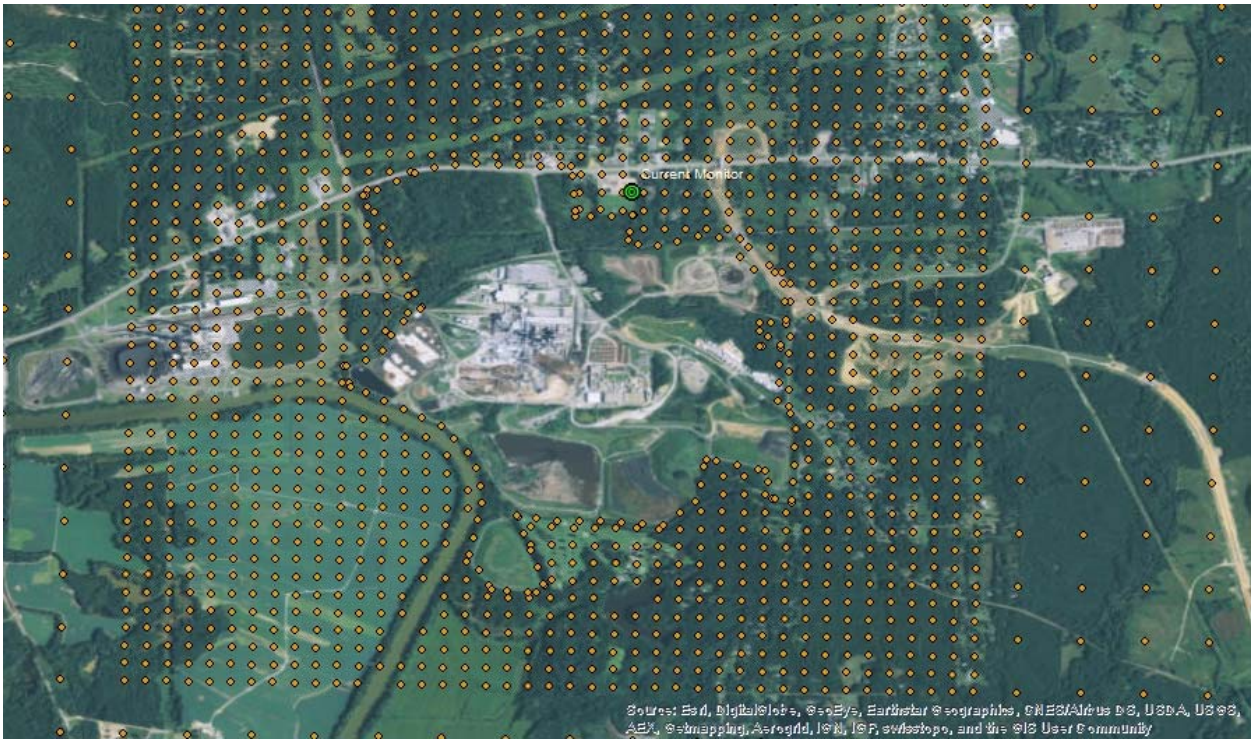


Figure 7. Receptor grid with receptors in the modeling domain (zoom in).

Terrain Elevation – Terrain data from USGS 1/3 arc-second/10-meter resolution National Elevation Dataset (NED) CONUS were extracted to obtain the elevations of all sources, buildings, and receptors by AERMAP terrain processor (version 11103). The resulting elevation

data were verified by comparing contoured receptor elevations with USGS 7.5-minute topographic map contours.

Building Downwash – The effects of building downwash were incorporated into the AERMOD analysis. Direction-specific building parameters required by AERMOD were developed using the BPIP PRIME utility (version 04274).

Land Use Type – This model was used to evaluate surrounding land use within 3 kilometers. GIS software was used to summarize the various land use types contained in the USGS electronic land use dataset. Based on the GIS summary, approximately 93.5% of the land use is rural with the remaining percentage of land use being urban. Therefore, the urban option was not selected in the AERMOD air dispersion model.

Offsite Emission Inventory – Figure 8 contains a spatial map of annual 2014 SO_2 emissions (TPY) from offsite sources near IP-Rome. Table 4 presents a detailed list of facilities within 30 km from IP-Rome and the emission (TPY), distance (km), and Q/d. Besides Plant Hammond, no other offsite facilities were added since the modeling is being used to help site the SO_2 monitor at the location of maximum impact and not being used to demonstrate attainment with the 1-hour SO_2 NAAQS.

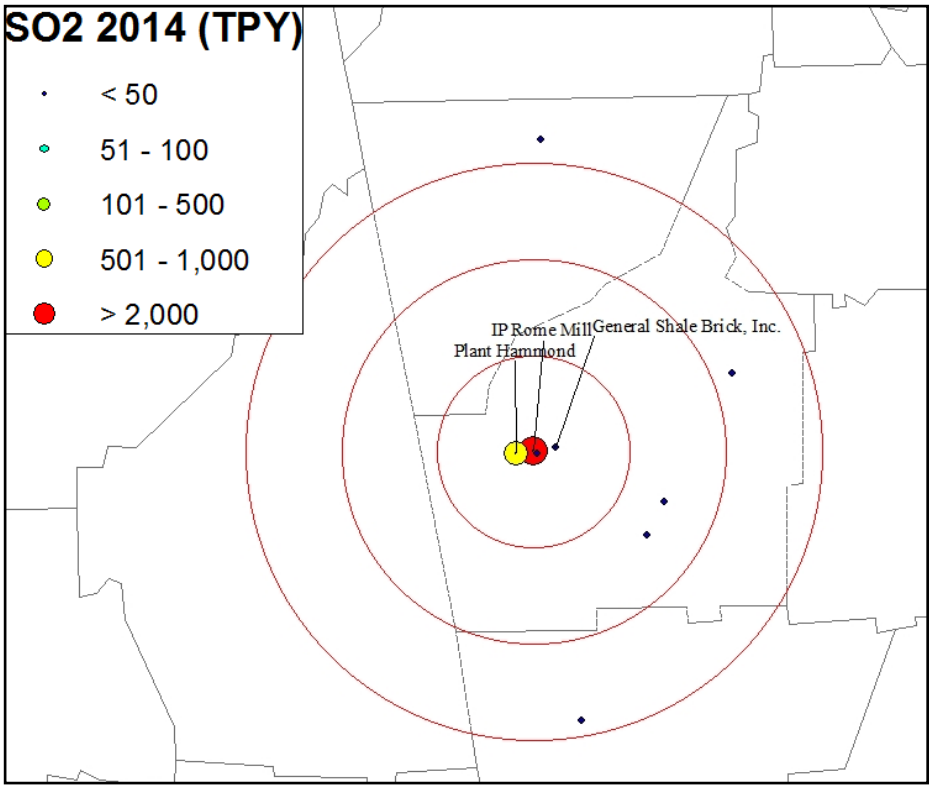


Figure 8. Map of annual 2014 SO_2 emissions (TPY) from offsite sources near IP-Rome. Concentric circles are placed in 10 km increments out to 30 km.

Table 4. List of facilities within 30 km from IP-Rome and the emission (TPY), distance (km), and Q/d.

AIRS ID	Facility Name	LATITUDE	LONGITUDE	2014 SO2 (TPY)	d (km)	Q/d
11500021	International Paper-Rome (IP-Rome)	34.25459	-85.32557	2355.73	0.00	N/A
11500003	Plant Hammond	34.25267	-85.34583	526.53	1.88	280.344
11500105	General Shale Brick, Inc.	34.25796	-85.30119	45.85	2.28	20.144
5500001	Mount Vernon Mills	34.54700	-85.31120	46.20	32.46	1.423
11500077	Ball Container LLC Rome Can Plant	34.32541	-85.09910	0.07	22.28	0.003
11500016	Georgia-Pacific Wood Products South LLC Lumber Plant	34.25250	-85.32175	0.00	0.42	0.002
11500095	Packaging Products Corporation, LLC	34.17460	-85.19901	0.02	14.65	0.002
11500073	Lifoam Industries, Inc.	34.20552	-85.17863	0.01	14.59	0.001
23300029	Kimoto Tech	34.00147	-85.27652	0.00	28.44	0.000

Background – No background concentrations were added to the modeling results since the modeling is being used to help site the SO_2 monitor at the location of maximum impact and not being used to demonstrate attainment with the 1-hour SO_2 NAAQS.

1-Hour SO_2 NAAQS ASSESSMENT

IP-Rome has chosen the ambient monitoring option to address the DRR requirements. Modeled 1-hour SO_2 concentrations using normalized hourly emissions are used to help site the SO_2 monitor at the location of maximum impact. The 1-hour SO_2 concentrations were calculated by AERMOD (version 15181) using normalized hourly emissions from both IP-Rome and Plant Hammond. AERMOD was run with two options: (1) with standard regulatory defaults (BASECASE), and (2) with the same setup except using LOWWIND3. The LOWWIND3 option is being used for weight of evidence and not for the primary modeling demonstration; therefore, it will not require prior approval from EPA.

Modeled normalized design values (NDVs) are calculated by averaging the modeled 4th highest daily maximum 1-hour SO_2 concentrations (i.e. 99th percentile) across three years using normalized hourly emissions. Distributions of NDVs for the BASECASE option (Figures 9 and 10) and the LOWWIND3 option (Figure 11 and 12) generally show similar results. The peak SO_2 concentrations occur at approximately 1.19 kilometers east of IP-Rome for the BASECASE option and approximately 0.78 kilometers southwest of IP-Rome for the LOWWIND3 option. The receptors having the top 200, 100, 25, and 10 NDVs are identified with red dots for the BASECASE option (Figures 13 and 14) and the LOWWIND3 option (Figures 15 and 16). All the NDV figures (Figures 9 – 16) indicate that the peak SO_2 design values generally occur east, southeast, south, or southwest of IP-Rome. This is consistent with the predominant wind in this area (Figure 1).

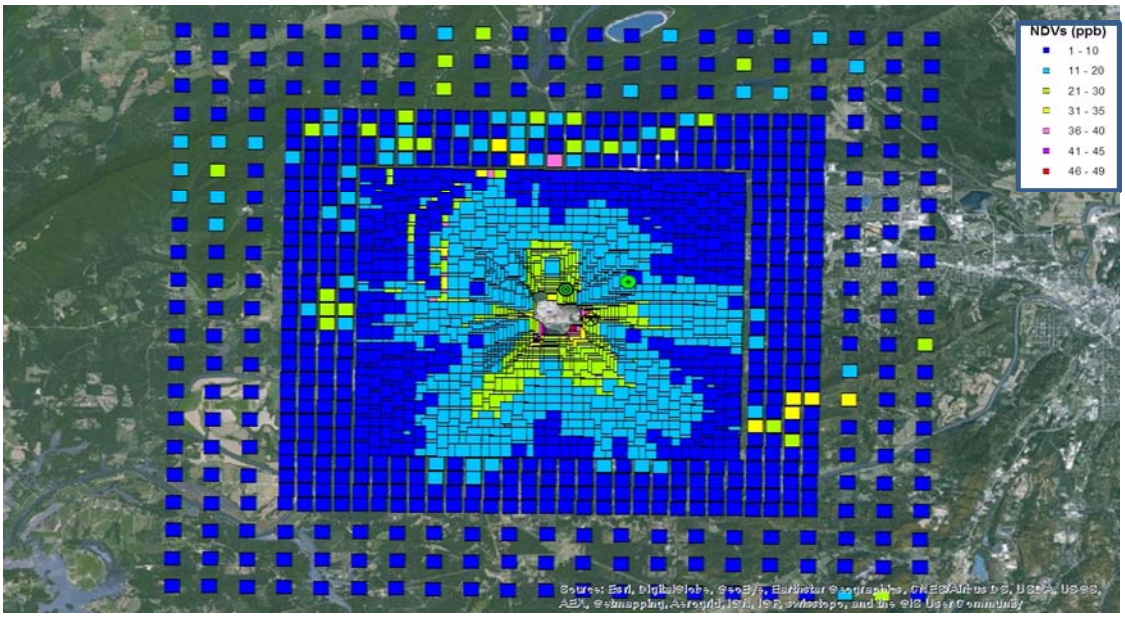


Figure 9. Normalized design values for the BASECASE option. The red colors indicate relatively higher NDVs.

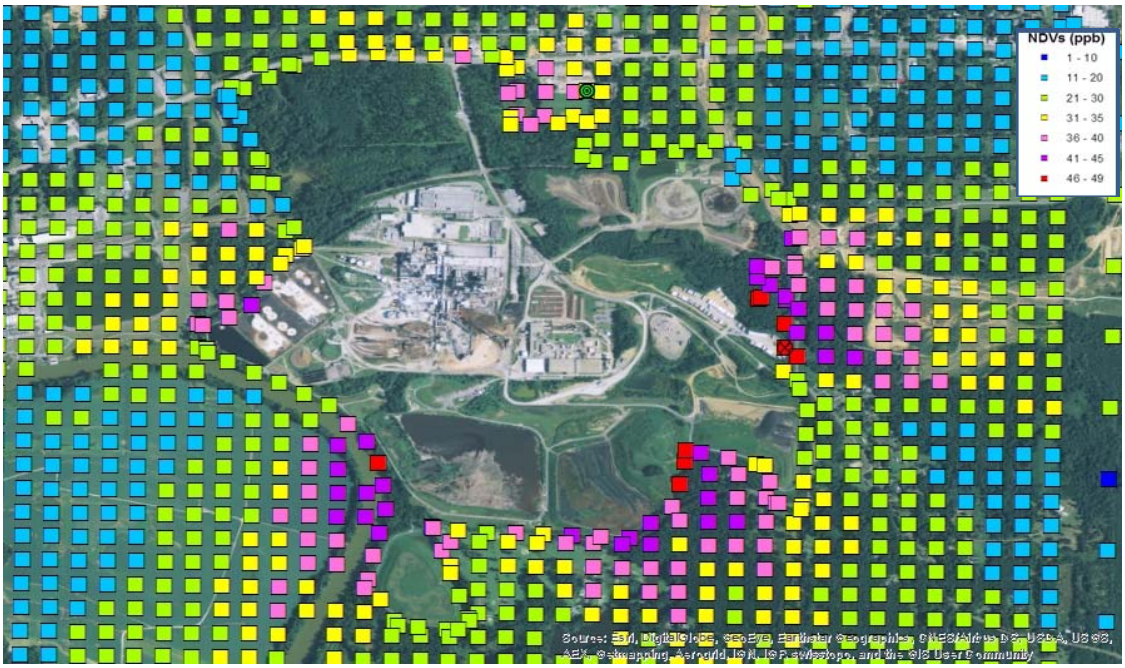


Figure 10. Normalized design values for the BASECASE option (zoom in). The red colors indicate relatively higher NDVs. The receptor with the highest NDV is circled with mark x in black.

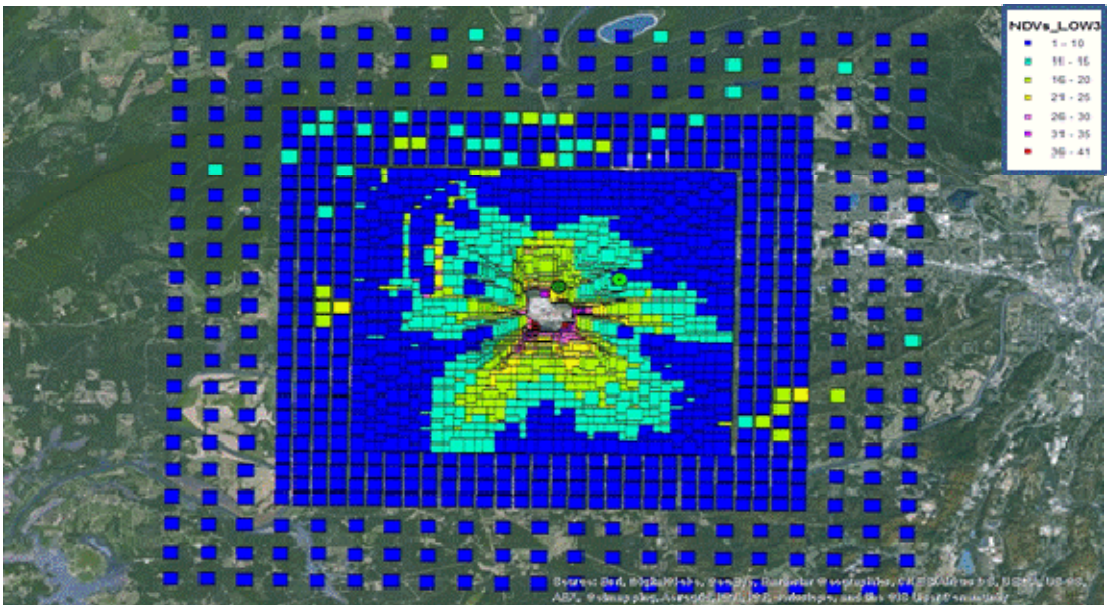


Figure 11. Normalized design values for the LOWWIND3 option. The red colors indicate relatively higher NDVs.

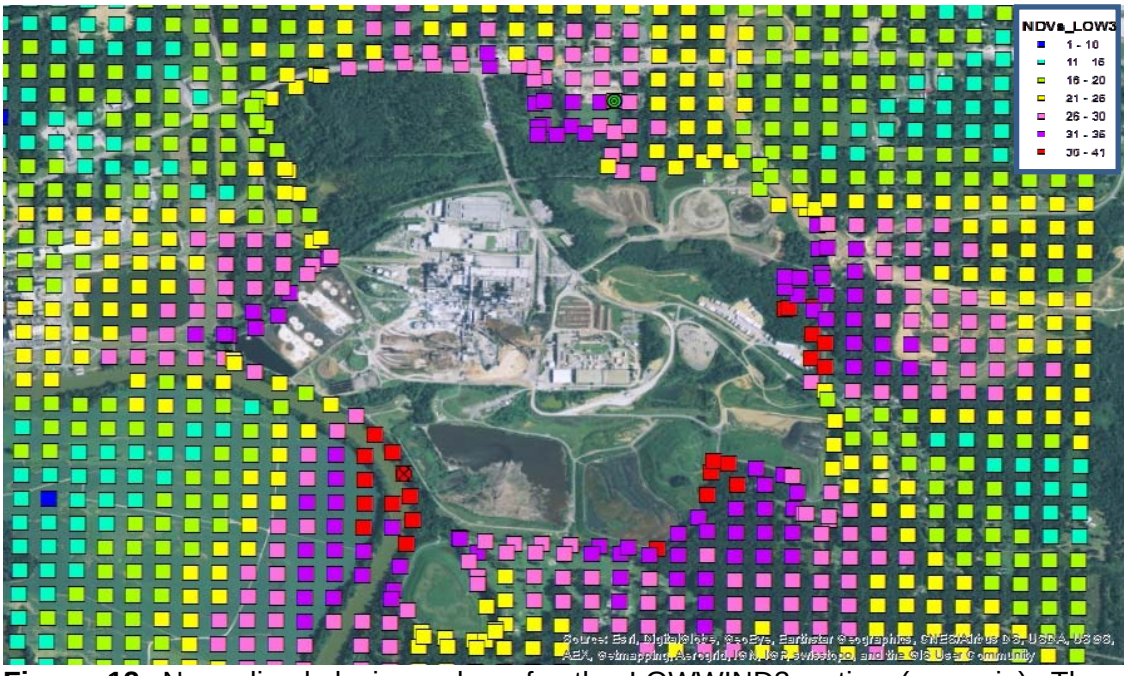


Figure 12. Normalized design values for the LOWWIND3 option (zoom in). The red colors indicate relatively higher NDVs. The receptor with the highest NDV is circled with mark x in black.

Figure 13. Locations of Top 200, 100, 25, and 10 normalized design values for BASECASE.

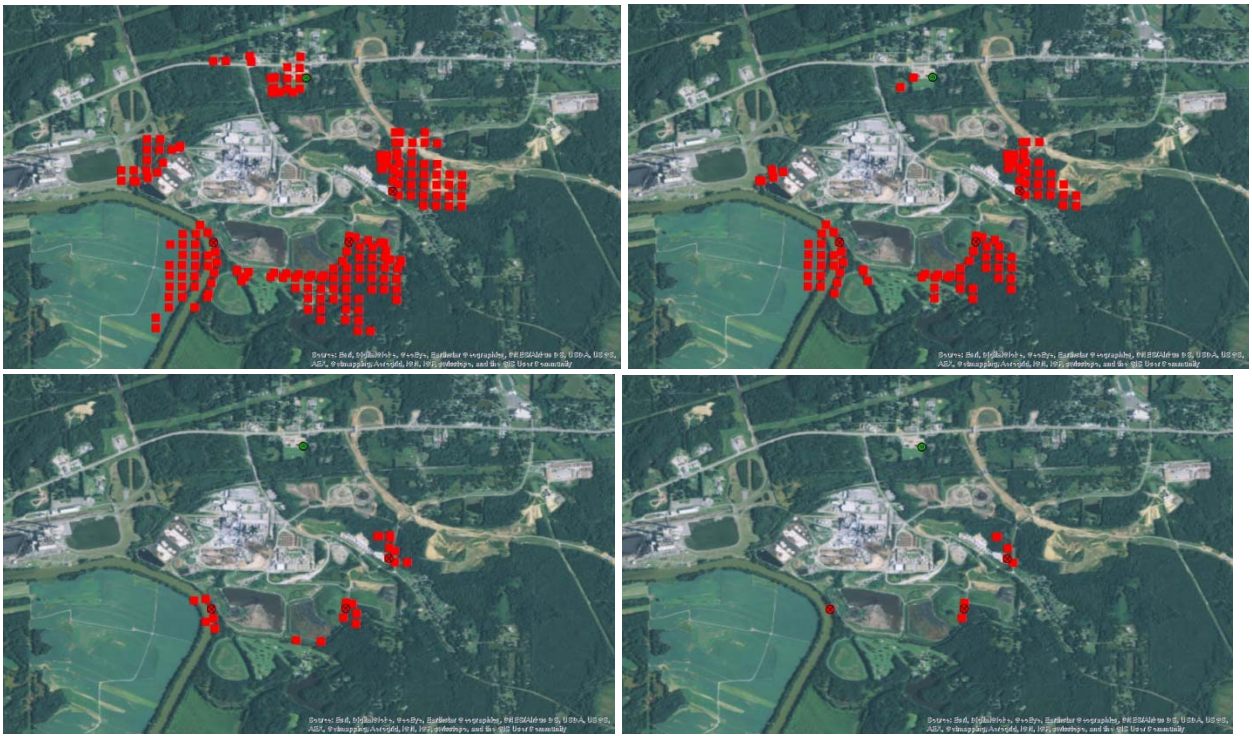


Figure 14. Locations of Top 200, 100, 25, and 10 normalized design values for BASECASE (zoom in).

Figure 15. Locations of Top 200, 100, 25, and 10 normalized design values for LOWWIND3.

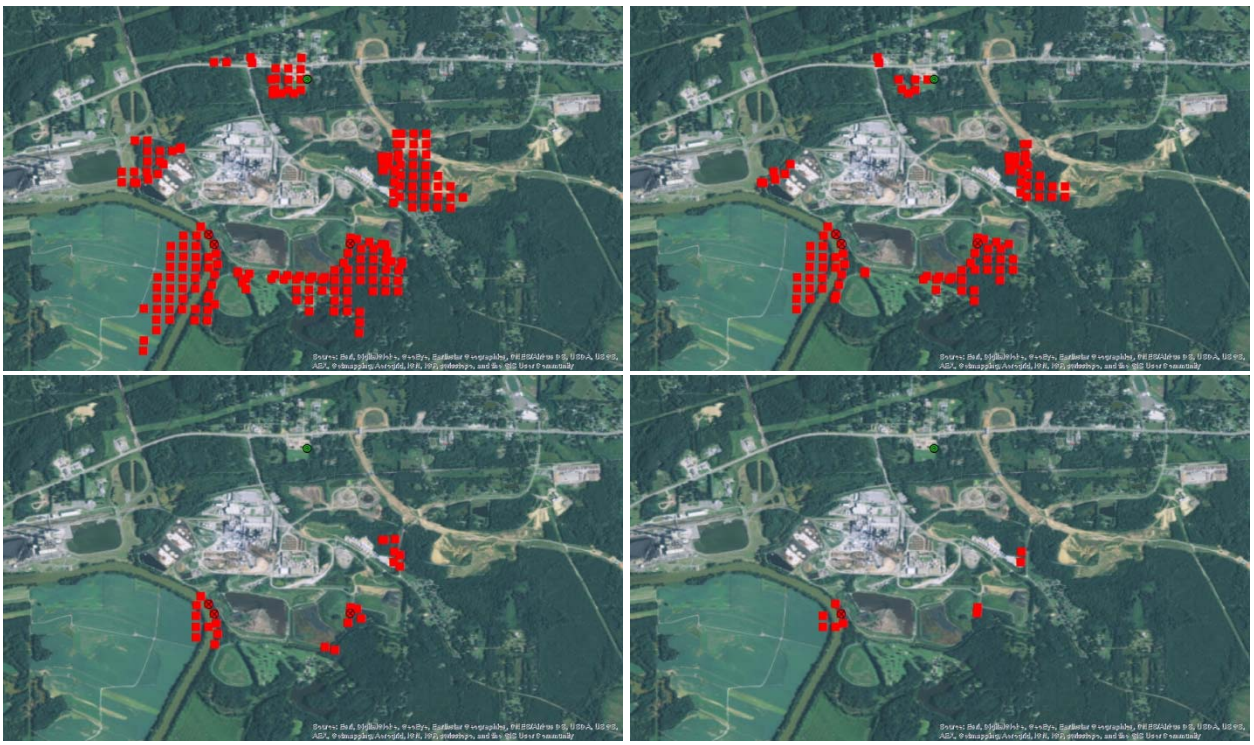


Figure 16. Locations of Top 200, 100, 25, and 10 normalized design values for LOWWIND3 (zoom in).

The number of days when the daily maximum1-hour SO_2 concentration occur at a receptor were counted for each receptor using the AERMOD outputs with MAXDAILY option. The total number of days over three years are shown for each receptor for the BASECASE option in Figures 17 and 18 and for the LOWWIND3 option in Figures 19 and 20. The daily maximum 1-hour SO_2 concentrations occur at the receptor with the highest NDV for the BASECASE option on 34 days, while the daily maximum1-hour SO_2 concentrations occur at the receptor with the highest NDV for the LOWWIND3 option on 77 days.

Scores are calculated for each receptor by adding the rank of NDVs and the rank of number of days when the daily maximum1-hour SO_2 concentration occur at the receptor (Figures 21 and 22 for the BASECASE option and Figures 23 and 24 for the LOWWIND3 option). The receptors with lower scores have a higher probability to experience peak SO_2 concentrations and should be given higher priority as a potential future monitor site. The receptors with lowest 10 scores are marked with black x symbols. The patterns are somewhat similar for both BASECASE and LOWWIND3 options. The only exception is the one receptor which is north of IP-Rome for the BASECASE option (Figure 22). This receptor is located on a hill side as illustrated by the topography maps (Figures 25 and 26) and may not adequately represent the peak SO_2 impacts from IP-Rome. The areas marked with red circles (Figure 22 and 24) represent the peak SO_2 impacts from IP-Rome. The areas marked with pink circles (Figure 22 and 24) represent the peak SO_2 impacts from IP-Rome, but is less desirable since it would be extremely difficult to site a monitor at this location due to the proximity to the river and challenging terrain surrounding the river. One possible SO_2 monitor location is marked with a green circle in Figures 22 and 24.

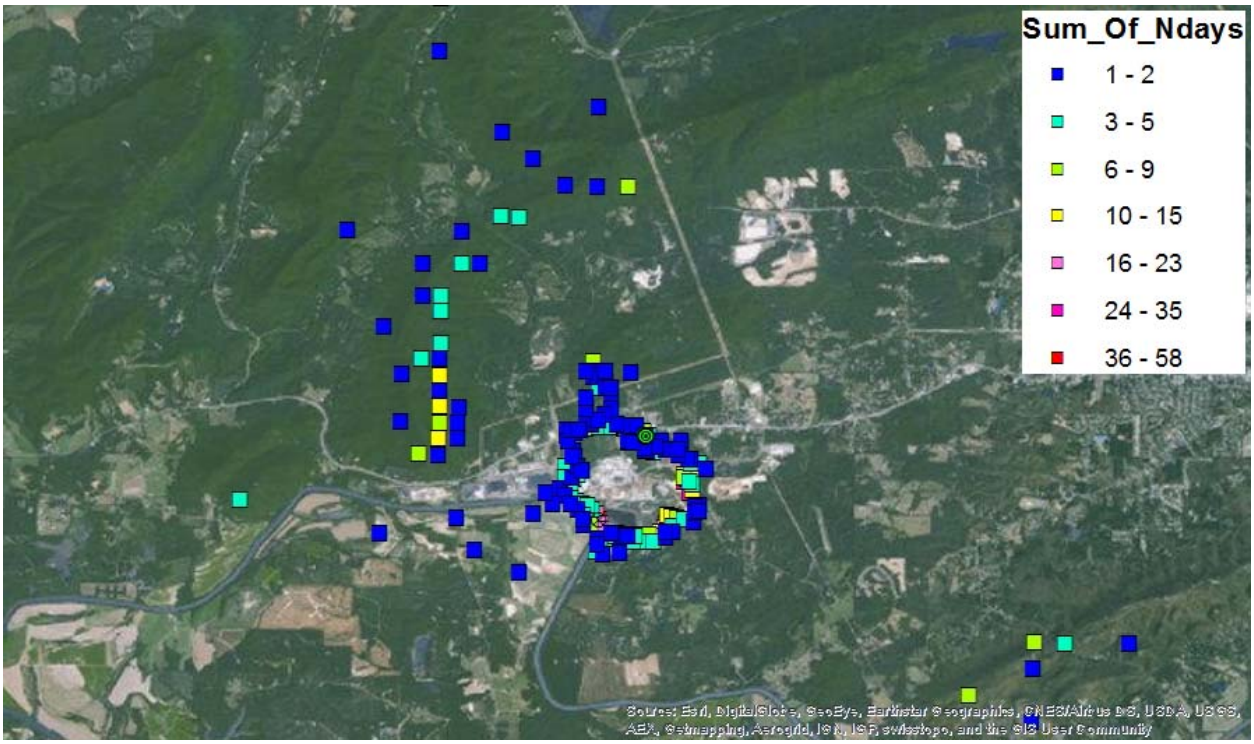


Figure 17. Total number of days when the 1-hour daily maximum concentrations occurred at a receptor during 2012-2014 for the BASECASE option.

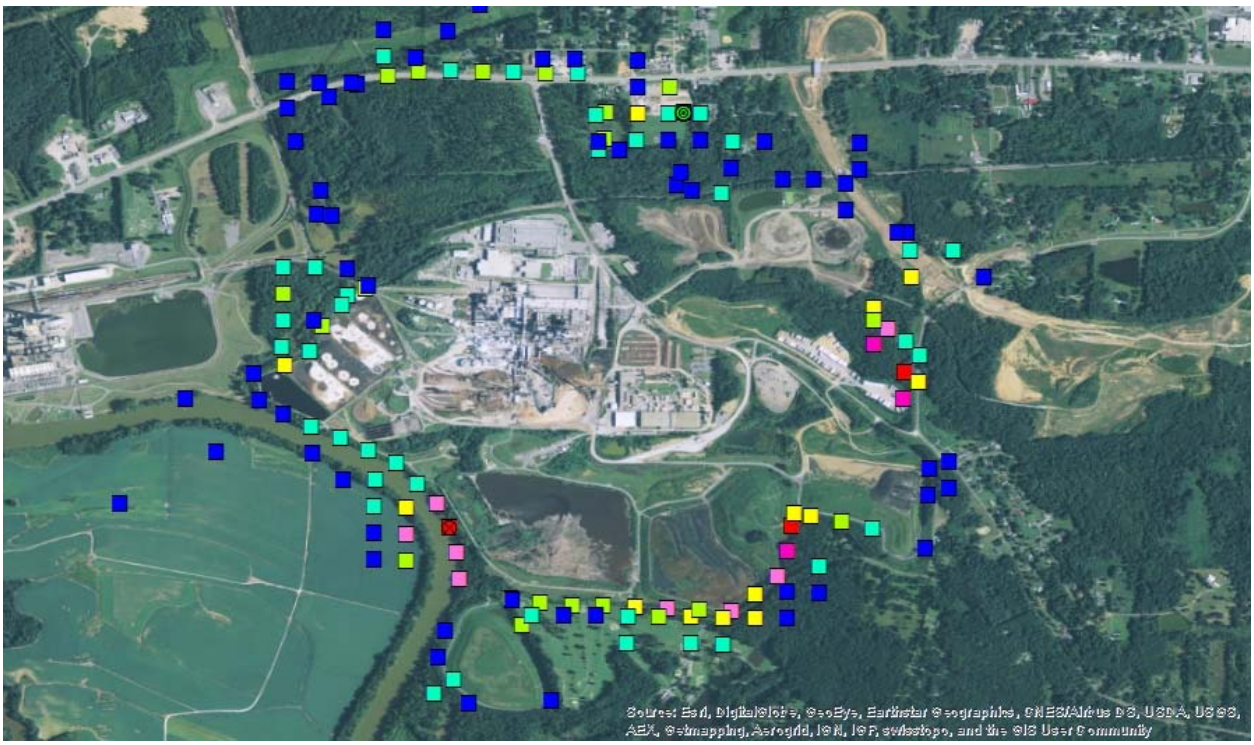


Figure 18. Total number of days when the 1-hour daily maximum concentrations occurred at a receptor during 2012-2014 for the BASECASE option (zoom in).

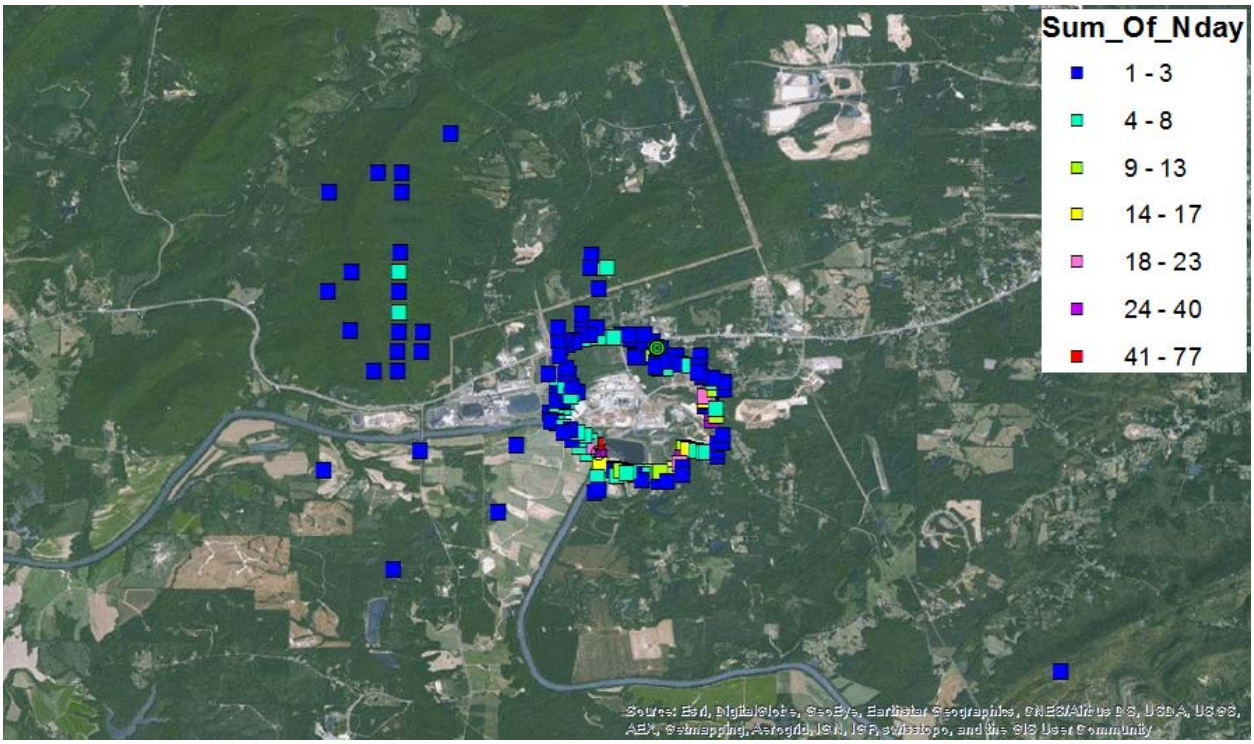


Figure 19. Total number of days when the 1-hour daily maximum concentrations occurred at a receptor during 2012-2014 for the LOWWIND3 option.

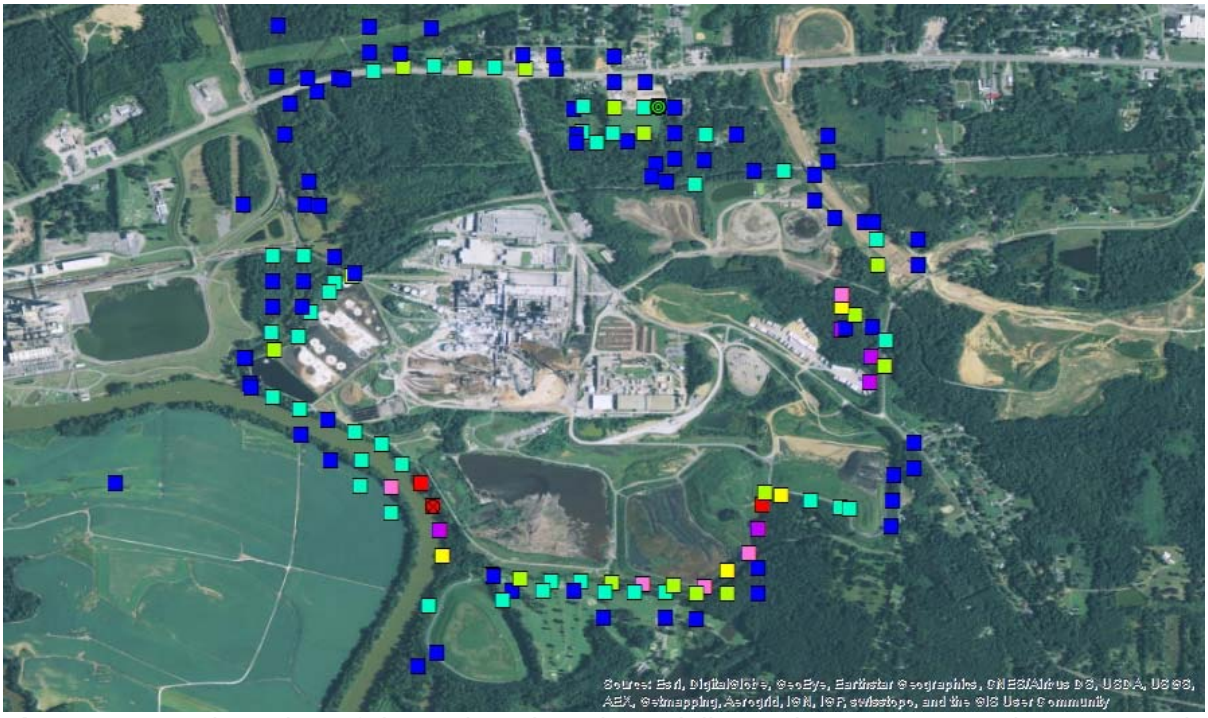


Figure 20. Total number of days when the 1-hour daily maximum concentrations occurred at a receptor during 2012-2014 for the LOWWIND3 option (zoom in).

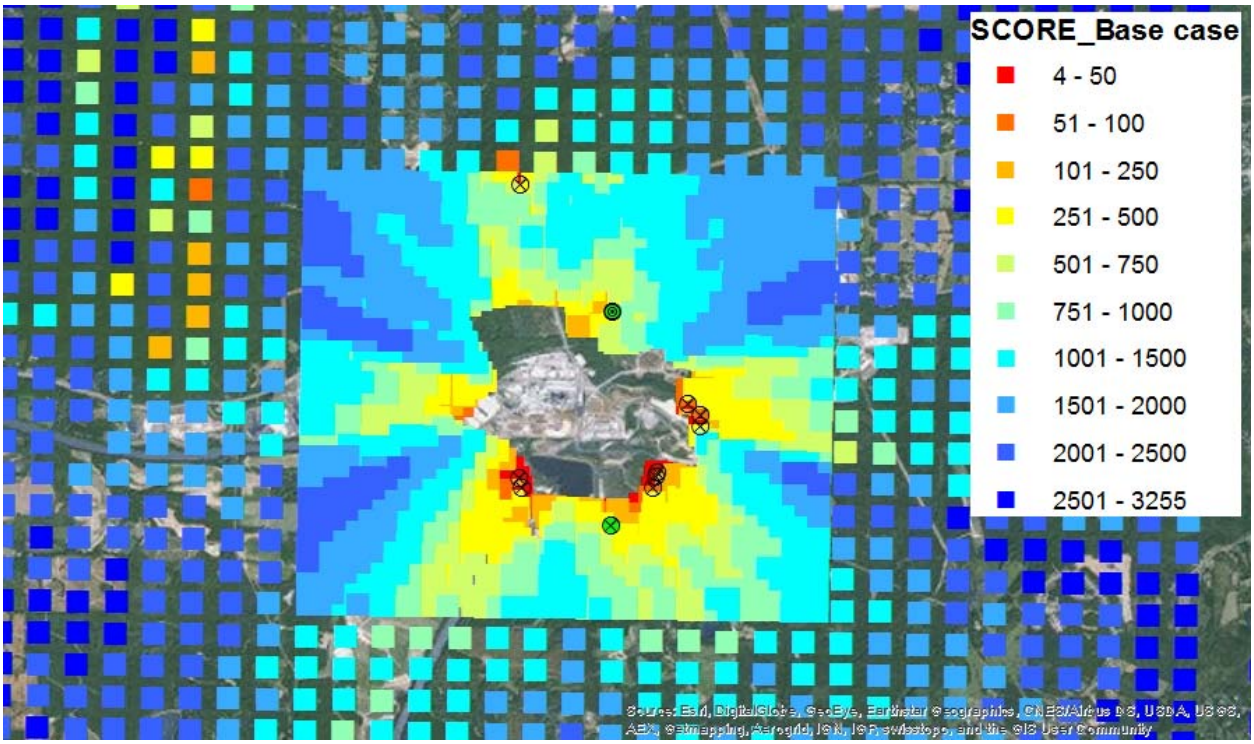


Figure 21. Scores reflecting NDVs and frequency of having the 1-hour daily maximum in the domain for the BASECASE option.

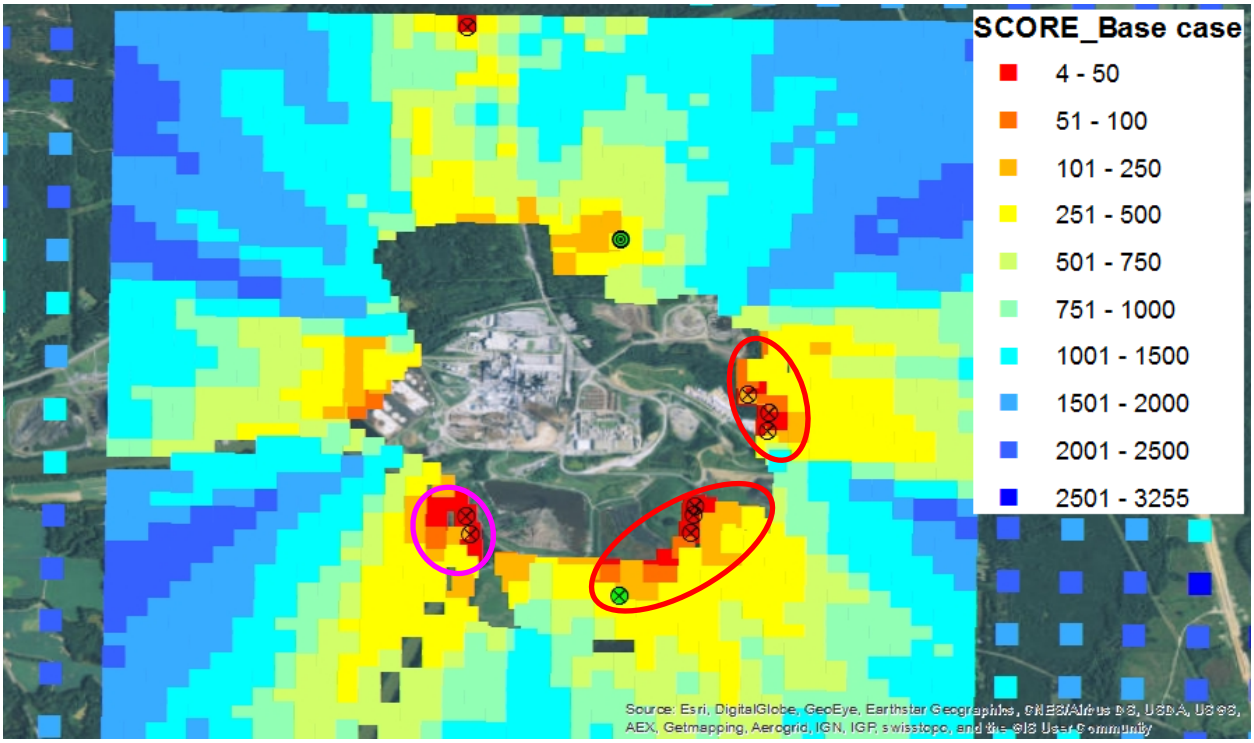


Figure 22. Scores reflecting NDVs and frequency of having the 1-hour daily maximum in the domain for the BASECASE option (zoom in). The area marked with red/pink circles represent the peak SO_2 impacts.

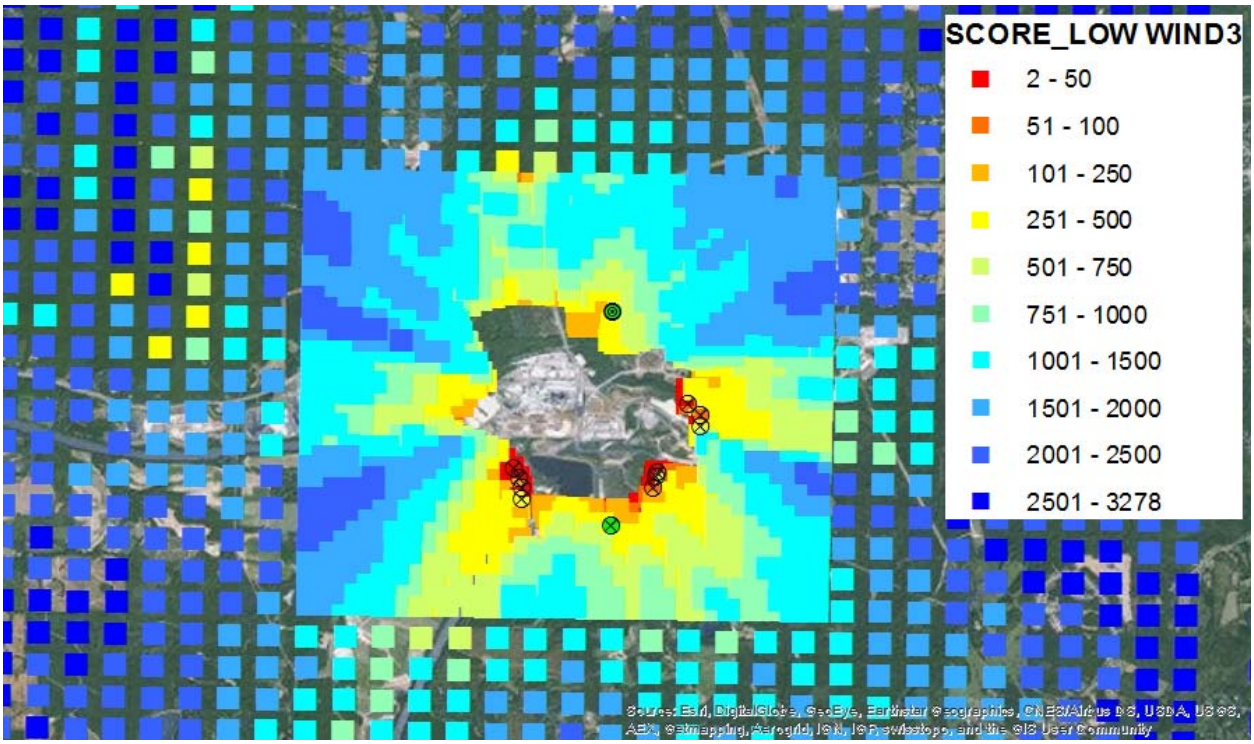


Figure 23. Scores reflecting NDVs and frequency of having the 1-hour daily maximum in the domain for the LOWWIND3 option.

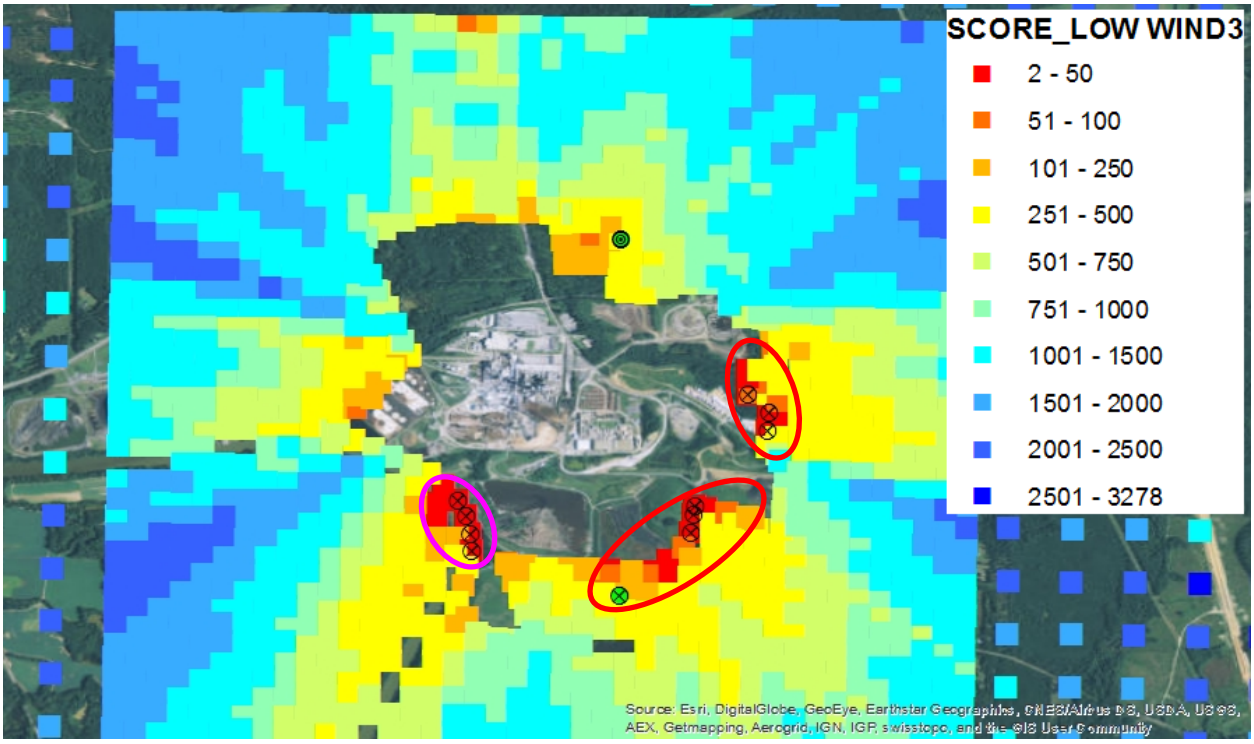


Figure 24. Scores reflecting NDVs and frequency of having the 1-hour daily maximum in the domain for the LOWWIND3 option (zoom in). The area marked with red/pink circles represent the peak SO_2 impacts.

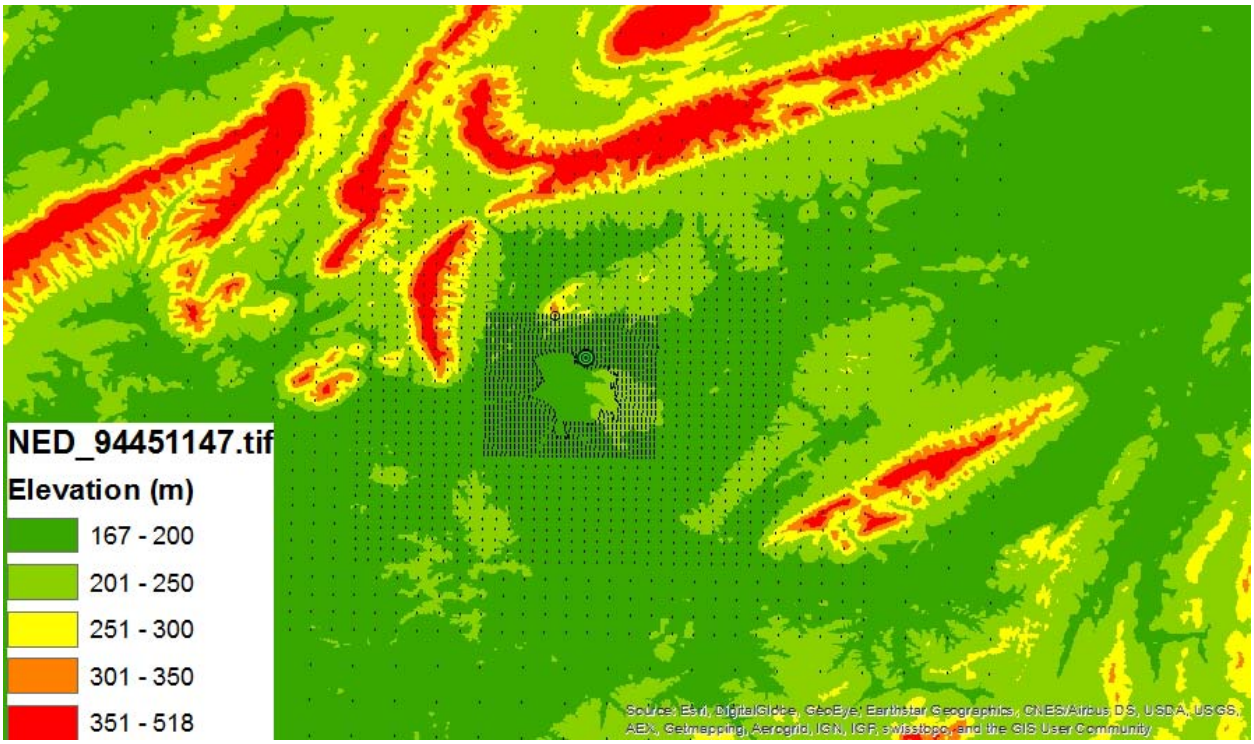


Figure 25. Topographical map showing the elevation in meters.

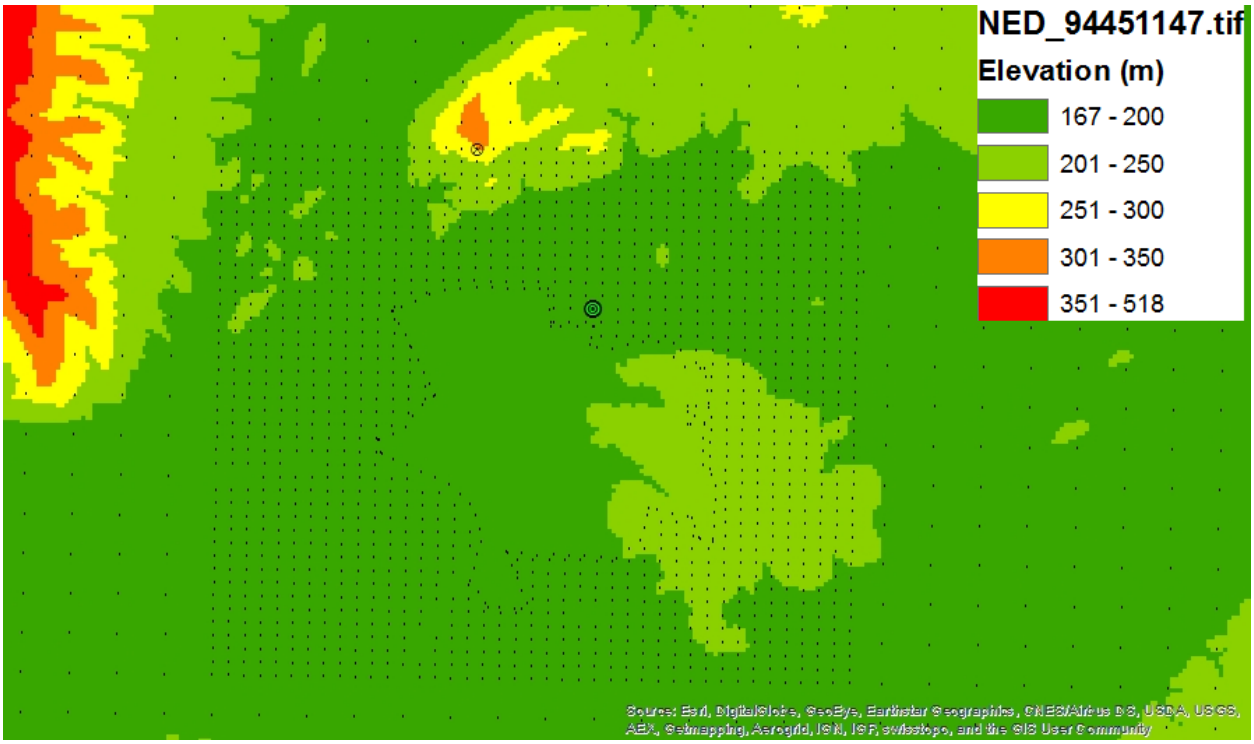


Figure 26. Topographical map showing the elevation in meters (zoom in). The receptor with the 6th ranked score is circled with mark x in black.

CONCLUSIONS

The IP-Rome dispersion modeling to help site the SO_2 monitor at the location of maximum impact for the 2010 1-hour SO_2 NAAQS designations was conducted in accordance with the final Data Requirements Rule (DRR) and Modeling and Monitoring Technical Assistance Documents (TADs) using the most recently available information.

The current SO_2 monitor (13-115-0003) located at former Coosa Elementary School may not be representative of SO_2 concentrations in this area. Therefore, this SO_2 monitors should be moved to the area in the red circles shown in Figures 22 and 24 to monitor the maximum SO_2 impacts from IP-Rome.

Appendix E:
Site Relocations and Discontinuations

Georgia Department of Natural Resources
Environmental Protection Division

Relocation of Rome SO_2 Monitor

In accordance with 40 CFR 58.14 regarding SLAMS relocation requests, GA EPD provides the following documentation in support of relocating the Rome-Coosa Elementary School (13-115-0003) SO_2 monitor located in the Rome MSA.

Due to the site property being purchased, GA EPD will be relocating the Rome-Coosa Elementary School site (13-115-0003), located at Coosa Elementary School, Highway 20, Rome, GA 30165 (N34.2605/W-85.32328), to the same vicinity. In accordance with the EPA Data Requirements Rule for sulfur dioxide, models of SO_2 concentrations were produced in order to choose the most appropriate location for the SO_2 monitor that would capture the maximum SO_2 emissions from applicable facilities (see Appendix D of this document for the draft International Paper-Rome Modeling Report submitted to EPA). These AERMOD models identified the areas of peak SO_2 impacts from International Paper (IP). The areas, or receptors, were ranked and those with the highest probability of experiencing peak SO_2 concentrations were given the lowest ranking, or a rank of 1 (Figure 1).

However, GA EPD personnel investigated the area surrounding the facility and found any other indicated locations (the receptors with the lowest ranks) were in undesirable locations. Most of the area surrounding the facility is heavily wooded and undeveloped. GA EPD personnel could not access the locations due to lack of roads and inaccessibility to the sites, due to proximity to the river and challenging terrain surrounding the river, presence of vegetation and trees, current utilization, as well as lack of access to electricity. This included any higher elevation terrain where the models predicted elevated concentrations. GA EPD would not meet ambient air monitoring requirements, as defined in 40CFR50.1(e), if a site were located inside the facility fence line, and the fence line encompassed all surrounding property except for the proposed location. Therefore, GA EPD was limited in location selection to property that was outside the facility's current fence line. As the facility has expanded the fence around the property to include almost all of the land owned by the facility, the availability of non-private land was greatly diminished. GA EPD met with IP personnel after exhausting all feasible possibilities, and IP personnel suggested the proposed location.

Three areas outside the fence line were identified as potential sites. One area was on a closed golf course parking lot with power and access readily available. This site was in a location that meets the 40CFR58, Appendix E siting criteria for a middle scale site. The second potential area identified was in the former green of the golf course near the tree line and river which runs concurrent to the facility fence line. This location would require development of a road to access the site, as well as power. This location was not preferable for the particulate matter monitors GA EPD operates at the Rome–Coosa monitoring site due to adverse effects on data completeness as a result of winter conditions without a paved road. The only other property identified was private property with a heavily wooded rear yard, and use of this property would greatly restrict access to data collection procedures. To ensure the highest data quality and completeness, GA EPD needs unlimited access to the ambient monitoring sites. Siting a station within a homeowner's private property would make access to the station contingent on the homeowner. Use of this site would have also required removal of the trees, which separated the property from the adjacent facility, for any potential ambient monitoring station to meet the siting requirements of 40CFR58, Appendix E. Therefore, the GA EPD did not pursue this location.

Table 1 lists the ranks and coordinates of the top 45 ranked receptors along with siting concerns for each receptor location. GA EPD considered the siting concerns of each receptor location and decided the most appropriate location is near 436 Kraftsman Road SW Rome, GA 30165 at

N34.24239798/W-85.3204549 (Figure 2). The proposed location is approximately 1.25 miles south of the current Rome site and will be located on a parking lot adjacent to a golf course where obstructions from trees would be minimal (23 meters from nearest tree) and site access is along paved roadways which will allow access in adverse weather (Figure 3). The new Rome site location will have the AQS site identification of 13-115-0006. Figure 4 shows the directional site photos, demonstrating that the site will meet siting criteria.

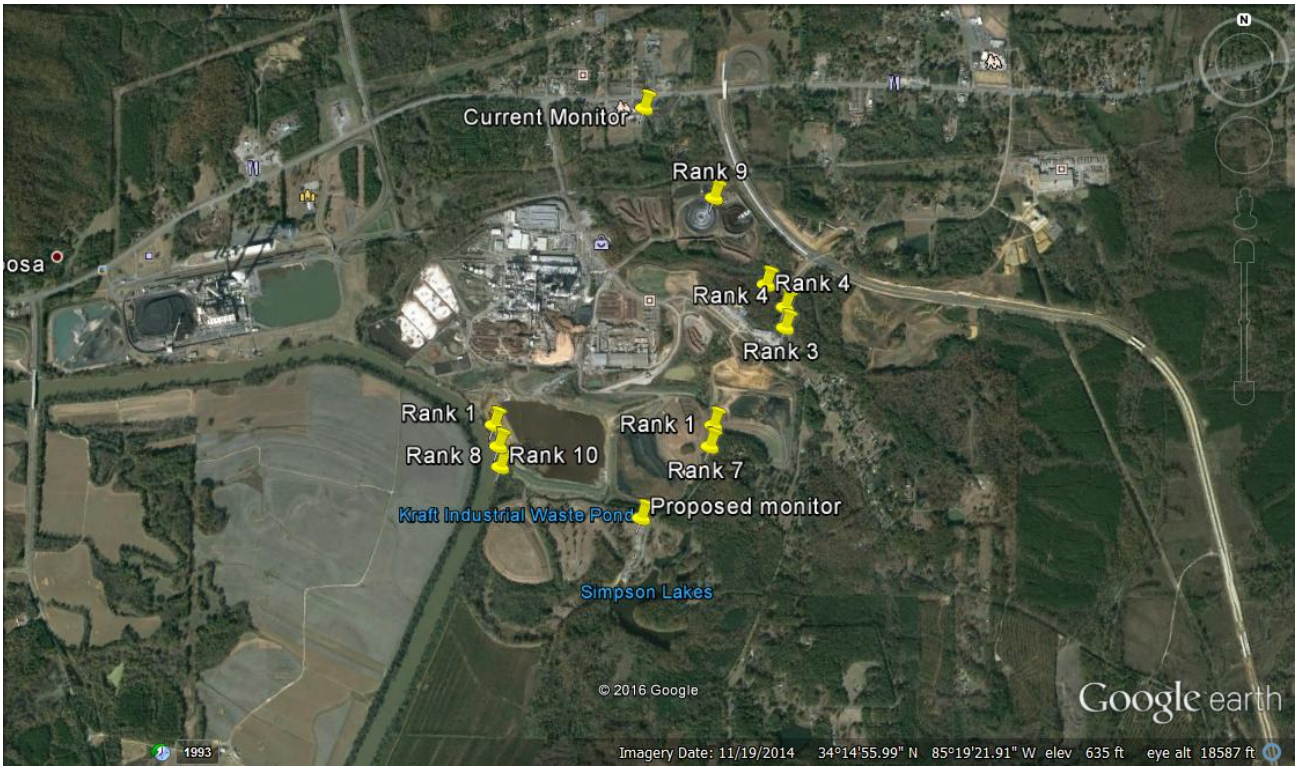


Figure 1: Map showing locations of the current Rome monitor, proposed monitor, and ranked receptors (multiple sites shared the same rank and are noted as such)

Table 1: List of the top 45 ranked receptors, coordinates, and siting concerns for Rome site

Receptor Score Rank	Latitude	Longitude	Siting Concern
1	34.24642652	-85.31959948	trees, no power source
1	34.24636931	-85.33125164	river, no power source
3	34.25075654	-85.31578878	private property- truck yard
4	34.25261871	-85.31678328	trees
4	34.25165785	-85.31575996	trees
6	34.27136354	-85.33115976	trees, no road access, no power source
7	34.24553616	-85.31976919	trees, no power source
8	34.24548262	-85.33103026	river, no power source
9	34.24684917	-85.31951506	trees, no power source
10	34.24460686	-85.33094983	river, no power source
10	34.24360821	-85.32384669	trees, no power source

10	34.24350639	-85.32167711	trees, no power source
10	34.24716852	-85.33167020	river, no power source
14	34.24674227	-85.31895255	trees, no power source
15	34.25130843	-85.31526741	trees
16	34.24703861	-85.33272603	river, no power source
17	34.25312628	-85.31631709	trees
18	34.24409952	-85.32087270	trees, no power source
19	34.24613714	-85.33274381	river, no power source
20	34.27318126	-85.33221002	trees, no road access, no power source
21	34.25383628	-85.31680247	trees, no power source
22	34.24326972	-85.32085661	trees, no power source
23	34.25488241	-85.31550021	trees
23	34.25190113	-85.33687601	trees, no power source
25	34.2439334	-85.32917155	trees
26	34.24328459	-85.32194211	trees, no power source
27	34.25341244	-85.31680005	trees, no road access, no power source
28	34.2708288	-85.3583242	trees, no road access, no power source
29	34.24329945	-85.32302761	trees
30	34.24471082	-85.32007877	trees, no power source
31	34.24523566	-85.3327616	river, no power source
32	34.24331429	-85.32411311	trees
33	34.2522099	-85.31524943	trees
34	34.25267636	-85.3157288	trees, private property
35	34.25237658	-85.3360305	trees, no power source
36	34.2465295	-85.31790352	trees, no power source
37	34.26045703	-85.32485913	trees
38	34.2450429	-85.31864975	trees, no power source
39	34.26541991	-85.35842934	trees, no road access, no power source
40	34.26001101	-85.35853444	trees, no road access, no power source
41	34.30285554	-85.32619066	trees, no road access, no power source
42	34.24355731	-85.3227619	trees, no power source
43	34.25250645	-85.33696183	trees, no power source
44	34.2595704	-85.32596272	trees, no power source
45	34.24239798	-85.32304549	proposed site

Figure 2: Map of Current Rome-Coosa Elementary site, the proposed new site location, and International Paper

Figure 3: Proposed site location for new Rome site

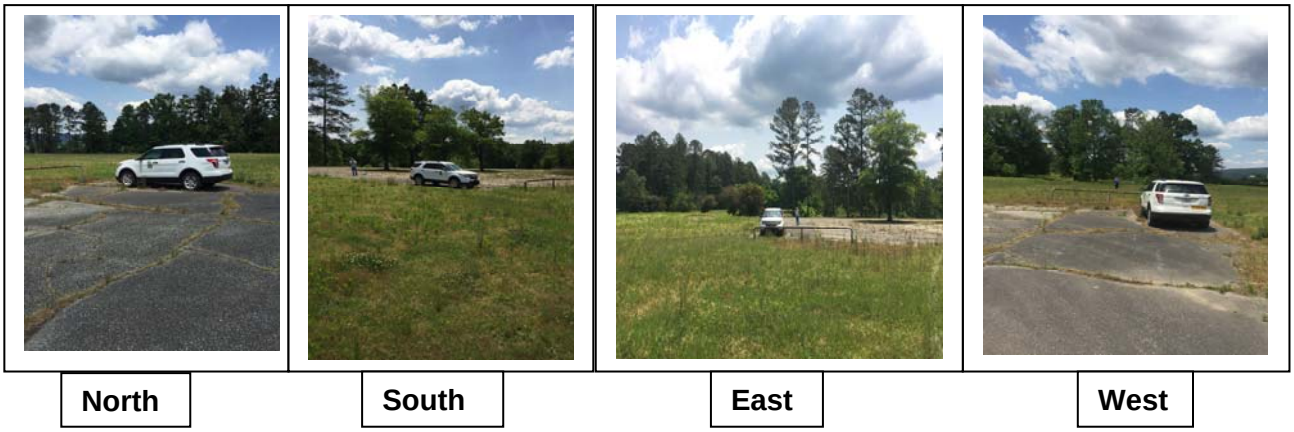


Figure 4: Site photos for proposed new Rome site

Although this location is not exactly at the location with the lowest scores, it is very close (less than 1 km) (Figure 1). AERMOD is not designed to simulate the exact location of the maximum impact, but rather gives a distribution of probabilistic locations. Since there are no significant variations in the topography in the red circles, GA EPD feels that locating a SO_2 monitor anywhere within the red circles in Figure 5 and Figure 6 (also in Appendix D of this document) would satisfy the requirement for measuring the maximum SO_2 impact. Since the proposed location of the new monitoring site falls within a red circle, which also includes a rank 1 receptor, GA EPD feels that this monitor would be properly sited to measure maximum SO_2 impacts and could be used to demonstrate attainment with the 2010 1-hour SO_2 NAAQS under the Data Requirements Rule. As discussed above, the proposed site has been determined to be the most feasible location given the results of the model.

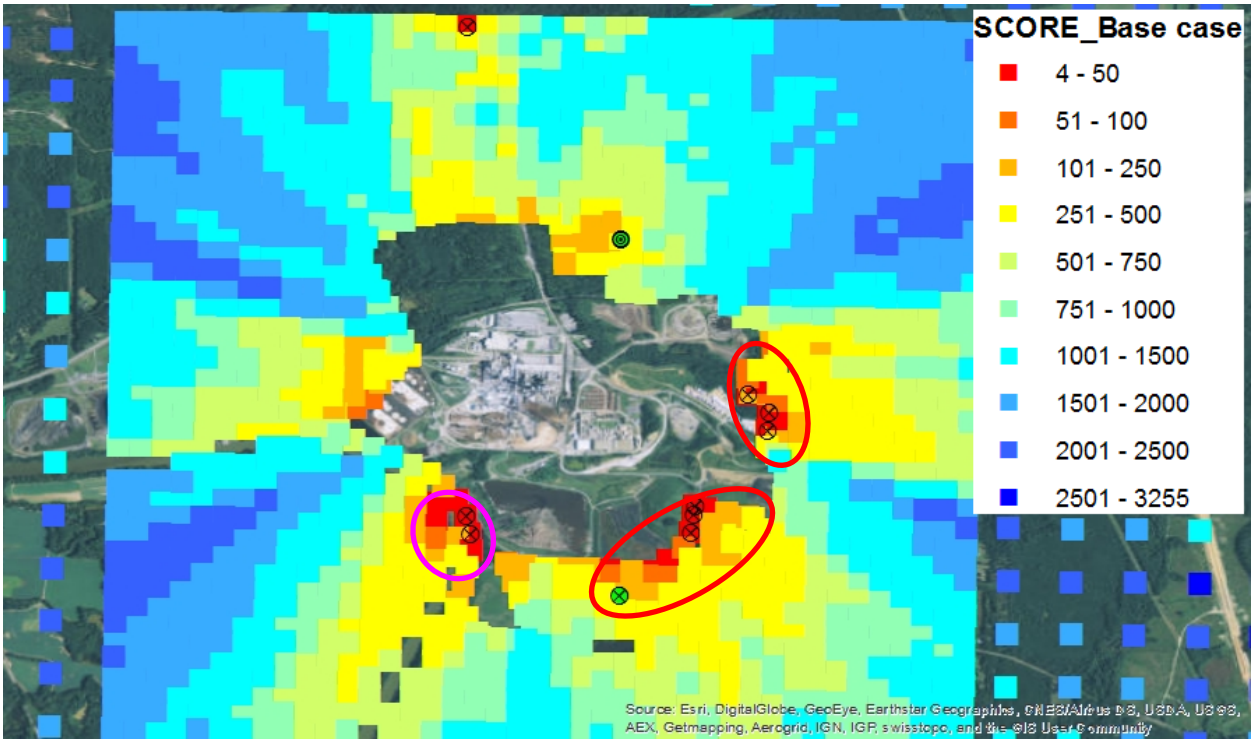


Figure 5: Scores reflecting modeled normalized design values (NDVs) and frequency of having the 1-hour daily maximum in the domain for the BASECASE option (zoom in). The areas marked with red/pink circles represent the peak SO_2 impacts. The red markers indicate the lowest ranking receptors, and the green marker within the red circle indicates the proposed site location.

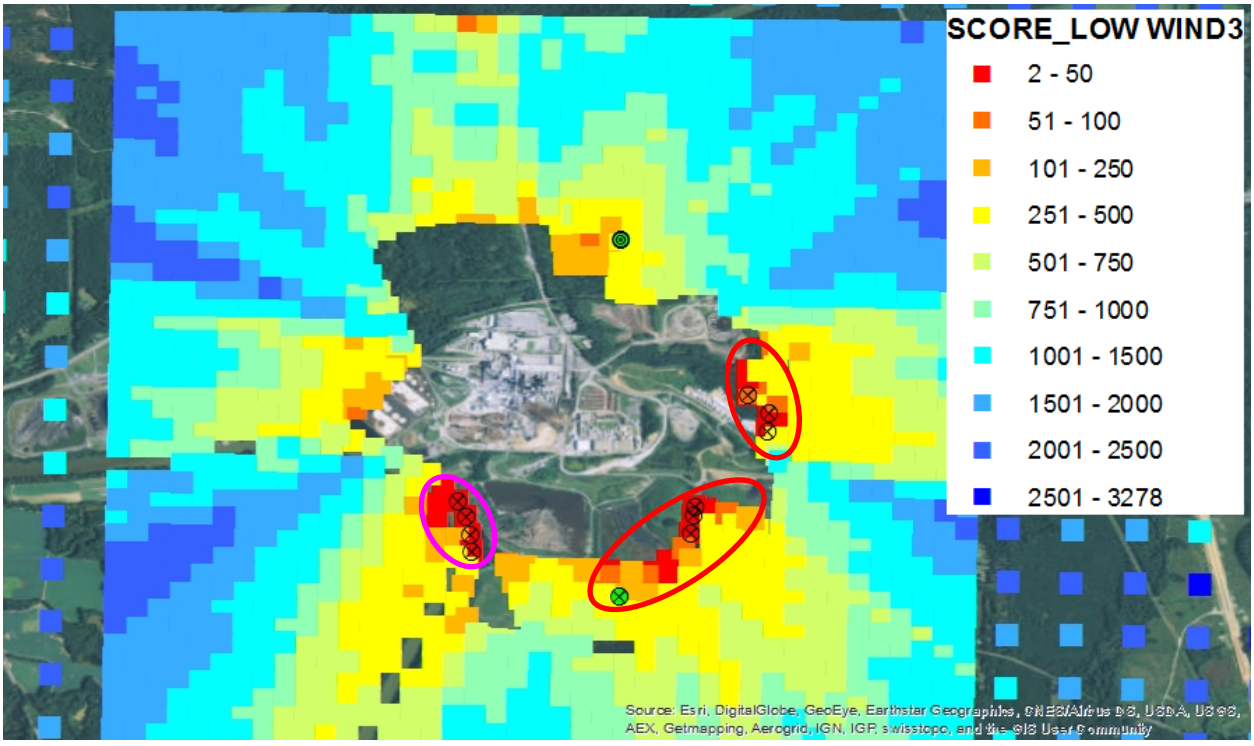


Figure 6: Scores reflecting NDVs and frequency of having the 1-hour daily maximum in the domain for the LOWWIND3 option (zoom in). The areas marked with red/pink circles represent the peak SO_2 impacts. The red markers indicate the lowest ranking receptors, and the green marker within the red circle indicates the proposed site location.

Figure 7 shows the SO_2 design value trend at the current Rome site for 2000-2015.

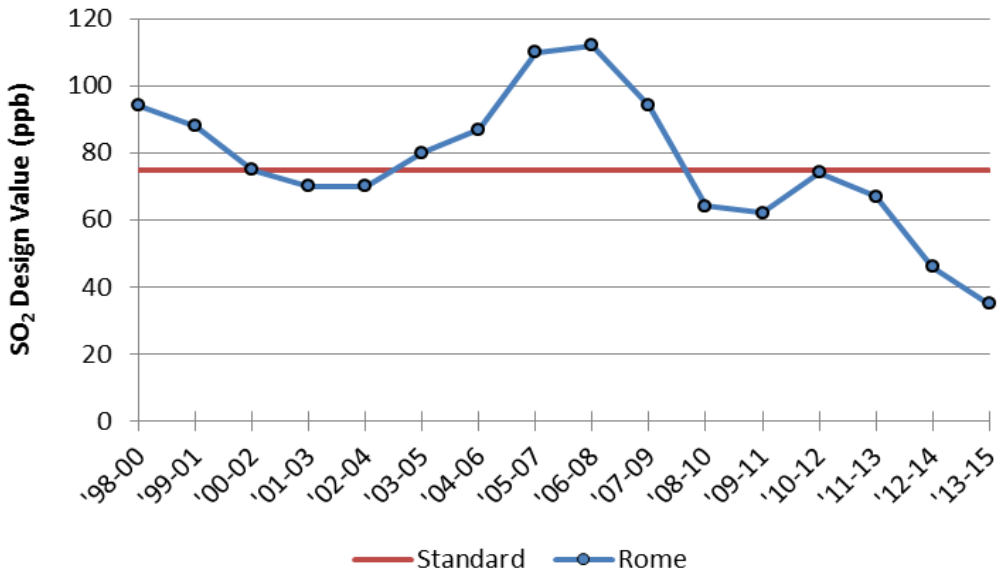


Figure 7: Rome SO_2 Design Value Trend

Table 2 details the parameter, monitoring objective, sampling schedule, probe inlet height, spatial scale, method code, analysis method, and begin date for each parameter to be monitored at the proposed Rome location. Nearby wind rose information can be found in Appendix D of this document.

Table 2: Parameter Information for Proposed Rome Site

Parameter	Monitoring Objective	Sampling Schedule	Probe Inlet Height	Spatial Scale	Method Code	Analysis Method	Begin Date
$PM_{2.5}$	Population Exposure	Continuous	3 m	Neighborhood	703	TEOM Gravimetric 30 deg C	1/1/08
$PM_{2.5}$ Speciation	Population Exposure	Every 6 days	2 m	Neighborhood	811, 812	Energy dispersive XRF, Ion Chromatography	3/1/02
SO_2	Population Exposure	Continuous	4 m	Middle	009	Pulsed Fluorescent	1/1/75
SO_2 5-Minute Maximum	Population Exposure	Continuous	4 m	Middle	009	Pulsed Fluorescent	8/1/10
Wind Speed	General/ Background	Continuous	10 m	Neighborhood	066	RM Young Ultrasonic Anemometer	1/1/2017
Wind Direction	General/ Background	Continuous	10 m	Neighborhood	066	RM Young Ultrasonic Anemometer	1/1/2017

Discontinuation of Rome $PM_{2.5}$ FRM Monitor

In accordance with 40 CFR 58.14(c) regarding SLAMS discontinuation requests, GA EPD provides the following documentation in support of discontinuing the $PM_{2.5}$ FRM monitor at the Rome-Coosa site (13-115-0003). The proposed $PM_{2.5}$ Implementation Rule would revoke the 1997 standard, should this rule be finalized in 2016, the monitor will be removed.

The Rome $PM_{2.5}$ annual design value trend from 2001-2015 is plotted along with the applicable NAAQS in Figure 8a. The Rome $PM_{2.5}$ 24-hour design value trend from 2001-2015 is plotted along with the NAAQS in Figure 8b. These trends show a steady decreasing trend in both the annual and 24-hour design values, and that this monitor has been in attainment of both the annual and 24-hour $PM_{2.5}$ NAAQS for more than five years.

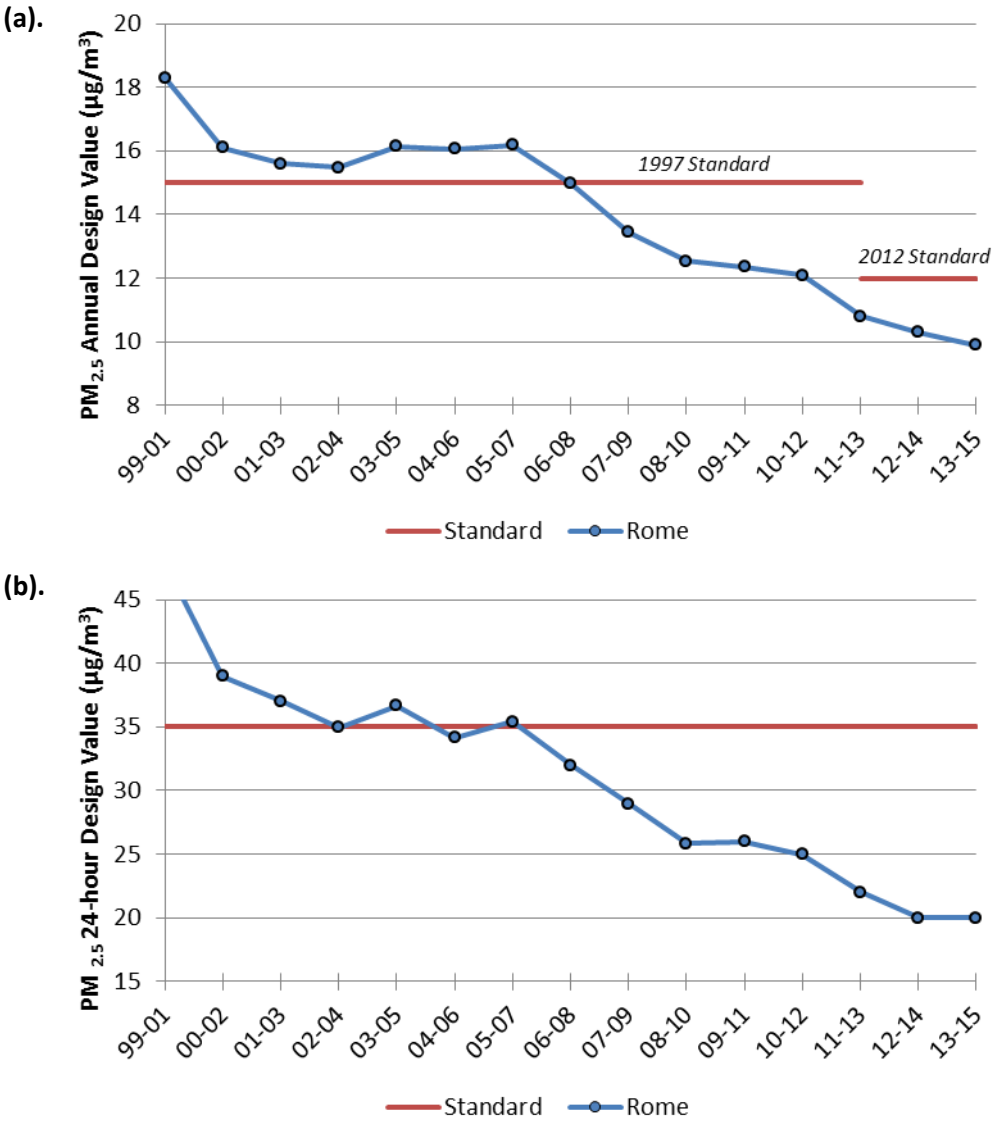


Figure 8: Rome $PM_{2.5}$ (a) Annual Design Value Trends and (b) 24-hour Design Value Trends

Figure 9a shows the $PM_{2.5}$ annual design value trend from 2001-2015 at the Rome site (13-115-0003) along with the annual design value trends of the nearby Kennesaw (13-067-0003) and Yorkville (13-223-0003) sites. The $PM_{2.5}$ 24-hour design value trend from 2001-2015 is plotted in Figure 9b for Rome, Kennesaw, and Yorkville. These figures show that the trend for the Rome $PM_{2.5}$ monitor is similar to those of Kennesaw and Yorkville for both the annual and 24-hour design values.

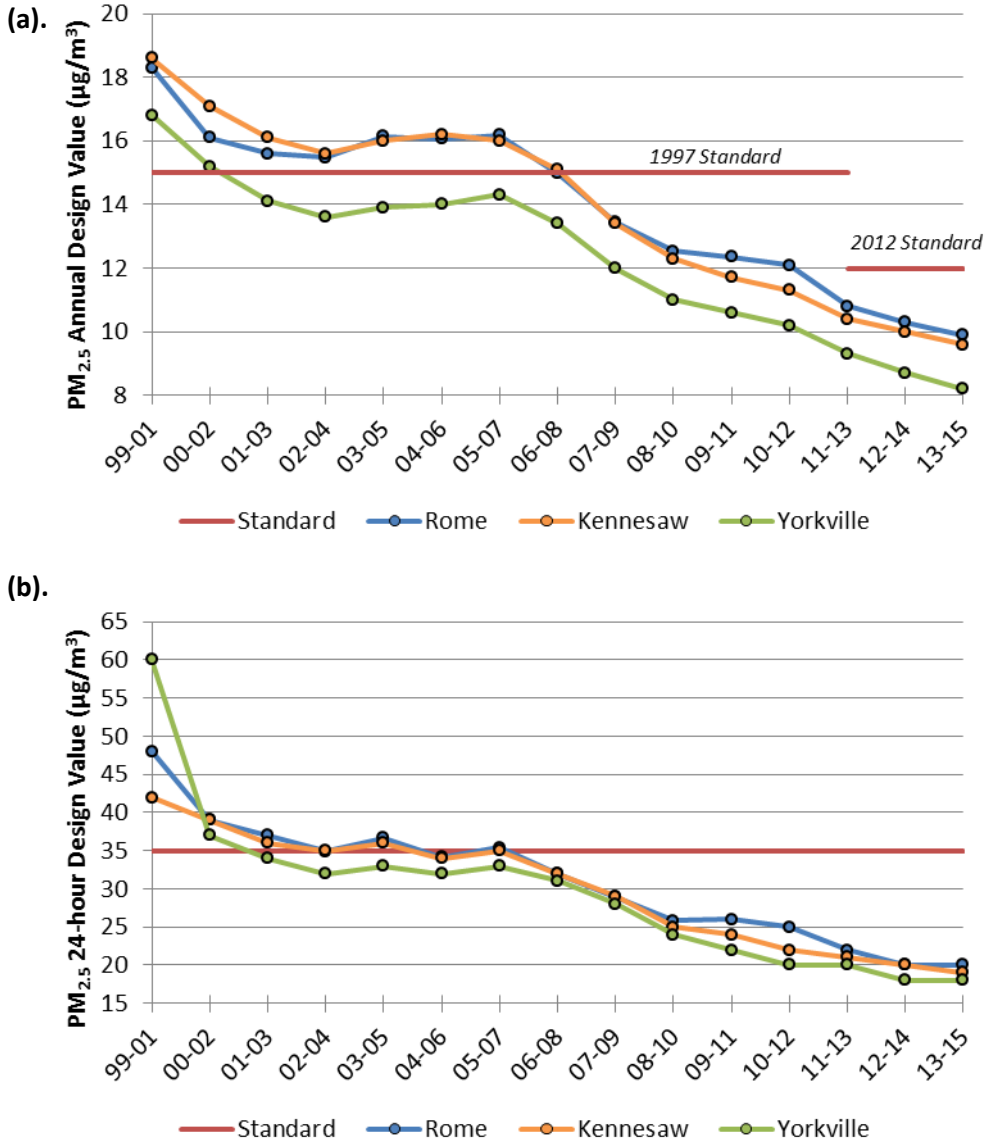
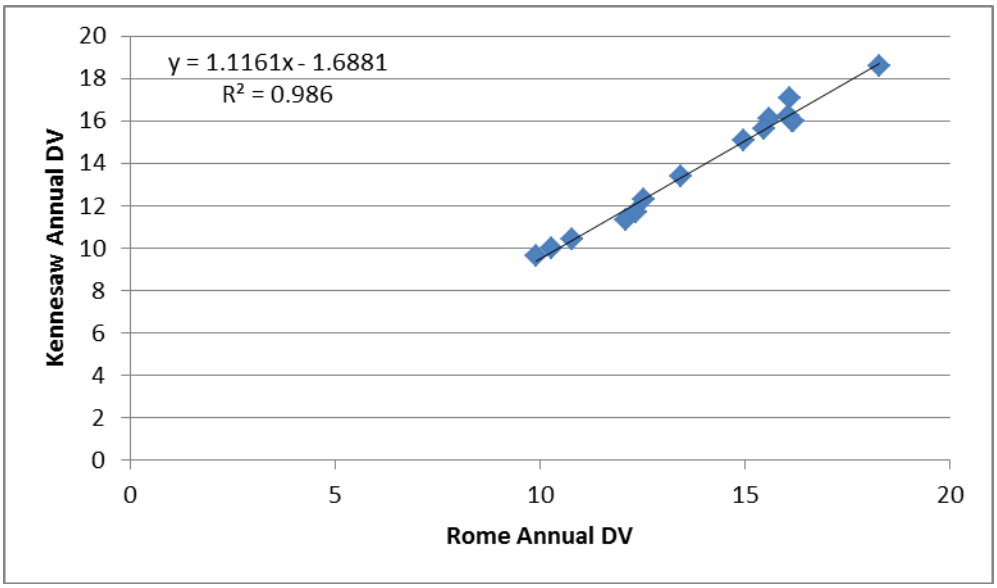


Figure 9: $PM_{2.5}$ Trends for Rome, Kennesaw, and Yorkville (a) Annual Design Value and (b) 24-hour Design Value

Correlation analyses were conducted between the Rome $PM_{2.5}$ monitor and the nearby $PM_{2.5}$ monitors at Kennesaw (13-067-0003) and Yorkville (13-223-0003). Figure 10a is a scatter plot of the $PM_{2.5}$ annual design values from 2001-2015 for Rome and Kennesaw with a trendline and R^2 value. Figure 10b is a scatterplot of the $PM_{2.5}$ 24-hour design values from 2001-2015 for Rome and Kennesaw with a trendline and R^2 value. The R^2 value for the annual design value (R^2=0.986) and the 24-hour design value (R^2=0.9598) indicates a positive correlation between the Rome and Kennesaw $PM_{2.5}$ monitors.

(a).



(b).

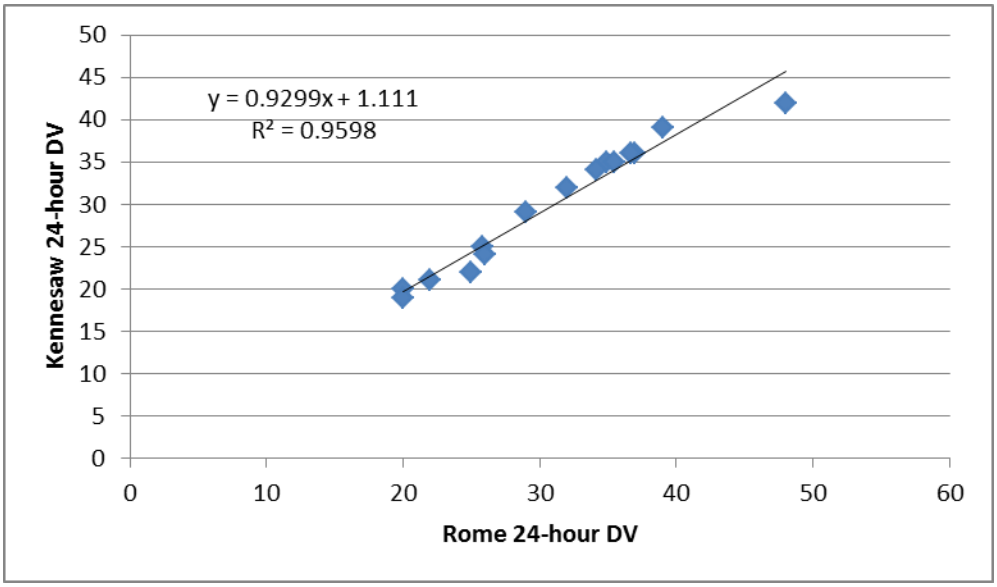
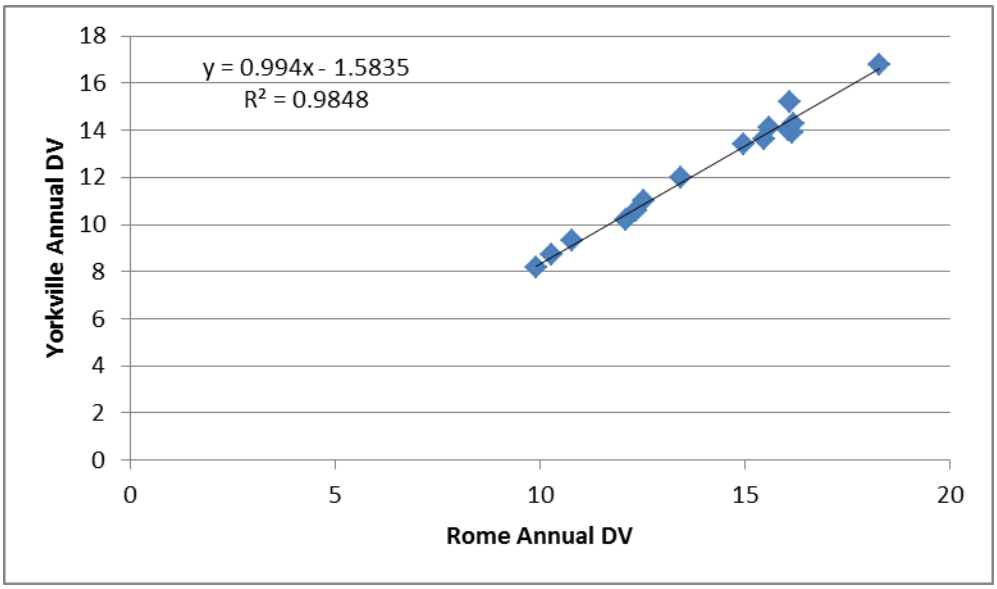


Figure 10: Scatter Plots Comparing Rome and Kennesaw $PM_{2.5}$ (a) Annual Design Values and (b) 24-hour Design Values

Figure 11a is a scatter plot of the $PM_{2.5}$ annual design values from 2001-2015 for Rome and Yorkville with a trendline and R^2 value. Figure 11b is a scatterplot of the $PM_{2.5}$ 24-hour design values from 2001-2015 for Rome and Yorkville with a trendline and R^2 value. The R^2 value for the annual design value (R^2=0.9848) and the 24-hour design value (R^2=0.9076) indicates a positive correlation between the Rome and Yorkville $PM_{2.5}$ monitors.

(a).



(b).

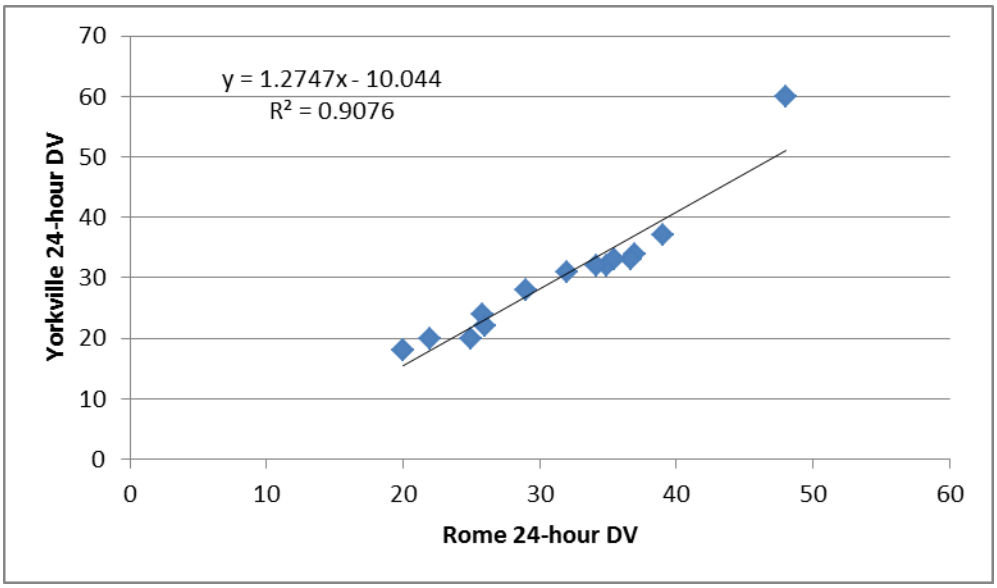


Figure 11: Scatter Plots Comparing Rome and Yorkville $PM_{2.5}$ (a) Annual Design Values and (b) 24-hour Design Values

Additionally, a deviation from the NAAQS analysis was conducted for Rome for 2011-2015. Figure 12a shows the $PM_{2.5}$ annual design value devation from the NAAQS and Figure 12b shows the $PM_{2.5}$ 24-hour design value devation from the NAAQS. These figures show that both the annual and 24-hour design values for Rome have been below the NAAQS for the last five years.

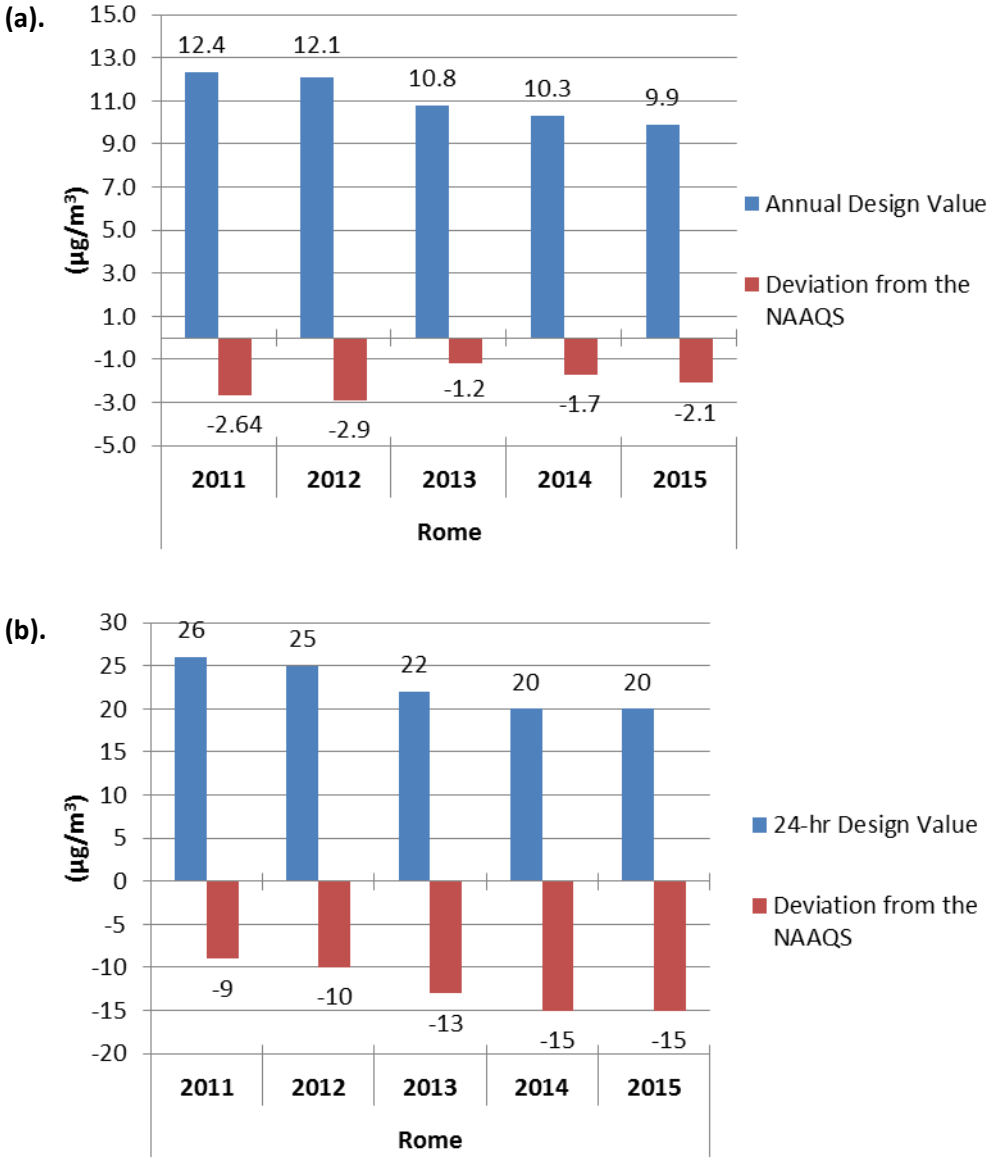


Figure 12: Rome $PM_{2.5}$ Design Value Deviation from the NAAQS for (a) the Annual Design Value and (b) the 24-hour Design Value

Discontinuation of Gordon $PM_{2.5}$ FRM Monitor

In accordance with 40 CFR 58.14 (c) regarding SLAMS discontinuation requests, GA EPD provides the following documentation in support of discontinuing the $PM_{2.5}$ FRM monitor at the Gordon site (13-319-0001).

The Gordon $PM_{2.5}$ annual design value trend from 2001-2015 is plotted along with the applicable NAAQS in Figure 13a. The Gordon $PM_{2.5}$ 24-hour design value trend from 2001-2015 is plotted along with the NAAQS in Figure 13b. These trends show a steady decreasing trend in both the annual and 24-hour design values, and that this monitor has been in attainment of both the annual and 24-hour $PM_{2.5}$ NAAQS for more than five years.

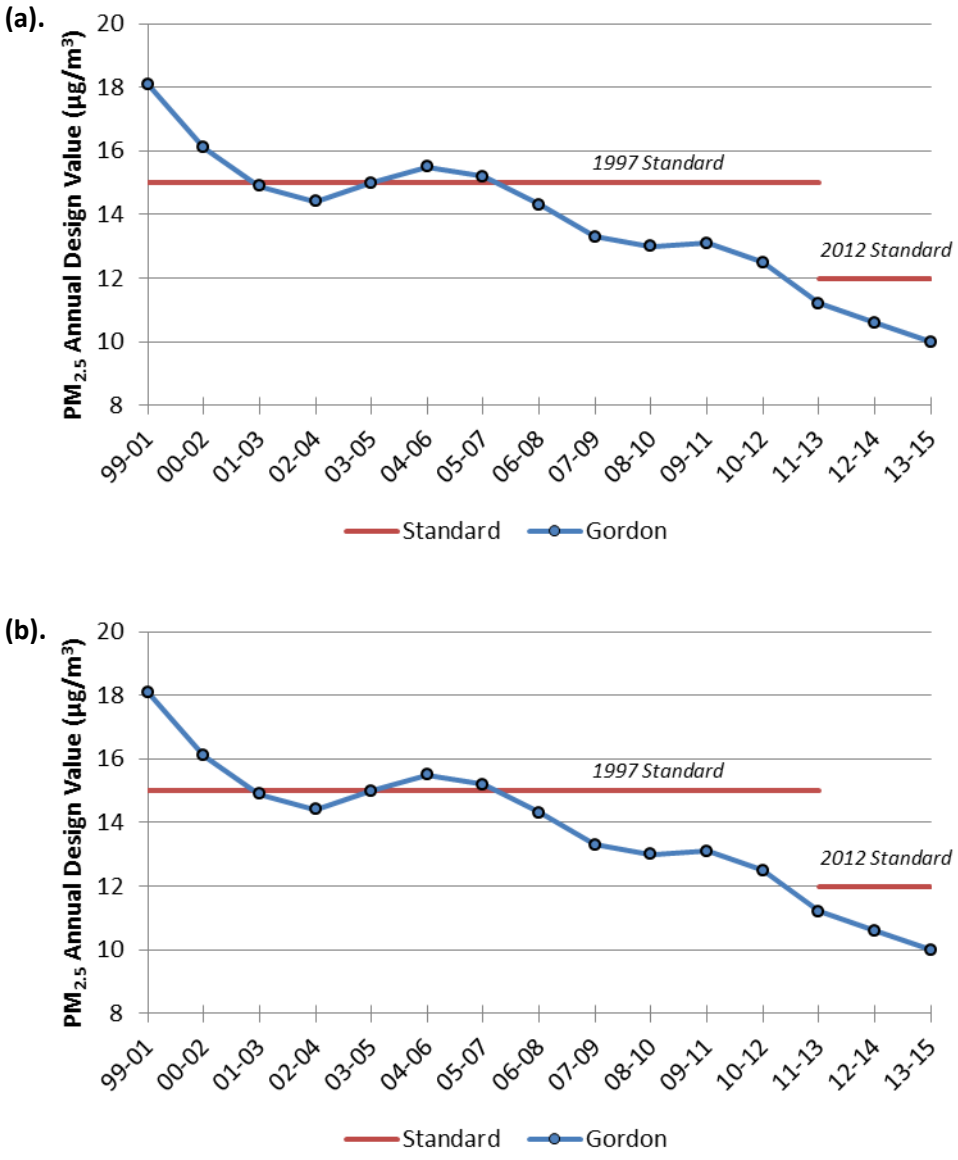


Figure 13: Gordon $PM_{2.5}$ (a) Annual Design Value Trends and (b) 24-hour Design Value Trends

Figure 14a shows the $PM_{2.5}$ annual design value trend from 2001-2015 at the Gordon site (13-115-0003) along with the annual design value trends of the nearby Macon-Allied (13-021-0007), Macon-Forestry (13-021-0012), Warner Robins (13-153-0001), and Sandersville (13-303-0001) sites. The $PM_{2.5}$ 24-hour design value trend from 2001-2015 is plotted in Figure 14b for Gordon, Macon-Allied, Macon-Forestry, Warner Robins, and Sandersville. These figures show that the trend for the Gordon $PM_{2.5}$ monitor is similar to those of Macon-Allied, Macon- Forestry, Warner Robins, and Sandersville for both the annual and 24-hour design values.

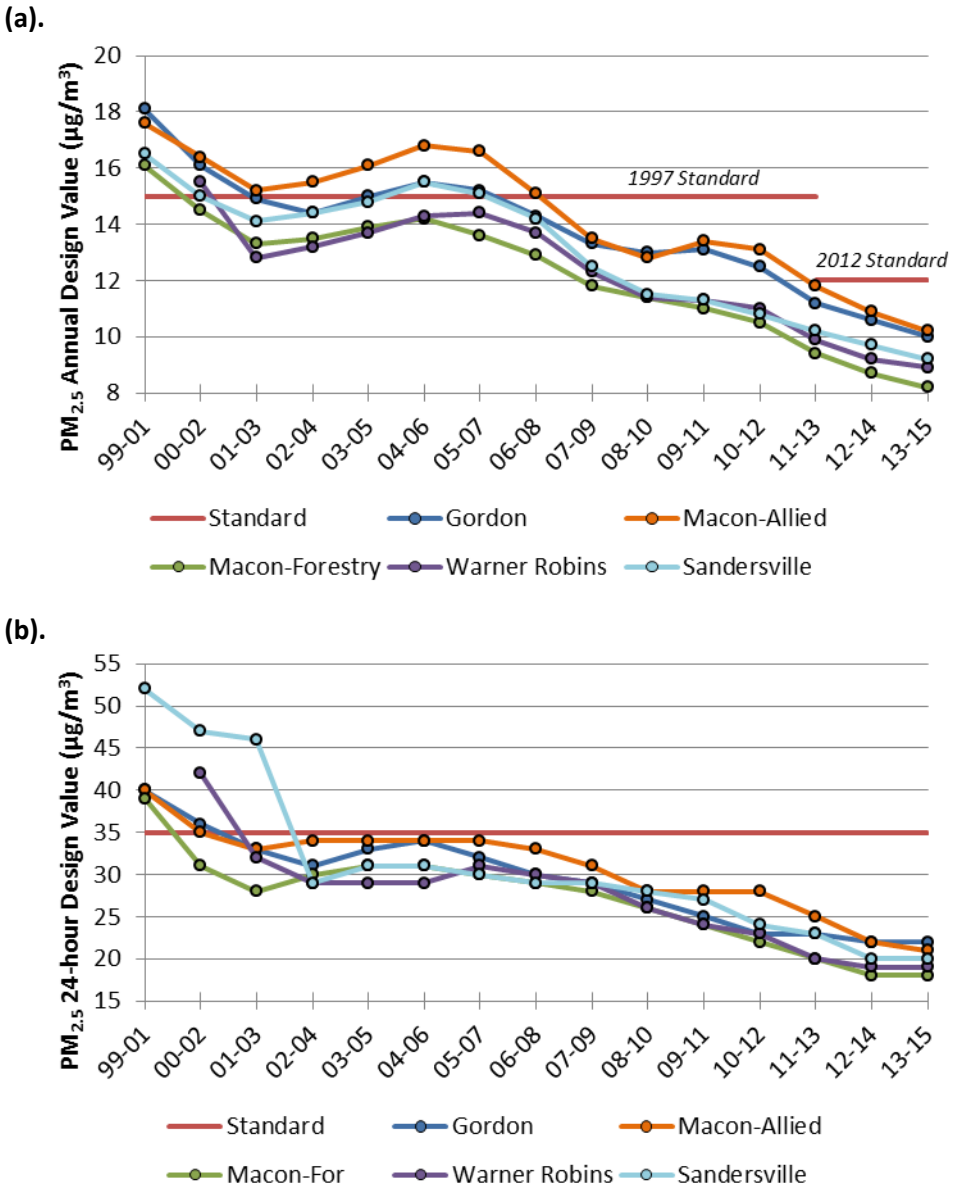


Figure 14: $PM_{2.5}$ Trends for Gordon, Macon-Allied, Macon-Forestry, Warner Robins, and Sandersville (a) Annual Design Value and (b) 24-hour Design Value

The Sandersville $PM_{2.5}$ monitor, which is approximately 30 miles from Gordon, typically has lower concentrations than the Gordon monitor. However, GA EPD wishes to retain this monitor because Sandersville has a number of kaolin sources within a small radius. Those industries

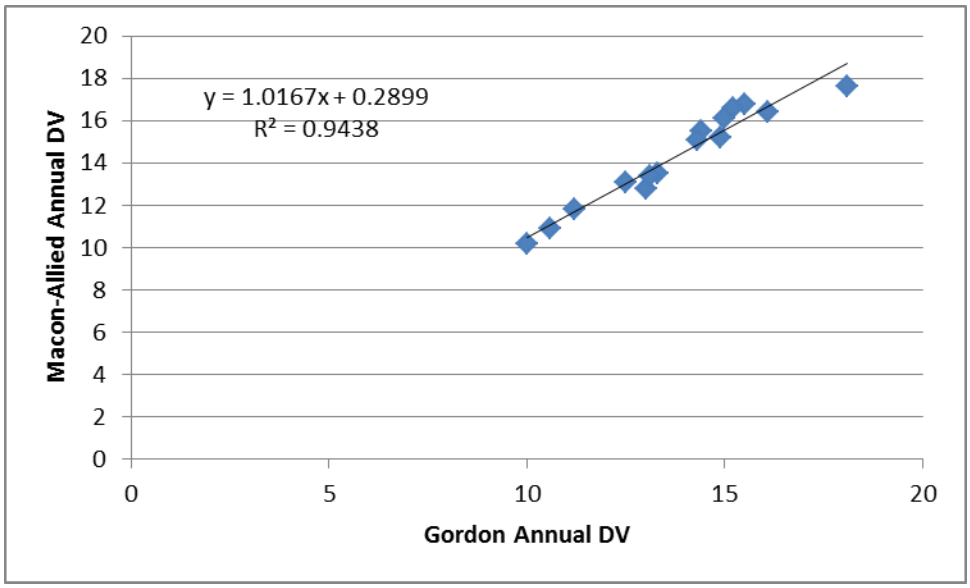
have been under Prevention of Significant Deterioration (PSD) increments for several years. Keeping the Sandersville monitor would allow GA EPD confidence that the $PM_{2.5}$ monitor is maintaining the standard. In addition, the Gordon monitor is located on the top of a building and GA EPD is working to remove the safety hazards of rooftops for our staff. The Sandersville monitor was relocated to ground level last year.

Correlation analyses between Gordon and nearby $PM_{2.5}$ sites are discussed on the following pages.

Correlation analyses were conducted between the Gordon $PM_{2.5}$ monitor and the nearby $PM_{2.5}$ monitors at Macon-Allied (13-021-0007), Macon-Forestry (13-021-0012), Warner Robins (13-153-0001), and Sandersville (13-303-0001).

Figure 15a is a scatter plot of the $PM_{2.5}$ annual design values from 2001-2015 for Gordon and Macon-Allied with a trendline and R^2 value. Figure 15b is a scatterplot of the $PM_{2.5}$ 24-hour design values from 2001-2015 for Gordon and Macon-Allied with a trendline and R^2 value. The R^2 value for the annual design value (R^2=0.9438) and the 24-hour design value (R^2=0.9038) indicates a positive correlation between the Gordon and Macon-Allied $PM_{2.5}$ monitors.

(a).



(b).

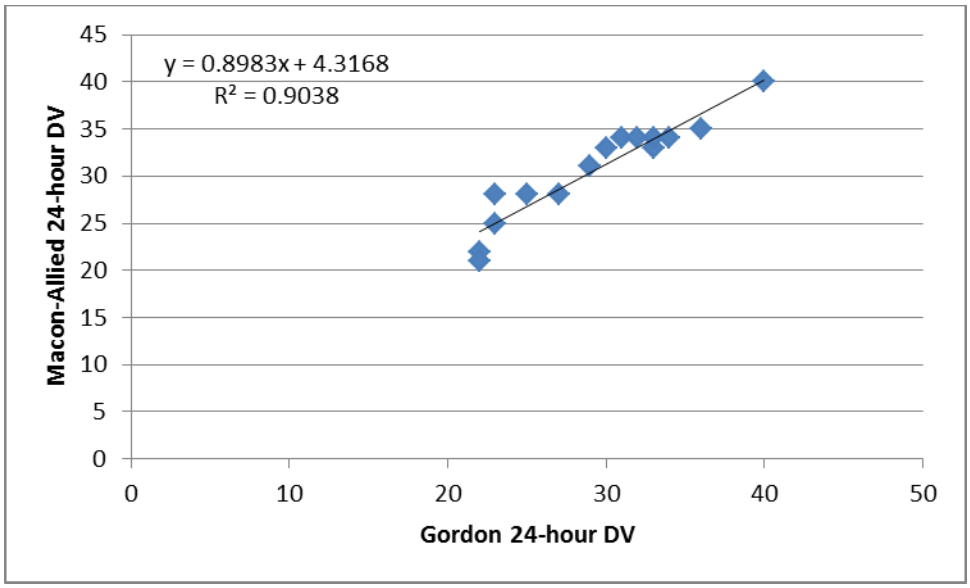


Figure 15: Scatter Plots Comparing Gordon and Macon-Allied $PM_{2.5}$ (a) Annual Design Values and (b) 24-hour Design Values

Figure 16a is a scatter plot of the $PM_{2.5}$ annual design values from 2001-2015 for Gordon and Macon-Forestry with a trendline and R^2 value. Figure 16b is a scatterplot of the $PM_{2.5}$ 24-hour design values from 2001-2015 for Gordon and Macon-Forestry with a trendline and R^2 value. The R^2 value for the annual design value (R^2=0.9799) and the 24-hour design value (R^2=0.9279) indicates a positive correlation between the Gordon and Macon-Forestry $PM_{2.5}$ monitors.

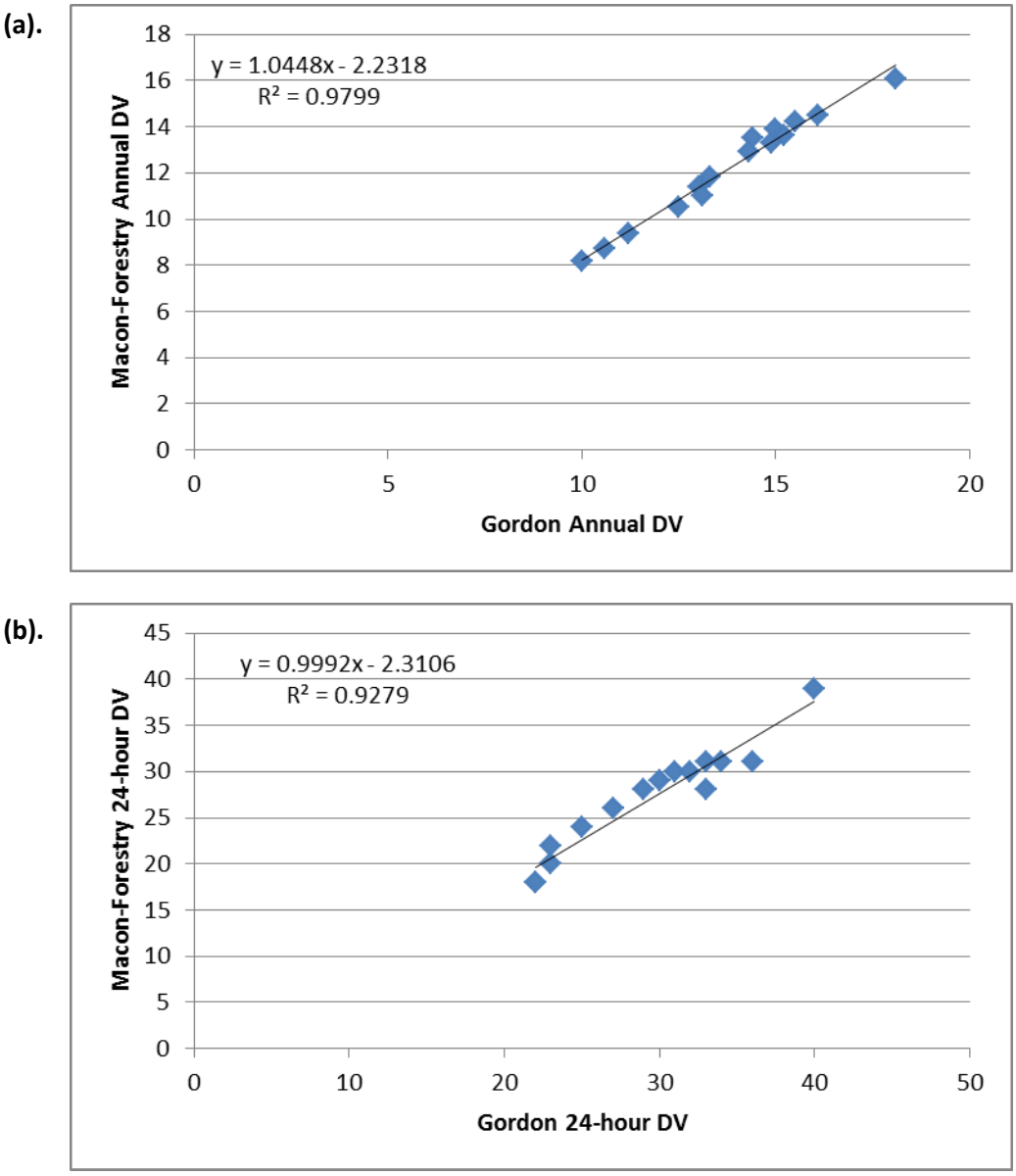
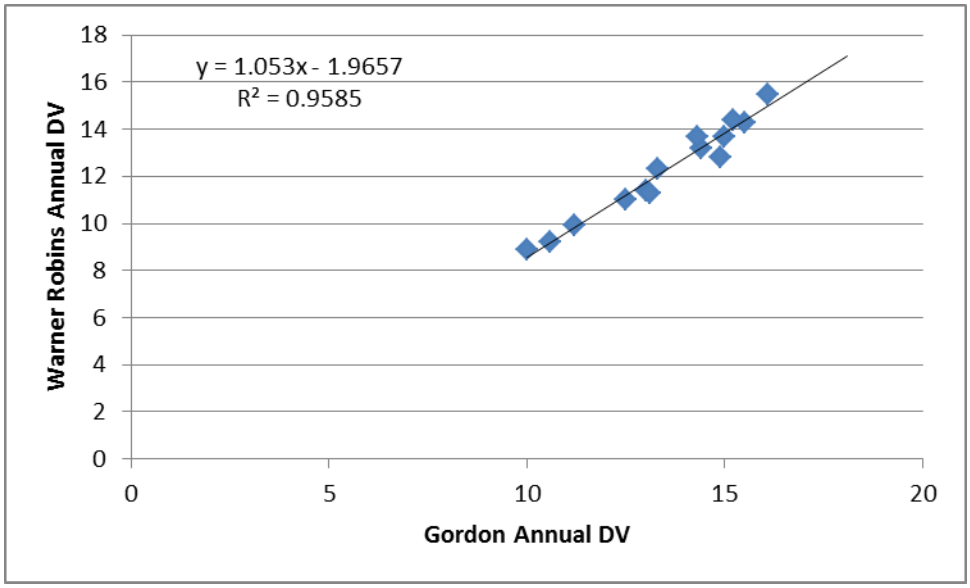


Figure 16: Scatter Plots Comparing Gordon and Macon-Forestry $PM_{2.5}$ (a) Annual Design Values and (b) 24-hour Design Values

Figure 17a is a scatter plot of the $PM_{2.5}$ annual design values from 2001-2015 for Gordon and Warner Robins with a trendline and R^2 value. Figure 17b is a scatterplot of the $PM_{2.5}$ 24-hour design values from 2001-2015 for Gordon and Warner Robins with a trendline and R^2 value. The R^2 value for the annual design value (R^2=0.9598) and the 24-hour design value (R^2=0.8351) indicates a positive correlation between the Gordon and Warner Robins $PM_{2.5}$ monitors.

(a).



(b).

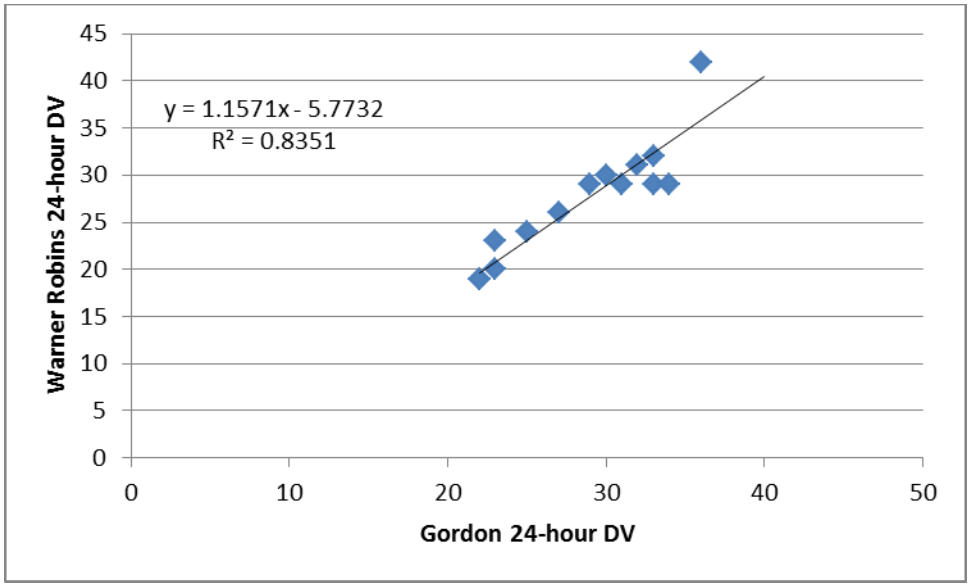


Figure 17: Scatter Plots Comparing Gordon and Warner Robins $PM_{2.5}$ (a) Annual Design Values and (b) 24-hour Design Values

Figure 18a is a scatter plot of the $PM_{2.5}$ annual design values from 2001-2015 for Gordon and Sandersville with a trendline and R^2 value. Figure 18b is a scatterplot of the $PM_{2.5}$ 24-hour design values from 2001-2015 for Gordon and Sandersville with a trendline and R^2 value. The R^2 value for the annual design value (R^2=0.929) and the 24-hour design value (R^2=0.7708) indicates a positive correlation between the Gordon and Sandersville $PM_{2.5}$ monitors.

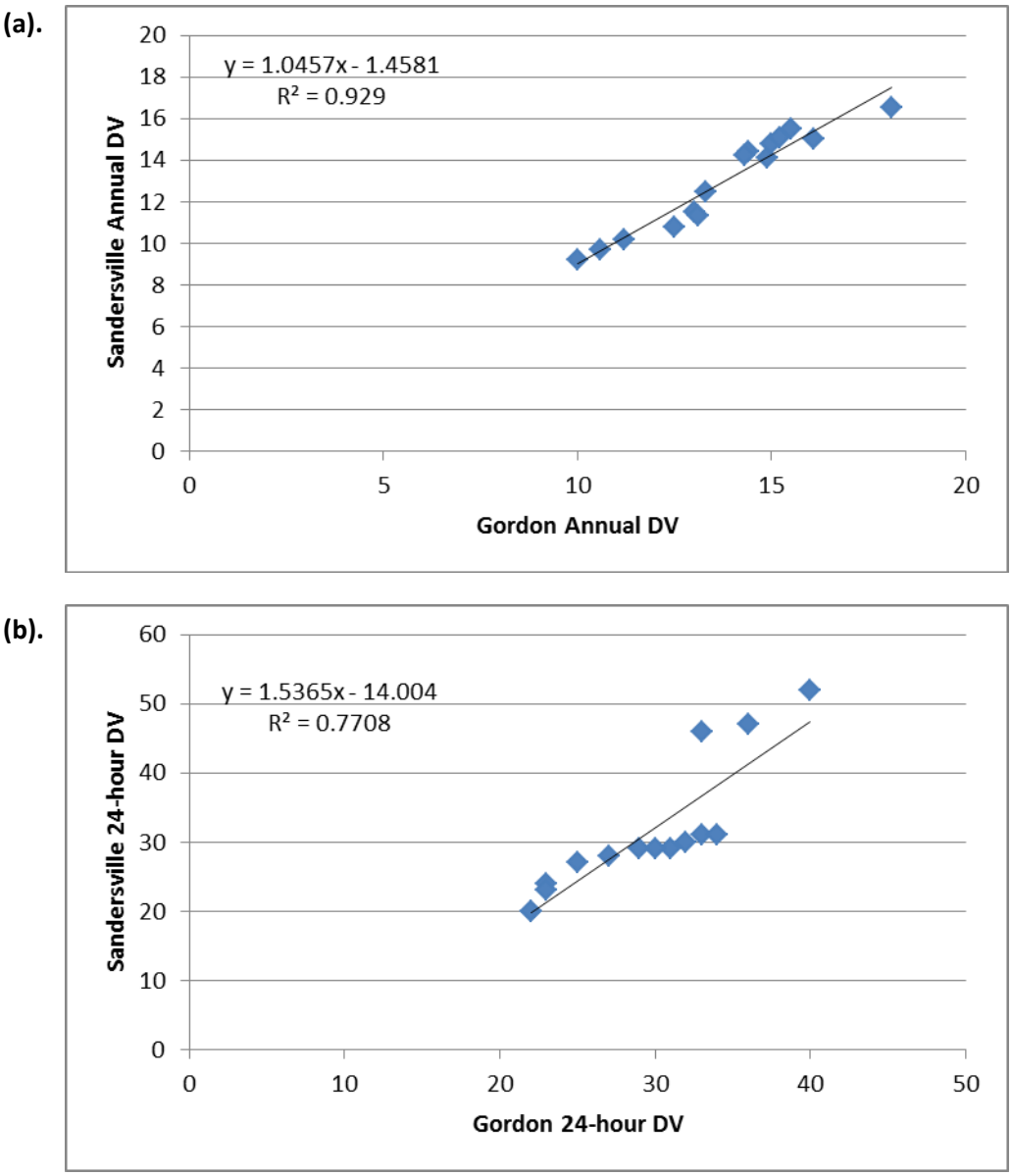


Figure 18: Scatter Plots Comparing Gordon and Sandersville $PM_{2.5}$ (a) Annual Design Values and (b) 24-hour Design Values

Additionally, a deviation from the NAAQS analysis was conducted for Gordon for 2011-2015. Figure 19a shows the $PM_{2.5}$ annual design value devation from the NAAQS and Figure 19b shows the $PM_{2.5}$ 24-hour design value devation from the NAAQS. These figures show that both the annual and 24-hour design values for Gordon have been below the NAAQS for the last five years.

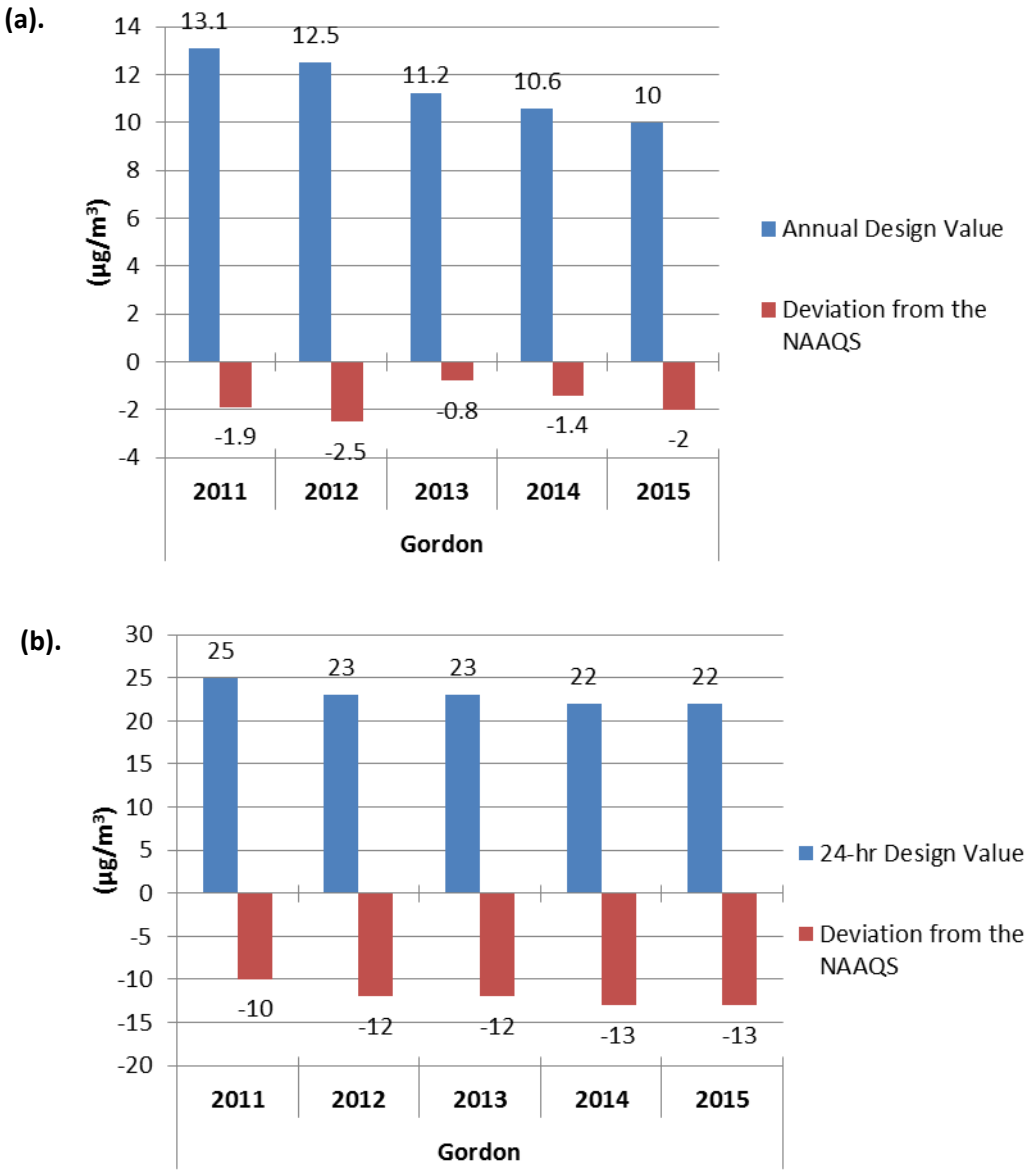


Figure 19: Gordon $PM_{2.5}$ Design Value Deviation from the NAAQS for (a) the Annual Design Value and (b) the 24-hour Design Value

Relocation of Gainesville $PM_{2.5}$ FRM Monitor

The Gainesville site (13-139-0003) will be relocated back to its original location at the Fair Street School at 695 Fair St. Gainesville, GA 30501 by December 31, 2016. Monitoring began at this location in 1997, but due to the school being demolished for rebuilding, the Gainesville site was temporarily moved to the adjacent property of the Boys and Girls Club in 2011, about 200 yards away. The roof of the Boys and Girls Club is very high and does not have power available, resulting in the use of an extension cord that is draped over the edge of the roof and plugged in to a nearby utility room on ground level (Figure 20). These circumstances make it both more dangerous and logistically challenging for GA EPD personnel to deal with on a regular basis. The proposed new location would be at the SW corner of the Fair Street School property, where the school's chain link fence abuts Collins Circle (Figure 21). GA EPD will have a deck, approximately 1 meter high, putting the sampler inlets at about 3.5 meters high. GA EPD plans to operate a Thermo 2025 FRM and a BAM 1022 FEM sampler. There are three trees in the proposed area, two of which are mature and approximately 13 to 15 meters away from sampling location. The third tree is young and currently about 11 to 12 meters away from sampling location. GA EPD is discussing with local authorities the possibility of relocating the immature tree or keeping it trimmed in such a way as to not become an interference for the monitors.

Figure 20: Gainesville Site on Roof of Boys and Girls Club

Figure 21: Site Photos of New Gainesville-Fair Street School Location

Appendix F:
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 Station	PM_{10}	12/31/12	2012
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

Appendix G:
Comments

Georgia Department of Natural Resources
Environmental Protection Division

Upon final review of this document, necessary changes were made to update the Air Quality Index (AQI) information in Figure 2 on page 8.

No public comments were received.